

Project Facilitation through Computer-Mediated-Communication

An Exploratory Study of Collaborative Research Projects

Fumitoshi Kato* and Kaoru Tachibana*

Abstract: This paper discusses facilitation processes in group-based research projects at a Japanese university. A series of content-analytic studies of e-mail messages is conducted in order to explore the roles and functions of CMC in facilitating research projects. Based on preliminary findings of this study, we attempt to propose a set of research agendas to further understand the communicative nature of project practices as they are embedded in our action. We suggest that the idea of self-communication will be an important concept to understand the relationships between an individual member's self-regulatory action and social interaction.

Keywords: facilitation, communication, collaboration, self-communication, Computer-mediated-communication (CMC)

Introduction

Presently, information technologies are transforming the nature of our social existence through their modification of various aspects of our day-to-day activities. Our attitudinal and behavioral changes may be generated by the processes and consequences associated with the adoption and use of new information technologies. For instance, computers are now everywhere. And their ubiquity has become subjects of our scholarly inquiries, such as studies on computer-mediated communication (hereafter referred to as CMC). Concurrently, computers have also become an important tool for our studies. In the context of project management, we have witnessed a growing awareness on the roles and functions of CMC in practicing and facilitating collaborative research projects. For example, we acknowledge the use of e-mail, mailing-list, or bulletin board system (BBS) to manage the flow of information among project members. Whereas the importance of communication process within the relationships between project members is often discussed, research methods and focuses on research practices have gravitated toward examinations of their "outcomes" or "effectiveness," rather than an examination of interaction process, that is to say, what is done and how it is done. This study is most centrally motivated by the conviction that before trying to explain why research projects happen as they do, or why they do not happen as those who design and facilitate group-based projects would like them to, we need to have much more detailed knowledge of what happens in a collaborative research setting (Francis, 1989). Research that focuses on such communicative instances seems rare.

Grounded in a constitutive view of communication

(Mokros, 1996, 2003; Mokros, et. al., 1995), this study assumes that group-based research projects, as examples of one type of social situation, are realized through communication. To anchor our discussions, we will use a case of Japanese university setting within which CMC is utilized, in addition to face-to-face communication (FTF), in group-based research projects. A series of content-analytic studies of e-mail messages is conducted in order to explore the roles and functions of CMC in facilitating research projects. Based on preliminary findings of this study, we attempt to propose a set of research agendas to further understand the communicative nature of project practices as they are embedded in our action.

Procedure

This research was conducted during the 9-months period of a classroom setting in Japanese university. As a part of the class requirements, students were divided into several groups, each working on its own tasks. Each group had its own mailing-list for their day-to-day communication, so that they could share the progress of their activities. In addition to their face-to-face communication, group members were encouraged (but not confined) to use mailing-list in order to facilitate their own project toward their completion of the tasks.

Data

A primary data source of this study consists of e-mail messages sent over mailing lists during the 9-months period (see Tachibana, et. al., 2004 for details). With the members' permission and agreement, we were able to conduct a content-analytic study of e-mail messages. The first step of the analysis began with an observation of each group's communication process via mailing-list. It focused on the sequential flow of what

* Keio University, Faculty of Environmental Information

happened in the process, and when (in what context) it has happened, based on an assumption that several aspects of our communicative behavior can be approached as if they are patterned.

The ways in which a group's discussion flows can be observed and recorded as a "natural" sequence of events. In this sense, the process of project management, as it unfolds, has its own "natural history" of chain of events (Bateson, 1996). In other words, though the process of project facilitation is usually operated on a set of guidelines (rules) and conventions, the process itself is not predetermined by them. It may be said to have a history of its own of which these guidelines and conventions are a part. By creating a set of permanent recordings of the process, and because those materials can be examined repeatedly, we can begin an exploration into closer ("thicker") descriptions of the instances of interaction.

Preliminary Findings

Flow of messages among group members

By an examination of e-mail messages sent over the group's mailing-list, we can begin to characterize the ways in which members managed to control the flow of information among group members. For the purpose of this paper, we will compare two different groups (denoted as Group I, and Group II) out of five groups examined. E-mail messages sent over each group's mailing list were categorized into following three types, based on its relationship (link) between other messages (ref. Kitayama, 2003; Tachibana, et. al., 2004). They are:

- (1) Initiating discussion: A member may post a (new) message in order to initiate discussion for the research project.
- (2) Reply: Group members may reply to a message already posted to the mailing-list. We identified such connections (links) between messages by checking the subject headings of e-mail messages (i.e., identifying "RE: " in subject headings).
- (3) Isolated message: There are messages that will not receive any reply from other members, and become isolated within a series of postings.

