NATIVE AND NON-NATIVE SPEAKERS' PARTICIPATION IN
EDUCATIONAL ASYNCHRONOUS COMPUTER CONFERENCING:
A CASE STUDY

by

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A thesis submitted in conformity with the requirements for the degree of
Master of Arts in Education
Graduate Department of Curriculum, Teaching and Learning
Ontario Institute for Studies in Education, University of Toronto

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ABSTRACT

This thesis presents a case study of graduate students' participation in optional course-related asynchronous computer conferencing (ACC) in the theoretical framework of Activity theory. The investigation was concerned with both native and non-native speakers of English.

It was found that the main factors that influenced participation in ACC were students' goals, motives, attitudes and beliefs. For example, students who believed the community had great importance in cognition, participated actively in ACC. The motives for participation ranged from interest in discussing the issues in the course to concerns about one's own position in the academic community. In the conference, students engaged in activities such as status-building, knowledge-gaining, knowledge-building and community-building.

All non-native speakers of English in the class took part in ACC with Knowledge Forum, while only 41.6% of the native speakers did so. Further, the perceived benefit of computer conferencing was greater for the non-native speakers. Most of them reported they could express their ideas better in ACC than in face-to-face discussions and pointed out computer conferencing was beneficial for their language and academic development.
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Chapter 1
INTRODUCTION

The use of technology in education is not something new: the slate, for example, would have been quite an innovation in its days. Technology develops, however, and there are always new technologies to be utilized in the learning process. The introduction in education of a new technology always poses the same old questions: how will it affect learning and teaching; will its use lead to better outcomes; will the benefits outweigh the sacrifices; etc, etc.

Computer conferencing (CC) is one of the new technologies that are quickly making their way into education. The universities and colleges started adopting CC in the early 80s. Studies of its use and speculations about its potential have suggested that it can be a powerful aid to both educators and students. Different aspects of educational CC have been studied: changes in the role of the teacher, group dynamics, time management, facilitation techniques, conflict resolution, information overload, patterns of participation, status and gender equality, knowledge construction, effect on second and foreign language learning, etc. However, to my knowledge, there have been no studies yet of non-native speakers' participation in mixed conferencing groups of native and non-native speakers of a particular language. Research on non-native speakers' participation in educational computer conferencing has been limited to second/foreign language learning classrooms. On the other hand, non-native speakers are not mentioned in the studies of participation in regular classroom computer conferences; it is unclear if there were any non-native speakers participating in those conferences at all.

This thesis examines graduate students' participation in a course-related optional computer conference and focuses on the differences in participation between the native and non-native speakers of English, the language of the conference. I hope that the study will help both students and instructors to understand better the challenges and the educational potential of computer conferencing, and will also enable non-native speakers to make informed decisions about taking courses that include computer conferencing.

1.1. Computer-mediated communication and computer conferencing

The term computer-mediated communication is used to denote human communication which is realized electronically via computers. In computer-mediated communication (CMC), networked computers serve as tools that mediate the activity of communication. The collective term CMC comprises technologically differing ways of communicating, such as e-mail, listserv, videoconferencing, MUD (multi-user domain), MOO (multi-user object oriented domain), computer conferencing, etc. While a few of these are image-based (videoconferencing, some
MUDs and MOOs) or incorporate oral/aural communication capabilities (videoconferencing). Most are written text-based. Keyboard electronic (computer) conferencing, or computer conferencing (CC) for short, is a type of CMC where numerous users exchange textual messages typed on computers and carried electronically over systems of networks. CC technology provides opportunities for many-to-many interaction, i.e. discussions, group work, 'meetings', etc. The term computer conferencing has gained popularity and is now widely used instead of keyboard electronic conferencing. The systems of networked computers that allow users to connect to a whole group of people are either local area networks (LAN), wider area networks (WAN), or worldwide (the World Wide Web).

In terms of the pace of interaction, there are two types of CC: synchronous and asynchronous. In synchronous CC, the verbal interaction is displayed to all users in 'real time', at practically the same time the messages are received by the service equipment. Since the speed of travel for the electronically exchanged messages is extremely high, in synchronous CC messages are displayed for reading by the participants almost immediately after having been sent. Also, in synchronous CC, messages are dynamically displayed on the viewer's personal computer screen, with new messages appearing usually at the bottom and the oldest messages moving up and out of the screen. The reader can respond immediately to what s/he is reading, which allows the first interactant to receive feedback to his/her 'utterance'. In its immediacy of exchanges and dynamic interaction, synchronous CC resembles oral interaction.

The other type of CC, asynchronous CC, is realized by technology that allows records of the individual written messages to be kept in the virtual electronic 'space' for long periods of time. Participants in asynchronous CC may or may not get immediate responses to their contributions. Users of asynchronous CC can view the messages many times and long after they have been written and sent to the conference. They may respond to messages posted in the conference at any time - right away or much later. In this way, asynchronous CC can resemble written communication. Most of the current ACC systems are hypertext-based which makes them dynamic environments: users can manipulate the display of the content of the conference (textual and graphic), and view the record of messages in sequenced or 'threaded' formats (sorted according to time of contribution, grouped by author, or clustered according to topical links). There are many kinds and designs of technology for asynchronous computer conferencing (ACC), and their boundaries are quite fuzzy. Different people classify the different electronic communication systems in different ways. As a result, for example, e-mail, MUDs and MOOs are often considered ACC systems. In this thesis, though, I am not concerned with the technology that affords ACC, but with the activity of asynchronous electronic discussion, which is most often called ACC. For convenience, I will use the popular term asynchronous computer conferencing (ACC) instead of the more clumsy 'discussion held asynchronously over CC systems'.
1.2. Intellectual discussion and computer conferencing

Discussion is one of the oldest methods of instruction. Socrates was probably not the first to use it to teach his pupils. In contemporary higher education, where active learning is greatly valued, discussion has an important place. McKeachie (1999) calls it "the prototypic teaching method for active learning" (p. 44) Although 'developmental discussion' (a problem-solving discussion technique in which the teacher breaks problems into parts so that all group members are working on the same part of the problem at the same time) may enjoy greater popularity, intellectual discussion also has a place in higher education.

Education, and university education above all, should be about advancing and testing of ideas (Tracy, 1997). One of the most characteristic features of higher education is the intellectual discussion, the talk about ideas. In his book Dialogic education: Conversation about ideas and between persons Arnett (1992) writes: "Conversation on campus is centered on ideas emerging from study and inquiry. [...] An idea is a starting place for conversation. Conversation about ideas is equated with a commitment to inquiry, propelled by wanting to find out, to know. [...] Ideas are viewed as the glue that pulls together data, facts, tradition, and hopes for the future" (p.8). Tracy (1997) views intellectual discussion as "a talk occasion in which the primary focus is on ideas" (p. 23). She outlines several characteristics of intellectual discussions: participants explore differences of opinion, at the same time remaining open to changing their minds as a result of the discussion; the conversation does not function as a tool for achieving practical ends, but can be an end in itself; the ideas talked about are more or less abstract. Any practical results of intellectual discussions are understood as secondary. In her study of intellectual discussions in two departmental colloquia, Tracy found that the main goals of the participants were (1) the development of ideas and (2) the building of intellectual community. Intellectual discussion embodies the idea that knowledge is created in a distributed way, in social interaction; it is co-construction of knowledge. In intellectual discussion, there is no one knower, but knowledge is sought collaboratively through exchange and testing of ideas. Since (and probably before) Socrates, intellectual discussions have distinguished the philosophers ('philo' - love, sophia - wisdom, knowledge). Current social constructionism considers intellectual dialogic interaction the vehicle of knowledge building. (Bereiter & Scardamalia, 1986).

Throughout the centuries, people who had the burning love for wisdom and knowing traveled the world to meet with soul mates and to indulge in conversation about ideas. Computer conferencing provides new, more convenient opportunities for intellectual discussions.
1.3. Advantages of asynchronous computer conferencing

Asynchronous computer conferencing affords time and space freedom because the interactants do not need to be at the same place to communicate, nor do they have to be connected at the same time in order to exchange messages. The combination of multi-user capabilities and space and time independence allows large groups of geographically dispersed individuals to connect and communicate in a way no other technology has ever provided before. Due to the convenience, flexibility and discussion opportunities, ACC is becoming an important part of contemporary higher education (Grabowski, 1989; Harasim, 1987, 1993; Hiltz, 1995; Mason & Kaye, 1989; McCreary & Van Duren, 1987; Rada, 1997; Riel and Levin, 1990; Steeples et al., 1996; Warren & Rada, 1998).

ACC for education addresses geographical isolation, and can broaden the range of interaction among students and instructors. It can be "an extra" to a regular face-to-face or distance-education course, or constitute the course itself. ACC brings time flexibility that can not exist in traditional face-to-face courses. In computer conferencing, the students and tutor(s) can communicate at their most convenient time, and messages can be stored in a permanent data file for later reference. It has been conjectured that students may have an additional benefit if computer conferencing is used by educators as "a tool in maturing [their] learning styles and developing independent learning strategies." (Mason & Kaye, 1990, pp. 25-26). Harasim (1987) analyzed graduate students' reactions to on-line learning. The data comprised responses to open-ended interview questions and comments collected from various conferences. Harasim identified several themes of perceived advantages:

- increased interaction: quantity and intensity;
- access to group knowledge and support;
- democratic environment;
- convenience of access: the "24 hour" class;
- user control over the learning interaction;
- motivational aspects;
- text-based communication

( ibid., p.125)

In Ruberg et al. (1996), students commented that the on-line discussion provided them with timely feedback and guidance, increased access to the instructor, increased involvement with course content, time for reflection and editing before sharing a comment, and more opportunities to demonstrate what they had learned. Pfaffenberger (1986) claimed that CMC created "a sense of informality and 'groupness' by serving to widen access, obliterate social distinctions, reduce or eliminate social barriers and foster a strong sense of group identity" (p. 30). Distance educators are exploring the strengths and weaknesses of computer conferencing,
especially its time convenience, freedom from scheduled travel, faster feedback, on-going dialogue, and group orientation.

Lemke (1996), who defends the values of the distributed model of cognition and advocates the inclusion of students in this model too, sees electronic discussion as an opportunity to extend the distributed model to the greater academic community:

There are at present two rather different, and somewhat conflicting models for academic communication. On the one hand we like to think of ourselves as a multitude of true communities, holding continuing and evolving conversations through publications, conferences, and private exchanges. Scholarly communication conforms to a "distributed" model of communication: many voices are speaking and contributing to the conversation, it is essentially "dialogical". [...] But this begins to disappear when it is not our peers that we are addressing, but our students or a wider public. They are not fully participants in the conversation. Indeed there no longer is a true conversation in the best sense. We pass over into a second, "centralized" model of communication: one voice speaking, perhaps with a multiplicity of messages, but in each class there is only one teacher, in each lecture hall only one speaker. [...] The distributed model, which is, I think, for all of us the preferred model, has extended now into the realm of electronic, computer-mediated communication. [...] All students should have access, at least, to local area network (LAN) -based discussion groups that include participation by not only specifically assigned course instructors, but also to larger pools of faculty members, reference librarians, and other specialists. In time, universities should seek to include off-campus specialists in these conference groups as well. This would go a long way toward making the distributed model of scholarly communication equally the model for academic instruction and student learning.

http://infosoc.uni-koeln.de/etext/text/lemke.93b.txt

Some authors have argued that CMC creates a paradigmatic shift in education (Harasim, 1990; Dede, 1993; Berge and Collins, 1995). Most of them contend CMC shifts the locus of control from the teacher to the learner. They see the technology as a decisive factor in the shift from teacher-centered to learner-centered education. Others, for example Salaberry (1996), warn against such technological determinism and remind of previous disappointments with instructional technology (audio, television, VCR, etc.).

By now, CC has become part of foreign and second language education too (Chapelle, 1994; Chapelle et al.; Chavez, 1997; Chun, 1996; Cononelos & Oliva, 1993; Cummins & Sayers, 1995; Kern, 1995; Nicholas & Toporski, 1993; Ortega, 1997; Salaberry, 1996; Warschauer, 1996, 1997). In his discussion of a theoretical foundation for the development of pedagogical tasks in CMC, Salaberry (1996) presents a list of the major characteristics of the pedagogical activities implemented in that medium:

- the learner addresses a specific audience for purposes other than demonstrating a skill
- expansion of the network of peers (sharing the work with fellow students)
- increased access to cross-cultural information (sharing information with other communities)
increased access to experts' advice/guidance (expert-novice interaction)
freedom from time and location constraints (e.g., non-accessible regions or conflicting schedules)
emergence of new discursive environments: absence of non-verbal cues (e.g., more spontaneous participation in group work, increased participation of minorities)
emotional involvement (increased motivation)
unparalleled access to information databases and help on-line
emergence and expansion of a new asynchronous mode of communication
safer environment in which learners may try to communicate with more advanced speakers without "losing face"

(Salaberry, 1996, p. 18)

In the literature on second language (L2) teaching and learning, both synchronous and asynchronous CC activities have been considered. L2 researchers seem to be more interested in the synchronous type of CC, but ACC is also beginning to attract their attention (Braine, 1997; Markley, 1992). Most of the publications are reports of classroom practices or suggestions for the application of commercially available software (Ganeva, 1998), but there is a growing number of reports on empirical research too. I will consider the use of CC in L2 classrooms in 1.5. and 1.6.

1.4. Limitations and weaknesses of CMC

At the beginning, CMC was saluted as the technology that would provide almost all students needed: access to tremendous amounts of information, independent learning, flexible scheduling, distributed cognition, student-centered education, etc., etc. There are now more cautious and balanced reflections on the advantages and disadvantages of computer-mediated learning. For example, McConnell (1990) indicated that in addition to the expected enthusiasm about computer conferencing, some students felt that they had wasted time and experienced undue formality in communicating with peers. Selfe and Meyer (1991) listed the academic advantages of computer conferencing as chiefly inclusionary -- it may enable access or minimize the impact of cues about status, age, gender, and so forth that inhibit communication or encourage broader and deeper discussion. In a discussion on active learning and knowledge-construction in computer conferencing Harasim (1990b) explained that while computer conferencing may promote a rich generation of ideas, it is not yet able to promote the important converging processes of linking and structuring ideas because it lacks the software to organize messages into orderly sequences and conceptual hierarchies (pp. 57-58). Recent writings on facilitation techniques for computer conferencing indicate an optimism tempered with the
realism of actual experience (Burge, 1993; Davie, 1988; Eastmond, 1992; Hiltz, 1990; Ruberg et al., 1996; Warschauer, 1996; Yates, 1997).

Harasim (1987) lists several "difficulties" that graduate distance education students reported as related to learning on-line: information overload, delayed responses, following discussion threads, loss of visual cues, and health concerns. Hiltz (1990) suggests that it is the more mature, motivated, independent students who can fully benefit from CMC because they are able to better manage their participation. Ruberg et al. (1996) discuss some limitations of the synchronous CMC interface. In their study student responses to the computer-based discussion were not all positive. Students reported that they missed the emotional quality of face-to-face interactions. The multiple simultaneous threads of topics and the lack of social cues, the same features that appealed to many, were confusing and inhibiting to a number of students.

Information overload is one of the most common problems mentioned by participants in instructional CMC. Cognitive gridlock (when discussions get confusing or show several threads at apparent cross-purposes) are yet another widespread source of frustration in computer conferencing. Burge's (1993) study found that a student may feel reduced effectiveness and pressure from a number of stressors. The seven stressors she identified were: having to use cognition and affect management skills simultaneously; manage loads of information; decide why, when, and how to contribute; not getting timely or useful peer messages: feeling out of sync with class discussions; fearing loss of valuable ideas; and having to decide quickly whether to stay in cognitive synchronicity with the focus of class discussion.

Burge (ibid.) points out that in computer conferencing, load may come from a variety of sources and have different effects. Students who do not have computer conferencing experience have to learn both software and course content at the same time at the beginning of the course. The fragmented nature of the messaging "reduces predictability in the discussion". Burge underlines that even good readers may suffer reduced processing ability if the capacity in their working memory is used up in coping with the fragmentation of ideas in messages.

One of the important aspects of CMC use in instruction is that it is text-based. CMC encourages and motivates students to write for a real audience, instead of merely composing assignments for the teacher. At the same time, we must recognize that not all students (native and especially non-native speakers) can express themselves well in writing, and, even for those who can, the act of writing and using on-line text-based applications can be a time-consuming struggle.
1.5. Participation in educational computer conferencing

There are a number of studies which address the issues of participation in educational computer conferencing. It is commonly agreed upon now, that CMC promotes a many-to-many model of interaction, as opposed to the usual classroom teacher-centered model. Faigley (1992) found that student interactions dominated electronic discussions, and student-initiated comments occurred 70-80% of the time, while the ratio of teacher-initiated comments decreased significantly in comparison with the traditional classroom discussions. In their review of six studies that examined the participation in electronic as compared to face-to-face discussion, Sproull and Kiesler (1991) noted the more balanced character of electronic discussions.

Many studies in the L1 education literature present evidence of increased participation on the part of so-called poorer performing students (Hartman et al., 1991), female students (Selfe, 1990), and shyer students (Bump, 1990). Harasim (1993), Levin et al. (1990), and McGuire et al. (1987) all found that participants with higher status do not dominate CMC interactions. Hartman et al. (1991) observed increased amount of communication in the electronic discussion for the "less able" students. They also reported that "poorer performing students" were more comfortable participating in CMC vs. face-to-face discussions. These findings are partially supported in Ruberg et al. (1996). In their study, students immediately responded to their peers' questions without waiting for the teacher to answer.

Grabowski et al. (1990) studied the use of electronic mail in a graduate school. They found that it differed between students. The most likely user profile was "a full time doctoral student, with an assistantship, no children, with a part-time job, consulting, or no job." (p.279). The percentage of international students who used electronic mail was considerably higher than the percentage of national students: 67% vs. 54%. As part of the study, students were asked what encouraged and what inhibited their use of electronic mail. Time and place independence was the most encouraging factor (68% of the students selected that answer); knowledge of computers was next with 55%. Among the inhibiting factors that were listed in the survey, 'no need to participate' was selected by 40% of the students; 'no access' was second with 33%, 'lack of knowledge' - next with 23%1, 'did not like/too impersonal' was also selected by 23%, and 'no time' - by 20%. Student status was the only factor which showed significant correlation with use: the full-time students were not only more likely to use e-mail, but they also used it for longer periods of time per week. Although Grabowski et al. did not study CC per se. their findings may give some basis for comparisons.

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1 In the mid-eighties when the study was conducted, electronic mail software was in its infancy, access was far from easy, and the operations necessary for participation required special knowledge.
1.5.1. Participation, CMC, and second language classrooms

CMC has been found to have an equalizing effect in second and foreign language classrooms too. Chun (1994) mentions that in the computer-assisted classroom discussion (CACD) she investigated, the most prolific were several of the otherwise quieter students. Moreover, she attests that learners were taking the initiative and expanding on topics, and taking a more active role in the discourse management.

Kern (1995) reports that there were dominating and non-participating students in the face-to-face discussions, while all of the students participated in the electronic classroom discussions. Furthermore, the number of turns per student was much greater in the CMC mode than in the face-to-face (12.5 and 4.6 respectively), and the average number of words produced by the students was respectively 446 and 248.

In their comparative study of two ESL writing environments, a computer-assisted classroom and a traditional classroom, Sullivan and Pratt (1996) found that 100% of the students participated in the whole-class electronic discussion, compared to 50% in the oral whole-class discussion. Investigating small group interactions, Warschauer (1996) found "a tendency toward more equal participation in the computer mode, with three of the four groups substantially more equal in electronic discussion, and the overall participation rate "twice as equal" in the electronic as in the face-to-face discussion." Furthermore, Warschauer's study demonstrated differences associated with nationality, with Japanese, Chinese, and Vietnamese students much more active in CMC than in face-to-face, and Filipino students losing their usual face-to-face dominance.

Impressionistic accounts of electronic synchronous discussions involving Portuguese and French learners register increases in the participation pattern of shy students and low-motivated, unsuccessful language learners, whereas the same students were perceived by their instructors as less willing to participate in oral discussions led by the teacher (Beauvois, 1992; Kelm, 1992). Most of the cited studies also elicited information on students' impressions and evaluations of CACD. Students themselves identified an increase in participation (and production) as one of the benefits of engaging in electronic discussions in the target language.

Reports of the use of CACD in L1 and L2 classrooms identify equality of participation as one of the most pervasive beneficial effects of using electronic synchronous discussion in L1 writing instruction (Hartman, Neuwirth, Kiesler, Sproull, Cochran, Plamquist, & Zubrow, 1991). FL instruction (Beauvois, 1992; Kelm, 1992; Kern, 1995), and ESL instruction (Sullivan & Pratt, 1996; Warschauer, 1996a). The more equal participation pattern in electronic
discussions is usually attributed to the reduction of social context cues in CMC (Hartman et al., 1991; Warschauer, 1996b), and partly to the absence of oral interaction constraints such as fear to interrupt or of being interrupted, need to manage the floor, and need for interlocutors to pay attention to the production of sequentially relevant discourse (Schenkein, 1978). Additionally, in L2 CACD learners need not be concerned with pronunciation, which often requires a high degree of attention and monitoring in the oral mode and may inhibit communication in the target language. Reportedly, in CACD interactants are less apprehensive about being evaluated by interlocutors, and thus more willing to participate at their leisure. They are less affected by wait time, turn-taking, and other elements of traditional interaction. This enables them to participate as much as they want, whenever they want, with opportunities for contribution being more equally distributed among participants. Ortega (1997) summarizes the effects of this equalizing power of synchronous electronic discussion: (1) the traditional figure of the teacher as authority source and expert is subverted (Kem, 1995, and Warschauer, 1996a), (2) students are afforded the opportunity to engage in self-generated, personally relevant communication involving a wide range of moves, functions, and meanings that may be facilitative in the development of overall language proficiency (Chun, 1994), and (3) all speakers share the floor more equally, and students that do not normally participate much in traditional classroom discussion seem to dramatically increase their participation in the electronic mode. In the FL literature, the small body of studies concerned with CACD seems to provide support for an equalizing effect of electronic discussion on participation patterns.

Research evidence suggests that computer-mediated discussions are more balanced and can galvanize increased participation in homogeneous L2 classrooms and small L1 groups. However, to my knowledge, no studies have yet attempted to address the issues of participation of L2 learners or non-native speakers in heterogeneous computer conferencing groups of native speakers and non-native speakers - the most common and often inevitable context of computer conferencing for many non-native speakers, and especially for graduate students.

1.5.2. Computer conferencing and second language learning

In the context of L2 learning, CC has been found beneficial in terms of increased quantity of language production, complexity of language produced, increased participation of shy students, acquisition of interactive competence, and effect on subsequent oral target language production.

1.5.2.1. Computer conferencing and target language output

CC is a type of language 'output'. The importance of comprehensible output in L2 learning has been aptly considered in the literature on SLA. The role of output in L2 learning was put forth
by Swain (1985; 1993; 1995). She maintains that producing language enhances fluency and accuracy. One function of language production is that it promotes 'noticing' the gap between communicative needs and ability to fulfill those needs.

[In producing the target language (vocally and subvocally) learners may notice a gap between what they want to say and what they can say, leading them to recognize what they do not know, or only know partially.]

(Swain, 1995, p.125)

Swain (1995) points out that output may be used as a way of trying out new language forms and structures as learners stretch their interlanguage to meet communicative needs. The production of output is hypothesis testing, where the non-native speakers can judge by the success of their communicative act if it was comprehensible. Moreover, language learners not only try out hypotheses, but they also explicitly discuss doubts and questions they have about language (Swain and Lapkin, 1998). This assists them in learning from outside experts, learning from their peers, or working to co-construct knowledge with their peers.

The metalinguistic function of output is also hypothesized to be important in second language learning. By reflecting on language use and internalizing the knowledge about the mechanisms of the target language, learners acquire linguistic knowledge.

One of the important aspects of CMC use is that it is text-based, i.e. it involves language production. CMC encourages and motivates students to write for a real audience, instead of merely composing assignments for the teacher. The authentic information gap in computer conferencing creates a situation where there is a purpose to interact. In this way, computer conferencing promotes real communication, and contributes to the development of communicative competence and communication skills. Canale and Swain (1980) underlined the importance of communicative competence in second language. They formulated a theoretical framework for communicative competence in which three components are defined: grammatical competence, sociolinguistic competence, and strategic competence. Grammatical competence comprises knowledge of phonology, morphology, syntax, lexis, and sentence-grammar semantics. Sociolinguistic competence consists of sociocultural rules and rules of discourse. Strategic competence includes verbal and non-verbal communication strategies which are used to prevent or repair communication breakdowns. Later, Canale (1983) revised the model and defined a fourth type of competence, discourse competence, which includes rules of discourse only (distinct from sociocultural rules). CC provides opportunities for the development of all types of competence in a context which allows time for thinking and planning of the output.

Time for planning the output is another advantage that ACC provides. Studies have found that increased planning time results in speech which is more syntactically complex (Crookes, 1989;
Ortega, 1995; Foster & Skehan, 1995). These findings are attributed to the possibility that increased planning time, by allowing learners to push toward greater language complexity, may simultaneously undermine or weaken attempts at greater accuracy and fluency.

