Chapter XXXIV
Discourse and Network Analyses of Learning Conversations

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ABSTRACT

Analytical frameworks for examining educational computer mediated discourse have been mainly designed for asynchronous discussions; hence the classification schemes are typically more sensitive when applied to longer postings than the shorter, more condensed exchanges present in online synchronous discourse. This chapter introduces the exchange structure analysis framework for examining online synchronous interaction at levels of structural organization and pragmatic intention. The further application of social network analysis as a method and visualization tool for the coded exchanges are explained and illustrated. Examples are provided from transcript data of moderated collaborative group discussions during virtual tutorials in a case study. With the integration of discourse and social network analytical methods, a richer interpretation is gained on the processes of articulation and negotiation of meaning during online learning conversations.

INTRODUCTION

Analytical frameworks for examining educational computer mediated discourse have been mainly designed for asynchronous discussions. Such classification schemes are typically more sensitive when applied to longer postings than the shorter, condensed and more intense exchanges present in online synchronous (chat) discourse. Nevertheless, there have been recent frameworks developed for analyzing educational chat discourse. This chapter describes a new methodological design which integrates discourse analysis (DA) and social network analysis (SNA) for examining educational chat interaction during collaborative group learning. A refined exchange structure analysis framework and coding scheme, based on Cox, Carr, and Hall (2004) and Kneser, Pilkington, and Treasure-Jones (2001), for examining educational chat exchanges are introduced. The

addition of SNA as a method and visualization tool for the coded exchanges are explained and illustrated with examples from transcript data of moderated group discussions in a case study (Lim, 2006). The chapter concludes with future research areas with the integrated method for studying online collaborative learning processes.

BACKGROUND

Interaction is considered crucial to learning experiences from a sociocultural constructivist perspective (Vygotsky, 1962) which assumes that participation in discursive practices of the community supports knowledge construction. In online educational contexts, within the zone of proximal development (ZPD) (Vygotsky, 1962) interpreted as encompassing the student, tutor, and virtual learning environment (Duffy & Cunningham, 1996), the learner's potential capacity for intellectual growth is enhanced by the presence of scaffolding (guidance) in the form of tutor/peer support through interaction. The mediation means of CMC technology and the language of computer mediated discourse enable the formation of learning conversations from which learners appropriate (Rogoff, 1990), for their own use, the resulting shared understandings. Essentially, individual and group knowledge construction processes are held to be supported by interaction in online instructional events such as virtual lectures/tutorials. Such knowledge construction processes are assumed to be empirically observable through examining the dialogic interactions between learning parties.

Characteristics of Computer Mediated Interaction and Discourse

Online interactions between learning parties are largely facilitated by asynchronous and/or synchronous CMC media that offer different capabilities and constraints (Ngwenya, Annand, & Wang, 2004). The asynchronous CMC mode supports delayed-time dialogue through applications such as e-mail and discussion forums. The interactions are usually text-based contributions which could be composed, sent and accessed without time or proximity constraints.

In contrast, the synchronous CMC mode requires communicating parties to be 'present' at the same time for the dialogue to occur through services and applications such as voice over IP, desktop video conferencing, and Internet relay chat. Online synchronous (chat) interactions are mainly text-based messages, composed and sent by parties who are simultaneously logged in chat rooms. Rather than having the facility to order messages in topical or temporal order, as in the case of asynchronous discussion threads, chat messages appear chronologically on-screen with preceding exchanges scrolling up and then off each party's computer screen at a speed corresponding to the pace of the conversation (Werry, 1996), offering a potentially permanent record of the proceedings, which is generally not retrievable unless deliberately saved by the user.

The emergence of such text-based electronic language (Collet & Belmore, 1996) from online interactions prompted research in computer mediated discourse (CMD) which is "distinguished by its focus on *language and language* use in computer networked environments, and by its use of methods of discourse analysis to address that focus" (Herring, 2003, p.1-emphasis in original). The type of CMD relevant here is chat discourse which challenges conventional understandings of the differences between speech and text with its text-based orality (December, 1993). While chat discourse displays the spontaneity of speech in its rhythm (given its synchronicity), it presents at the same time, the textual and structural forms of written language.

Studies that compared chat discourse characteristics to speech (Kortti, 1999; Murphy & Collins, 1999; Werry, 1996) identified linguistic features similar to face-to-face conversation such