

Pedagogical Implications of Synchronous Computer Chat: Coherence *or* Equality?

Susan C. Herring
Program in Linguistics
University of Texas
Arlington, TX 76019 USA
susan@ling.uta.edu

Introduction

The possibility of exchanging messages in "real time" via interactive computer chat protocols has evident implications for on-site as well as distance education, and is generating considerable excitement in educational circles. Among the benefits claimed for computer-mediated communication (CMC) are egalitarian, non-hierarchical participation (Cooper & Selfe 1990) and student-centered learning (Dale & Traun 1998); collaborative problem-solving (Levin et al. 1987; Meagher & Castaños 1996); and enhanced expression and organization of complex ideas, leading to the development of higher-order skills and a more fluent, sophisticated use of language (Bowen 1994; Dale & Traun 1998; Meagher & Castaños 1996). However, most existing research has focused on asynchronous, e-mail-based CMC, in which students need not be logged on to their computers at the same time, and which allows messages to be reviewed and edited. In contrast, in a study of the language produced via Daedalus InterChange, a synchronous chat protocol used in college-level English classes in the United States, Ko (1996) found an overall low level of linguistic complexity, which he attributed to temporal constraints on message production and processing. Given such constraints, can synchronous chat facilitate student learning in educational contexts?

The present study analyzes extended sequences in two Internet Relay Chat (IRC) groups, one an on-line course providing advanced instruction in pharmacology, and the other devoted exclusively to social interaction.¹ Three sessions of interaction from each group are analyzed using methods of linguistic discourse analysis, including exchange structure (Frances & Hunston 1992) and topic shift (Hobbs 1991). The results reveal clear differences between the two groups: the pedagogical chat is characterized by familiar teacher-student exchange sequences which proceed in an orderly fashion, while the social chat demonstrates more playful behavior and is relatively disjunctive. These results suggest that there is a tension between coherence and equality of participation in synchronous CMC, such that rather than inheriting both qualities automatically along with the computer system, teachers in computer-mediated classrooms may have to choose between them. In concluding, I propose pedagogical considerations to guide this choice for the purposes of language teaching.

¹ For a description of the properties of Internet Relay Chat, see Werry (1996).

The Investigation

The total corpus consisted of 1540 messages contributed to the pharmacy group, and 338 messages contributed to the social chat group, for a total of 1878 messages. The three pharmacy sessions were taught by two different male teachers, with four to five students in each session; the social chat averaged seven participants in each session.

All individual messages in the corpus were coded for discourse coherence using two methods adapted from the analysis of face-to-face conversation.² The first of these is the *exchange structure* analysis of Sinclair and Coulthard (1975), as modified by Francis and Hunston (1992). Following this method, the communicative function of each speech act was coded into one of 35 categories such as *inform*, *inquire*, *react*, etc.

Differences were found between the two chat groups regarding the frequency of *inquires*, *neutral proposals*, *receives*, *qualifies* and *prompts*—which are common on pharmacy but not in the social group—and the frequency of *reacts*, *confirms*, *behaves* and *greet*s, which are common in the social group but not in the pharmacy class. These differences reflect the typical activities taking place on the two channels—teacher-controlled question and answer sequences in the educational chat, and playful social interaction in the social chat.

The most frequent combination of acts into exchanges in the pharmacy class is *inquire-inform-receive*, with the teacher performing the first and the third acts, and the students doing the informing. In contrast, the most frequent exchange structure in the social chat group is *inform-react*, and any participant may perform either act. Example (1) is a typical exchange from the pharmacy chat, and example (2) is typical of the social chat:

- | | | |
|-----|---|---------------------------|
| (1) | 142 <Teacher> “Okay, then what evidence is there of a UTA?” | [inquire] |
| | 143 <StudentA> strong smell...amonia | [inform] |
| | 144 <Teacher> “Okay, good, what else?” | [receive/endorse/inquire] |
| (2) | 29 <Jellyroll> not one, but TWO bathrooms - WOW! | [inform/react] |
| | 30 <inedoftrl> oh yeah! | [react] |

In contrast to the egalitarian distribution of act types in the social chat, the distribution of acts in the educational chat is strongly skewed, with the teacher producing almost all of the prompts, directives, metastatements, and exchange-concluding moves, as well as asking most of the questions. That the teacher disproportionately directs behavior and structures the discourse would be expected in a traditional classroom, but it runs counter to the claim that computer-mediated “classrooms” are inherently non-hierarchical.

The second method of analysis measured *topic drift* in terms of the relation between an individual message and its preceding discourse context, by operationalizing categories of topic relations identified by Hobbs (1990). A message can be *on-topic*, shift the topic through *parallelism*, *explanation*, or *metatalk*, or *break* from the previous topic altogether.

² For detailed description of the methods and how they were applied to the data, see Herring & Nix (1997).

In addition, the topical *distance* between messages was coded on a scale of 0 to 4, with '0' representing an on-topic message and '4' an unrelated break in the topical sequence.

Most messages in both groups were found to be on-topic in relation to the previous discourse, although the percentages differ considerably for the two groups. Whereas over three-quarters of messages are strictly on-topic in the pharmacy chat, this is true for only half of the social chat messages. The "off-topic" messages are mostly parallel shifts, but the social chat also has a high percentage of breaks compared to the pharmacy chat. When the distance of each message from the previous message is calculated and averaged, we find that social chat messages are more remotely related to their antecedents than pharmacy messages by a ratio of 4 to 1, resulting in lesser topical coherence and more rapid topic decay.³

The teacher in the pharmacy class, as the person responsible for structuring the discourse, plays a key role in maintaining topic coherence. Through his questions and follow-up comments, he repeatedly returns the class discussion to the topics determined in advance by his lesson plan, as illustrated in the following exchange:

- (3) 58 <Teacher> Okay, so the first question is, are there any definitions that anyone did not understand?
60-66 (Students respond)
68 <Teacher> Any other problems with abbreviations?
70-84 (Students respond)
85 <Teacher> Any other problems with abbreviations?
86 <StudentB> Oh, yeah lots.
87 <Teacher> If not, then let's come up with a list of this patient's medical problems.