Wendel (1997) investigated the effects of an opportunity to plan discourse prior to second-language speech production. The participants were forty Japanese learners of low to intermediate English language proficiency attending a junior college in Japan. In the unplanned condition, participants watched a short silent film and were then asked to tell the story in the film immediately after watching it. In the planned condition, participants were given 10 minutes after watching a second film to plan their discourse prior to telling the story. Transcripts of the spoken narratives were evaluated on five measures covering the areas of fluency, complexity, and grammatical accuracy. A two-way MANOVA showed a significant difference for the planning condition, but not for the film condition or the interaction of planning and film condition. Univariate tests revealed that participants in the planned condition produced narratives with significantly greater fluency and greater syntactic complexity than participants in the unplanned condition. A correlation analysis of the five dependent measures and subjects' English proficiency scores (a cloze test) across planning conditions was conducted. The five measures correlated more highly with test scores in the planned condition than they did with scores in the unplanned condition. These results suggest that strategic planning allows learners to perform at a level which better reflects their level of English language proficiency.

In his thorough study of FL students' language production in synchronous computer mediated collaborative class discussions, Kern (1995) found evidence of many different functions in students' written discourse: greetings, assertions, formally marked personal opinions, questions, commands, narrative, self-correction, recapitulation of another's comment. Compared to oral discussions, the computer mediated discussion was found to offer "more frequent opportunities for student expression and to lead to more language production" (p.472). There was also some indication that the computer conferencing environment reduced communication anxiety.

The qualitative analysis of data collected by Sullivan & Pratt (1996) indicated that types/patterns of discourse were clearly different in the two collaborative writing environments, traditional classroom and computer-assisted. During peer response group sessions, the comments made in the computer-assisted classroom were more focused.

Hoffman (1996) explored the advantages and disadvantages of computer networks in language teaching and learning, and emphasized the capacity of networked computers to support a new type of writing, 'communicative process writing'.

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Chun (1994) studied the impact of computer-assisted class discussion on the acquisition of interactive competence. She found that in computer conferencing FL students produced a great variety of 'the functional features' of language. Chun concluded that all types of functional and interactive competence outlined in the ACTFL Proficiency Guidelines were demonstrated in the electronic discussion.

Although there are no studies focusing specifically on correlations between the writing medium and CC target language production, some of the effects of CC may be linked to the use of computers to write. In her book The Computer and the Non-native Writer, Pennington (1996a) summarizes research evidence and conclusions about the potential of computer-mediated writing environments. She emphasizes the improvement in quality and quantity of writing which results from the use of word processing and networked writing. According to studies reviewed in the book, when writing on computer, L2 students tend to write for longer periods than they would when writing by hand. Computer-writing is more 'exploratory' (Cochran-Smith, 1991), increasing the time available for ideas to germinate and for content to be developed. Moreover, computer-assisted writing promotes increase in revision, which leads to better quality. Pennington points to studies that have found correlational relationship between writing quantity and quality, and recounts the positive potentials of word processing:

- Motivation to spend more time on writing.
- Interactive effects that encourage the development of ideas.
- Facilitation of major revisions.
- Promotion of attention to structure and content.
- Elimination of the concern about handwriting or physical appearance of a paper.
- Provision of an environment for experimentation and planning
- Stimulation of writing in quantity.
- Capability of synthesis of large amounts of information.
- Provision of an environment for developing an effective writing process.
- Provision of an environment for communication and collaboration with peers.

(Pennington, M., 1996b, p.22)

1.5.2.2. Synchronous computer-assisted second language classroom discussion

Chavez (1997), Chun (1994), Cononelos & Oliva (1993), Kern (1995), Nicholas & Toporski (1993), Oliva & Polastrani (1995), Ortega (1997), Warschauer (1996a) and many others have studied L2 learning effects of computer-assisted classroom discussion (CACD). This type of synchronous CC is attracting a lot of attention in the field of L2 research. Most of the studies are small case studies which use anecdotal illustrations to back up claims of
increased L2 production, increased equality of participation in comparison with face-to-face classrooms, and positive attitude to language learning. Although CACD is different from asynchronous CC, and L2 learners' problems are different from graduate NNS students', we should at least consider the findings of those studies in our investigation of NNS graduate student participation in asynchronous educational CC.

Ortega (1997) points out that three areas of electronic synchronous communication have been the focus of most CACD research to date: (a) CACD has an equalizing effect on participation; (b) it increases learner productivity in terms of overall amount of language and/or ideas produced; and (c) the language produced in electronic synchronous discussions can be expected to be more complex and formal than in face-to-face discussions, without losing the interactive nature of oral language. Ortega argues that these three dimensions of CACD have been the object of much anecdotal discussion and enthusiastic advocacy in the FL literature.

1.5.2.3. Characteristics of the target language in CMC

Esling (1991) observed that L2 student communication over a computer network produced discourse characterized by certain linguistic features, such as high frequency of explicit nominal reference.

In addition to the significant quantitative differences in language production in favor of the CMC context, Kern (1995) found that students' language output in the electronic discussions was more sophisticated than in the oral discussions, in terms of the range of its morphosyntactic features and in terms of the variety of discourse functions.

Rilling (1998) studied student language produced in three contexts - traditional classroom, computerized conferences and computer chats - using a functional framework. She collected the texts from four diverse-students (native and non-native speakers) composition classrooms and analyzed them for frequencies of six categories: academic, social, procedural, regulatory, grammatical leftovers, and questionable idea units. Rilling found that the students, non-native speakers included, produced significantly more academic talk in the computerized conference as compared to the traditional classroom.

Warschauer (1996a) compared face-to-face and electronic discussions on two measures of complexity: one lexical (type-token ratio), and one syntactic (coordination index). On both measures, "the electronic discussion involved significantly more complex language than face-to-face discussions" (p. 18). For example, only 18.5% of the combined clauses in the electronic mode were based on coordination rather than subordination, as compared to the 47.5% in the
face-to-face discussion. The computer-mediated discussion tended to include more formal expressions, such as "based on my opinion", "therefore".

Quantity of linguistic production has been of central interest in the FL literature on CACD because of the immediate implications for L2 learning in relation to SLA theory. Swain's (1985) comprehensible output hypothesis predicts a crucial role for language production in L2 development on the grounds that meaningful use of a learner's linguistic resources pushes interlanguage development by forcing the learner to map function-to-form and meaning-to-form relationships in light of particular contexts of language use. The tentative finding that can be gleaned from the literature is that CMC may provide for an instructional context that generates opportunities for (communicative) practice of the second language and opportunities for meaningful L2 output to a significantly greater degree than more traditional arrangements in the L2 classroom.

Ittzes (1997) investigated communicative foreign language use in CC and group journals writing. The study compared the language output of 46 intermediate German as a foreign language students in CC and in traditional group journals writing. The researcher used statistical analyses (matched t-tests and multiple regression analyses), discourse analysis and ethnography of writing. There was no difference between the two conditions in terms of lexical diversity, but learners' language in the CC condition exhibited a higher level of grammatical accuracy, richer lexicon and improved comprehensibility (as rated by native speaker judges).

1.5.2.4. Effect of CC on oral target language production

The effect of a networked computer-mediated discussion on subsequent oral discussions in the ESL classroom was studied by Kim (1998). She examined how two different interaction modes (CMC and face-to-face discussions) affected L2 learners' participation in follow-up oral discussions among the whole class. Data were collected from L2 university students enrolled in an academic English writing program. An experimental group participated in a sequence of computer discussions on InterChange, the conferencing subdivision of the Daedalus Integrated Writing Environment. The CC discussions were followed by oral discussions, with pairs of discussions devoted to the same topic. A control group participated in pairs of oral discussions. The research was focused on the second oral discussion for both groups. Total words, total t-units, and total turns were counted as an estimation of participation in the class, and total number of adjectives per t-unit and total words per t-unit were calculated to evaluate language complexity or sophistication. The Gini-coefficient (an index of the equality of one measure over contributors) was used to show that the CMC discussion encouraged equal participation in the regular class. In this study, the experimental group exhibited more equal participation in the
follow-up oral discussions than did the control group. High anxiety students in the experimental condition participated more than high anxiety students in the control group. The small group size precluded formal statistical analysis.

1.6. Attitudes to computer conferencing

In the literature on human-computer interaction, attitudes have been studied mostly in relation to the acquisition of computer literacy (Badagliacco, 1990; Bear et al. 1987; Geissler & Horridge, 1993; Kay, 1993; Simonson et al. 1987; Woodrow, 1994).

Simons et al. (1987) emphasize that a positive, anxiety-free attitude toward computers is a component of computer literacy. Bear et al. (1987) claim that the first objective of computer literacy should be the fostering of favourable attitudes. Kay (1993) and Woodrow (1994) also point to the importance of positive attitudes in the development of computer literacy, and in addition discuss the significance of other factors such as belief in one's ability to work with computers, as well as commitment to developing computer knowledge and skills. The computer attitude measures used in these studies were interest, confidence, perceived utility, and stereotypical attitudes. Gardner et al. (1993) demonstrated that computer attitudes were influenced by computer experience. In a study of the ways in which different factors affect students' perceived knowledge regarding computers, Levine and Donitsa-Schmidt (1998) analyzed the relationship between computer-related attitudes, belief in own ability when working with computers, computer experience, and self-perceived computer knowledge. The data on students' attitudes and confidence were elicited through a questionnaire which included items like "I think I would enjoy using a computer", "The computer is like a private tutor", "People who use computers are not very sociable", "People who like computers are the type who enjoy science", etc. (p.145). The findings from the study confirmed that the "existence of a positive relationship between computer experience and computer attitudes" (p.139). They also showed that the additive effect of exposure to computers in school and at home had the strongest effect on computer self-confidence and attitudes.

Many studies of CMC in education have included a component about students' perceptions of the benefits and disadvantages of its use. Hiltz (1986) surveyed graduate and undergraduate students, as well as continuing education students about their use of electronic mail to discuss course materials. Students reported that they were motivated to do their on-line assignments well because other members of the class would read them. The majority of the students agreed that they learned more "due to the computerized conferencing system" (p.99), with the graduate students being more negative. The continuing education students, who all worked, indicated that they were more likely to ignore the CC component of the class in comparison to a traditional class when they were busy.
Austin (1997) surveyed teachers who participated in CC on contemporary world issues and modern history. Towards the end of the year, they completed a questionnaire which asked them about the role they felt CC had in their professional preparation. One of the questions asked them if they felt the CC discussions had helped them "to clarify their understanding of educational issues". 73.4% agreed with this view, 18% were not sure, and 8% disagreed. Another question asked if CC was "a more interesting medium for the expression of views" than face-to-face communication. 11.6% agreed strongly, 46.5% agreed, 27.9% were not sure, and 13.9% disagreed. Of those who disagreed, one student was intimidated by the notion that large numbers would read his/her writing, two students disliked the absence of body language or emotion, and for one it was too cold and removed (p.158). Austin points out that there were no "obvious distinctions related to gender, experience with IT, or cultural/religious affiliation" between those who liked conferencing and those who did not (p.158).

In Kern (1995), L2 students pointed out that they felt more confident about participating in the electronic discussions as compared to the oral classroom discussions (80%) and that it improved their ability to write in French (78%). A number of students reported that the on-line discussions were "more open" and "more real" than the oral class discussions. (p.467). According to students' accounts, this was related to "the urgency to write combined with lessened concern about making mistakes" (p.467). The Likert scale questionnaire through which the responses were elicited comprised questions like "The written format of the conversation allowed me to feel more confident about participating", "Not having to worry about pronunciation was a strong incentive to contribute to the discussion", "The InterChange improved my ability to write in French" (p.475). Open-ended interview questions were also asked: "What did you like the most about InterChange?", "What did you like the least?", "What aspects of InterChange, if any, helped you to improve your skills in French?", etc.

Warschauer (1996b) studied L2 students' attitudes to writing and communication in order to identify motivational factors. One hundred and sixty-seven students in 12 ESL and EFL academic writing classes in the US, Hong Kong and Taiwan were surveyed. Thirty questions were asked: 5 addressed the use of computers for word processing, 11 focused on the use of computers for personal communication, and 14 queried general feelings about using computers. All 30 questions were to be answered on a five-point Likert scale. Some of the questions were "I can write better essays when I do them on computer", "If I have question or comment, I would rather contact my teacher in person than by e-mail", "Writing by computer makes me more creative", etc. All categories of students showed positive attitude towards using computers. The two most important factors influencing motivation were knowledge of computers and experience.
1.7. Conclusions from the background literature review

Interest in conversation about ideas is assumed at the graduate level of university education. Even models of education that adopt the transmission approach value intellectual discussion and consider it a test of eligibility for members of academia. Graduate students the world over are expected not only to be able to participate in intellectual discussions, but also to seek them and enjoy them. Apart from graduate courses, many university events are organized with the purpose to afford students opportunities for apprenticeship in the art of intellectual discussion: formal and informal seminars, talks, presentations, discussion groups, colloquia, conferences, etc. All this suggest the considerable importance of intellectual discussion in university education.

There are a number of skills that people need to apply in intellectual discussions. McKeachie (1999) lists several: the skill to establish what the discussion is about, the skill to talk about one's ideas openly, to listen and respond to others' ideas, to build on others' ideas rather than compete, etc. On another level, participants in a discussion need to have competence and skills related to language and its use. This makes discussions challenging for people who are not native speakers of the language of the discussion. In oral discussions, in addition to the challenges of speaking (pronunciation and lack of planning time), it is also necessary to anticipate and notice 'points of possible completion', to manage turn-taking, to maintain continuity of a topic or at least 'talk topically' (Sacks et al. 1974), to take into account that utterances are poli-functional, and so on. Since these are relevant to discourse, i.e. language in use, they are all closely related to language proficiency. Knowledge of the content of the discussion is only one prerequisite for successful participation. Other very important bases for participation in discussion are language proficiency and communicative competence, knowledge of culturally appropriate behaviour and discourse. It is easy to speculate that participation in intellectual discussions is more difficult for the non-native speakers of the language in which the discussion is held.

The review of the literature on the advantages of CC and on the effects of CC on second language learning suggests that CC, and especially ACC, has the potential to address some of the problems of non-native speakers' participation in intellectual discussions. It may allow non-native speakers to participate more equally in discussions, to take their time to comprehend the discourse and plan their responses, to work on the form of the contribution, and to avoid the pitfalls of speaking in a different language. On the other hand, it may take away some of the benefits of oral communication compensatory strategies. There is an increasing number of studies addressing participation in CC, both of native and non-native speakers in homogeneous language groups. However, to my knowledge there are no studies of the specifics of non-native speakers' participation in ACC. A study of the differences between native and non-native speakers' participation in CC intellectual discussions is much needed today, when education is becoming
more and more computerized, maybe nearing a time when a CC course will be the only option for graduate students interested in a particular subject.

1.8. Research questions

Non-native speakers’ of English participation in a graduate-level course-related optional ACC is the focus of this case study of participation in ACC. The following research questions are addressed:

1. What is the amount of graduate students’ participation in an optional course-related asynchronous computer conference?
2. How does participation relate to the students' background?
3. What beliefs and values influence students' participation in optional educational ACC? What are the students' motives for participation and reasons for non-participation?
4. Is participation different between native speakers and non-native speakers of English? If yes, how?
5. Do non-native speakers perceive computer conferencing as beneficial for their language development? If yes, in what ways?

I hope that the results of the study will prove useful to both educational theory and practice, and also to non-native speakers interested in computer conferencing.

The theoretical framework of the study is discussed in Chapter 2. Chapter 3 presents the context of the investigation, the methodology and the participants. The results are detailed in Chapter 4, and Chapter 5 is devoted to interpretations. In the conclusion of the thesis, I address some implications and suggestions for future research.
Chapter 2
THEORETICAL FRAMEWORK OF THE THESIS

CC has been approached from various perspectives. Studies oriented to the development of technology have tried to establish cause and effect relationships between technological design features and participation in CC. Most often in these studies participation is measured in terms of quantity. Sociologists have studied participation in CC in terms of racial, gender, social status, and institutional status. There is an increasing body of research on the effect of different pedagogical approaches and designs on participation in educational CC. In this study, participation in educational CC was examined in the light of the broad-based intellectual movement of sociocultural theory. In particular, I have argued that participation in educational CC can be understood best by viewing it as a type of activity in the framework of Activity theory.

2.1. Activity theory

Activity theory originated in the beginning of this century as an attempt to understand in a holistic way the relationship between people, environment (society included) and what people do in that environment. This contextual approach distinguished activity theory from conceptual frameworks such as behaviorism and cognitive theory. Activity theory was first established within Soviet psychology in the 1930s. It was used as a means of supporting communist ideology with scientific psychological 'proofs' and explanations. Along with many other theories developed in line with the governmentally institutionalized ideology, it was derived from Marxism and served to prove its truths. The origins of Activity theory can be traced back to the philosophy of Kant, Fichte and Hegel. There, the relationship between subject and object constituted a "mental activity". Feuerbach brought the concept into materialistic philosophy, and Marx developed the idea by putting forth the notion "practical-critical" activity, where the central aspect was transforming of material objects. The names most often associated with the initial conception and further development of Activity theory as such are those of L.S. Vygotsky, A.N. Leont'ev, P. Galperin, P. Zinchenko and A.R. Luria. Between 1920 and 1990, activity theory was the dominant theory in the field of social studies in the Communist Block. At different times, it underwent extreme ideologization, complication, humanization, relativization and numerous crises. It managed to stay alive, though, and attracted the attention of some Western scholars who saw it as a refreshing new idea and took to popularizing it and building on it. At present, it is a developed and well used methodology of academic inquiry espoused (to different degrees) by authors in different areas of research, including second language (Ahmed, 1994; Coughlan & Duff, 1994; Gillette, 1994) and human-computer interaction (Bellamy, 1996; Bodker, 1996; Engestrom & Escalante, 1996; Holland & Reeves, 1996; Kuutti, 1996; Nardi, 1996). Although it was first conceived as a theory
of cognitive development (Lantolf and Appel, 1994, p. 5), it has evolved to address issues of creativity, socialization, institutional organization, aesthetic education, and so on.

Kaptelinin (1996) describes the general philosophy of activity theory as an attempt to integrate three perspectives: (1) the objective, (2) the ecological, and (3) the sociocultural. Kari Kuutti (1996) writes:

Broadly defined, activity theory is a philosophical and cross-disciplinary framework for studying different forms of human practices as development processes, with both individual and social levels interlinked at the same time. (ibid, p. 25)

Within activity theory, human beings and what they do are analyzed in their 'natural environment', which is understood as both physical and social.

2.2. Principles of Activity theory

'Activity' can be defined as conscious, intentional and goal-oriented human interaction with the environment. The most succinct and at the same time perfect description of activity that I found was Kuutti's (1996): “An activity is a form of doing directed to an object, and activities are distinguished from each other according to their objects. Transforming the object into an outcome motivates the existence of the activity.” (Kuutti, 1996, p. 27). Leont'ev (1978), who is one of the architects of Activity theory, describes activity in terms of subject(s) (those who do), object(s) (things that are acted upon), motive(s), goal(s), actions and operations. The subject can be a person or a group. The object can be material or ideal and it motivates the activity. It is generally accepted in activity theory that the object of the activity can change during the process of the activity. Motives can be pragmatic, idealistic, emotional, etc. The most important point about the object in activity theory is that it is shared for manipulation and transformation by the participants of the activity. (Nardi, 1996).

There are several principal characteristics of activity that distinguish it as a methodological construct. Activities are structured systems, mediated, dynamic, developmentally significant, conscious and meaningful. Activities are conceptualized as oriented to motives - objects (material or ideal) that satisfy the subjects' needs.

Activity is structured according to a hierarchical principle. It consists of actions which in turn are realized through operations. Actions are functionally subordinate to activities, and are defined

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2 Engeström (1987) has proposed that 'community' be considered a separate element of the activity, with rules mediating the relationship between subject and community. This model has been accepted by many researchers working from an Activity theory perspective (see Nardi, 1996).
as processes directed by goals. Further, operations are the processes that realize the actions; they are automatic and are characterized by the conditions of the activity.

One very central characteristic of activity is its dynamic nature and structural flexibility. Activities do not have rigid structures. Every element of an activity can change at any point in time, thus influencing the nature of the activity. For example, if the conditions of an operation change and become more difficult, that may cause the operation to rise to the level of a conscious process and evolve into an action. Further, a person can be simultaneously engaged in several different activities while performing the same actions and operations, because there is no rigid one to one relationship between motive(s) and actions/operations.

Activities are mediated by tools (material and ideal) such as instruments, signs, procedures, laws, rules, etc.. Tools are artifacts produced and developed by humans over the history of society. They are culture-specific and encode cultural knowledge and social experience. In both phylogenetic and ontogenetic development, socialization is realized through appropriation of tools. A person becomes a social being, a member of society by internalizing the social knowledge enacted in the tools. People are acculturated through engaging in activities and using the tools that mediate them. Although language is not one of the tools activity theorists have focused on, semioticians have been discussing its role as a tool for almost a century now. Language can clearly be viewed as a tool mediating most activities. I will consider language further as an activity-mediating tool in 2.5.1.

Another important concept in the activity theory framework is development. Activities are viewed as instrumental in human development, both individual and societal. Activity theory insists that personal development can happen only through the person's participation in activities, i.e. a person must have motives and goals and perform actions and activities in order to develop. Development does not happen through passive absorption, it is a result of conscious effort.

The latest works in Activity theory recognize the community as a separate element in an activity, equipollent to subject and object. It is seen as a body regulating the interactions of subjects and objects (see Nardi. 1996). While the relationship between the subject and the object of the activity is mediated by tools, the relationship between the subject and the community is mediated by rules. Rules cover implicit and explicit conventions, norms, etc. The relationship between the object and the community is viewed as mediated by division of labour. Division of labour here refers to the organization of the community as it functions to transform the object. These are not fixed, but are in a state of dynamic change.
2.3. Reasons for choosing activity theory as a framework for the investigation of participation in computer conferencing

Activity theory is an excellent theoretical framework for the analysis of computer conferencing because it allows a contextualized understanding of the phenomenon while keeping the human being in the center of the investigation. Compared to other frameworks that have been used to approach human-computer phenomena, for example situated action models or distributed cognition, it has a much better grasp of the relationship between environment and people, and of the agency of the person. There are several advantages to Activity theory as a methodological framework for the study of computer conferencing: it has definite consideration for the context, at the same time focusing on the agency of the individual; it incorporates interest in the role of language and the machine; it considers the actual situation in the broader cultural-historical perspective; and it takes into consideration the role of the community.

In Activity theory, attention is evenly distributed among the elements of the system (humans and things). The goals and motives of the individual are aptly recognized and there is a focus on people's transforming the environment (the 'setting', situated action models). In situated action models, the 'setting' or the 'arena' is seen as a stable institutional framework to which the humans have to react. Situated action analyses often assume a "situation" that is given. There is no consideration of the fact that the very "situation" has already been created in part by the subject. Activity theory gives the necessary attention to what the subject brings to a situation and how the subject's interaction with it transforms it. The unit of analysis in Activity theory (the activity) accounts for both the 'setting' (situated action model) and the 'cognitive system' (distributed cognition).

Although situated cognition analyzes what people do in different situations, it does not aim at understanding how they act in types of situations. As Nardi puts it, "In emphasizing improvisation and response to contingency, situated action de-emphasizes the study of more durable, stable phenomena that persist across situations."(p. 72) Activity theory is interested not only in describing particular situations, but in conceptualizing the mechanisms of types of activities. In this way it allows generalizations and consideration of implications.

In Activity theory, the analysis is oriented to the understanding of the whole: the system in which people act and its regulations. In distributed cognition, the analysis is also directed to the system, but the intent is to reveal the functioning of the system itself rather than the individuals who are part of the system. Nardi (1996) points out: "Practitioners of distributed cognition sometimes refer to the "functional system" (instead of the "cognitive system) as their central unit of analysis [...], hinting at an even further distance from the notion of the individual that the term
cognitive cannot help but suggest." (p. 77) Like Activity theory, distributed cognition is concerned with a holistic approach to the complex phenomena of people's social practices, but views both people and things as "agents" in a system. This makes people and artifacts conceptually equivalent. Approaching computer-mediated communication from the perspective of distributed cognition would entail viewing people, the computers they use and the language involved as equal participants in the phenomenon of computer conferencing. It is my belief that Activity theory's notion of artifacts as mediators of cognition is a more appropriate way to discuss the role of computers and language in CC.

The use of varied methods of research is another characteristic of Activity theory which makes it a compelling framework for understanding such a complex phenomenon as participation in CC. In CC, participants engage in cognitive processes (discussion, writing) and social interactions in an abstract environment (the virtual electronic environment), at the same time manipulating complex tools (computers). In my view, to understand the phenomenon of participation in CC it is not enough to measure it in terms of quantity; it is necessary to analyze why the quantity is such that it is, that is to examine people's goals and motives for participation, and the quality of that participation. The combination of quantitative methods of investigation with interviews and other qualitative methods is a tradition in Activity theory: use of different data allows the researcher to see the dynamic relations among the different elements of the activity. For example, to understand what exactly people are doing we need to know what their goals are; this warrants the use of interview data to analyze the goals of the participants in an activity such as computer conferencing.

Activity theory provides the researcher with a solid structure for the analysis of phenomena. The conceptualization of the relations between object-motive, goals and activity makes it easy to distinguish between different activities. It accounts for the differences in terms of subjective (of the people) as well as objective (of the environment) criteria. In this way, two activities which involve seemingly same sets of behaviours and processes can be seen as different things. For example, someone typing a message and posting it in the conference may be engaged in the activity of composing, while another person typing and posting a message may be making friends.

The general framework of Activity theory allow analysis of CC interactions with consideration for the role of computers and language without any technological determinism, because they will be interpreted as mediating artifacts. In this framework, computer conferencing skills and language proficiency will be considered relevant factors, but only as mediators of meaning.
In conclusion, Activity theory is a most appropriate framework for the investigation of participation in computer conferencing. In this thesis, it is used as a prism through which the participants' actions, interpersonal relations, and attitudes towards the activity can be best understood.