Table 1: Flow of messages among group members.

	Group I	Group II
Number of members	8	5
(1) Initiating discussion	66 (21.2)	185 (19.1)
(2) Reply	127 (40.7)	561 (58.0)
(3) Isolated message	119 (38.1)	222 (22.9)
Total	312	968
(%)	(100.0)	(100.0)
Average number of reply messages	1.9	3.0

Table 1 illustrates the flow of messages among two different groups during the 9-months period of their research activities. First, it was found that during the same period of time, total number of messages exchanged differs significantly. Whereas Group I exchanged 312 messages, Group II sent 968 messages. In Group II, 58% of all the messages were replies to other messages. In Group I, 38% of all the messages became isolated within their on-going interactions via CMC. Average number of reply messages may indicate the group members' responsiveness to the colleague members. It can be understood that, in Group II, there were 3 reply messages, on average, whenever a group member posted a new message to the list to initiate discussion. In contrast, on average, there were 1.9 reply messages in Group I.

These figures may be useful indices to capture the nature of group processes as they utilize mailing-lists in order to organize their day-to-day activities. Also, as will be discussed, it is an interesting issue to examine the characteristics of isolated messages since it can be understood in terms of self-regulatory function of self-communication. By posting a message to the mailing-list, even without receiving any reply messages, a member may be reconstructing the situation in which he/she is embedded.

Forms/Functions of CMC

During the 9-months period, members of each project attempt to manage the flow of interactions through a set of communication strategies. Eight types of facilitation moves were identified for the analysis (see Table 2): providing proposals (PR), analyzing the situation (AN), making requests for members' actions (RQ), reporting one's action (RE), providing

information/data (IN), self-talk (ST), asking questions (QU), or answering questions (AS). These are forms of group facilitation that can be identified through the members' exchanges of e-mail messages. Each of these categories identifies types of messages within CMC processes, and it also suggests its function within the collaborative projects.

Table 2: Categories for coding.

Category	Description of the type of message
Proposal (PR)	Making a proposal; stating one's opinion
Analysis (AN)	Analyzing the current status; analyzing members' messages
Request (RQ)	Making a request for a certain action.
Report (RE)	Reporting on one's action
Information (IN)	Providing information/data; offering a "log" of discussions
Self-Talk (ST)	Self-communication; monologue
Question (QU)	Asking questions
Answer (AS)	Answering to a member's question

Table 3 shows the types of communicative moves and the number of messages sent by the group members. Among eight types of communicative moves, Group I exchanged 117 messages (approximately 38% of all the messages sent) for reporting on one's action (RE), and 57 messages (approximately 18% of all the messages sent) for analyzing the current status of the group project (AN). Similarly, in Group II, 375 messages (approximately 39% of all the messages sent) were identified as reporting on one's action (RE), and 189 messages (approximately 20% of all the messages sent) as analyzing the current status of the group project (AN). These two types of communication messages were most frequently exchanged over the mailing-lists. In both of the groups, members sent relatively few numbers of messages for making a request (RQ) and providing information (IN). And about 9% of all the messages sent in Group II accounted for the members' self-talk (ST).

Table 3: Types of e-mail messages sent

Category	Group I	Group II
Proposal (PR)	46 (14.7)	57 (5.9)
Analysis (AN)	57 (18.3)	189 (19.5)
Request (RQ)	11 (3.5)	43 (4.4)
Report (RE)	117 (37.5)	375 (38.7)
Information (IN)	3 (1.0)	5 (0.5)
Self-Talk (ST)	11 (3.5)	85 (8.8)
Question (QU)	20 (6.4)	53 (5.5)
Answer (AS)	47 (15.1)	161 (16.6)
Total	312	968
(%)	(100.0)	(100.0)

In addition to these figures, we could observe and recognize the nature of the group processes through a closer examination of e-mail messages (e.g., the ways in which members address each other, tones of the members' "voices," or an atmosphere of their exchanges via mailing-list, etc.).

Members of the Group I, eight members in total, sent their messages mainly for reporting one's commitment to their tasks. There, major topics were, for example, scheduling of their project meetings and sharing documents/files that are in preparation. Answers were mostly replies to the leader's messages in which members were explicitly asked to reply to them. Messages that analyze their current status increased over time, as they seem to have constructed, through the very process of collaboration, their pattern of communication. We could observe that, in the later stage of their project, a member initiated a discussion by posting one's message as a report (RE), while others attempted to comment on it to give advises and suggestions as an analysis (AN).