Summary and Conclusion

The results of these analyses show that the educational chat makes regular use of complete three-part exchange structures organized around question-answer sequences, contains many regulatory speech acts, and is topically coherent. As a consequence, the pharmacy chat stays focused, and the class is able to successfully diagnose and prescribe treatment for one or two patients in each session. In contrast, activity on the social chat channel is mainly comprised of declarations by individuals to which others may or may not react, has a high incidence of phatic and playful speech acts, and is topically incoherent, in that messages tend to digress rapidly away from the previous topic.

The pharmacy chat achieves its focus and structure, however, at the cost of egalitarian participation. Contrary to previous claims that computer networks create a student-centered learning environment, the on-line pharmacy classes were controlled at every level by the teacher, who in addition to doing most of the "talking", unilaterally directed the students' behavior, evaluated their responses, introduced official topics, and structured the flow of discussion. These findings pose a dilemma: current pedagogical theories advocate breaking down hierarchy in the classroom in favor of more participatory student-directed learning, yet focus and coherence are also important to successful classroom interaction. One might well question whether synchronous CMC necessarily

³ See Herring (1999) for an example and discussion of topic decay in the social chat group.

enhances the organization of complex ideas, if coherence must be maintained through heavy-handed teacher intervention. Similarly, one might question that the free participation enabled by CMC is necessarily desirable, if unstructured participation becomes a "free-for-all" in which coherence is sacrificed.

Although the communication analyzed in this study takes place in English, the tendency towards fragmentation observed in leaderless chat does not appear to be language- or culture-specific. Analysis currently in progress of French IRC reveals patterns of egalitarian exchange and topic decay similar to those found in the social chat group in the present study. These properties are, to a large extent, built into synchronous messaging systems (see, e.g., Herring 1999), and as such constitute real limitations and potentialities that must be taken into account when choosing to use computer chat for a particular purpose.

These findings have implications for the use of synchronous CMC in second language teaching. Topically-fragmented group chat could confuse learners and provide infelicitous models for imitation, making it unlikely that beginners would benefit from exposure to naturalistic chat, or be able—as some have suggested—to "acquire" a language solely through exposure to it on the Internet. In the language classroom, however, teachers can optimize the properties of real-time chat by deploying it strategically. Unstructured participation lends itself to idea generation and to language games requiring minimal cross-turn coherence—for example, simple question-answer exchanges. The fragmented nature of such interaction is offset by the possibilities it opens up for creative thinking. Leader-directed chat, in contrast, is appropriate when ideas must be developed sequentially, as for example in giving grammatical explanations, or when facilitating debate or task-based activities. In such cases, equal participation is sacrificed temporarily in order to reap the benefits of sustained, coherent focus on a complex task.

Synchronous CMC thus falls short of the enthusiastic claims made by its supporters, but in ways that recommend a careful, informed use of the technology in educational contexts, rather than rejection of it altogether.

References

- Bowen, B. 1994. "Telecommunications networks: Expanding the contexts for literacy." In C. Selfe & S. Hilligoss (eds.), *Literacy and Computers: The Complications of Teaching and Learning with Technology*. NY: The Modern Language Association of America.
- Cooper, M. & C. Selfe. 1990. "Computer conferences and learning: Authority, resistance, and internally persuasive discourse." *College English* 52: 847-869.
- Dale, H. & C. Traun. 1998. "Getting the most from e-mail." *Notes Plus*, January: 4-5.
- Francis, G. & S. Hunston. 1992. "Analysing everyday conversation." In M. Coulthard (ed.), *Advances in Spoken Discourse*. London: Routledge.
- Herring, S. 1999. "Interactional coherence in CMC." *Proceedings of the 32nd Hawai'i International Conference on System Sciences*. IEEE.

- Herring, S. & C. Nix. 1997. "Is 'serious chat' an oxymoron? Educational vs. social uses of Internet Relay Chat." Paper presented at the American Association of Applied Linguistics (AAAL) conference, Orlando, FL, March 11, 1997.
- Hobbs, J. 1990. "Topic drift." In B. Dorval (ed.), *Conversational Organization and its Development*, 3-22. Norwood, NJ: Ablex.
- Ko, K-K. 1996. "Structural characteristics of computer-mediated language: A comparative analysis of InterChange discourse." *Electronic Journal of Communication/La revue électronique de communication* 6(3).
- Levin, J.A., M. Riel, N. Miyake & M. Cohen. 1987. "Education on the electronic frontier: Teleapprentices in globally distributed educational contexts." *Contemporary Educational Psychology* 12: 254-260.
- Meagher, M.E. & F. Castaños. 1996. "Perceptions of American culture: The impact of an electronically-mediated cultural exchange program on Mexican high school students." In S. Herring (ed.), *Computer-Mediated Communication: Linguistic, Social and Cross-Cultural Perspectives*, 187-202. Amsterdam: John Benjamins.
- Sinclair, J. & M. Coulthard. 1975. *Towards an Analysis of Discourse*. Oxford University Press.
- Werry, C. 1996. "Linguistic and interactional features of Internet Relay Chat." In S. Herring (ed.), *Computer-Mediated Communication: Linguistic, Social and Cross-Cultural Perspectives*, 47-64. Amsterdam: John Benjamins.