2.4. Intellectual discussion and computer conferencing as activity types

In light of the above review, discussion and CC can be viewed as types of activity.

I would suggest that discussion is an activity. The subjects in this activity are clearly the participants. The object is most often knowledge, in the general sense of the word, but in different cases the object can be status or affect. The actual object of the activity in each case is related to the goal of the subject. All subjects have their goals in the activity. Since the goals of the participants may differ, for the different participants in the discussion the activity may be different. That is why in an investigation of intellectual discussion it is important to consider the participants' goals and motives for participation.

Discussion is mediated by language. We can say that the object of the activity is meaning making through language. This means that in a study of intellectual discussion it is necessary to examine how the participants use language to make meaning.

If we consider Kuutti's model (1996), we will view the discourse community as an element of the activity. The community itself and the relations within the community will also have a bearing on what the activity will be for any subject.

Computer conferencing is a type of activity, too. It has all the elements of an activity: a dynamic hierarchical structure of operations and actions; it is mediated by a number of social artifacts, i.e. computers, language, rules. Furthermore, it can be viewed as a stage in the development of literacy. Individuals participating in computer conferencing are the subjects of the activity who share the manipulation and transformation of a common object. The object of the activity is either knowledge or discourse, the meaning-making of the interaction. Thus the motive of computer conferencing as an activity lies in the text of the conference, the 'improveable object' (Bereiter) which is constructed and developed in the activity. Computer conferencing is mediated by machines on one hand, and by language on the other. The activity is realized by actions such as composing/writing and reading. Typing, pointing with the mouse, clicking on hyperlinks and images, etc. are the automatized operations of the activity that build up the actions. Of course, these operations can become goal-driven actions in times of break down. For example, if a person is not a good typist, typing - i.e. an operation that usually serves the action of composing -
becomes an action of independent importance that involves the attention and concentration of the subject of the activity.

As a type of activity, computer conferencing can be examined in terms of subject(s), object(s), mediating systems, actions and operations, and motives and goals of the participants. To establish eventual differences in participation in the CC discussion as activity, I will examine it in terms of both external indicators (quantity of participation, speech functions) and internal indicators (goals, motives, affect of the participants). In this way, it will be possible to relate differences in participation to differences in the actual activities in which the individuals engage.

2.5. Language and discourse

Language is an important part of text-based computer conferencing. Making meaning with the mediation of language is what most of computer conferencing is. For this reason, the analysis of the use of language in CC is, I believe, one of the most fitting ways of studying participation in an educational computer conference. This methodological approach to analyzing educational ACC has its theoretical base in the conceptual view of language in use as doing and of language as the tool which mediates that doing. In this section, I would like to highlight relevant theoretical considerations of language and its use (i.e. discourse), before turning to the presentation of the methodology of the study.

2.5.1. Language in the perspective of sociocultural theory

In the perspective of sociocultural theory, language is a social and historical artifact which is used to mediate people's actions and regulate activities. Sociocultural theory holds a functional view of language; it is seen as a product of social interaction and as a psychological tool for cognitive development and social interaction. Vygotsky, a patriarch of sociocultural theory, argued that all higher mental functions develop through participation in social activities. According to Vygotsky, developmentally, language is first inter-personal and later undergoes internalization, becoming part of the individual's psychological tool-kit for interacting with the environment. Activity theory treats language as one of the tools which mediate human activity. Similar views are expressed also in Social semiotics and Halliday's systemic functional theory of language. The similarities in the understanding of language between Activity theory and systemic functional linguistics led Wells (1996) to integrate them in his development of a framework for the analysis of classroom interaction. In my investigation of participation in ACC, I will combine insights of these theories and adopt their terminology to examine how language is used by native and non-native speakers of English in computer conferencing. In what follows, I will give a short summary of language and discourse as conceptualized in sociocultural theory and in this study.
People interact in various ways: by means of gesture, facial expression, touch, movement in space, gaze, sound, visuals, language. Regardless of what the means of interaction are, they have one thing in common: they convey meaning. The meaning is not only a creation of the concrete interaction: it is socio-historically created. It is perceived as meaning in the context of the situation in which the interaction occurs; on its part, the situation itself is socially and historically embedded and acts upon the meaning as such. Since birth (and maybe even before that), we are immersed in other people's signals of meaning. Little by little, we come to recognize and remember the connections between these signals and the rest of our reality, we get to know what the signals mean. In this way, we become members of the body of people who know how to interpret the signals they come in contact with, how to make sense and what sense to make of what is happening around us and inside us. In turn, these same people who are part of our situation, and whose signals we learn so well to connect to the reality as making sense or making meaning, have already been initiated by other people into being able to connect others' signals to the rest of the reality. Thus, we can say that the meaning of signals people use to interact is socially and historically created. Sociocultural theory holds that in an individual's life, this process is initially shaped in interaction with other people and later becomes an internal psychological mechanism. As Vygotsky put it,

An interpersonal process is transformed into an intrapersonal one. Every function in the child's functional development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological), and then inside the child (intrapsychological).

(Vygotsky, 1978, p. 57)

Semioticians conceptualize meaning as created in the use of systems of signs, and speak about human interaction as mediated by these sign systems. Halliday (1973, 1975, 1978, 1994), who started the school of systemic functional linguistics, outlined a model of language as social semiotic. The systemic approach theorizes the links between language and social life and applies functional analysis of language in use in order to understand how meaning is socially constructed.

To sum up, language is one of the sign systems which mediate human interaction. Regardless of how it came to be in the first place, for us - since birth (and even before that) - it is part of our reality. We get to know it and the way it functions through our interactions with (already socialized) people, and it becomes one way of socialization for us. We internalize the semiotic system of language, with its sign-meaning relationships established by the society, and it becomes our tool for interacting with society. Although we can and do create our own signs for meaning, most of the time we use the signs for meaning that society already knows and uses; we appropriate socially functional artifacts. Learning the meaning of the signs, and learning to use the sign system of language to make meaning in our interactions with other people, is a long process.
Each time we learn a new system of signs, a new language, we become socialized into the group of people who are already socialized into that language.

2.5.2. The multi-functional nature of language

Of the semiotic systems that mediate meaning making in CC, language is by far the most complex. Besides the logical or grammatical complexity which has been the focus of linguistics for a long period of time, some contemporary theories have considered the functional-semantic complexity of language. Early in the century Bakhtin wrote:

One can say that any word exists for the speaker in three aspects: as a neutral word of a language, belonging to nobody; as an other's word, which belongs to another person and is filled with echoes of other's utterance; and finally, as my word, for, since I am dealing with it in a particular situation, with a particular speech plan, it is already imbued with my expression."

(Bakhtin, 1986, p. 88)

Building on Bakhtin's ideas, systemic functional linguistic theory focuses on the multi-functional nature of language. Halliday (1978, 1993) points out that language performs several (meta)functions simultaneously. On one hand, it allows interactants to exchange messages about experiences from the 'world of objects' and thus performs an 'ideational metafunction'. At the same time, it is a tool which people use to position themselves in relation to each other; that is, language has an 'interpersonal metafunction'. Language has also a textual metafunction expressed in grammatical balance, semantic structure, cohesion, rhythm, and other aspects of the text.

In this study, I will focus on the interpersonal metafunction of language. However, since all metafunctions are always expressed in discourse, the experiential and textual metafunctions will also be considered. I would like to consider language and its use from a functional perspective, because I believe that this approach allows the most contextualised analysis of language-related phenomena like computer conferencing.

2.5.3. Language in use: Discourse

The understanding of language as a tool for meaning making and interacting opens up the possibility to view language in use as doing. This understanding of language has existed in human culture for thousands of years. That was what led people to practice casting of spells, for example. In the last 80 years, philosophers, psychologists, linguists, and educators have acknowledged that language in use in a particular situation – discourse – can be conceptualized as doing by means of a language, or meaning by language. In this philosophical framework, discourse, i.e. language in use, is understood as situated meaning making mediated by a language.
The Oxford philosopher John Austin (1911 - 1960) was one of the first writers to emphasize that language is used not just to describe the world, but to perform a range of actions. He approached speech from a functional perspective and came to the conclusion that every utterance performs a *speech act*, i.e. language in use is doing. Austin himself did not develop a theory of Speech acts. His book *How to do things with words*, published after his death, in 1962, was a collection of lectures delivered at Harvard in 1955. In fact, he had been lecturing on the same topic for several years in Oxford, and had presented papers in that spirit as early as 1940 (Lyons, 1981). Austin not only recognized the action-oriented function of utterances, but also acknowledged that the same speech act can be realized in linguistically different ways. For example, 'I command you to open the door' performs the same speech act as 'Open the door'.

Austin's ideas, developed by John Searle (1969, 1979, 1983), and J. Lyons (1981), bred a new understanding of discourse as action. Systemic functional linguistics also adopted the understanding that language in use is doing. Instead of 'speech act', systemic linguists use the term 'speech function' to emphasize the notion that language realizes simultaneously several functions. Although Speech act theory has not been integrated with Activity theory, I consider the general idea of language in use as doing complementary to Activity theory. If discourse is doing by means of language, the speech events or functions can be classified as *actions*. In my approach to computer conferencing, I would like to examine CC discourse in terms of speech functions, i.e. discourse actions.

2.5.4. The dialogic nature of discourse

Bakhtin was one of the first to point out that "speech can exist in reality only in the form of concrete utterances" (Bakhtin, 1986, p. 71). He emphasized that utterances do not occur as isolated acts, but are contextualized by the goals and conditions of the activity in which they occur and by both preceding and following utterances. There are two very significant points in Bakhtin's understanding of discourse: that discourse is situated and that it is dialogic.

About the dialogic nature of discourse Bakhtin writes:

The unique speech experience of each individual is shaped and developed in continuous and constant interaction with others' individual utterances. This experience can be characterized to some degree as the process of assimilation - more or less creative - of others' words (and not the words of a language). Our speech, that is, all our utterances (including creative works), is filled with others' words, varying degrees of otherness or varying degrees of "our-own-ness."

(Bakhtin, 1986, p.89)
In his discussion of the model of distributed cognition in academe and higher education, Lemke (1996) points out that "every text is a moment in a larger conversation ... meant to elicit response: queries, further development, diverging arguments, disagreement."

Wells (1981) writes:

Conversations occur because the participants have interactional purposes of various kinds to fulfill, and it is the negotiation of these purposes which creates the structure of particular conversations within the turn-taking framework. (1981, p. 27)

The dialogic nature of discourse was specifically foregrounded in Pragmatics (Grice, 1975). Grice postulated a 'co-operative principle' which accounted for the fact that conversations usually go on quite naturally, without people quarreling about turns, interrupting each other, or talking about different things:

We might then formulate a rough general principle which participants will be expected (ceteris paribus) to observe, namely: Make your conversational contributions such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged.

(Grice, 1975, p.45)

2.5.5. The situated nature of discourse

Discourse happens in context. Several theoretical orientations concern themselves with the notion of context. Here, I will consider the approach of Systemic functional linguistics.

The question of context has been addressed in systemic functional linguistics in terms of content, social act and textual characteristics. To describe the social situation which acts upon discourse, Halliday introduced the terms field, tenor and mode. He argued that every piece of discourse could be construed in terms of these three notions. Field of discourse he defined as "the general sense of what it is all about"; tenor as "the personal relationships involved"; and mode - as "the particular part that the language is playing in the interactive process" (Halliday, 1989, p.24). Halliday gives an example of analysis of a text - a broadcast talk given by the Bishop of Woolwich - in terms of field, tenor and mode (p. 26):

Field: Maintenance of institutionalized system of beliefs; religion (Christianity), and the members' attitude towards it; semi-technical

Tenor: Authority (in both senses, i.e. person holding authority, and specialist) to the audience: audience unseen and unknown (like readership), but relationship institutionalized (pastor to flock)

Mode: Written to be read aloud; public act (mass media: radio); monologue; text is whole of relevant activity; lecture; persuasive, with rational argument.
Such understanding of the social situation of discourse provides a helpful way of thinking about socially-situated language-mediated interaction. For example, a face-to-face conversation between two people can be the same in content and in grammatical form as the electronically-held conversation between the same people, but will feel different and will be different. Expressed in Hallidayan terms, the discourse is different because not all three aspects are equivalent: although the field and the tenor of the situations may be the same, the mode is different. While in the face-to-face situation the discourse uses a phonic medium (language which can be heard), in the electronically-held conversation the channel is graphic (language that can be read).

I have reviewed several perspectives on language and discourse that I find relevant to analyzing participation in text-based computer conferencing. All of them have specifically addressed oral interaction and not computer conferencing. Nonetheless, these perspectives can inform an investigation of text-based CC, because they have contributed to the understanding of the nature and mechanisms of discourse in general. I have therefore found it most useful to adopt a rather eclectic theoretical base, drawing on insights from these different approaches, but with particular preference to Systemic functional linguistics.

2.6. Computer conferencing as discourse

Computer conferencing is a relatively new type of communication. Its history spans only about 40 years, and it has been available to the general public for no more than 20. It is an evolving genre, still in its childhood. Its characteristics change with the rapid changes in computers' technological capabilities and software design. In 1984, Kiesler, Siegel and McGuire wrote that "[c]ulturally, computer-mediated communication is still undeveloped" (1125). Fifteen years later, that is still the case. There are very few conventions in CC, and each conferencing community creates its own rules for participation. Some communities tolerate very free writing styles, with no capitalization, wide use of acronyms, colloquialisms, and jargon, as well as phonetic spelling. Other CC communities follow strictly traditional writing conventions and insist on 'good literate' style.

2.6.1. What kind of discourse is computer conferencing?

In the last couple of decades, researchers have undertaken various investigations of the new type of discourse that emerged with the introduction of CC. It is interesting to see what terms are used and what assumptions are made about CC discourse. Concepts like 'conversation', 'discussion' and 'electronic dialogue' are widely used in talking about CC. Other authors speak of 'lists', 'on-line interchanges' and 'conferences'. Some prefer to go with
the unengaging 'computer-mediated communication'. Ferrara, Brunner and Whittemore (1991) coined the phrase *Interactive written discourse* and argued that it is "an emerging hybrid register". Wilkins (1991) examined the text of a conferencing network and found that linguistic features of oral interactions ("indicators of personal involvement, disfluencies, and representations of paralinguistic elements" - p. 56) occur very often. The prevalence of oral features in the text led him to conclude that what happens in CC is *computer talk*. Baron (1998) wonders whether e-mail is "letters by phone or speech by other means" (p.133). His investigation into the characteristics of e-mail in terms of Social dynamics, Format, Grammar, and Style led him to conclude that e-mail is more like writing in its social dynamics, predominantly speech in style and in the lexical component of grammar, and 'mixed' writing and speech in format and syntax.

Quinn et al. (1983) found that compared with face-to-face, CMC interactions were structured quite differently. Topics had a non-linear sequence. They overlapped and intersected. In CMC, an Initiation act led to numerous Replies, rather than the Initiation-Reply-Evaluation sequence of traditional classroom discussions. (It seems that this is the earliest recognition of the multi-directional and complex nature of CMC.) Poster (1990) asserts that "writing is now very much like speaking. ...[C]omputer writing brings a modicum of ambiguity into the clear and distinct world represented in Cartesian dualism. (Poster, 1990, pp.111-112). Bernhardt (1993) argues that text itself is changing with technology, and is becoming 'interactive', situationally embedded', 'functionally mapped', 'graphically rich', 'navigable'.

In a college environment, Taylor (1992) compared linguistically the electronic communication texts with the texts of the papers students produced and demonstrated that CMC discourse contains grammatical features of both spoken and written texts. For that reason Taylor insists that CMC text is "a new genre" (p. 145).

The preoccupation with identifying computer-mediated discourse as written, oral, or hybrid is seen as a manifestation of technological determinism by Johanyak (1997) and Lea (1991). Johanyak (1997) investigated CMC discourse in a series of three studies and found that the texts varied according to the role they realized, the "perceived purpose of the communicative act", and the "cognitive, social, and contextual constraints of each language user" (p. 107).

I should note here though, that even before the debate about the nature of CMC, linguists and anthropologists have recognized that no clear-cut distinctions can be made about discourse on the basis of its modality. For example, Tannen (1982), Chafe & Danielewicz (1987), Chafe and Tannen (1987), Biber (1988, 1995) point out that writing and speech vary linguistically from context to context.
2.6.2. Characteristics of CMC discourse in second language classrooms

In the area of L2 studies, few researchers have investigated the nature of CMC interactions. Most of the research is done on synchronous CC. Chun (1994) concluded, that "turn-taking as done in spoken language is not a factor" in CMC. She acknowledges the complexity of the phenomenon by pointing to the 'spoken' character of the interactional structure in CMC on the background of this 'essentially written practice'.

Kern (1995) concluded that "[w]hile the discourse generated during CMC sessions shares certain aspects of written discourse — for example, its preference for certain syntax (e.g. subject-verb inversion in French), and somewhat greater lexical density, it also shares aspects of oral discourse, such as a light, familiar style, direct interpersonal address, rapid topic shifts, and frequent digressions. Kern describes the nature of the writing that students produce in synchronous computer-mediated discussions as "chatty", and points to the term "written interactive discourse" used by Holec (1985) to explain the type of communication which takes place in the new environment.

On the basis of the evidence from his study, Warschauer (1996) maintains that electronic and face-to-face discussions differ substantially, and should be used with different purposes. He suggests that electronic discussions can serve as a bridge from spoken interaction to written composition.

Kern (1995) contends that discourse mediated by networked computers "bears linguistic consequences". "Orthographic accents are often missing and verb conjugations are simplified. Furthermore, new, medium-specific conventions emerge to compensate for the absence of prosodic and paralinguistic features found in face-to-face oral communication. For example, facial expressions such as smiles [: -) ], frowns [ :) - ( ], or winks [ :) ], and other symbols" (p.459). Chun (1994) also mentions that in CMC students used exclamations and capitalization to indicate emphasis and enthusiasm, which would be expressed through intonation in spoken language.

2.6.3. My view of the nature of CMC discourse

If we apply Hasan's (1989) distinction between medium\(^3\) and modality\(^4\), we can only say that in general CC is a type of graphic discourse (in terms of the channel through which it is realized). It can be either written or spoken, depending on the context of the situation. For

\(^{3}\text{medium} \text{ being spoken or written depending on the 'patternning of the wordings themselves: for example, is there a greater degree of grammatical complexity or of lexical complexity' (p.58)}\)

\(^{4}\text{modality} \text{ being phonic or graphic}\)
example, if the tenor is formal, institutionalized relationships among the participants in the conference, the discourse may very well be written; if the relationships are friendly and informal, the discourse may be spoken. We can not generalize and say whether CC is written or spoken discourse, because the medium (in Hasan's terms) depends on the lexical patterning of a particular interaction. However, we should note that what participants in keyboard CC do to get their message across is write (type), i.e. typing is an operation within the activity of keyboard CC (in the terminology of the Activity theory).

2.7. Discourse analysis: Systemic functional discourse analysis

Analyzing discourse to understand language, people, and people's actions has been used by anthropologists, ethnomethodologists, philosophers, linguists, sociolinguists, semioticians, structuralists, social psychologists, etc. (Schiffrin, 1994). It is my conviction that the analysis of the discourse of a computer conference is a method that can generate important insights about participation in CC.

My choice of discourse analysis methodology for the investigation of CC - systemic functional discourse analysis - relates to my interest in the role of the social factors in an activity. Moreover, it is most compatible with the Activity theory framework of this study.

In the school of systemic functional linguistics, discourse analysis focuses on the holistic interpretation of discourse, i.e. the types of meaning being made in a text. As Eggins (1994) puts it, the study of language at the discourse stratum is "a description of how the semantics are expressed through the clause patterns in the text, and how the semantics are themselves expression of contextual dimensions within which the text was produced" (p. 84). In order to identify the meanings of the text - experiential, interpersonal and textual - systemic linguists describe its lexico-grammatical organization realized in the lexico-grammatical patterns of the clauses of the text. This is done by the identification of Transitivity, Mood, and Thematic choices made in the production of the text. The Theme which expresses the textual meaning relates to who or what is placed in first position in each clause. Transitivity refers to the patterns of processes, participants, and circumstances carried by the 'content' words of clauses. These are verbs, nouns, and circumstances (prepositional phrases and adverbs which carry the information about the where, when, how, why, and with what of the action). The transitivity choices in a text express its experiential meaning. The interpersonal meaning is expressed through Mood. Mood includes patterns of (1) type of clause structure (declarative, interrogative, imperative); (2) modality (expressions of probability, tentativity, assurance or frequency on one hand, and of obligation, necessity or attitude on the other); and (3) attitude (positive or negative). The mood choices made consistently throughout a text together express its interpersonal meaning.
In order to describe the meanings of a text, i.e. carry out discourse analysis, systemic linguists focus first on the structure of the clause. A second part of systemic discourse analysis is "to relate the meanings chosen 'outwards' from the text, by extending the realizational links up to the contextual variables of field, mode and tenor" (ibid., p.84).

Systemic functional analysis of dialogue allows one to account for how people construct relationships through talk in terms of the roles interactants adopt. The roles are realized through speech functions, the discourse functions of the speech actions performed through talk. Halliday (1984) saw dialogue as 'a process of exchange' in which the interactants establish relationships of demanding and giving according to the roles they adopt in different moments of the interaction. Halliday suggested that there are two components to a dialogue: a commodity to be exchanged (goods and services or information), and roles that the interactants take on (demand or give). From here, he proposed four basic initiating speech functions realized in dialogue: statement (giving of information), offer (giving of goods and services), question (demanding information), and command (demanding goods and services)(Table 2.1).

Table 2.1. Speech functions (Halliday, 1984)

<table>
<thead>
<tr>
<th>Roles</th>
<th>Commodity to be exchanged</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Information</td>
</tr>
<tr>
<td>Give</td>
<td>Statement</td>
</tr>
<tr>
<td>Demand</td>
<td>Question</td>
</tr>
</tbody>
</table>

These speech functions realize the different speech roles that people take on in the act of starting a communication. But dialogue is interactive; it does not involve only one type of action. After one speaker has initiated an exchange another speaker is likely to respond. The possible responding moves in a dialogue are two kinds: supporting moves and confronting moves. Following Halliday, systemic linguists recognize two types of responding speech functions:

1. Supporting: acceptance, compliance, acknowledgement, and answer.

The twelve basic speech functions recognized in systemic functional linguistics are summarized in Table 2.2.
Table 2.2. Speech function pairs

<table>
<thead>
<tr>
<th>Initiating</th>
<th>Supporting</th>
<th>Confronting</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Acknowledgement</td>
<td>Contradiction</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
<td>Disclaimer</td>
</tr>
<tr>
<td>Offer</td>
<td>Acceptance</td>
<td>Rejection</td>
</tr>
<tr>
<td>Command</td>
<td>Compliance</td>
<td>Refusal</td>
</tr>
</tbody>
</table>

The choice of responding moves is greatly constrained by the initiating move that has just been made, because when one participant takes on a role, he/she assigns a role to the other participants in the interaction.

Eggin (1994) discuss the correlation between speech function and the grammatical structure which is typically chosen to realize it. Table 2.3. shows the typical moods of clauses for the different speech functions.

Table 2.3. Speech functions and typical mood in clause

<table>
<thead>
<tr>
<th>Speech function</th>
<th>Typical mood in clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement</td>
<td>declarative</td>
</tr>
<tr>
<td>Question</td>
<td>interrogative</td>
</tr>
<tr>
<td>Offer</td>
<td>modulated interrogative</td>
</tr>
<tr>
<td>Command</td>
<td>imperative</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>minor</td>
</tr>
<tr>
<td>Answer</td>
<td>elliptical declarative</td>
</tr>
<tr>
<td>Acceptance</td>
<td>minor</td>
</tr>
<tr>
<td>Compliance</td>
<td>minor</td>
</tr>
</tbody>
</table>

This table shows only the typical correlations, or the congruent clause moods for different speech functions. There are, however, possibilities for marked and unmarked correlations. For example, not all demands for information are interrogatives, they can also be expressed by modulated declaratives (e.g. "I was wondering whether you have ideas about using conversational shadowing with video").

Some of the possible non-typical realizations are shown in Table 2.4.
### Table 2.4. Non-typical realizations of speech functions

<table>
<thead>
<tr>
<th>Speech function</th>
<th>Non-typical clause mood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command</td>
<td>modulated interrogative; declarative</td>
</tr>
<tr>
<td>Offer</td>
<td>imperative declarative</td>
</tr>
<tr>
<td>Statement</td>
<td>tagged declarative</td>
</tr>
<tr>
<td>Question</td>
<td>modulated declarative</td>
</tr>
</tbody>
</table>

(Eggins, 1994, p.153)

The choice of typical or non-typical Mood structure is influenced by contextual demands, especially by the tenor (Eggins, 1994, p. 153). For example, in unequal contexts or in formal contexts unmarked choices are likely to be made: instead of using the imperative mood for the realization of a demand, a speaker may choose to use a modulated interrogative (e.g. "Could you open the door for me?").

An analysis of the choices made in respect to marked/unmarked Mood allows one to understand the Tenor, i.e. the relationships between the interactants in a conversation. Another way of gaining insights of the actual relationships is the selection of modality. *Modality* refers to the ways information is delivered. When modality is used to argue about the probability or frequency of propositions (exchange of information), it is referred to as modalization. When modality is used to argue about the obligation or inclination of propositions (exchange of goods and services), it is referred to as modulation. Information (a proposition) is something that can be affirmed or denied. A proposition is something that can be argued. In between these two extremes there are a number of choices of "degree of certainty or usuality": perhaps, for sure, sometimes, probably, usually. These intermediate positions are referred to as modalization. Modalization involves the expression of two kinds of meaning:

1. probability: where the speaker expresses judgements as to the likelihood or probability of something happening or being; and
2. usuality: where the speaker expresses judgements as to the frequency with which something happens or is.