A similar pattern was observed in Group II as well. It seems that each member understood the nature of the task, and all the members organized their "team roles" (Belbin, 1981, 1996) in an orderly fashion. Also, they sent messages as analyzing their status displaying relatively high motivation toward the

completion of their tasks. When compared to Group I, members of the Group II seem more responsive (as suggested in Table 1) to each other, being in tune with the tasks they face, and created an atmosphere where they could send or receive messages freely (e.g., their messages included more jokes, trivial episodes, or greetings).

Project Facilitation through CMC

Preliminary findings of our study suggest that the use of CMC may influence the ways in which project members organize their tasks. At the same time, such mode of communication may affect the ways in which project members understand about themselves. As a concluding discussion of this paper, we propose a set of research agendas that may contribute to our further understandings about the nature of project facilitation through CMC.

Linking internal and external activities

As an entry point to explore the nature of project facilitation via CMC, we propose that one of the interesting perspectives is to explore the relationship between our internal and external activities, drawing mainly on studies on self-communication. Broadly defined, self-communication (intrapersonal communication) refers to the situation in which an individual addresses oneself (not necessarily audibly), by constituting oneself as the sole intended recipient of his or her own remarks. As will be elaborated, communication that takes place within an individual may play a significant role in his or her social interactions. One's intrapersonal communication will contribute to shape the way he or she interacts with the situation; and in turn, his or her engagement in social interactions will reshape, or maintain the intrapersonal relationship to him or herself.

Self-regulation and social interaction

Ideas regarding the relationships between self-communication (self-reflection) and its emergence through social interactions (e.g., Mead, Vygotsky) may serve as a basis to understand the use of CMC in facilitating a group-based project. What are the rationales for incorporating the ideas, such as self-communication, internalization, social interaction, into communication research? In other words, what are the major motivations that guide us to think about these ideas in the context of CMC? We suggest that there are at least three sources of motivations. Each of them will be summarized:

(1) First, it has been argued that the notion of

internalization plays an important role to explore the relationship between external and internal activities. Though it may vary depending on the context, self-communication is the primary locus of an individual's gains in monitoring, reflecting on, and self-management of cognitions and affects. Also, the studies reviewed inform that a process of intrapersonal communication is situated within a complex interrelationship between interpersonal and intrapersonal relationships. And the very process of self-communication serves as a vehicle to bridge the external and internal activities, and thereby facilitates one's learning, problem solving, and sense making. In this regard, a focus on self-communication and its emergence via interactional events resonates with the interactional view. As a way to approach our human communication behavior, the focus offers a conceptual basis to proceed with further inquiries.

(2) Secondly, it was also discussed that the study of self-communication may have important pedagogical (therapeutic) implications. In other words, it is expected that further explorations of the self-regulatory nature of self-communication may serve as an entry point to reorient, or reorganize a seemingly "dominant" theories of learning and teaching. It also ties into the issues of the design of learning environments. By identifying the conditions on which a process of self-communication is provoked, we may be able to suggest the ways to organize learning environments (i.e., computer programs). As John-Steiner (1992) proposes, "studies of private speech ... are of great interest because they provide data which are linguistic in form but which deviate in structure from language developed and realized in communicative settings" (p. 294).

(3) Finally, though a series of studies and experiments based on this perspective has focused mainly on children's learning and development, the underlying logic and epistemological assumptions are insightful for us to think about interactional approaches in general. As John-Steiner and Soubelman (1978) suggest, Vygotsky "emphasized the study of development because he believed it to be the primary theoretical and methodological means necessary to unravel complex human processes" (p. 128). Accordingly, several scholars have suggested that we can observe the phenomena of self-communication in various settings (e.g., age groups, contexts, etc.). As already mentioned, whereas we can identify a growing interest in the Vygotskian perspective, it seems relatively

unexplored in the context of communication research. Thus, we are motivated to explore the applicability of the ideas to various contexts of our interactional events.

Possible techniques and procedures

Fry (1992) suggests a set of possible techniques and procedures to approach the phenomenon of self-communication (Figure 1). Though his study focuses on roles and functions of self-communication among elderly people, the list can be understood as a general guideline to assess the approaches to self-communication.