Modalization has to do with the different ways in which a language user can give a nuance to the message, expressing attitudes and judgements of various kinds. Modalization is the expression of the speaker's attitude towards what she/he is saying. It can be implicit (through the use of modal operators and mood adjuncts like must, certainly, always, may, probably, usually, might, possibly, sometimes) or explicit (by using what Halliday calls 'grammatical metaphors': I reckon, I think, I am sure). Eggins (1994) points out that discourse analysis needs to capture "the
fact that giving and demanding information involves both the choice of clause Mood (interrogative, declarative, exclamative), AND the choice to express or not express modalization" (p.183).

One way in which Mood analysis reveals dimensions of tenor is by finding out who is doing the talking in a situation. As Eggins (1994) points out, "the most striking indication of power is in who gets to be speaker in an exchange, and for how long" (p.193). A second way of analyzing Mood is by looking at what speakers do when they get the speaker role, i.e. who gives, who demands, etc. Systemic linguists have found that the lack of reciprocity indicates status relations. The non-reciprocity is an indication of unequal power relations. A further aspect of Mood analysis concerns selections of modality: who modalizes, who modulates. This provides a realization both of relationships of power and of affective involvement.

In systemic discourse analysis, the unit of analysis of the interpersonal relations is usually the 'move'. Halliday (1984) suggested that at the level of discourse, speech functions are expressed in moves. A move is the smallest unit of discourse in systemic linguistics. As Eggins (1994) points out, moves are different from clauses; moves and clauses do not necessarily relate to each other in terms of size or constituency. Moves are not 'made up' of clauses. The relationship is one of "expression. or, more technically, realization: moves, which are discourse units, are expressed in language through clauses, which are grammatical units" (Eggins and Slate, 1996, p.185). It is considered that a move is congruently realized through a clause. However, a single speech function can be achieved not only through a single clause ("I read Ann Jordan's article"), but also through two or more linked clauses ("I wonder if people with different linguistic backgrounds have the same experience.").

Eggins and Slade's (1997) define the boundaries of moves in conversation as dependent on the "co-occurrence of grammatical and prosodic boundaries as indeed was recognized (although not systematically stated by Sacks et al. (1974)" (p.189). The main principle for identifying moves (Eggins and Slade, 1997) is that clauses which select independently for Mood generally function as separate moves. Those clauses which do not select independently for mood, subordinate clauses to a main clause, are not considered separate moves. For example, "If you want to leave earlier, you have to speak with the councilor" is one move realizing one speech function, i.e. command. There are three combinations which are usually considered moves in systemic linguistics:

1. Dependent clauses and the main clause on which they depend (i.e. "If you want to leave earlier, you have to speak with the councilor")
2. Embedded clauses (i.e. in "You met his sister that night we were doing the cutting and pasting up", the clause "we were doing the cutting and pasting up")
3. Quoting and reporting clauses - both direct and indirect - including mental clause projections (I hope..., I think...): "I mean you've got to admit he is the best friend you have".

(Eggins and Slade, 1997, p. 187)

By identifying moves and the speech functions which they realize, systemic linguists accomplish an in-depth understanding of the relations between participants in conversations (Eggins and Slade, 1997). This qualitative method of investigation allows researchers to go beyond the superfluous analysis of interaction (i.e. analysis of quantity of participation) and to "lay bare the linguistic behaviours which are associated with certain social roles and the interactive behaviours which enable participants, consciously and unconsciously, to position themselves and their fellow interactants as sociocultural subjects" (Eggins and Slade, 1997, p. 226).

I consider systemic functional discourse analysis most appropriate for this investigation of participation in CC. It relates to the theoretical framework of the study and allows us to understand what interpersonal relations are established in and through CC discourse, how self and other are positioned, and what actions and activities participants engage in.

2.8. Summary

Activity theory is a framework which allows researchers to approach phenomena in a holistic manner. I find such an approach necessary in the study of complex phenomena like ACC. Functional discourse analysis and Activity theory are two complementary theoretical frameworks that will allow an in-depth investigation of the language-based activity of ACC.

In face-to-face interactions, text is rarely a dominant meaning making dimension. Gesture, gaze, posture, appearance, etc., are all involved in the negotiation of meaning. In CC however, text is the main and almost only way of making meaning. Emoticons such as symbols (^_^ : -) 8-) *_* ), capital letters, or images drawn with letters are used in CC, but their role is mostly to enhance the text. That is why language proficiency is so very important in CC. Are non-native speakers at a disadvantage in CC? Is it, on the contrary, beneficial for them? These are questions that call for answers. One way to look for answers is to examine what participants in ACC do by means of language, i.e. to analyze the speech functions in the CC discourse. Another way of investigating participation in ACC is to look at the quantity of participation. A third method of investigation can be the qualitative study of participants' goals, motives, and attitudes. In this case study, I have used all three in order to find some answers to the questions around non-native speakers participation in ACC. The next chapters present the design of the study and its results.
Chapter 3
RESEARCH DESIGN, PARTICIPANTS AND METHODOLOGY

This chapter presents the design of the study, its context, and participants. The rationale for the methodology is discussed and the procedures of the investigation are described.

3.1. Context

The study of students’ participation in CC was conducted in the context of an optional voluntary asynchronous computer conference related to a graduate level course at a major North American university. I was a student in the course, and in that capacity initiated the conference, actively participated in it and facilitated the discussion. Participation in the conference was not part of the requirements for the course, and did not influence the course grades of the students in any way. The course had a well-established tradition in the department. It extended over a period of seven months and was co-taught by two experienced professors. Classroom meetings were held bi-weekly. The course was research-oriented and was built around guest-speaker research presentations, with 45 minute to one hour question answer time following the presentations. The main purposes of the course were to acquaint students with current research in the field and to foster critical research analysis skills. An emphasis was put on research methodologies, and the two professors teaching the course made sure that a variety of methodologies were represented. There were 19 students in the course. Seven of them were born and raised in English speaking families and were non-disputed native speakers of English. Seven of the students identified themselves as non-native speakers of English. Of the remaining 5, one had non-English mother tongue but had been using English as his dominant language for most of his adult life and identified himself as native speaker of English; the other four were raised in bilingual families and were fully or almost fully bilingual/trilingual. There was a considerable variety of mother-tongue backgrounds in the class: Amharic, Bulgarian, Chinese, English, Farsi, French, Hungarian, Italian, Portuguese, Spanish and Thai. In keeping with Graduate School admission requirements for this university, the non-native speakers of English had earned TOEFL scores of at least 600 in order to be considered for admission. Consequently, the non-native speakers of English in the class had a high level of English language proficiency. Eleven of the students in the class were enrolled in a Ph.D. program, six pursued M.A. degrees, and two were M.Ed. candidates.

The conference was held in the virtual electronic environment provided by the web-based conferencing software Knowledge Forum (http://online.oise.utoronto.ca/webkf/). Web Knowledge Forum is a kind of conferencing software which affords many different choices for its users. They can:
see the architecture of the Forum with all its parts (views);
see the architecture of separate parts (views);
read messages (notes) within a view sorted by thread, author or date;
scroll up and down the lists of notes;
post (contribute) notes;
edit or delete previously posted own notes;
reference and build on existing notes;
co-author notes;
paste text from a word processing application into the note-writing window;
markup text using HTML
hyperlink Web sites;
send E-mail messages directly to people within the conference;
access a central Help feature.

The text of the CC is structured (according to the design of the software) in three hierarchical layers. Figure 3.1 gives an idea of the architecture of the conference.

Figure 3.1. Architecture of the Knowledge Forum

```
Forum
   ┌──────────────────┐
   │ Views            │
   │ (Introductions, Lounge, etc.) │
   └──────────────────┘
   ┌──────────────────┐
   │ Notes            │
   │ (within each View) │
   └──────────────────┘
```

In the terminology of the designers of the software the conference is called a Forum. It comprises different sections or Views. In this case the Views were three types: Views designated for social interaction (Introductions, Lounge), Views dedicated to the class events (readings and guest-speaker talks), and Views for the exchange of resources that could be hyperlinked to the Internet. Each view consists of Notes typed in by the participants in the Forum. Although the software allows ‘building on’ previously posted notes when writing in the conference (responding or reacting to a note by visually linking one’s note to a previous note), I will not consider the lack of use of this function as a meaningful choice in my interpretation, because very few of the

\[5\] All participants in the Forum were invited to contribute to the information exchange. However, nobody else but I did.

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participants knew the software well enough to use all its possibilities adequately. The fact that someone did not use the 'build on' function of the software may be the result of a conscious decision not to, but may - to the same extent - reflect the person's lack of knowledge of that possibility.

The investigation considered the discourse at the level of the View and the Note level. In this conference, the View was a general topical shell for the discourse in which each note was a turn.

3.2. Participants

All students in the course were invited to participate in the investigation. They all gave their consent to be included as participants in the study. However, the actual participants in the investigation were self-selected through their participation in the conference and the interviews. In this way, the actual participants in the study were 16 students in the course. Eleven of them (and the researcher) participated in the conference and 16 provided interview data. Six were NNSs of English and 10 identified themselves as NS. Of those 10, three had non-English mother tongues. Nine of the actual 16 participants in the study were Ph.D. students, five were M.A. students, and two were registered in M.Ed. programs. In this thesis, the real names of the participants in the study have been replaced with pseudonyms.

3.3. Design of the study

The students in the course were classified into two groups: native speakers of English (NS) and non-native speakers of English (NNS). The investigation was conducted on the basis of their participation in the computer conference over two 5-week periods of time: second third of the first semester (October 7 to November 17) and first third of the second semester (January 25 to February 28). To understand holistically why and how graduate students participate in the optional course-related asynchronous CC, I employed a variety of methods and techniques. Data collection techniques included the use of the built-in computer archiving of the conferencing software, a written questionnaire (Appendix C), and audio-taped semi-structured interviews with students and instructors. The amount and frequency of participation was studied through quantitative analyses of the contributions to the conference. The participation/non-participation in CC was examined quantitatively in terms of number of messages and words written in the conference, number of messages read, and percentage frequency of participation. Participation was studied qualitatively using functional discourse analysis of the text of the conference. Descriptive analysis of the background information about the participants collected through the questionnaire and interview, shed light on the influence of
students' background on their CC participation. The qualitative method of investigation of the reasons for participation and non-participation in CC allowed in-depth understanding of the motives, beliefs and attitudes which shaped CC behaviors. This qualitative analyses involved interpretation of questionnaire and interview data. The study focused on the interpretation of the patterns of participation of native and non-native speakers of English in light of their background, motives, attitudes and beliefs.

3.4. Timeline of the study, data collection procedures, and methods of analyses

The conference was initially suggested by me (the researcher), a student in the course, as an add-on to the course, an opportunity to extend the discussion of issues beyond the classroom sessions. The idea of a computer conference was conceived after the first class meeting for the course. The format of the class - meetings only every other week, with question/answer periods of only 45 minutes to an hour - combined with the large size of the class which would limit the amount of time for individual contributions to the classroom discussion, prompted me to suggest asynchronous computer conferencing. Having had previous experience with computer conferencing in other graduate courses, I believed CC was an effective mode for discussion of issues related to the course topics. The idea was informally shared with three other students in the class. At that point they demonstrated keen interest in such an opportunity. I then presented the idea to the two professors teaching the course. Although unfamiliar with the technology or methodology of educational CC, the professors agreed to allow me to set up and propose to the class a computer conference which would be an add-on to the course. They also insisted that in suggesting the conference to the class I should stress that participation or non-participation in the conference would not influence students' grades. The idea that the conference might be the object of my thesis study also came up in this first conversation.

Both professors felt that the conference was a student initiative that would defeat its purpose if they took part in the on-line discussions. They emphasized that their only involvement with the conference would be to read from time to time what was posted there. In the very beginning, the professors made a decision not to contribute to the conference by writing. This decision was in harmony with their view that their input might stifle the discussion and prevent students from freely expressing their opinions.

I 'advertised' the conference via e-mail (Appendix B) and an oral 10 minutes presentation in the second class meeting. In the one hour session following that second class meeting, I provided instruction on the use of the conferencing software to those students who chose to attend. Two weeks later, I asked the students for permission to use their current and
future contributions to the conference as data for my thesis. Those who agreed to participate in the study signed a Consent form (Appendix A). All students and the two professors agreed to participate in the study. The two instructors supported the endeavor both as discussion opportunity and as research opportunity. They acknowledged their support in front of the class, but at the same time made it clear that participation in the conference was not required and would not influence students' grades. Throughout the course, there was absolutely no pressure to participate put on the students by the professors. Several guest speakers took part in the conference in the week(s) following their presentations. All guest speakers who took part in the conference were aware that the conference was being studied.

3.4.1. Data collection procedures

Five months into the course, I started collecting interview data from the students, both from those who participated in the conference and from those who did not. 16 students responded to my request for an interview; 11 of them had taken part in the conference. Interviews with students were conducted within a month. Each interview session had two parts: (1) a written questionnaire addressing factual information about the student, and (2) an oral, semi-structured interview focusing on the student's beliefs, attitudes, and motivation for participation in CC. The interviews were held in my office. They were audio-taped and later I transcribed the parts relevant to this study. I also conducted an interview with the two professors after the last class of the course. It focused on the purposes and objectives of the course, on the professors' expectations of the students in the course, and on their view of CC as educational technology.

The archive of the Knowledge Forum and its search function were used to collect the textual data from the conference: messages written, information on who had read every message and when, structure of the conference, timeline, etc. at the end of the study period. The hypertext nature and sorting capabilities of the software allowed the conference to be viewed in different formats, which greatly facilitated the data collection and analysis.

The functional discourse analysis of the text of students' contributions to the conference was performed after the end of the course.

3.4.2. Methodology of discourse analysis

I chose to use discourse analysis for the investigation of participation in CC because it could give insights into what participants were doing through language. Discourse analysis helped identify patterns of participation and make conclusions about the interpersonal relations in the
conference. By analyzing the natural discourse they produced in terms of speech functions, I focused on what the participants in this situation did by means of language, what actions and activities they engaged in.

3.4.2.1. Review of interaction analysis methodologies that have been used to investigate participation in educational CC

A number of analysis methodologies have been used to investigate participation and interaction in computer conferencing. They usually combine quantitative and qualitative approaches.

For the comparison of face-to-face with real-time computer conferences, Hiltz et al. (1980) used IPA, the Interaction Process Analysis developed for the study of small group interactions in the context of Alcoholics Anonymous by Bales (1950, 1955). There are serious drawbacks to the use of IPA for the study of computer conferencing, though. The context for which IPA was developed is much different from the context of most educational computer conferencing groups. It was developed for oral, unstructured discussions, with an emotional focus, where problems are to be discovered, not solved or academically considered. IPA is quite limited in range. As D'Andrade & Wish (1985) have noted, IPA includes tension release categories, but excludes speech acts denoting orders, refusals, or acknowledgments.

Several computer conferencing interaction analysis methods used Mehan's (1978) Initiation-Reply-Evaluation (IRE) coding system, developed for the analysis of traditional classroom interactions. Sinclair and Coulthard (1975) developed a three-part descriptive framework of teacher-led classroom discourse a couple of years earlier. Sinclair and Coulthard (1975) described speaker turns as consisting of discourse moves, which frequently occur in exchange structures comprised of three parts: initiation, response, feedback (IRF). The three-part exchange pattern apparently came to be viewed as the "default pattern" in classroom discourse. Quinn et al. (1983), and many others after them demonstrated that in CMC an Initiation act led to numerous Replies, rather than the IRE sequence of traditional classroom discussions. However, these findings did not lead to a conclusion about the methodological appropriateness of the IRE model for exploration of CMC.

Levin et al. (1990) used the IRE sequence to develop their Message Act Analysis for the comparison of face-to-face and electronic communication. Message Act Analysis compares the number of initiations, replies, and evaluations. Levin et al. also discovered more complex patterns in CMC compared to face-to-face. A single message could receive multiple replies or initiate a chain of replies. Evaluation statements were less evident than in face-to-face communication. The Message Act Analysis proved to be a useful model for describing the sequence of e-mail interactions. However, it was developed for the investigation of another type of electronic communication and can
not account for all types of interaction that occur in a university-course computer conference. Furthermore, Levin et al.'s coding system allowed for only coding presence or absence of each act, but not for the number of occurrences of each type within one message.

Ruberg et al. (1996) expanded the Message Act Analysis coding system to include the categories initiation, reply, evaluation, reply/initiation, and reply/evaluation. This system, I suppose, tries to provide some accommodation for the complexity of computer conferencing messages. It looks like an additive approach has been applied to the classification system, but then why are categories like initiation/evaluation neglected? The authors do not offer a rationale for their classification, or a discussion of its effectiveness, which makes the critical consideration of the system difficult, if not problematic.

Ellis and McCraery (1987) developed a symbolic system of diagrams for analyzing computer conferencing interactions. In their system, links between messages were based on 'references', where each message referred back to one other message. The resulting pattern resembled a tree diagram. This system, which in its time was a valuable increment in computer conferencing research methodology, can not account for the complexity of the interaction in an asynchronous computer conferencing, where messages often reference more than one previous message.

Inter-message Reference Analysis involves coding of messages on the basis of clear or inferred references to previous messages, and preparing message maps which depict the way in which messages are structured. This method can indicate which messages are referenced frequently, which get referenced, who references whom, and who gets referenced. The message maps illustrate the multiple threads of the interactions. This type of analysis was discussed and used in Winkelmans (1988). Two constructs were measured for the Inter-message Reference Analysis: influence (the number of direct references a comment receives), and confluence (the number of direct references to previous comments found within an entry). (It is not clear whether Winkelmans got the idea from other studies, or developed it himself). Message maps and cluster diagrams were designed to show the links between messages, provide overviews of trends, and identify thematic clusters. These message maps are so complicated and cumbersome, that they fail to serve as means of presenting information in a comprehensible visual manner.

For his Message Act Analysis, Winkelmans coded each act category (Initiation, Reply, Evaluation) for presence or absence. Message Flow Analysis was used to indicate the overall pattern of a group interaction by monitoring volume over time. The analyses Winkelmans applied aimed at identifying patterns and tendencies in terms of topic groups, and conference structure and development. That is why his conclusions concerning the strengths and weaknesses of the different
analyses, although interesting and useful, are not relevant for a study focusing on individuals' participation and interaction in computer conferencing.

In her study of the effects of synchronous computer assisted class discussions (CACD) on the interactive competence of FL learners Chun (1994) examined the functional features of the language which the students used. The features were examined through quantitative measures and qualitative analysis: (a) number and length of entries or turns by each student; (b) syntactic or grammatical complexity; (c) type and number of different discourse structures. It is interesting to note the qualitative analysis categories that were used in the study. Based on some types of functional competence from the ACTFL Proficiency Guidelines (1986) and of Kramsch's (1983) interactive competence, Chun made tallies of the kinds of sentences produced by the students. The sentences were classified by function within the discourse as follows: questions and answers (6 kinds), statements and imperatives (7 kinds), and discourse management (3 kinds). The choice of the sentence as the unit of analysis does not seem to suit a functional framework of discourse analysis, though. Many authors have emphasized that speech acts or speech functions are not confined to the sentence boundaries.

Kern (1995) compared face-to-face and synchronous computer conferencing communicative language use of university FL students. His investigation was much more thorough than Chun's (1994). He coded the transcripts for discourse functions (greetings, assertions, questions, commands, self-corrections), verbal tense and mood characteristics, syntactic features (coordination, subordination, negation, comparative and superlative structures, relative pronouns), length of turns, and students' use of L1. The unit of analysis was the clause. This type of analysis can serve as a model for analyzing synchronous interactions. However, for the analysis of asynchronous CC discourse which differs from synchronous because of the differences in the dynamics of interaction, a different system of discourse functions has to be designed.

A Rhetorical Analysis of the comments in computer conferencing was carried out by Ruberg et al. (1996). They slightly modified the rhetorical content coding system used by Butler (1992), combining two pairs of categories, to include the following: question, reply, consensus building, evaluation, topic initiation, assertion, acknowledgment, off-task, qualification/definition, and clarification/elaboration. I suppose that they embrace Butler's premises for this classification. However, it is not clear whether these categories were applied to the messages or to other units, and whether they were applied in a mutually-exclusive fashion.

In their article, Howell-Richardson and Mellar (1996) discuss the results of the application of four different analyses of computer conferencing: analysis of message length and distribution, analysis of inter-referential links between messages, and interaction analysis. The authors discuss the
underpinnings of their research methodology, and offer a sound rationale for their choice of types of analysis and units of analysis. Howell-Richardson and Mellar designed three forms of message maps to present message frequency against length, distribution of messages against sender and time, and inter-message referential links. The purpose of their study was to establish the patterns of interaction that take place in two different computer conference contexts, while I am interested in patterns of participation of a group of people within a conference. The interaction analysis that the authors employ is derived from if not precisely based on Speech Act theory. For the purposes of the study, each communication unit (illocutionary unit) was coded for illocutionary property (interrogative, declarative, directive, or elicitation), focus (group, task, off-task), addressee (all, individual, subgroup), and inter-message reference (reference, no reference). Group focus was further classified as organizational, rechannel, socio-affective, debilitating, or metacomment; and task focus into initiate/proposal, reject/disagree, confirm/elaborate, refer to external sources, summarize, or request. In their "Comment on methodology", the authors state that "certain multi-functional categories -- in particular initiate/proposal and confirm/elaborate/develop -- have proved insufficiently focused to enable the coding to distinguish between different types of communicative acts".

To describe the participation in computer conferencing, Ruberg et al. (1996) applied 'Interchange Analysis', a modification of Butler's (1992) three quantifiable measures of individual participation (participation ratio, participation frequency, and integration ratio). Ruberg et al. used the following measures for their Interchange Analysis: words sent, % of words sent, messages sent, participation ratio (number of messages sent over total number of messages), participation frequency (number of words sent over number of messages sent), volume ratio (number of words sent over total number of words), and integration ratio (number of messages received over number of messages sent). This participation analysis method is thorough and will be suitable for the present investigation.

The number of words per speaker was used to calculate the participation percentage per speaker in Warschauer's (1996) study. The participation percentage was then used to calculate a Gini coefficient of participation equality for the conferencing group. The Gini-coefficient (an index of the equality of one measure over contributors) was used to determine if the CMC discussion encouraged equal participation in the regular class. This participation analysis technique appears to be very appropriate for the study of participation equality/inequality in computer conferencing.

3.4.2.2. Discourse analysis methodology for this study

In examining the discourse in the computer conference, I have generally followed the functional systemic discourse analysis methodology. This methodology provided a way of looking at the text of the CC in terms of the context of the discourse situation, and in terms of what the
interactants were doing in relation to each other, i.e. the roles they adopted. It let me reveal how people constructed relationships through discourse. Using functional discourse analysis, I was able to interpret those roles by analyzing the speech functions realized in the CC 'talk'. The analysis of the relationships among the people involved in CC gave me insights into their participation in the activity.

3.4.2.2.1. Analysis of the computer conferencing situation

Although the discourse situation of CC was quite different from the context of situations of face-to-face conversations (mainly in terms of mode), I decided I could still use the basic concepts of functional discourse analysis of face-to-face conversation to talk about CC discourse. For example, the context of the CC situation was analyzed in terms of field, tenor and mode in the same way as a face-to-face register of situation (see Chapter 2: 2.7.6.). Also, regardless of the modality (CC is graphic interaction, and face-to-face conversation is phonic – Hasan, 1987), both types of discourse can be analyzed through the interpersonal speech functions expressed in the text (Chapter 2: 2.7.6). There are different speech functions between the two situations, and the dynamics of the interaction are different. but there are also speech functions that are present in both situations. That means that the roles of the participants in CC discourse are often expressed through the same speech functions as the roles of the participants in face-to-face interactions.

3.4.2.2.2. Unit of analysis

At the first stage of the analysis of the discourse happening in the conference, I had to identify the smallest discourse units realizing the speech functions, i.e. the moves. I followed Eggins and Slade's (1996) description of the boundaries of moves in conversation: the boundaries depend "on the co-occurrence of grammatical and prosodic boundaries as indeed was recognized (although not systematically stated by Sacks et al. (1974)" (p.189). Since prosody is non-existent in CC, for move identification I only relied on grammatical criteria. Following Eggins (1994) and Eggins and Slade (1996), I considered the clause the grammatical unit which congruently realizes a move. As Eggins and Slade (1997) recognize, a move can be realized by other grammatical units too; this possibility was taken into consideration in the analysis of the existing data. The main principle for identifying moves - that clauses which select independently for Mood generally function as separate moves - was followed. Those clauses which did not select independently for mood, subordinate clauses to a main clause, were not considered separate moves. For example, in "To me one reason among the others which makes the older immersion students mostly use their L1 while interacting in their peer group is their attitude towards the L2", the subordinate clause "which makes the older immersion students mostly use their L1 while interacting in their peer
"group" was not considered a separate move. Adopting Eggins and Slade's move boundaries (1997, p. 187; see also 2.7), I considered the following three combinations moves:

1. Dependent clauses and the main clause on which they depend
2. Embedded clauses
3. Quoting and reporting clauses - both direct and indirect - including mental clause projections (I hope..., I think...).

The specifics of the data analyzed in this study were such that on several occasions it was necessary to consider an embedded noun phrase to be a separate move. For example, in the clause "I think the whole body of work on the negotiation of meaning which Vega mentions (especially Susan Gass and E. Varonis) lends further support to this approach.", the phrase "which Vega mentions" was considered a separate move - a reacting move - embedded in the promoting move. Further, the phrase in brackets - "(especially Susan Gass and E. Varonis)" - is also a separate move, a Prove move, within a State opinion move. In the process of the analysis and in its graphic presentation, the embedded moves were taken out of their place in the natural text flow and replaced with [...] . They were coded separately on the line following the line of the embedding text out of which they were taken (Appendix D).

3.4.2.2.3. Speech functions

For the interpretation of the relations between the participants in the electronic conference, I examined the text of the messages in terms of the roles interactants adopted. As I discussed earlier, the roles are expressed in the speech functions of the text. The analysis of interpersonal relations involved identification of the speech functions, analysis of their dynamics, and interpretation of their frequencies.

To identify the speech functions most appropriate for the understanding of the interpersonal relations in this CC, I established first the context of the particular discourse situation in terms of Field, Tenor, and Mode. Then, based on the system of speech functions developed by Halliday and summarized in Eggins (1994) and Eggins and Slade (1997), I constructed a system of speech functions for the ones expressed in the text of the conference.

In their analysis of casual conversation, Eggins and Slade (1997) introduced a detailed system of speech functions to account for the interpersonal relations as realized in casual conversation. Sixty five categories were identified and used to label the speech functions in casual conversation. The system allowed conclusions about the interpersonal positions of the participants to be drawn on the basis of the discourse analysis of conversation.

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Some insights from that study were used here, but since the context of the computer conference was much different from the context of the casual conversation examined by Eggins and Slade, I had to develop a new system of speech functions. I constructed the coding scheme of speech functions after a careful examination of the text of the CC. In that process, I took into consideration the characteristics of the situation - academic field, multi-agent tenor, constitutive role of the language in a graphic modality.

There were four distinguishable classes of moves that served to position the participants in the group: socializing moves, inquiring moves, moves for promoting ideas, and reacting moves. Each class of speech functions was further particularized in a more detailed distinction between moves. For example, the Socializing speech functions class comprises three speech functions: Salute, Share and Thank. Some speech functions are broken down into finer distinctions of functions. This is reflected in the labeling by indentation and numbering. Tables 3.1, 3.2, 3.3, and 3.4 summarize the speech function labels, their discourse purpose, and congruent mood. The examples given in the last columns of the tables are taken from the conference text and are presented here unedited.

Table 3.1. Socializing speech functions

<table>
<thead>
<tr>
<th>Speech function</th>
<th>Discourse purpose</th>
<th>Congruent mood</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salute</td>
<td>to establish contact</td>
<td>nominal group</td>
<td>Hi, everyone</td>
</tr>
<tr>
<td>Share (feelings)</td>
<td>to engage the community</td>
<td>full declarative; modality, no appraisal</td>
<td>In fact, on Friday, I didn't feel the passing of time at all.</td>
</tr>
<tr>
<td>Thank</td>
<td>to express gratitude for</td>
<td>full declarative; modality and/or appraising lexis</td>
<td>Firstly, let me extend my thanks to Vega for setting this up.</td>
</tr>
<tr>
<td></td>
<td>someone's help</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3.2. Inquiring speech functions

<table>
<thead>
<tr>
<th>Speech function</th>
<th>Discourse purpose</th>
<th>Consequent usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open question -</td>
<td>to demand factual information</td>
<td>wh-interrogative; no modality: no appraisal</td>
</tr>
<tr>
<td>fact</td>
<td></td>
<td>My question, therefore, is whether there is any principle in guiding learners on how much shadowing they should do</td>
</tr>
<tr>
<td>Open question -</td>
<td>to demand opinion information</td>
<td>wh-interrogative;                      polar interrogative; no modality: no appraisal</td>
</tr>
<tr>
<td>opinion</td>
<td></td>
<td>I would be curious to know what Polly thinks.</td>
</tr>
<tr>
<td>Polar question -</td>
<td>to demand confirmation/agreement with factual information</td>
<td>polar interrogative; no modality: no appraisal</td>
</tr>
<tr>
<td>fact</td>
<td></td>
<td>Did I answer your question?</td>
</tr>
<tr>
<td>Polar question -</td>
<td>to demand agreement with opinion information</td>
<td>polar interrogative; modality/appraisal</td>
</tr>
<tr>
<td>opinion</td>
<td></td>
<td>(no example in the data)</td>
</tr>
</tbody>
</table>

### Table 3.3. Promoting speech functions

<table>
<thead>
<tr>
<th>Speech function</th>
<th>Discourse purpose</th>
<th>Consequent usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meta-talk</td>
<td>to comment on the purpose or circumstances of the contribution</td>
<td>Full declarative; no modality</td>
</tr>
<tr>
<td>Recount</td>
<td>to give factual information, an account of an experience</td>
<td>Full declarative; first person singular;</td>
</tr>
<tr>
<td>Summarize</td>
<td>to summarize literature, other's contributions to the conference, or class activities</td>
<td>Full declarative</td>
</tr>
<tr>
<td>State fact</td>
<td>to give factual information (other than personal experience)</td>
<td>Full declarative; no modality: no appraisal</td>
</tr>
<tr>
<td>State opinion</td>
<td>to give attitudinal/evaluative information</td>
<td>Full declarative; modality and/or appraising lexis</td>
</tr>
</tbody>
</table>
State opinion as to give factual information Full declarative; modality and/or appraising lexis This attitude is built upon, whether or not the L1 is the dominant language of the community.

Prove

1. Refer to authority/literature to convince by referring to information given in literature or specialist Full declarative; citation/referral These kids want to integrate themselves into the culture ..., otherwise they will be "marked as non-members (Tarone & Swain, 1995)...

2. Refer to personal experience/observation to convince by giving factual information from personal experience or observation Full declarative; no appraisal When I have tried to shadow I find I am so focused on the mechanical exercise...

Advise to give a suggestion oriented to the benefit of the audience Modulated full declarative; modulated interrogative; modality/appraisal Maybe you can read [...] article.

Table 3.4. Reacting speech functions

<table>
<thead>
<tr>
<th>Speech function</th>
<th>Discourse purpose</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledge</td>
<td>to recognize by mentioning the contribution of other participants in the conference</td>
<td>Full declarative; minor clause; repetition or summary of other's words; no modality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>As you noted, Vega, you had tried so hard to make the most out of the least.</td>
</tr>
</tbody>
</table>

Answer:

1. Give factual information or reference to provide demanded factual information Full declarative no example in data

2. State opinion or refer to personal experience to provide attitudinal/evaluative information related to demand Full declarative; modality/appraisal no example in data

3. State opinion as fact to provide attitudinal/evaluative information related to a demand Full declarative; modality and/or appraising lexis no example in data
Develop other's ideas to offer additional supporting information related to someone else's contribution (not an 'answer')

Agree to indicate support of factual or attitudinal/evaluative information given

Repair to correct oneself

Disagree to indicate rejection of other participant's opinion

Discredit to challenge other's ideas by providing disclaiming information

Full declarative I even noticed that some parents receive answers to their L1 questions in English.

Declarative; positive polarity I agree with Polly saying that...

Declarative; modality and/or appraisal My use of the term "force" was careless.

Declarative; negative modality I do wonder whether shadowing interpreted narrowly as verbatim repetition is really an effective...

Declarative; negation but I think Tannen is trying to show that repetition serves a variety of functions...

The labels of the speech functions were used to code the text of the notes written in the Knowledge Forum by the students (Appendix D).

3.4.2.2.4. Mood and modulation

Another analysis that helped understand the Tenor, i.e. the relationships in the conference, was the analysis of the choices made in respect to marked/unmarked Mood of the clauses realizing the speech functions. For example, the marked declarative mood in the Inquiring speech function "am wondering how one would motivate students to do this on their own" was interpreted as an attempt to avoid the danger of coming across as someone who is asking for help (explanation).

Another way of gaining knowledge about the actual relationships in the conferencing community and from there - understanding of students' participation - is the selection of modalization (see 2.7) Eggins (1994) points out that discourse analysis needs to capture "the fact that giving and demanding information involves both the choice of clause Mood (interrogative, declarative, exclamative), AND the choice to express or not express modalization" (p.183). Modalization involves the expression of nuances to the message, expressing attitudes and judgements of various kinds. For example, the use of what Halliday calls 'grammatical metaphors' (I think, It seems to me) may indicate that participants are hesitant because they are uncomfortable making mistakes before each other.
3.4.2.2.5. Procedures of discourse analysis

After I had examined the data and constructed the system of speech functions, I divided the text of the notes in the conference into moves, and coded them for speech function. A 20% sample of the text was coded by two other coders. Agreement between the two coders on the coding of the sample was 74%. Agreement between each of the coders and my coding was satisfactory: the first coder and I agreed on 80% of the coding, and agreement between the second coder and me was 77%. I analyzed statistically the results from the coding of the entire data set. The statistical analyses of the frequencies of the different speech functions allowed conclusions about the interpersonal relations in the conference and from there – about factors affecting participation.

3.5. Summary

In this chapter I have outlined the design of the study and its procedures, and have discussed its methodology. The participants in the study, 19 students enrolled in a graduate course at a major North American university, were studied in their participation/non-participation in an optional ACC related to the course. The design involved the study of the participants in two groups. native and non-native speakers of English. The investigation employed quantitative and qualitative methods: descriptive statistics of students' background and CC writing and reading, qualitative and quantitative discourse analysis, and analysis of questionnaire and interview data. Chapter 4 presents the results of the study.
Chapter 4
RESULTS OF THE STUDY

4.1. Students’ background

Sixteen of the 19 students in the class filled out the research questionnaire and were interviewed about their computer experience, knowledge and skills; about their participation in and attitudes to computer conferencing, and their motivation to participate in such activities. The data elicited through the questionnaire provided background information about the students and their computer literacy and experience with computer-assisted activities. Table 4.1. summarizes the background information of the 16 interviewees, five of whom had not taken part in the conference.

Most of the interviewed students reported good computer skills, high or very high levels of computer literacy and regular to extensive use of computers. In this respect, they had similar backgrounds. The non-native speakers reported slightly lower levels of computer skills and experience. There were no uninformed or beginner computer users, and all students felt comfortable using computers. E-mail experience, an area closely related to computer conferencing, was considerable. Use of the Internet was also important in this case, because the class was using a web-based version of the Knowledge Forum conferencing software. Many participants in the study reported regular and extensive use of the Internet. The majority of the students in the course, though, had little or no previous experience with computer conferencing. Of the NNSs, only three (one of whom was the researcher) had previous CC experience. Conversely, most of the NSs did have previous and concurrent CC experience. However, previous CC experience did not correlate positively with current participation: for example, the student with the most CC experience, Caren, did not participate in the Knowledge Forum.

Several questions from the questionnaire addressed the conditions of students’ participation in the ongoing course-related CC. Eleven of the 16 interviewed students had access to the Internet from home; seven of them participated in the conference. Of the 11 who had access from home, 6 used the campus computer labs too. Of those 6 who could use both their home computers and the lab computers, 4 took part in the conference. All four students who had access to the conference only from campus computer labs, participated in it. The data do not suggest a positive correlation between availability of home Internet link, amount of

---

*This should not be taken to mean that they had ample Internet skills or knowledge: in their interviews, several of them commented that they did not know where or how to find the conference. I should mention that both the written (e-mail) and the oral presentation advertising the conference included explicit information about the nature and the URL (Internet address) of the conference.*
computer-related experience, computer skills, or previous CC experience to participation in the conference.

Table 4.1. Students' background

<table>
<thead>
<tr>
<th>Participants' pseudonyms</th>
<th>Native (N), non-native (NN)</th>
<th>Program of study</th>
<th>Typing speed</th>
<th>Computer skills</th>
<th>Computer use</th>
<th>E-mail experience</th>
<th>Internet use</th>
<th>ACC experience</th>
<th>Participation in this CC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slow</td>
<td>Average</td>
<td>Fast</td>
<td>V. fast</td>
<td>Poor</td>
<td>Some</td>
<td>Good</td>
</tr>
<tr>
<td>1 Ann</td>
<td>N</td>
<td>PhD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2 Flora</td>
<td>N</td>
<td>PhD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3 Nick</td>
<td>N</td>
<td>PhD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4 Polly</td>
<td>N</td>
<td>PhD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>5 Rona</td>
<td>N</td>
<td>Med</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>6 Ben</td>
<td>N</td>
<td>PhD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>7 Bob</td>
<td>N</td>
<td>MA</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>8 Ted</td>
<td>N</td>
<td>PhD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>9 Caren</td>
<td>N</td>
<td>PhD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>10 Lora</td>
<td>N</td>
<td>MA</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>11 Leo</td>
<td>N</td>
<td>Med</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>12 Greg</td>
<td>N</td>
<td>PhD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>13 Fred</td>
<td>N</td>
<td>MA</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>14 Ross</td>
<td>N</td>
<td>PhD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>15 Lilly</td>
<td>N</td>
<td>MA</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>16 Scott</td>
<td>N</td>
<td>MA</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Note:
The numbers in the column 'ACC experience' reflect the number of course-related computer conferences (other than the studied one) in which the person had been involved or was concurrently involved.
4.2. Quantity of participation in the conference

Of the 19 students in the class, 12 (63%) participated in the conference\(^1\) and 7 (37%) did not (Table 4.2).

<table>
<thead>
<tr>
<th>Table 4.2. Class participation / non-participation in the conference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students who participated in the conference</td>
</tr>
<tr>
<td>Percentage of students who participated in the conference</td>
</tr>
<tr>
<td>Number of students who did not participate in the conference</td>
</tr>
<tr>
<td>Percentage of students who did not participate in the conference</td>
</tr>
<tr>
<td>Total number of students in the class</td>
</tr>
</tbody>
</table>

Five of the 12 participants in the conference (42%) were native and seven of them (58%) were non-native speakers of English. (Table 4.3.)

<table>
<thead>
<tr>
<th>Table 4.3. Participants in the conference: proportion of NS and NNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants in the conference</td>
</tr>
<tr>
<td>Native speakers of English (NS)</td>
</tr>
<tr>
<td>Non-native speakers of English</td>
</tr>
<tr>
<td>Total participants in the conference: NS+NNS</td>
</tr>
</tbody>
</table>

All non-native speakers in the course\(^2\) (100%) participated in the conference, while only five of the 12 NS students in the class (42%) took part.\(^3\) (Table 4.4.)

\(^1\) The researcher is included in this part of the statistics.

\(^2\) including the researcher

\(^3\) I should mention that two of those five NS participants had non-English mother-tongue background.
### Table 4.4. Proportions of participants to non-participants in the conference for the NS and NNS groups

<table>
<thead>
<tr>
<th>Participants</th>
<th>Participated in the conference</th>
<th>Did not participate in the conference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of participants</td>
<td>Percentage of the total number for the class</td>
</tr>
<tr>
<td>Native speakers</td>
<td>5</td>
<td>42%</td>
</tr>
<tr>
<td>Non-native speakers</td>
<td>7</td>
<td>100%</td>
</tr>
</tbody>
</table>

Six of the 11 Ph.D. students, 3 of the 6 MA, and both M.Ed. students participated in the conference. In percentages, 54% of the PhD, 50% of the MA and 100% of the M.Ed. students took part in the conference. (Table 4.5)

### Table 4.5. Participation in the conference for the groups of M.Ed., M.A., and Ph.D. students

<table>
<thead>
<tr>
<th></th>
<th>M.Ed.</th>
<th>M.A.</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students who participated in the conference</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Percentage of the students who participated in the conference</td>
<td>100%</td>
<td>50%</td>
<td>54%</td>
</tr>
</tbody>
</table>

The quantity of written participation in the conference in the periods October 7 - November 17 and January 25 - February 28 is presented in Tables 4.6, 4.7, and 4.8.

Table 4.6 shows the written contributions of the non-native speakers of English (NNS). In this analysis, the researcher's contributions are not considered. One participant (Ann), did not write anything, only read others' contributions to the conference. She is not included in this stage of the analysis.
Table 4.6. Written participation in the conference: NNS

<table>
<thead>
<tr>
<th>No</th>
<th>Pseudonym</th>
<th>Words written</th>
<th>Messages written</th>
<th>% words (of all words)</th>
<th>% of messages (of all messages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flora</td>
<td>302</td>
<td>1</td>
<td>8.11</td>
<td>4.34</td>
</tr>
<tr>
<td>2</td>
<td>Nick</td>
<td>384</td>
<td>3</td>
<td>10.31</td>
<td>13.04</td>
</tr>
<tr>
<td>3</td>
<td>Polly</td>
<td>456</td>
<td>5</td>
<td>11.70</td>
<td>21.74</td>
</tr>
<tr>
<td>4</td>
<td>Rona</td>
<td>393</td>
<td>2</td>
<td>10.55</td>
<td>8.70</td>
</tr>
<tr>
<td>5</td>
<td>Ben</td>
<td>235</td>
<td>1</td>
<td>6.31</td>
<td>4.34</td>
</tr>
<tr>
<td></td>
<td>Total n=5</td>
<td>1 770</td>
<td>12</td>
<td>47.26</td>
<td>52.18</td>
</tr>
</tbody>
</table>

The results of the written contributions of the native speakers of English who participated in the conference are presented in Table 4.7.

Table 4.7. Written participation in the conference: NS

<table>
<thead>
<tr>
<th>No</th>
<th>Pseudonym</th>
<th>Words written</th>
<th>Messages written</th>
<th>% words (of all words)</th>
<th>% of messages (of all messages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bob</td>
<td>348</td>
<td>3</td>
<td>9.34</td>
<td>13.04</td>
</tr>
<tr>
<td>2</td>
<td>Ted</td>
<td>743</td>
<td>3</td>
<td>19.94</td>
<td>13.04</td>
</tr>
<tr>
<td>3</td>
<td>Leo</td>
<td>68</td>
<td>1</td>
<td>1.82</td>
<td>4.34</td>
</tr>
<tr>
<td>4</td>
<td>Ross</td>
<td>262</td>
<td>1</td>
<td>7.03</td>
<td>4.34</td>
</tr>
<tr>
<td>5</td>
<td>Scott</td>
<td>554</td>
<td>3</td>
<td>14.87</td>
<td>13.04</td>
</tr>
<tr>
<td></td>
<td>Total n=5</td>
<td>1 975</td>
<td>11</td>
<td>52.73</td>
<td>47.82</td>
</tr>
</tbody>
</table>

Table 4.8 summarizes the results of NS and NNS contributions to the conference.
Table 4.8. Written contributions of native and non-native speakers

<table>
<thead>
<tr>
<th>Group</th>
<th>Words written</th>
<th>Messages</th>
<th>Words per person</th>
<th>Messages per person</th>
<th>% words written</th>
<th>% messages</th>
<th>Frequency # messages/ # words</th>
</tr>
</thead>
<tbody>
<tr>
<td>NNS (n=5)</td>
<td>1 770</td>
<td>12</td>
<td>354</td>
<td>2.4</td>
<td>47.26</td>
<td>52.18</td>
<td>0.007</td>
</tr>
<tr>
<td>NS (n=5)</td>
<td>1 975</td>
<td>11</td>
<td>395</td>
<td>2.2</td>
<td>52.73</td>
<td>47.82</td>
<td>0.005</td>
</tr>
</tbody>
</table>

The two groups, i.e. NS and NNS, produced almost equal numbers of messages: 11 for the NS group and 12 for the NNS group. The group of native speakers authored 47.82% of the messages, and the NNS group wrote 52.18% of the total messages. The average number of written messages for the NS group (2.2) is slightly lower than the average of the NNS group (2.4). However, the NS group produced 52.73% of the words written in the conference, while the NSSs wrote 47.26% of the words (395 and 354 words per person respectively). The frequency of written participation (expressed in the number of messages in each group divided by the number of words for that group) is greater for the NNS group (0.007).

The quantitative results show that the NNSs wrote less, but more frequently than the NSs. 

The ‘search’ feature of the conferencing software allowed me to calculate the number of messages read by each participant in the Knowledge Forum. Table 4.9 shows the reading of the non-native speakers (NNS). The reading behaviour varied considerably among the different participants. Ann (who did not write in the Knowledge Forum at all) read only 26.32% of the messages in the Forum. Nick read more than three times as much as Ann; at 80%, he read most of the posted messages.

---

4 The researcher’s results were not calculated in the NNS group results, although she is a NNS of English: the position of a researcher/facilitator is obviously privileged and a facilitator’s participation cannot be compared to the participation of any other student in the conference. That is why the calculations for the group of non-native speakers do not include the contributions of the researcher.
Table 4.9. Reading participation: non-native speakers

<table>
<thead>
<tr>
<th>No</th>
<th>Pseudonym</th>
<th>Messages read</th>
<th>% messages read (of the total posted, 57)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ann</td>
<td>15</td>
<td>26.32</td>
</tr>
<tr>
<td>2</td>
<td>Flora</td>
<td>30</td>
<td>52.63</td>
</tr>
<tr>
<td>3</td>
<td>Nick</td>
<td>46</td>
<td>80.70</td>
</tr>
<tr>
<td>4</td>
<td>Polly</td>
<td>32</td>
<td>56.14</td>
</tr>
<tr>
<td>5</td>
<td>Rona</td>
<td>23</td>
<td>40.35</td>
</tr>
<tr>
<td>6</td>
<td>Ben</td>
<td>35</td>
<td>61.40</td>
</tr>
<tr>
<td></td>
<td>Total (n=6)</td>
<td>181</td>
<td>317.54</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>30.17</td>
<td>52.92</td>
</tr>
</tbody>
</table>

Table 4.10 presents the results for NSs' reading in the conference. Scott, the student who was considered a non-native speaker of English by many, but identified himself as a NS in this study, read the most among the native speakers.

Table 4.10. Reading participation: native speakers

<table>
<thead>
<tr>
<th>No</th>
<th>Pseudonym</th>
<th>Messages read</th>
<th>% messages read (of the total posted, 57)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bob</td>
<td>16</td>
<td>28.07</td>
</tr>
<tr>
<td>2</td>
<td>Ted</td>
<td>27</td>
<td>47.36</td>
</tr>
<tr>
<td>3</td>
<td>Leo</td>
<td>8</td>
<td>14.03</td>
</tr>
<tr>
<td>4</td>
<td>Ross</td>
<td>20</td>
<td>35.08</td>
</tr>
<tr>
<td>5</td>
<td>Scott</td>
<td>28</td>
<td>49.12</td>
</tr>
<tr>
<td></td>
<td>Total (n=5)</td>
<td>99</td>
<td>173.66</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>19.8</td>
<td>34.63</td>
</tr>
</tbody>
</table>

The summary of the results in Table 4.11 shows that the reading behaviour of native and non-native speakers was different from their writing behaviour. The NSs who wrote more than the NNSs (9.42% compared to 8.70% per person), read much less (34.63% compared to 52.92% respectively).
Table 4.11. Summary: comparison between native and non-native speakers' writing and reading participation in the conference

<table>
<thead>
<tr>
<th>Group</th>
<th>No</th>
<th>Messages written</th>
<th>% messages written</th>
<th>Messages read</th>
<th>% messages read</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Average</td>
<td>Total</td>
<td>Average</td>
<td>Total</td>
</tr>
<tr>
<td>NNS</td>
<td>6</td>
<td>12</td>
<td>2</td>
<td>52.18</td>
<td>8.70</td>
</tr>
<tr>
<td>NS</td>
<td>5</td>
<td>11</td>
<td>2.2</td>
<td>47.12</td>
<td>9.42</td>
</tr>
</tbody>
</table>

The descriptive statistics of the quantities NS and NNS groups wrote and read illustrates an important difference in the pattern of participation between NSs and NNSs. While NSs wrote more messages per person and more words per person (2.2 and 395 compared to 2.0 and 295 respectively when calculations include the NNS who did not write at all), they read much less than their NNS colleagues (19.8 or 34.63% compared to 30.17 or 52.92% per person). There is a considerable difference between the two groups in the number of messages each person read. Apparently, NNSs read more extensively than NSs. Together with the fact that 100% of the NNSs in the class participated in the conference while only 42% of the NSs took part, this demonstrates that the NNSs were definitely more active in the conference.

4.3. Results from the discourse analysis of the text of the conference

Further understanding of the differences in CC participation between native and non-native speakers was sought through discourse analysis of the text of the conference.

4.3.1. Context of the discourse situation

The first step in the discourse analysis was to establish the context of the particular discourse situation. For this, I applied the Field - Tenor - Mode system of analysis (see Chapter 2). The following characteristics of the context of situation were apparent in this CC:

Field

The field of the discourse situation for this computer conference can be described as the academic study and critical analysis of second and foreign language teaching and learning research and theory. The goal of the activity was the intellectual realization and enrichment of
the participants. The number of the participants in the interaction - which I believe should also be considered a feature of the field - was (potentially) 28 people.

Mode

As in every electronic discussion, the role assigned to language was constitutive (Hasan, 1989). The “process sharing” - defined by the role of the addressee in the process of message creation (Hasan, 1989) - was minimal. In this way the mode of the CC was lecture-like or letter-like. The modality through which the addressees came in contact with the messages was graphic (Hasan, 1989). The medium was predominantly written (edited), and at times spoken (spontaneous).

Tenor

The agent roles of the regular participants in the conference were colleagues who held equal (zero) power over each other in terms of institutionally determined relations. The results from participant interviews showed also that most of them perceived the rest of the participants as strangers (6 answers), acquaintances (3 answers), co-workers (2 answers), collaborators (2 answers), between competitors and strangers (1 answer), fellow travelers (1 answer), friends (1 answer). Guest participants who joined the conference at different points re-structured the relations into student-teacher relations by virtue of their higher institutional status and greater experience. In this way, the tenor of the context of situation fluctuates between hierarchic and non-hierarchic. The social distance was also different between the different participants, ranging from minimal (between those students who were friends) to near maximal (between some of the students and the guest speakers). To summarize, the tenor of the context was varied because of the multi-agent characteristics of the situation. Speech function analysis shed more light on the configuration of the tenor.