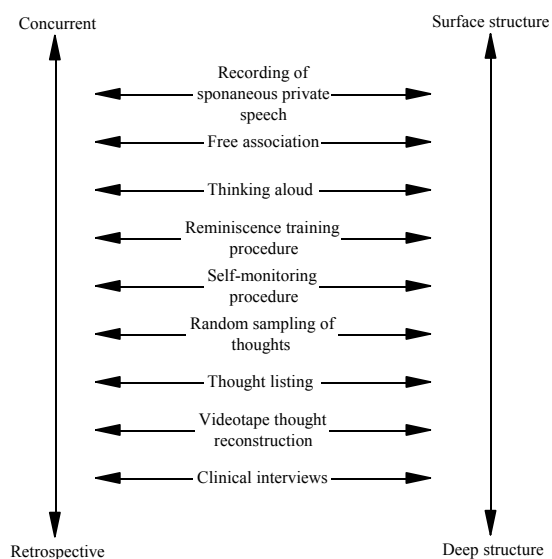


Figure 1: Specific techniques and procedures for eliciting private speech. Adapted from Glass & Arnkoff (1982), cited in Fry (1992).

Fry's illustration is important not only because it provides various recording techniques, but also because it layouts two important dimensions of analysis:

(1) Concurrent/Retrospective dimension. This dimension reflects the temporal distance between the actual events under investigation and the timing of observation and recording (Fry, 1992, p. 280). For example, we can record one's interaction with a computer directly --- concurrently --- via video taping; or, in contrast, we can create a setting in which one is asked to recall --- retrospect --- about his or her interaction with a computer. It can be assumed that concurrent procedures are more reflective of the interactor's "natural" flow of behavior. As Fry (1992) suggests, "retrospective reconstructions employing subjects' recall of past events are more vulnerable to distortions or inaccurate recall" (p. 280). Also, in

terms of the unobtrusiveness of the method, concurrent procedures may be better to capture the "natural" flow of an interactional event.

(2) Surface structure/Deep structure dimension. In parallel with the concurrent-retrospective dimension, we can also identify the surface and deep structure dimension. It refers to the subjects' different levels of awareness and processing of the information of interest. It is expected that, at the surface level, one's utterances (i.e., surface level) during the interactional events are relatively easy to access and record. Subsequently, these recorded verbalizations may be somehow coded, and we can perform a content analytic study. In contrast, approaches to the deeper structures of one's self-communication attempt to tap into intensity of one's self-regulatory activities and their meaning embedded in his or her utterances. However, the deep structure level is difficult to access, and it may be understood "only by inferences and endorsements, and the study of deep structure is a slow process" (Fry, 1992, p. 281).

Toward a Redirection

In relation to interpersonal communication research, there have been on-going discussions regarding the similarities and differences between CMC and face-to-face communication (e.g., Salomon, 1988, 1990; Walther, 1992; Walther & Burgoon, 1992). One of the interesting questions raised is to ask whether or not CMC has an influence upon development of one's social practices such as writing (e.g., Riel, 1993). From the very beginning stage of CMC research, several scholars have argued that CMC has an impact upon development of one's social skills --- some scholars have identified computers as a determinant of such development. For example, Riel (1993), looking back her own experience, characterizes the mode of such interactions as reflective talk:

CMC is reflective talk. It is more like talk than writing. ... I can pause, and reread, rethink and rework my talk until I am happy with it. Herein, I believe, lies the difference. I am interacting with myself as much as you -- taking time to reflect on the change in my ideas and seeing my ideas go from fleeting spiraling thoughts to a linear order... (CMC-hotline, April 28, 1993).

It has been argued that studies in interpersonal communication have tended to be based upon either of

the following two “dominant” perspectives (Stamp & Knapp, 1990): on one end, there is a focus upon an individual's internal mental activity; on the other end, a research focus is given upon the functions of one's external behavior. Because of this tendency to focus only on one end of interactants, when we try to put both ends of interactants together in perspective, we often encounter a set of incompatible theories and models. Whereas “dominant” approaches may offer rigorous and parsimonious explanations about some aspects of interpersonal communication, the very nature of their theoretical assumptions have inevitably created unexplored aspects of our communication processes. Needless to say, this tendency is not limited to interpersonal communication research. Related disciplines such as learning theories and cognitive science, or social sciences in general, have been experiencing a similar tendency in their scholarly pursuits.

Therefore, it is important to shift our focus toward a relatively unexplored aspect of our behavior: that is to explore the relationship between our external and internal activities; that is to focus upon individuals' activities interactionally. In the context of project management, particularly within our interest on project facilitation, a redirection of our focus toward an interactional approach not only enables us to ask alternative questions, but also serves as a basis to reevaluate the strengths and weaknesses of previous research programs.

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