4.3.2. Speech functions in the text of the conference

Student participation was examined qualitatively through analysis of the text of the conference in terms of speech functions. A number of speech functions were identified through careful qualitative examination of the data (see 3.4.2.2.3). Appendix D shows a sample of the coding for speech function.

5 Including course professors and visiting professors.

6 Hasan considers the very process of creation of an utterance: if the person who is the intended responder of an utterance is in a position to interfere in the very process of the creation of the utterance (negotiate), the “process sharing” is maximal. Such is the situation in conversations. If that person can not “share” the process of creation (cannot negotiate), the “process sharing” is minimal. Minimal process sharing is typical of speeches, radio or TV addresses, etc.
The frequencies of the different speech functions are summarized for the two groups, i.e. NS and NNS, in Table 4.12 and Table 4.13.

**Table 4.12. Frequencies of speech functions for the NS and NNS groups**

<table>
<thead>
<tr>
<th>Speech functions</th>
<th>NS in discuss notes</th>
<th>NS in social notes</th>
<th>NH total (n=5)</th>
<th>NNS in discuss notes</th>
<th>NNS in social notes</th>
<th>NNS total (n=5)</th>
<th>Total in Forum (n=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S: Salute or address</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>S: Share (feelings)</td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>S: Thank</td>
<td>-</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>I: Open question – fact</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I: Open question – opinion</td>
<td>4</td>
<td>-</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>I: Polar question – fact</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I: Polar question – opinion</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P: Meta-talk</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>4</td>
<td>-</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>P: Recount</td>
<td>3</td>
<td>-</td>
<td>14</td>
<td>17</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>P: Summarize</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>6</td>
<td>-</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>P: State fact</td>
<td>1</td>
<td>20</td>
<td>21</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>P: State opinion</td>
<td>13</td>
<td>2</td>
<td>15</td>
<td>23</td>
<td>-</td>
<td>23</td>
<td>38</td>
</tr>
<tr>
<td>P: State opinion as fact</td>
<td>8</td>
<td>1</td>
<td>9</td>
<td>20</td>
<td>1</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td>P: Prove: refer to authority</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>P: Prove: refer to experience</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>P: Advise</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>R: Acknowledge</td>
<td>6</td>
<td>-</td>
<td>6</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>R: Answer: factual info.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>R: Answer: opinion /experience</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>R: Answer: opinion as fact</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>R: Develop other’s idea</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>R: Agree</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>R: Repair</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>R: Disagree</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>R: Discredit</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>54</td>
<td>56</td>
<td><strong>110</strong></td>
<td>89</td>
<td>12</td>
<td><strong>101</strong></td>
<td><strong>211</strong></td>
</tr>
</tbody>
</table>
Table 4.13. Frequencies of speech functions for the NS and NNS groups expressed in percentage of all moves of the respective groups (110/101)

<table>
<thead>
<tr>
<th>Speech functions</th>
<th>% speech functions of total number of NS speech functions</th>
<th>% speech functions of total number of NNS speech functions</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% in discuss notes</td>
<td>% in social notes</td>
<td>Total</td>
</tr>
<tr>
<td>S: Salute or address</td>
<td>2.7</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>S: Thank</td>
<td>0.9</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>S: Open question – fact</td>
<td>2.7</td>
<td>12.7</td>
<td>15.4</td>
</tr>
<tr>
<td>I: Open question – fact</td>
<td>3.6</td>
<td>7.3</td>
<td>10.9</td>
</tr>
<tr>
<td>I: Open question – opinion</td>
<td>0.9</td>
<td>1.8</td>
<td>2.7</td>
</tr>
<tr>
<td>I: Polar question – fact</td>
<td>2.7</td>
<td>4.6</td>
<td>7.3</td>
</tr>
<tr>
<td>P: Meta-talk</td>
<td>11.8</td>
<td>18.2</td>
<td>30.0</td>
</tr>
<tr>
<td>P: State fact</td>
<td>6.3</td>
<td>11.4</td>
<td>17.7</td>
</tr>
<tr>
<td>R: Answer: factual info.</td>
<td>5.5</td>
<td>5.5</td>
<td>11.0</td>
</tr>
<tr>
<td>R: Answer: opinion /experience</td>
<td>1.8</td>
<td>1.8</td>
<td>3.6</td>
</tr>
<tr>
<td>Total</td>
<td>49.1</td>
<td>50.9</td>
<td>100</td>
</tr>
</tbody>
</table>
A comparison of the total number of speech functions for NS and NNS groups shows that the two groups produced almost equal total amounts of speech functions: 110 for the NSs and 101 for the NNSs7.

NSs asked only one Open question about facts ("My question, therefore, is whether there is any principle in guiding learners and how much shadowing there should be"); NNSs asked three such questions. In percentages, that is 0.9% of the total moves for the NS group to 3% for the NNS. The Open question asking for opinion function was used 4 times by NSs, and only once by NNSs (3.6% and 1%).

NNSs stated opinion almost twice as much as NSs: 22.8% of their total speech functions, compared to 13.6% for NSs. The difference is even greater for the State opinion as fact speech function: 20% for the NNSs and 8.1% for the NSs.

NNSs referred to authority with 5% of their moves, while NSs expressed that function in only 0.9% of their moves. Reference to personal experience or observation was also greater for the group of NNSs (3% compared to 0.9% in NSs' data).

There were a number of speech functions that I considered germane to CC, i.e. the Responding Answering speech functions, that could not be found in these participants' texts. Answering moves were present in other texts in the Forum (i.e. in professors' texts, as well as in my own texts). The same can be said of the Inquiring polar question about opinion speech function.

NSs expressed some Disagreement (1.8% of their speech functions), while NNSs did not use this function at all. The same results were found for the Discredit speech function.

The Repair was used only by one CC participant, a native speaker with non-English mother tongue, in reaction to a professor's direct remark. No other remarks or reproaches were made in the Forum, so the fact that the Repair function was absent from NNSs' data should be interpreted carefully.

4.3.3. Differences in the discussion and social views

The total number of speech functions produced by the two groups, NS and NNS, was almost equal (NS 110 and NNS 101). However, there was a big difference in the number of speech functions expressed in the notes written in Views designated for intellectual discussion

7 The equivalent group sizes (n=5) make the comparisons quite easy.
and those written in the Lounge and the Introductions Views, where more 'social' type of notes were supposed to be written (Table 4.14).

Table 4.14. Speech functions in the two types of views, discussion and social: comparison between NS and NNS groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Discussion</th>
<th>Social</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Functions</td>
<td>% of group total</td>
<td>Functions</td>
</tr>
<tr>
<td>NS (n=5)</td>
<td>54</td>
<td>49.1</td>
<td>56</td>
</tr>
<tr>
<td>NNS (n=5)</td>
<td>89</td>
<td>88.1</td>
<td>12</td>
</tr>
</tbody>
</table>

In the discussion-type notes, the NSs had 54 speech functions (49.1% of their total), and the NNSs - 89 speech functions (88.1% of their total). This comparison shows that NNSs' written participation in the CC discussion was much greater than the NSs'. What determined the greater total number of speech functions for the NS group was in fact the greater number of speech functions in the social notes (Lounge and Introductions views). Furthermore, since only one NS note was written in the Lounge view, and that was not an original message but a copy of a list of funny learner errors. I can indeed say that the 'greater participation' writing results of the NS group came from writing about themselves in the Introductions section of the conference.

Table 4.15 shows the ranking of the top five speech functions for the NS and NNS groups in the social notes, the discussion notes, and the group total.

Table 4.15. Ranking of the top five speech functions according to their numbers in the data: NS and NNS groups

<table>
<thead>
<tr>
<th>Rank</th>
<th>Native speakers (NS)</th>
<th>Non-native speakers (NNS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>discussion notes</td>
<td>social notes</td>
</tr>
<tr>
<td>1</td>
<td>State opinion (11.8%)</td>
<td>State fact (18.2%)</td>
</tr>
<tr>
<td>2</td>
<td>State opinion as fact (7.3%)</td>
<td>Recount (12.7%)</td>
</tr>
<tr>
<td>3</td>
<td>Acknowledge (5.5%)</td>
<td>Share (5.5%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

68
It is obvious that there are considerable differences in the distribution of speech function types in the two types of notes, the notes in Views designated for discussions and in Views designated for social interaction. I found it wiser, therefore, to consider the results of the two groups separately for the ‘discussion’-type notes and the ‘social’-type notes.

The most interesting differences between the NS and NNS groups can be seen in the Salute, Share, State opinion, and State opinion as fact speech functions.

State opinion and state opinion as fact are in the first positions in the discussion views for both NS and NNS. However, if we compare the number of those moves between the two groups, we see that the NSs stated opinion in 11.8% of their moves, and the NNSs did that in 22.8% of theirs: that is, almost twice as much. Further, in the discussion views, NSs stated opinion as fact in 7.3% of their moves, and the NNSs - in 20% of their moves: that is close to three times as much.

NSs saluted or addressed the conference only when they wrote ‘social’ notes, while two NNSs used this Socializing speech function in their ‘discussion’ notes. In this way, NNSs had equal number of Salute functions in the two types of notes, ‘social’ and ‘discussion’. Similar difference can be noticed for the Share speech function. NSs reserved this function for the ‘social’ notes (5.5% in ‘social’ compared to 1.8% in ‘discussion’), and NNSs used it similarly in both (5% in ‘social’ and 3% in ‘discussion’). All in all, 57% of NNSs’ Socializing speech functions were found in ‘discussion’ notes: for the NSs this number was only 13%.

The total number of Recount and State fact speech functions for the NS group (17 and 21: 15.4% and 19.1% respectively), which is much greater than the total number of the same speech functions of the NNS group (5 and 4: 5% and 4% respectively), actually comes from NSs’ contributions to the Introductions View where students were talking about themselves: background, experience, interests. If we look at the results from the Views designated for
discussion. The Recount moves and the State fact moves of the two groups are almost the same: 3 Recount moves in the NS group and 4 in the NNS group; 1 State fact in the NS group and 2 in the NNS group.

4.3.4. Modalization

Modalization was largely employed in this CC. ‘I think...’, ‘I find...’, ‘It seems...’, ‘It can be that...’, ‘To me...’, ‘This may be...’, ‘May I say that...’, ‘I would like to...’, ‘One explanation might be...’ are some of the examples from the data. Modalization was what distinguished the State opinion speech function from State opinion as fact. The statistics for these two functions suggest that NS modulated more than NNSs (13.6% State opinion and 8.1% State opinion as fact in NS data; 22.8% State opinion and 20.8% State opinion as fact in NNS data).

Interpretations of these facts and further consideration of the quantitative results from the discourse analysis are presented in chapter 5 of the thesis.

4.4. CC and academic development

Those who took part in the conference (11 persons) were asked if it was useful for their academic development. Of the 11 interviewed conference participants, one did not think the conference helped him improve his academic skills. This was the participant with the least participation in the conference, a NS who had written one 68-word message and had read 8 messages altogether. Two of the participants said the conference contributed little to the improvement of their academic skills. Six of the 11 thought it considerably helped them to improve their academic skills, and two people reported great positive influence.

All but one participant reported that participation in the conference helped understand or clarify issues related to the course: four of the participants said this happened every time they were in the conference. Ann, the NNS who only read in the conference, said:

“It is beneficial for me at least. Sometimes I think oh, I should look into this. I didn't know this”.

Another NNS stated that she discovered a new domain of learning:

“Actually from this conferencing I learned that I can learn many things from other people”. (Flora, NNS)

One NNS participant considered the writing part of the conference especially beneficial for his academic development:
"[...] because when I write about things I am interested in, I have to think about it, so it's like the thought becomes more polished." (Nick. NNS)

For two of the participants in the conference, academic gain was what motivated them to log on:

"It gives me maybe some ideas or something that I missed in reading. There are, you know, different aspects. So it makes me more aware of what it is all about." (Polly. NNS)

"Having questions about the topic or the issue, having unresolved questions." (Bob), NS.

The accounts of the interviewees suggest that CC was beneficial academically for most participants, NS and NNS alike, but more so for NNSs. As the next section shows, it was also perceived as useful for L2 improvement by all NNSs.

4.5. CC and second/foreign language improvement

All NNSs who participated in the conference acknowledged it was beneficial for their English language improvement. These improvements included vocabulary, grammar, reading and writing skills, as well as sociolinguistic aspects of academic English. However, they also pointed out that they prepared their contributions in advance, and made considerable efforts to 'have the language right'. Expanding one's vocabulary was the most often mentioned L2 gain:

"CC is more beneficial (than face-to-face discussions) for vocabulary learning, because we can see the word. When people speak, we can not catch it, it's just gone. If you are a non-native speaker, it's good for you. And for people like me who are quite careful about expressing ideas." (Nick. NNS)

Second/foreign language improvement was not measured objectively in this study: I believe that at this very high level of English language proficiency, language improvement is more a matter of qualitative rather than quantitative changes.

4.6. Motives for participation in CC

The semi-structured interviews (which were conversational in nature and in manner of interaction between researcher and interviewee) elicited raw data relevant to (among other things) the motives for participation in the conference. Students were asked about the reasons for not participating as well. Here the interview data are presented according to the issues brought up by the interviewees. Researcher's comments are put in braces {}, and three dots in square brackets [...] indicate that some of the text from the raw data is omitted for clarity. Three dots without brackets represent a pause longer than two seconds.

The two main reasons for participation in the conference mentioned by the students were interest in what others had to say and interest in the topics.
For the majority of the students, the first motive they reported was that they wanted to check what other students thought or had to say. Interestingly, only NNSs gave this reason as their first reason for 'going' to the conference. Within this general interest, a finer distinction can be made between those who were interested in others' contributions primarily as a source of ideas and 'food for thought', and those who needed to verify their own views. The first approach is represented by one student:

"The first thing is to know about other students' opinions about the topic, and their perspectives, the way they have read and looked at this matter, so it gives me maybe some ideas or something that I missed in reading. There are, you know, different aspects. So it makes me more aware of what it is all about." (Polly, NNS)

Four of the NNS participants were concerned primarily with their position in the class. They seemed to view the conference as an opportunity to check if they 'measured up'.

"I was quite curious to see what other people think of something, [...] and then compare theirs to mine [...] most of the time I just want to check if my thinking is, is not correct, I mean in an acceptable way." (Ann, NNS)

"Most of the time I read other people's contributions. Whether their concerns are the same as my concerns." (Flora, NNS)

"First of all, I want to know what other people think about the topic that we are reading, or that we have discussed in class." (Nick, NNS)

One native speaker also mentioned his interest in other students' contributions as one of the reasons (reason number three) for logging on:

"Because you just sort of want to see what other people have said and, you know, may trigger some ideas, some suggestions." (Bob, NS)

Three other participants, all native speakers, were motivated primarily by interest in the issues discussed in the course.

"[...] there are always lose ends to tie up and inquire. The other thing is that sometimes you just don't get a chance to contribute [in class]. Giving my two cents worth when I wasn't able to in the class, having second thoughts about something or simply just exploring issues that weren't, just were not addressed." (Scott, NS)

"Having questions about the topic or the issue, having unresolved questions. And also having interest in the topic." (Bob, NS)

"Initial motivation is just interest in the course." (Leo, NS)

The only motive for participation for two students was the social closeness they felt the conference provided:

"Need to exchange, interact..." (Rona, NNS)

"I wanted to see who was looking at my introduction after I created it, and it would also give me the dates when someone looked at it. And later just to see what activity is going on about the current guest speaker that we had." (Ross, NS)

One person also reported he had a social motive for participation, but that was the last motive he mentioned:
"[J]ust you know, becoming connected with the people in the course." (Bob, NS)

One participant was most concerned about his positioning on the student-professor relationship continuum and thought it was important to register activity.

"I was kind of interested to see what some of the professors had said, like professor {name}. I was wondering about what other people did and whether I should participate, just to put my opinion there." (Ted, NS)

For one NNS, the motive for participation in the conference lay in the opportunity for better self-expression. She reported she could express herself better in this environment rather than in face-to-face discussions.

"I better express myself in conferencing. Because there is more anxiety in face-to-face communication. Sometimes you feel oh, it's not quite relevant, maybe I missed something, maybe I'm just repeating something which has been already discussed. There is for me always such an anxiety, you know, sometimes I have questions. but I think 'Oh, maybe I missed that part' and just leave it alone. And there is no time limitations for conferencing." (Polly, NNS)

One NNS said what motivated him were

"thoughts of need for participation" (Ben. NNS).

All in all, the results from the interviews show that the strongest motives for participation in the optional ACC for NNSs were (1) the opportunity to interact with their colleagues and learn from them, and (2) the concern about their relative position in the class in terms of knowledgeability. The NSs were less concerned about their relative position in the class in terms of knowledgeability and did not treat their classmates as knowledge-source. NS demonstrated more strongly motivation directly related to interest in the topics and the discussion itself.

4.7. Hindrances to participation

The biggest setback to participation in the conference, and the most often mentioned reason for not participating at all, was lack of time. All non-participants declared time was the principal hindrance.

"Time. I don't have time to do it. I have so many things that are on the go that unless it's required of me ..." (Caren. NS)

"In the fall was access, but since then it's just been time. If there is spare time I prefer to go and look up extra articles for my thesis or something rather than pursuing some of the topics that have been in the {class}." (Lora. NS)

"The most important thing for me would be time. Another thing that would make me log on is if it was part of the course. A number of times I was thinking of logging on, but I didn't, just because of the time. I don't think it's a matter of a lack of time, as much as it is just other things that have to be done. I spend a lot of time at the computer, any time I sit at the computer is on a task: doing a paper or looking over the internet for something for a paper, things that I really have to produce. So the fact that it doesn't take much time, you know, for me it doesn't take much
time to do something on the internet that is recreational, like go look for guitar music or something that I like to do in my free time. But I still don't do it. Just because I see it as recreational and I think in this case for me right now this would be more recreational, something I would enjoy doing; but right now I've put things that I enjoy doing to the side. (Greg, NS)

"[...] lack of time mainly... since it takes some time to log in to the net. It's not just a simple process. I don't like to go on it at all if I only have a short amount of time to spend on the net." (Lilly, NS)

Not finding the time was a hindrance to greater participation for many of those who did take part in the on-line discussion.

"Time. time is the factor. If I had more, much more time. I would've done much more. But you know, time is limited. That's the biggest factor, that was the only restrictive factor that I felt. The software was very user-friendly, very accessible, yeah." (Bob, NS)

"Time. I wanted to participate more, but I just didn't have the time." (Leo. NS)

In addition to time, other factors that hindered participation were mentioned by the interviewees. Electronic overload was one cause for lack of participation and low participation rate:

"I am around computers all day and I'm kind of tired of them. I'm not too keen on using them when I don't have to." (Ted. NS)

"I have my assistantship, my e-mail. other projects... By the time I've done that, I don't want to do anything more electronically." (Caren. NS)

For others, the feeble discussion in the conference also caused a setback:

"It's simply not finding the time. And if I find the discussion is pointless. Once or twice it seemed that the conversation died before I had the chance to contribute. I mean, you make an assessment if something is alive. I think the problem here was the nature of the course, that there is no one thread." (Scott. NS)

Technical difficulties (access, interface design) and inadequate computer literacy caused some of the problems with participation.

"I had tried many times in a given week, but became so frustrated at the inability to access the site!" (Lilly, NS)

"...And because you have to go to a website....In people's lives there are lots of choices." (Nick, NNS)

"First I was waiting for the icon of the conference to appear on my First Class. I didn't know it has it's own website. Then one of the fellows told me no, you are not going to have an icon for it, it's on the web. and I thought, oh, yes, well maybe one day I'll go in. And I just didn't." (Fred, NS)

Two students shared their dislike for the electronic mode of discussion. They considered it time-consuming and clumsy.

"If somebody said to me 'Take 10 minutes and come sit in this office and talk to me', sure, I don't mind taking the time out of my schedule to do that, because there is more motivation for me. I mean your response to me is immediate. I don't have to come back later and find out how you responded to my question. It really does take more time electronically. And this way we can throw in little personal things, whereas in the conference I certainly wouldn't ask you anything about you. I could, but everyone would know." (Caren. NS)
"Let's say I'm reading what someone said and I'm wondering is this a carefully thought out argument that they have evidence for, or is it just that they had five minutes before supper and if I ask them about it they'd change their mind. [...] If someone says something and I go 'You mean bla-bla-bla?'. and have this look on my face like you know, I'm crazy, and they say 'No, no, no' and then that'll be the end of it, right? Whereas if I sit down and write an e-mail saying 'You said bla-bla-bla, do you really mean bla-bla-bla', then that's pretty serious. They're gonna say 'Oh, this guy doesn't like me.'” (Ted, NS)

Two interviewees mentioned that for them the lack of interest in the discussion topics was an impediment to participation.

"I guess I like the idea of technology, but I haven't been wowed by it. There are two reasons why I didn't use this one. First I was waiting for the icon of the conference to appear on my First Class. [...] and I thought, oh, yes, well maybe one day I'll go in. And I just didn't. It wasn't a conscious effort not to, and I'm on the Internet two or three times a day, I check my e-mail couple of times a day. I'm always on the computer and I have access to the Internet at home. And I just haven't been on. I don't know why even. I guess because I'm not enticed. I wasn't interested. Most of the topics...I liked one at the beginning, but I didn't have the address then, and I liked the one about (mentions a topic), but those were the only two. The other ones I, it wasn't my focus.” (Fred, NS)

"Some of the course topics I was not interested in. I did not feel I have that passion to be in that Forum to talk. I think it depends on the topic which is the focus of that week, if I am interested or not, and sometimes I don't have nothing to say.” (Ann, NNS)

Feedback was very important to those who contributed to the conference, and the lack of acknowledgement hampered further participation in several cases.

"If the conversation is more busy. and if I get feedback. I will be more willing to participate.”
(Polly, NNS)

"It really depends on how much I have invested. It's how what you have to say is accepted in the class. I think if you have a point of view and that point of view is not acknowledged..." (Leo, NS)

"Only a few of us started initially, and that had an effect on my value I thought about it. Because when you had the orientation there were only about 5 or 6 of us, and there should have been a lot more coming. Some of the people who didn't come initially got involved later, but by that time I was not participating like I was originally. So I was hindered by the fact that I didn't think that a lot of people were going to get involved with it.” (Ross, NS)

A few of the students, all of them NNSs, stated that their personal and cultural specifics affected their participation:

"I think my culture and personality stop me from expressing my conflicting ideas. [...] I did not respond to other people's ideas. I just respond to the ideas from the readings." (Nick)

"I myself will not talk about something if I am not sure. Maybe it arises from my being a L2 speaker.” (Flora, NNS)

"But it's my personality probably. I am not that kind of a risk-taking person.” (Ann)

"I do not usually initiate. that's part of my personality.” (Polly)

Almost all participants and non-participants in the conference, NS and NNS alike, talked about the pressures of written communication. Most of them were anxious about writing 'in public'. They all felt they should make special efforts to write academically in such circumstances.

"I am a little shy about stating my opinions and things like that on a Knowledge Forum where everybody else can see, because I am usually used to just writing a paper. I feel like on a CC I've
got to be more academic than what I might have to be in a classroom, where it's just more spontaneous. When I am on the computer I try to polish my ideas more, make them more academic. Definitely, I am concerned about coming across more as an academic when I am on the computer. So therefore I feel a little intimidated because what I'm gonna say is going to be read by everybody and they're gonna have the chance to look at it and re-read it, whereas when you are speaking and listening it's there and then it's gone." (Ross, NS)

"This is not writing to a friend with simple words, this is academic. It shouldn't be too childish, or too naive. It's electronic mini-composition. It is public, because not only one person's going to read your writing. Even if you mention that, you know, you can write whatever you want, I still, I think that if I write I should write pretty well because there are so many people that will read my writing, so ... I don't want to be so stupid looking over there. You know, as a second language learner I still have a lot of accents in my writing I think, I constantly make grammatical mistakes."(Ann, NNS)

"It is not informal as conversation, but writing academically." (Flora, NNS)

"In class I don't think about the consequences of my criticism and I end up alienating people, but when I'm in a conferencing if you are gonna send an e-mail it's gonna take more time, you have to sit down, and then it will be in print afterwards so people can quote you, so it's more intimidating, right? [...] It's in print! You can quote me!" (Ted, NS)

"When I see something in written text, no matter what it's for. I personally feel like it has to be first rate quality, that is formal. Formal and really good. Like I am sort of shooting from the hip here saying whatever comes to my mind, but if you had asked me to type in the answers - say we were doing this over e-mail - my answers would probably be different. ... If I send you an e-mail and look at it later and find that I sent a spelling mistake, I'd think 'Oh, goodness, what must she be thinking {laughs uneasily}." (Caren. NS)

"In my case, because I am not a native speaker. I think it takes more time to look at the language and to reflect on the ideas that I present because I know that lots of people are going to read it so I have to say it's like a way to present myself to the public." (Nick, NNS)

Even the only interviewee who did not feel intimidated by the 'publicness' of the conference considered it risk-taking:

"I guess I don't feel the anxiety because I'm used to publishing things, used to being criticized. used to being praised and it doesn't matter to me. Sure, you are putting yourself on the line, I mean it's all in writing. There is a written record." (Scott, NS)

The same student was the only one to point out another impediment to a better discussion: that the conference needed a moderator, not only a facilitator. He alluded to the poor leadership of the conference as one reason for its failure:

"In a sense you sometimes made the assumption that people would be interested. In order to get people to contribute, you have to have a longer starting piece. Like, a five line I don't think will necessarily get people started. You have to be a leader." (Scott, NS)

Three of the interviewed students thought that the conference was not very successful because it was not part of the course.

"I like the idea. In a way it's too bad that it's not a required part of the course. I'm sure I'm gonna learn from this kind of thing. [...] I would probably think about making it mandatory if I was a teacher. Depending on the context, of course. But anything that's optional, optional things whatever they are, get pushed aside. Optional things at the school, optional things in their personal lives, unfortunately. priorities." (Greg. NS)

"But it would be good if it's compulsory. I have a suggestion: if you make it compulsory in the beginning, people will get hooked, and then they will see it's enjoyable and think 'We can make use of it'. Then they will go on using it for the rest of their studies." (Nick, NNS)
"I suppose having participation in KF count as part of course evaluation would definitely help!"
(Lily, NS)

In conclusion, time was apparently the strongest of the impediments to participation in the conference, but for NNSs it was not so strong as to stop them from participating. Both native and non-native speakers felt the anxiety of writing in the conference, but for the NNSs it was compensated by the opportunity to prepare the content and the form of the contribution. NNSs were much more interested in participating than NSs. In this way, the interview data corroborate the quantitative analyses of participation (Table 4.11): NNSs were more interested in CC than NSs, registered greater participation, but did not contribute as much to the conference in terms of writing.

4.8. Attitude to computer conferencing

Several questions in the Questionnaire and in the interview were designed to elicit data on students’ attitudes and beliefs about CC. Table 4.14 gives a summary of the results from the questionnaire for the two groups (NS and NNS).

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<thead>
<tr>
<th>Questions</th>
<th>Number of NS</th>
<th>Number of NNS</th>
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<tbody>
<tr>
<td>Which do you think allows you to express your ideas better:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which do you think allows you to express your feelings better:</td>
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<table>
<thead>
<tr>
<th>Questions</th>
<th>Number of NS</th>
<th>Number of NNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would you enroll in a course which contains CC?</td>
<td></td>
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</tr>
<tr>
<td>Would you enroll in an on-line distance education course?</td>
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</table>

The results from the questionnaire and the interviews indicate that all students felt comfortable with CC: they all responded positively to the questions "Would you enroll in a course where CC is mandatory?" and "Would you enroll in an on-line (CC) distance education course?". However, they all indicated also that they would do it only if there was no face-to-face version of the course or if it was better for their schedule. This leads to the
conclusion that although the students were not apprehensive about CC, they did not love it either. The most frequently mentioned reason for the preference for the face-to-face course mode was the desire to be immersed in the academic atmosphere. The students felt that CC could not substitute for the real interaction.

More NNSs (4 NNS compared to 1 NS) reported that in CC they could express their ideas better than in face-to-face classrooms. The reason for this preference was clarified in the interviews: in CC they could take their time to think not only about the content of their statements, but also about the form and accuracy of the language.

In reply to the interview question "What do you think about CC in general?", most of students pointed out that they considered it very useful.

Ann (NNS), whose participation was one of the weakest, was confident that
"CC is a convenient way to talk to each other: we won't see each other every day. It is beneficial, for me at least. Sometimes I think oh, I should look into this. I didn't know this. And I knew more about the people after I read their writing."

Flora (NNS) was so enthused about CC, she suggested it to her professor in another class she was taking:
"Actually from this conferencing I learned that I can learn many things from other people, and that's why I am a great user of this second one. this course I am taking with [professor name]. That is why I proposed to him that it is better to make a conference for the class”. (Flora, NNS)
She also noted that "for L2 it can help for reading skills, writing skills."

Another non-native speaker, Polly, participated regularly in the conference. She was the only NNS who had had previous CC experience. Her attitude was very positive.
At first, when we had it (in another course), I was afraid ... I felt anxiety, because of the computers, this technophobia. But then I felt comfortable and I learnt a lot. I mean through other people's opinions and the discussions. And definitely for language improvement. It is definitely beneficial for education, for graduate students. At the beginning, when I started this program, I was afraid to contribute to this sort of discussions, it was very new for me. But now I feel that it is really helpful. I have no anxiety. Maybe in face-to-face I am more anxious, but not in computer conferencing. (Polly, NNS)

The development of Polly’s attitude to CC shows that positive and rewarding CC experience in addition to an open mind can turn CC into a preferred mode of communication: Polly’s answers to both questions about preferred mode for expressing ideas and feelings were in favour of CC.

Ross (NS), a weak participant in the conference, thought it was a good idea too:
"CC has a lot of potential. We only meet once every two weeks. It helps people to keep in touch with each other. We need the opportunity to talk about what we are doing. We are all used to classrooms.
right. CC is new to a lot of people. ... The success of the CC depends on the class meetings also. But I think it's the future. really”. (Ross, NS)

Bob (NS) participated in the conference moderately. He regretted he hadn't had time for more frequent participation and considered CC an enhancement of the course:

“It allows you to put your thoughts together before you 'say' it. And my feelings. ... I was very pleased with it [the opportunity to have cc in the course]. I thought it was an enhancement of the class in this respect that it did bring another dimension to it, it was fun to use, it was different, it also allowed people more time to process their thoughts. To connect, especially because this was a bi-weekly course, we needed that opportunity to be able to connect. And I've had, I have one [cc] in one of my other classes and it is very useful. ... but this one is more elaborate, more detailed. You know, you see how each message relates to each other. And it shows links you know. I think in the long run it will be more beneficial. I wish I'd used it more. It's just time that's the issue, but it certainly is a very interesting application of the course”’. (Bob. NS)

Lora's (NS) participation was limited to 'looking over the shoulder' of another participant in the conference once when he was in the conference. She did not think CC could replace face-to-face education, but had positive comments about CC:

“I think it's great as a complement, an addition to classes. For me learning here, a lot of it is interacting with the people. Although to a certain extent in CC you are interacting with the people, it's not the same, it can never take the place of that. But as a complement, I think it's great. It's a chance for people who are shy in class to speak out. I think it can have a place in any class'”. (Lora, NS)

Not all students had a positive attitude to CC. Two of the NSs (one of them a participant and the other one a non-participant in the conference) were comfortable with the electronic medium. had significant CC experience. but were critical of the capabilities of CC technology and strongly preferred face-to-face communication. Caren (NS) who had the most previous CC experience. commented on the lack of control over the CC discourse and the lack of personal touch in CC.

“I think that CCs can have their place and perhaps should have their place. I don't like them ... I just had them up to here. I actually hate reading. And when I open a message that has like even 3 or 4 K of text I just think 'Ah, do I have to read this'. whereas if the exact same amount of information was something that you told me, I'd be fascinated, I'd sit there and listen. It's just, it's such a different thing. When it's something that's academically relevant to me but not personally, I don't want to do that over e-mail. I'd rather do that in person. I love courses. I love classes. I love sitting there and having people tell me stuff and asking questions and having stuff clarified, because that way I can gain information in a much more personal way. whereas if I sit there and read it's like I already know this, do I have to read this again..' Or 'Is that it? Aren't you gonna tell me more? I have like thousands of questions about this and you only gave me this one sentence?' Whereas in face-to-face I guess I have more control over the kind of information I get” (Caren. NS)

Another student though, who talked in length about a previous disappointing experience with CC, still believed CC could be very beneficial for students.

“I can predict it to be very successful in the future... The optional thing can be very helpful. It offers a potential. I can see myself using it as a teacher, but I can see a lot of work for the teacher. Once the technical things are ironed out, I can see many things that are beneficial”. (Leo. NS)
To sum up, all NNS had a positive attitude to CC and believed it was beneficial for them. Of the NS students, 1/4 reported they do not like CC in principle because it lacks immediacy and 'personal touch'. However, they did not feel any anxiety about the technology. On the contrary, they all felt comfortable with computers and were even more confident than the rest of the class. All of them reported dislike of the medium and commented they much preferred 'real' face-to-face interactions. It is worth mentioning that they were all NSs. Two of these students did not participate in the conference, and the third had very weak participation.

In this chapter I have presented the results of the investigation of graduate students' participation in an optional course-related computer conference. Chapter 5 will offer a discussion of the results and implications of this case study.
Chapter 5
DISCUSSION

This chapter offers an interpretation of the results of the case study of ACC. The findings of the quantitative and qualitative data analyses are discussed in light of the Activity theory. Graduate students' participation in educational ACC is interpreted as determined by the components and the dynamics of the activity they engaged in.

5.1. The Individuals

It has been reported in the literature that computer conferencing enhances learning by providing convenience, time and space independence, easy access to larger learning communities, opportunities for equal participation, for reflection, discussion, knowledge-building, collaborative problem solving, for language learning and development (see the literature review in Chapter 1). Writers who have discussed cognition and CC theoretically, have pointed out that CC can be beneficial for higher order learning (Bereiter & Scardamalia, 1991). Lemke (1996) argues that CMC is the direct way into Academe.

Based on theoretical speculations and empirical studies of the benefits of CC for education, CC discussions should be readily adopted by students oriented to higher-order learning. Graduate-level education presupposes higher-order learning. University calendars and bulletins insist that students in graduate programs should be committed to advanced studies of significant problems and issues and develop skills for independent learning. The participants in this study were graduate students in a major university. They were students expected to be driven by interest in ideas, to be eager to discuss and pursue ideas, to bring their own experience to the academic community and to build on that community. However, the results of this study show that not all of them (or rather only a few of them) approached the educational situation with such a mindset.

The results of the investigation of students' participation in this ACC suggest that these graduate students were not very willing to take advantage of the discussion opportunities provided by the optional course-related CC. The moderate number of students who participated in CC and the small number of contributions to the conference — a total of 23 student messages over the period of three months, 15 of these messages in the 'discussion' views1 — seem to indicate low interest in the CC discussion. It was important to investigate in

14 excluding the participation of the researcher.
in greater detail why participation was low, why some participated in the CC and others did not. Further, it was necessary to find out who participated and what the characteristics of that participation were. Finally, the differences between native and non-native speakers of the language of the conference had to be analyzed.

Earlier studies have found that technology-related anxiety can be a powerful impediment to students' use of computers (Badagliacco, 1990; Bear et al., 1987; Simons et al., 1987). Although according to the results of the investigation of their background the students in this study were not expert computer users and did not have extensive experience with CC, they did not report or indicate in any way technology-related anxiety. Therefore, non-participation can not be explained by fear of technology. The dislike for the CC medium that some students reported was not associated with technology anxiety, but with the lack of immediacy in the CC interactions, lack of control over the interaction, dislike for the (perceived) formality of the interaction, etc. Such attitude has been reported by a small percentage of the participants in other studies of CC (Austin, 1997; Hartman et al., 1991; Kern 1995; Ruberg et al., 1996; Sullivan & Pratt, 1996).

The results of the descriptive statistical analysis of the students' background and the answers to interview questions indicate that the participants in the study had little to no experience with CC even though they were all users of computers and e-mail. They had not yet developed skills to engage in CC without special efforts. In the terminology of the Activity theory, most of them had to perform actions rather than operations in managing the software and the logistics of an on-line discussion. For example, logging in required the special effort of remembering the URL for the Knowledge Forum. For novice users of CC software, responding to someone's contribution — an automatized operation in face-to-face communication — is an act that involves planning and going through a number of technical manipulations. In very early stages of computer literacy, it can not only be carried out as an action instead of operation, but can raise to the hierarchical level of an activity in its own right. Needless to say, this slows down participation in CC. Burges (1993) points out that learning the software for CC is a factor in participation. Another problem arises in the conference when participants do not have the specific communication skills of responding promptly to peers' contributions. While in face-to-face communication a speaker can pick up the reactions of the listeners by monitoring their facial expression, glance, nods and other gestures, in CC the only sign of co-participation is the actual written response. Austin (1997) stresses how important prompt responses are in CC. In his study, the participants in CC reported that not receiving a response right away led to disappointment and even hard feelings. That is why the status of 'responding' - operation, action, or activity - has a strong bearing on participation in CC.
Like any technical novelty, the Knowledge Forum demanded time for getting used to. Not many students were willing to put that time into an activity that was not required by the instructors. In this way, I would suggest, the actions that with more practice could have been automatized into operations and consequently made the activity more easily performed, stayed at the level of actions, demanding active attention. Activity theory emphasizes that if actions turn into operations, the subjects become more efficient in the activity because they have disengaged their mind from the lower order manipulations. I conjecture that the novice CC status of the majority of the participants in the course influenced negatively their participation in that respect.

Studies of CMC have demonstrated that the success of CC depends on the moderator or facilitator of the electronic conference (Austin, 1997; Ruberg et al., 1996). Following Berge (1995), Weisenberg and Hutton (1996) emphasize that good moderation is a prerequisite for successful CC. In this CC, I adopted the role of a facilitator rather than a moderator. My decision not to moderate the conference was based on my understanding that an optional, student initiated CC should be as free-flowing as possible and should allow the group to select its 'natural' leaders. It was the participating professors (guest-speakers) who adopted the leadership role, each during the time of his/her participation. In the interviews, only one student commented on the lack of a moderator as a weakness in the conference. However, my own (subjective) assessment is that this lack affected participation in a negative way.

The fact that this CC was optional and not integrated into the course work also had a bearing on participation. Several students noted in their interview responses that if CC were part of the course requirements, they would have participated more. Some of the non-participants also indicated that they did not participate because CC was not required and therefore not on their priority list. It is natural that only some students would participate in an optional CC.

Warschauer (1996 b) and Ruberg et al. (1996) claim that the integration of CC in the course work is crucial for the 'success' of CC. Warschauer's study (ibid.) showed that "the class that had the lowest mean motivation score (3.249, significantly lower than 10 of the other 11 classes) was the class whose computer work was most peripheral to the goals and structure of the course: the students were encouraged to take volunteer computer work shops, and all of them had individual experience using email and word processing, yet computer work was not mandatory for completion of class assignments. In contrast, the two courses with the highest mean motivation scores (3.85 and 3.84) were classes where computer work was absolutely
integral to the class” (p. 5). The more important question, therefore, is what made some students participate in this optional course-related conference which did not have a bearing on the course grade.

I would suggest that participation in the Knowledge Forum was influenced by the students’ attitudes to CC, by their beliefs about cognition and education, and by the value they placed on the social construction of knowledge.

Participants’ attitudes to CC, a feature of the subject component in the activity, were complicated. On one hand, students realized CC was a potentially useful innovation. These results corroborate findings from other studies (Chun, 1994; Ruberge et al., 1996; Warschauer, 1996a, b). On the other hand, the participants in this CC experienced anxiety related to the ‘publicness’ of their actions. This anxiety impeded participation: it made people cautious about what they were saying and how they were saying it; ultimately, it hampered participation in CC. Most of the participants viewed CC as a place where one exposes himself/herself, baring one’s potential deficiencies. CC was perceived as putting oneself on the line. It is not surprising that with this attitude people participated as little as possible, even reducing their participation to non-participation. Such apprehension has been reported only in a small percent of the participants in other studies (Austin, 1997); most studies of participation in CC have found increased ease of communication, openness, feelings of freedom to express controversial ideas, lack of concern for ‘good writing’, lack of apprehension (Chan, 1994; Harasim, 1987; Kern, 1995; Ruberge et al., 1996; Sullivan & Pratt, 1996; Warschauer, 1996a, b). One possible explanation of the large number of people who felt writing anxiety in this conference could be that the participants in this CC were concerned about their status as knowledgeable members of the academic community. Another possibility is that they did not perceive the conferencing group as a supportive community. I will develop these considerations further in 5.2.

One cause of differences in CC participation in this study, I propose, was related to the different understandings of CC by the individual participants. For some people, CC was a community event. These were people who valued community knowledge-building as a way of cognitive development. For other people, CC was mainly an opportunity for self-realization. My interpretation is that these attitudes are related to students’ beliefs about education. Those students whose beliefs about education were shaped by placing a high value on community — community as a resource, community as a regulator, or community as a verifier — were more interested in the CC discussions, participated more, and had more positive attitudes to CC. Such beliefs were evident in students’ reports on what they expected from CC: interaction with
peers and professors. Those who viewed education as an individual endeavor, who commented that they would rather read an article or write their paper than ‘chat’ on-line, had low participation or did not participate at all, and had little or no enthusiasm for CC. I have to note, though, that in cases where students were particularly fond of the physical dimensions of real-life human interaction with its immediacy of responses and subtlety of the physical cues in communication, non-participation in the CC appears to have been determined by the attitude to the medium rather than anything else.

Many of the students saw education as knowledge acquisition resulting from intake of expert information; that is, they believed in the conduit model of education. Such students sought primarily interaction with the participating professors. This was evident in their answers to the interview questions about their participation/non-participation in the conference. They were interested in their peers’ ideas, but that interest was secondary to the interest in gaining information relevant to the course requirements. Further, it is my impression that these students were the ones who spoke the most about the lack of time when asked about the hindrances to participating in the CC. They seemed to place their priorities either in getting the course work done, on their jobs, or outside of academe. I would say they did not see their role of graduate students as people who are perpetually engaged in discussions about ideas, but viewed this stage of their education as a means to achieve other goals.

The goals of the subjects, an important component of an activity, although individually different, were mainly centered on acquiring knowledge and ensuring status in the academic community. My insights about the goals of the participants are based on the results of the discourse analysis of the conference texts and on the answers to the interview questions about participation/non-participation in the conference (What made you log on? What hindered your participation?). The interviewees commented they wanted to ‘see’ what others were thinking about the readings, what the professors were saying. However, the discourse analysis showed that the ‘seeing’ did not usually result in ‘reacting’. Reacting speech functions were rare in the text of the Knowledge Forum. This leads to the interpretation that the ‘seeing’ served to evaluate one’s own position within the community (‘how smart and knowledgeable I am in comparison to others’), or to gain knowledge. The findings of the discourse analysis, that the Promoting moves (especially State opinion and State opinion as fact) significantly outnumbered the Reacting moves, suggest that the priority of the participants was in building up status by demonstrating knowledgeability, intelligence, originality. In contributing to the Forum, they most often Promoted their ideas, stating opinion and stating opinion as fact. If the students wanted in the first place to establish and maintain a position of knowledgeable members of academe, any situation that could endanger the achievement of these goals was
likely to be avoided. Non-participation in the Knowledge Forum was one way of avoiding exposure to others' potentially evaluative scrutiny. Another way was to minimize one's participation. Minimal participation both secured the claim for membership in academe, and minimized exposure to criticism.

The overwhelming number of Promoting moves in the text of the conference shows that the participants in the conference were highly interested in creating images of thinkers, and claiming strong positions as academics. However, the small number of Prove moves - with Refer to personal experience moves outnumbering the Refer to authority moves - suggests that CC was not seen as highly or strictly academic. In academic writing, formal reference to authority is mandatory and is considered a sign of knowledgeability of the person and credibility of the claims. The argumentative strategies in this CC were mostly limited to Statements of opinion and Statements of opinion as fact. Statements dominated the CC discourse and created a feeling of showcasing of self. It is interesting to note that the statements of opinion were as many as the statements of opinion presented as a fact. This behaviour was exhibited more often by non-native speakers of English in comparison with the native speakers. On one hand, presenting opinion as fact instead of presenting it as personal opinion suggests assertiveness; on the other hand, though, it may result from language proficiency and communicative competence issues. A study on native and non-native speakers’ hedging (Yates, 1999) lends support to the second consideration.

5.2. The activities

In the framework of Activity theory, the goals and motives of the subjects determine what the activity is in which they are engaged. Taking into consideration the goals and motives of the students in this case study, I suggest that there were several activities in which students engaged while participating in the conference.

One was the activity of 'positioning in the knowledge community'. The object of the activity in this case was status. The activity involved actions like checking how one was positioned in relation to others in terms of expertise and influence; promoting ideas which claimed originality and understanding of the subject area; as well as participating with contributions that were thought through, revised and proofread. Promoting ideas was the most frequent speech function class in the conference. My interpretation of the use of Promoting ideas speech functions is that they serve to demonstrate knowledgeability and thus to claim a membership in the academic community. Judging by the number of the Promoting ideas function, the participants in the conference most often engaged in a status-building activity. An interesting pattern was evident in terms of the dynamic of Reacting and Promoting moves: almost all Reacting moves – as rare as
they were - were followed by a series of Promoting moves. This indicates that for the participants in the conference, acknowledgement of others' ideas was a prelude to self-promotion. Another indication of the priority of knowledgeability and the positioning activity is that the Inquiring moves were only moderately represented in this conference. This tendency suggests that participants did not want to be perceived as incompetent or dependent on others. The purpose of the existing Inquiring moves — Open questions about opinion — was to elicit others' opinion while avoiding the typically 'student's', dependent behaviour of asking for facts. Fears about possible intellectual inequality were high, and this is revealed in the careful disguise of Questions about facts as Questions about opinion. Participants tried to avoid positioning themselves as needy, and made efforts to look interested in abstract ideas rather than asking for information.

I interpret the Socializing moves (Salute, Share and Thank) as realizing a community-building function. Such speech actions were infrequent in the data (15.84% of NNS and 13.63% of NS moves). The small numbers suggest that the participants did not engage often in a community-building activity. For some, though, that was the most important activity in the conference. This was evident from their answers to the interview questions about their motives for participation. In fact, a few participants were responsible for most of the Socializing moves in the conference, and their interview responses suggested they were interested in community-building.

The moves which promoted ideas served to position the contributors as knowledgeable members of the academic community. Another position in the conference was the 'student' position. Some students placed themselves in this position when they interacted with the participating professors through the Question-about-fact inquiring moves. These were moves assigning the potential professor-responder a role of 'the primary knower' (Berry, 1982). Such moves, though, were rare. I suggest they realized the activity of knowledge-gaining. The object of that activity was more or less factual information. Questions seeking factual information were the questions most often asked of professors (as opposed to opinion questions asked of peers). However, the participants in the conference were careful to balance the knowledge-gaining against the positioning activity: most questions were asked through modulated declaratives or interrogatives which were to indicate that the person asking did not need the answer, but was just academically curious. At the same time, the questions were accompanied by Promoting discourse actions: summarizing, stating opinion or fact, etc. This suggests that in fact the participants in the conference did not view knowledge-gaining as an activity that created the status they sought.

The strongest motives for participation (for those who did participate) lay in securing a strong position in the knowledge community of the class and in knowledge-gaining. However,
there were some participants motivated by interest in the interaction with the community and in knowledge-building. Knowledge-building was another activity in this CC. Here I make a distinction between knowledge-gaining and knowledge-building. In knowledge-gaining, the subject adopts a consumer role; s/he does not see her/himself as a contributor and creator of knowledge. Although in both knowledge-gaining and knowledge-building the object of the activity has to do with knowledge, in the first case it is knowledge-consumption and in the second – knowledge-creation. The goals of the subjects engaged in knowledge-building in CC were different: active co-construction of knowledge. The strongest indicator of this activity were the Responding moves. Some participants who viewed CC as a community endeavor and their own role as participants in academic knowledge-building, engaged in Responding discourse moves, agreeing or disagreeing with other participants, developing others' ideas. It is interesting to note that the Knowledge Forum software was developed exactly to address knowledge-building in education. In constructivism, knowledge-building is considered one of the most superior and most desirable cognitive activities. In this conference, though, only a few indications of such an activity could be found. The Responding moves of the participants in the Knowledge Forum were 11.53% of all their moves, with a much stronger representation of NSs (14.54% of their total moves. as compared to NNSs' 7.92%). It might be that NNSs were too concerned with the positioning activity to engage in knowledge-building.

5.3. The Community

Many authors have pointed out that cognition is socially constructed. Vygotsky (1978) showed that reflective thought is in fact internalized social conversation. Wells (1994) argues that learning happens within communities of inquiry. He highlights the importance of the presence of certain community characteristics for successful development of the activity of writing: a community within which the writing plays a significant role, and the help of that community in providing support and guidance. Tracy (1997) insists that problems and tensions in academic settings are minimized when an academic group makes an effort to develop an intellectual community. Dörnyei and Malderez (1997) and Clément, Dörnyei & Noels (1994) point to the importance of group cohesion for within group cooperation and learning. Clément

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15 Group cohesion is studied under "different guises" (Levine & Moreland, 1990): "solidarity", "morale", "climate", "sense of community". (p. 603) Levine and Moreland list four groups of methods for measuring cohesion: observation of non-verbal behaviour of group members; recording their verbal behaviour; asking group members to evaluate one another and then aggregating the responses to produce a single index of cohesion; and asking people to describe their personal feeling about the group and its members. Green (1989) assessed group cohesion by means of nine bipolar adjective pairs. These nine items provide a measure of "within-group harmony and interpersonal attraction" (p. 75) equated with group cohesion. Each group member was asked to "indicate the extent to which his or her fellow group members were cooperative/uncooperative, quarrelsome/congenial, and so on" (p. 75). In their study of motivation, self-confidence and group cohesion in the foreign language classroom, Clement, Dörnyei & Noels (1994) used items like "I think that some people in this group feel left out" and "I am dissatisfied with my
et al. found that group cohesion was associated with a positive evaluation of the learning environment. "thus forming a broader 'perceived classroom situation' cluster" (p. 442). Levine and Moreland (1990) claim that "members of cohesive groups are more likely than others to participate actively in conversation" and "more likely than others to participate in group activities" (p.603). Evans and Dion (1991) undertook a meta-analysis of studies addressing the relationship between group cohesion and group performance. They confirmed that there is a significant positive relationship between the two variables, indicating that cohesive groups or communities tend to be more productive than non-cohesive groups.

In contemporary Activity theory, the community is considered not only a learning environment, but a component of the activity (Engeström, 1996; Kuutti, 1996). Kuutti defines the community as "those who share the object" (p. 27). In my interpretation of the role of community in activity, I will adopt Kuutti’s definition and will consider a group of individuals to be a community if they are sharing the same object of activity. In this case, a community is not void of hierarchy and members can have equal or unequal positions in terms of status.

In light of the importance of the community in human activity, we can understand why the students did not participate very actively in this CC. The results from the qualitative analysis of the questionnaire, interviews and discourse data suggest that the participants in the course and the participants in the conference did not consider themselves part of a community. They did not perceive the group of potential or actual participants in the Knowledge Forum as a community, but as a group of strangers, acquaintances, competitors, co-workers.

As Tracy points out, in a community, people feel comfortable (Tracy, 1997, p.134). Most participants in this study reported that they did not feel comfortable with the group; on the contrary, they felt anxious, wary not to embarrass themselves. Moreover, the participants in this study reported that they felt a pressure to be perfect, fluent in both their language production and in the content of their contributions. They did not feel comfortable with the thought that they might make a mistake. In this group, a mistake was perceived as a failure. Interviewees did not feel the conference was a safe place where they could take risks; many of them thought it was a competition venue. That is why they were so concerned about 'academic writing', about 'coming across more as an academic'. This attitude is opposite to what Tracy suggests to be characteristic of an intellectual community:

> When a respectful group climate has been established, participants will be the least fearful that what they say will be taken wrong. Participants can criticize another's idea strongly without worry that the other will see them as personally hostile. At the same time, in a community, participants will be more willing to risk saying

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group” (p. 427) to measure perceived group cohesion. Their questionnaire contained eight items, three positively and five negatively worded.
something that could reflect negatively on the self. When people feel appreciated and respected by others, they are considerably less threatened by the knowledge that they have uttered something stupid on a particular occasion.

(Tracy 1997, p. 134)

The results of the interviews conducted in my study suggest that the written electronic environment amplified the usual anxiety related to public discussions noted in other studies (Tracy, 1997). These results are opposite to the findings in Chun (1994), Harasim (1987), Kern (1995), Pfaffenberger (1986), Warschauer (1996a, b). The written record of what one said was perceived as potentially threatening the status of the student in the knowledge community. Although no one mentioned specifically this pressure as a reason for not participating, all students talked about it at some point of the interview. Again, they did not feel that the group of participants would tolerate imperfection. or would have a friendly, encouraging attitude (which would be typical of a community).

Tracy points out that an intellectual community exists when a group shares a commitment to a set of issues and "respects and supports each member" (p. 134). This characteristic of a community, recognition and respect, demonstrated in 'gestures' of support and feedback. was also lacking according to participants' accounts. Without feedback, they did not feel there was much meaning in CC. In CC, where the only way of knowing others' reactions to one's contribution is written feedback in the conference, the lack of response or feedback is perceived as indicative of disrespect. The importance of feedback in CC is underlined in many studies of CMC. Feenberg (1997) writes:

[A] response - any response - is generally interpreted as a success while silence means failure. Additionally, the sender of a message needs to know not only that it was received, but how it was received. It is disturbing to do without nods of the head, smiles, glances, tacit signs which in everyday conversation often take the place of words. (p. 23)

The participants in this conference mentioned the lack of feedback and acknowledgement as one of the reasons for withdrawal from participation.

Disagreeing and Discrediting Reacting moves were rare in the students' data from this conference. Although intellectual discussion is about testing ideas (Tracy, 1997), the student participants did not use the conference to challenge others' ideas. This may be perceived as willingness to create an atmosphere of tolerance and comfort in the discourse community. However, I think it should be interpreted as a weakness. A slightly more challenging atmosphere, expressed in more disagreement, might have created more opportunities for knowledge-building in the conference. Some comments on the importance of challenging moves in casual conversation
(Eggins. 1994: Eggins and Slade. 1996) lend support for an interpretation that the lack of challenge might be one of the reasons for the inactivity in the conference.

In conclusion, the discussion in this CC cannot be considered an intellectual discussion if we apply Tracy’s (1997) definition: intellectual discussion is an activity where “ideas are being advanced, tested and criticized, intellectual community is being maintained, and at the same time each party is implicitly supporting self’s and other’s face concerns to be intellectually able” (p.35). Indeed, ideas were advanced and participants were concerned about their position in the community of intellectuals. However, the participants were not critical of own or others’ ideas and they did not make any special effort to build up the community. Not stepping on others’ toes does not mean support or community building. Testing of ideas was also rare in this conference. In this case, computer conferencing was more like a discussion on academic topics rather than an intellectual discussion.

The importance of community in CC was clearly demonstrated in this study. The value of the conferencing group was different for different participants. While for some the community was the focus of their interest. for others the conferencing group was a context of self-realization. The first ones felt discouraged and withdrew from participation because they saw no point in taking part in this non-communal enterprise. The perceived lack of community in this case impeded participation in the conference. The second ones participated only to the degree that would satisfy their self-realization goals.

5.4. Differences between native and non-native speakers’ participation

NNSs’ participation in CC differed from NSs’ in two ways: NNSs participated more readily in the conference. were more interested in the discussion part of the Forum and less in the socializing. and were more concerned about their status in the academic community than the NSs.

All NNSs took part in CC. while only less than half of the NSs ventured in the Knowledge Forum (Table 4.4). These results corroborate the findings of Grabowski et all.’s (1990) survey. where the percentage of international college students’ use of electronic mail was higher than the nationals’: 67% and 54% respectively. In this case study I found that not only the quantity of participation. but also the patterns of participation differed considerably between the NS and the NNS groups. Although the two groups wrote almost equal number of messages (Table 4.8). NNSs read much more than NSs: 52.92% of the posted messages on the average. against an average of 34.63% for the NSs (Table 4.11). Furthermore, the NNSs’
group produced many more speech functions in the actual CC discussion: 89 compared to NSs' 54; or 88% of the group total for the NNSs and 49% of the group total for the NSs (Table 4.12). The greater participation in CC of the NNSs, and the much greater participation in the CC discussion suggest that NNSs found CC more beneficial than did NSs. The qualitative analysis of the interview data leads to the identification of a few factors that might have caused the differences in participation between native and non-native speakers of English.

NNSs saw the conferencing group as providing a norm-reference. The interview data indicate that, uncertain of their status in the new cultural environment, NNSs were eager to check if they measured up to the rest of the class. They believed that they needed to 'align' with the rest of the knowledge community. The discourse analysis also suggests that NNSs were concerned with status and positioning more than with community-building or knowledge-building: they engaged in Promoting ideas moves much more than in Socializing moves or Responding moves: 72 Promoting moves compared to 16 Socializing moves and 8 Responding moves, a ratio of 9:2:1 (Table 4.12). For the NS group, this ratio was roughly 5:1:1 (75, 15, and 16 moves respectively), suggesting a slightly more balanced distribution between status-building on the one hand and community-building and knowledge-building on the other. Also, based on the discourse analysis, NNSs devoted twice as much effort to socializing than to knowledge-building (Socializing to Responding moves 2:1), while NSs were equally concerned with the two (Socializing to Responding moves 1:1).

NNSs' predominant concern with status and positioning in the knowledge community was demonstrated also in the distribution of their contributions between the 'social' and the 'discussion' views. Of their discourse moves, 88.1% were found in the discussion notes, and 11.9% in the social notes (Table 4.13). NSs' interest was equally distributed between the two: 49.1% in the discussion and 50.9% in the social notes.

NNSs felt ACC gave them opportunities to express their ideas better than in the face-to-face classroom situation (Table 4.16 and interview data in 4.8). In the face-to-face interactions in the classroom, NNSs reported, it was more difficult for them to follow the discussion, to be certain they understood the content of others' utterances correctly, to express their ideas in the right form and to speak with confidence. In CC, NNSs were able to say what they wanted to say because they could take their time to prepare their contributions. In this way, they compensated for the inadequate classroom participation. It seems that was the main reason why they were more willing to put time and effort into the optional CC - something NSs were not eager to do.
The NNSs in this study had high levels of second language proficiency. They were definitely concerned with the form of their output, and insisted on its accuracy. For them getting the meaning across was not successful unless that meaning was put in adequate and accurate form. In this case, CC provided opportunities for polishing the form as well as the content of their contribution.

Although this CC was not busy at all, NNSs reported their language development benefited from it. They noted that the participation in the Knowledge Forum contributed to the improvement of their writing, enriched their vocabulary, and enhanced their communicative competence. Most NNSs pointed out they were sure the benefit would be much greater had the conference been more busy. It is interesting to mention that some NSs of English who had had CC experience in other (foreign) languages commented on the positive results of those conferences on their target language development. They, however, emphasize that in comparison with computer conferencing in their first language (English), CC in a foreign language was much more difficult and time consuming. In light of these comments, NNSs’ (more) active participation in CC is an indication of the perceived benefit they attribute to this form of academic discussion.

The optional character of this CC was one of the reasons for low overall student participation. However, the lack of formative educational conditions where participation is shaped by requirements. allowed us to see the 'natural' differences in native and non-native speakers' participation in ACC. I believe that is one of the important contributions of this study.

5.5. Summary of the discussion

This study of graduate students' participation in optional course-related ACC addressed several questions:

1. What is the amount of graduate students' participation in an optional course-related asynchronous computer conference?
2. How does participation relate to the students’ background?
3. What beliefs and values influence students' participation in optional educational ACC? What are the students' motives for participation and reasons for non-participation?
4. Is participation different between native speakers and non-native speakers of English? If yes, how?
5. Do non-native speakers perceive computer conferencing as beneficial for their language development? If yes, in what ways?
Graduate students' participation in this optional course-related ACC was moderate, with 63% of the students participating and an average of less than 2 student messages per week over a period of three months. Participation was not influenced by (self-assessed) computer skills, typing speed, computer use, Internet use, e-mail experience, or ACC experience.

The reasons for participating in the optional ACC reported by the students ranged from interest in the issues discussed in the course, interest in knowledge-building and knowledge-gaining, to concern for own position in the knowledge community and positioning on the student-professor relationship continuum. Lack of time, lack of interest in some topics, and lack of recognition or feedback on one's contributions hindered participation in the conference. Non-participation was due to lack of time, lack of interest in CC, and to the fact that the conference was not a required part of the course.

In this thesis, the results of graduate students' participation in the optional course-related CC were analyzed from a sociocultural point of view. This analyses conceptualized participation and non-participation in the conference as influenced by students' goals, motives, social beliefs, value systems and attitudes. These factors determined the activities in which the participants in the CC engaged. The activities in which the participants in this ACC engaged were status-building, positioning, knowledge-gaining, knowledge-building, and rarely community-building. Participation in CC was influenced in part by students' attitudes to CC, perceived benefit of ACC, beliefs about cognition and education, by the value they placed on the role of community, and also by students' image of the conferencing group. Positive attitude to CC was not enough to elicit participation, and negative attitude did not prevent one student from participating. Perceived benefits of ACC, both cognitive and social, seemed to be associated with increased participation. The belief that cognition is socially constructed and a greater value placed on community were related to the adoption of ACC. The perceived lack of community was one of the reasons for low participation rates. These results show that CC is not merely an exchange of ideas. It is social interaction, identity negotiation, and socially realized meaning making. In order to become knowledge-building, CC has to go hand in hand with community-building.

Participation in this ACC was different between native and non-native speakers of English. All NNSs took part in the Knowledge Forum, while only 42% of the NSs were involved. The quantity of written participation of NNSs was slightly less than that of the NSs. However, NNSs read much more than NSs. Further, NNSs participated much more than NSs in the parts of the conference devoted to intellectual discussion, and much less in the parts set
aside for socializing. On the other hand, NNSs concerned themselves with positioning in the knowledge community and status-building more than did NSs. NNSs were also more interested than NSs in their peers' contributions, but at the same time were more assertive in promoting their own ideas. The perceived cognitive benefit of CC was greater for NNSs than for NSs, and that was one of the reasons for their greater participation in the conference in comparison with the NSs. Moreover, the majority of NNSs reported they could express their ideas better in the ACC rather than in the face-to-face interactions in the classroom, while only one of the NSs preferred CC in that respect. Furthermore, NNSs felt that ACC was beneficial for their L2 development in terms of vocabulary, grammar, writing skills, and the sociolinguistic aspects of academic English. All this shows that ACC put non-native speakers in a more favourable position in the academic community by allowing them to compensate for inadequate participation in the face-to-face activities, to demonstrate their cognitive potential, and to evaluate more accurately their position in the knowledge community. ACC also facilitated NNSs' L2 improvement.

5.7. Implications

This case study was concerned with graduate students' participation in optional course-related asynchronous computer conferencing. It focused on a comparison of native and non-native speakers' participation in the framework of Activity theory.

The findings of the study indicate that graduate students are not very willing to spend time on optional course-related CC discussions. There were several reasons for that unwillingness. but here I would like to emphasize one that relates directly to teaching. Students' belief in the educational potential of CC and their comments that they would gladly participate in CC discussions if those were part of course requirements suggest that if CC is used as an add-on to a regular course or program of education, it will most likely be sluggish rather than lively. It is, therefore, important to emphasize that CC discussions are contingent not only on technology, but on the pedagogical context too. Educators should not expect that the use of CC will automatically elicit participation similar to the participation in contexts where CC is required. Obviously, the availability of the technology and the opportunities it affords do not ensure the use of those capabilities. Even at the graduate level, where students are supposed to be independent learners, enthusiastic about intellectual discussions and expected to seize every opportunity to engage in conversation about ideas, optional ACC discussions will be embraced only by some. Studies of participation in structured educational CC have demonstrated how the potential of the technology can be transformed into kinetic activity. However, such activity does not result from the application of the technology alone, but from
the combination of educational conditions and technology. The low participation in this optional, non-moderated ACC illustrates once again the importance of formal educational leadership.

This study suggests that if educators want to have their students engage in CC discussions, they have to make adjustments to their course requirements and incorporate CC in the requirements and the timeframe of the course. Students’ time is a finite entity, and can not be stretched beyond certain limits even for the sake of good impression or intellectual discussion. Weisenberg and Hutton (1996) have pointed out that educational CC requires an extra amount of time from both instructors and students. My case study confirms those findings.

Another consideration following from the findings of this study is that reduced writing anxiety reported in many studies of CC should not be expected in every setting where CC is used. In this study, participants reported writing anxiety related to the ‘publicness’ of the medium. In fact, there are reports suggesting such anxiety in other studies too (Austin, 1997; Weisenberg and Hutton, 1996). However, they did not show writing apprehension to be great. I have demonstrated that in this study, the anxiety was closely associated with the configuration of the conferencing group. It is necessary to stress that if the conferencing group is not perceived as a supportive community, people can be apprehensive about writing and about participating. To ensure active participation, educators should make special efforts to promote community-building in CC.

The results of the study demonstrated that in terms of quantity, non-native speakers participated more than native speakers. On one hand, ACC gave them more opportunities to assess their own position in the knowledge community; on the other hand, the majority of them felt they could express their ideas more adequately in CC rather than in the face-to-face classroom context (Table 4.16). These results demonstrate that ACC can be beneficial for non-native speakers who have problems with oral language production. Non-native speakers may find it more fulfilling to take courses incorporating ACC, where they can demonstrate their intellectual potential more fully than in face-to-face courses. At the same time, CC interactions may influence non-native speakers’ writing skills and enhance their vocabulary and communicative competence. Another benefit of CC for non-native speakers also has to be mentioned: in CC it is obviously easier for non-native speakers to follow the discussion and to weigh the merits of their peers’ contributions. In face-to-face discussions, non-native speakers reported, one may be left with uncertainty regarding others’ propositions. Sometimes non-native speakers are not sure if another’s utterance does not make sense to them because of their
own language problems or because there was a problem with the utterance itself. CC allows participants to revisit others’ contributions and assess more accurately their merits. In this way, non-native speakers can evaluate better their relevant status in the knowledge community. Although this positioning activity is certainly not a highly desirable cognitive activity, it may help non-native speakers feel more confident and be more active in the long run.

The issues of non-native speakers’ participation in educational ACC have been somewhat neglected by researchers. On one hand, in most studies of the effects of technology in education there is no mention of non-native speakers. On the other hand, in the area of second language education and applied linguistics there are many studies of second language learning and CC and none (to my knowledge) of non-native speakers’ participation in regular educational ACC. There are a number of issues regarding non-native speakers’ participation in educational ACC, though, that need to be considered: what are the educational contexts which afford optimal participation of non-native speakers, what tasks and methods provide best results, what CC strategies lead to successful participation of NNSs, what activities best serve L2 language development, and so on. I hope that these important issues will soon spark researchers’ interest.


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REQUEST FOR CONSENT

Dear colleague,

I am writing to ask you for permission to use your contributions to the Knowledge Forum, http://online.oise.utoronto.ca/webkf/..., in my study "Participation in Asynchronous Educational Computer Conferencing". The purpose of this MA thesis research is to develop an understanding of how graduate students use computer conferencing. In my study, I will examine the ways in which students participate in the on-line forum, and will discuss social and pedagogical implications of this technology in graduate students' education. To gain a deeper understanding of the effects of educational computer conferencing, I would also like to administer a questionnaire asking you to provide background information and share your impressions of this particular computer conferencing experience.

The data you provide will be kept strictly confidential. Your identity will be protected by use of a pseudonym in documenting and reporting on the research. Drs. [professors’ names] have assured me that participation in the study or your refusal to do so will not affect your course grades. You may withdraw your participation at any time.

I would like to use this opportunity to assure you that I will gladly share with you the results of the research, even at an earlier, intermediate stage of its completion. Your critical input will be greatly appreciated. I also hope you will benefit from this opportunity to gain a better understanding of the potential of educational computer conferencing.

Thank you.

Irena Ganeva, MA candidate
iganeva@oise.utoronto.ca

CONSENT FORM

I, ________________________________, agree ___/ disagree ___ to participate in the research for the MA thesis "Participation in Asynchronous Educational Computer Conferencing: A Case Study" by Irena Ganeva.

Signature: ___________________________ Date: ___________________________

Please tear off and submit this Consent Form to Irena Ganeva and keep a copy of the Request Letter for your personal records.
The E-mail message which introduced the idea of computer conferencing

Dear colleagues,

We now have a web site which we can use for our [name of course]. It is a web site of the Knowledge Forum, a computer conferencing program for asynchronous communication developed at OISE by a group of world renowned researchers. Maybe some of you are familiar with this program, and others have used similar conferencing systems. I am using the Knowledge Forum in other courses, and can tell you from experience it provides remarkable opportunities for discussions among the students and with the professors. It can be especially good for our class, since we only meet once every two-three weeks, and don't really have much time to discuss the issues that interest us. With the Forum, we'll be able to communicate at our most convenient times: you just go to the site when you have time, read notes others have left there, write a note or two on the issues that interest you, or respond to someone's note. I think we will all enjoy sharing thoughts (and emotions, why not) in the Forum. Its Internet address is [URL].

You will need a password to get in (sign on). I will send you your password over e-mail when I receive your reply to this message. I will treat your positive reply as a request to be added to the users list. To set up your password, I need your full name (First & Surname). You can change that password later, when you log on, from the Preferences menu button. I've booked computer-lab time (lab 4 on the 4th floor) from 4:00 to 5:00 after the class on Oct. 16, when I can show you what it's all about and how easy it is to use. If we feel we need more time, we can schedule another lab demonstration. Do not feel obliged to come to this presentation. Those of you who know how to use the Internet will have no difficulties with logging on and using the Forum right away. We can even start this week with our comments and questions to [presenter's name]. Maybe he will find that helpful in the preparation for his presentation: it is always good to know what your audience is interested in hearing before you start speaking.

Before I leave you, I just want to share with you that I started using computers only last year. So if I am not doing some things right, blame it on my inexperience. Also, I will (probably) try to use the Forum for my MA thesis. Maybe you would want to know that now. However, I will have a consent request letter for you before I do that.

Thanks a lot for your patience in reading this long message. I'll be waiting for your reply!!

Best regards,

Irena
QUESTIONNAIRE

1. Please, print your name here: ________________________________

2. Are you an MA, M.Ed., Ph.D or Ed.D. candidate? (Please, circle the correct answer)

3. Your typing speed (in English)? (Please circle one)
   ♦ Slow    Average    Fast    Very fast

4. Do you use computers?
   ♦ No    Sometimes    Regularly    Yes, a lot

5. Do you use Internet?
   ♦ No    Sometimes    Regularly    Yes, a lot

6. How would you describe your computer skills:
   ♦ Poor    Some    Good    Very good    Expert

7. How would you describe your e-mail experience
   ♦ Poor    Some    Regular user    Extensive use

8. Was this your first computer conferencing experience?
   ♦ Yes    No    / If no, what other experiences have you had? ________________________________

9. Where did you log in from for this CC?
   ♦ Home    Computer lab    Other

10. Which do you think allows you to express your ideas better:
    ♦ Face-to-face communication    Computer conferencing

11. Which mode allows you to express your feelings better:
    ♦ Face-to-face communication    Computer conferencing

12. Did computer conferencing help you improve your academic skills?
    ♦ Not at all    Not much    Yes, to some degree    Yes, a lot

13. Did CC in this course provide you with opportunities to understand better an issue, problem, or concept?
    ♦ Yes    No    / If yes, on how many occasions? ________________________________

14. Would you enroll in a course where computer conferencing is mandatory?
    ♦ Yes    No

15. Would you enroll in an on-line (CC) distance education course?
    ♦ Yes    No

16. Is English your mother tongue?
    ♦ Yes    No

17. What languages do you speak?
    L1 ________________________ L3____________________
    L2 ________________________ L4____________________
18. Do you consider yourself a native speaker of English?
   ◆ Yes ◆ No

19. If you are a non-native speaker of English, do you think computer conferencing is beneficial for your English language improvement?
   ◆ Yes ◆ No

20. If 'yes', in what ways (you may wish to elaborate):
   - Reading skills __________________________
   - Writing skills __________________________
   - Communication skills ____________________
   - Vocabulary ______________________________
   - Grammar ________________________________
   - Meta-linguistic knowledge __________________
   - Socio-linguistic knowledge __________________
   - Socio-cultural knowledge __________________
   - Other (please specify) ______________________

21. How much time do you spend on the KF per week? (To indicate, put a cross on the line.)
   5 10 15 20 25 30 35 40 45 50 55 60 longer
   __________________________
   (minutes)

22. Do you make revisions when you write in the conference?
   ◆ No ◆ Sometimes ◆ Often ◆ Yes, a lot

23. Did you use the "edit" function of the software?
   ◆ No ◆ Sometimes ◆ Often ◆ Yes, a lot

24. Did you use reference materials when writing for the FK (the readings, books, dictionaries, etc.)?
   ◆ No ◆ Sometimes ◆ Often ◆ Yes, quite a lot

25. What is (your image of) the relationship between the people participating in this KF?
   ◆ Friends ◆ Collaborators ◆ Co-workers ◆ Acquaintances ◆ Strangers ◆ Competitors

26. What (in your view) is the status of the participants?
   ◆ Equal ◆ Inequal ◆ Quite unequal ◆ Unequal

27. In your view, what genre is computer conferencing?

28. What makes you log in to the KF? What is your motivation?

29. What hinders your participation in computer conferencing?

30. What do you think of computer conferencing?
## Coded sample of the discourse in the Knowledge Forum

**Legend:**  
- **S:** socializing speech function  
- **I:** inquiring speech function  
- **P:** promoting ideas speech function  
- **R:** responding speech function

<table>
<thead>
<tr>
<th>Moves</th>
<th>Text</th>
<th>Speech function</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Understanding and shadowing</td>
<td>title</td>
</tr>
<tr>
<td>1</td>
<td>I have the feeling that David's work is touching on some important issues.</td>
<td>R: acknowledge</td>
</tr>
<tr>
<td>2</td>
<td>I am sure that there are a lot of L2 learners who have trouble following the person whom they are talking with, especially if this person speaks quickly.</td>
<td>R: agree</td>
</tr>
<tr>
<td>3</td>
<td>Learners do have to find some way to slow such speakers down to a speed they can handle.</td>
<td>R: agree</td>
</tr>
<tr>
<td>4</td>
<td>and I think the whole body of work on the negotiation of meaning [...] lends further support to this approach.</td>
<td>R: develop</td>
</tr>
<tr>
<td>5</td>
<td>which Vega mentions (especially Susan Gass and E. Varonis)</td>
<td>R: acknowledge</td>
</tr>
<tr>
<td>6</td>
<td>I do wonder whether shadowing interpreted narrowly as verbatim repetition is really an effective or practical method of displaying one's understandings of the ongoing talk.</td>
<td>P: prove: authority</td>
</tr>
<tr>
<td>7</td>
<td>David cited Deborah Tannen's work in his latest email.</td>
<td>R: disagree</td>
</tr>
<tr>
<td>8</td>
<td>but I think Tannen is trying to show that repetition serves a variety of functions in conversation, and that different people will interpret it in different ways depending on the conversational style they are used to.</td>
<td>R: fact</td>
</tr>
<tr>
<td>9</td>
<td>I think David is trying to focus less on the role of repetition in actual conversations, and more on shadowing as a learning strategy, and this makes some sense.</td>
<td>R: acknowledge</td>
</tr>
<tr>
<td>10</td>
<td>However, when I have tried to shadow I find that I am so focussed on the mechanical exercise, trying so hard to get it right that I can't focus on understanding what is being said, or planning an appropriate reaction.</td>
<td>P: prove: personal</td>
</tr>
<tr>
<td>11</td>
<td>I think I prefer more naturalistic teaching methods where students are conversing in ways that they would outside the class, and getting used to thinking of appropriate responses rather than narrowly focussing on repeating what is said whatever possible benefits this may have.</td>
<td>P: opinion</td>
</tr>
<tr>
<td>12</td>
<td>Note: The text is presented as it appeared in the Knowledge Forum without changes in the spelling. Pseudonyms are used instead of the real names of the participants.</td>
<td>R: discredit</td>
</tr>
</tbody>
</table>