

Literature Review: Using Computer-Mediated Communication in Second Language Classrooms

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Abstract

In this paper, some current uses of computer-mediated communication in language classrooms are discussed. First, a brief history of the use of IT in second language classrooms is offered. Second, the characteristics of CMC are introduced and discussed in relation to some of the current theoretical perspectives on language learning, such as Vygotskian Sociocultural theory and the Interaction Hypothesis as proposed by researchers like Long (1985, 1996). Finally, some suggestions are offered as to how CMC can be implemented in the context of language classes at Japanese universities.

Introduction

When computers were first used for language education, just bringing them into the classroom was so exciting that the need for a pedagogical rationale for using them was often overlooked. Time has passed since those early days, and we now know that, while computers can indeed be very useful in the language classroom, they are essentially just another way to help students, not the answer to all our problems. However, it is also true that there are creative approaches to helping students that computers make possible. For example, the kinds of interactional conditions predicted to be useful for L2 acquisition by the Interaction Hypothesis (IH) and Vygotskian Sociocultural Theory (SCT) seem to be, for at least some kinds of students, an almost natural result of using computer-mediated communication (CMC). This ability to create conditions favorable to L2 acquisition using CMC, along with some of the characteristics of CMC, may hold great promise for language classrooms in Japanese universities.

Historical and current trends in IT media used in language courses

In the field of Instructional Technology, many hold that "... the technical specifications and the implementation of the online classroom as we know it today originated in 1973 when Murray Turoff created the Electronic Information and Exchange System (Jorday & Teles, Retrieved May 15th, 2003, Module 1 section 1.3, para. 7). He developed a system which allowed people in different places to communicate through computer-mediated means

(para 7). For the language teaching field in particular, the first article dealing with the use of information technology (IT) in the language classroom to appear in the TESOL Quarterly was in 1986. This article was the first comprehensive study to look at the effectiveness of CALL in an ESL program. The study concluded that “...certain types of learners may be better suited to some CALL (computer assisted language learning) materials than other students” (Chapelle and Jamieson, 1986, p.27). They found out, for example, that “students who are not FI (field independent) show a significant preference for using CALL”, (p.38) even though their self-reported levels of motivation did not play a significant role in the time students spent studying using the CALL program. In this article, the authors conclude “CALL cannot be evaluated without looking at the other student variables... that are important in L2 acquisition” (p. 41). These variables include attitude and motivation towards using computers for studying, correlations between the preference for use of CALL and field dependence. Of course, this observation that CALL must be evaluated along with other variables still stands true today.

In the past two decades, the TESOL field has witnessed the rapid growth of research in the CALL field. There have been a lot of practical “how-to” papers in recent years. For example, there have been numerous reports on how to use the Internet in L2 classrooms. Also, there have been a number of articles that suggest how to evaluate websites to be used as resources for classrooms. See for example, Bauman (1998) on using emails, and Opp-Beckman, 2002; Kamhi-Stein, Bezdikian, Gillis, Lee, Lemes, Michelson, and Tamaki (2002) on using projects and content-based for CALL classes.

In addition to these types of papers, an analytical thread and two theoretical threads have recently emerged in the field of CALL. These current trends can be categorized into three areas:

- (1) Characteristics of Computer-Mediated Communication
- (2) Applying SCT using IT in language classrooms
- (3) The negotiation of meaning (a key feature of the Interaction Hypothesis) using CMC

In the following sections, these three current areas of interest will be examined in more detail.

Characteristics of Computer-Mediated Communication

Murray defines CMC as “communication that takes place between human beings via the instrumentality of computers” but restricts it to “...include only text-based modes” (2000, p.399). Adopting this definition, in this paper CMC is understood to include both synchronous (“at the same time”) and asynchronous (“at different times”) communication.

Murray (2000) explored the language used in CMC because L2 learners are likely to encounter CMC at some point as language users. Looking at characteristics of CMC is

very important in this sense, and also in the sense that if we do want to use some type of CMC in the classroom, students should have information on what to expect in such interactions. In her study, Murray found that CMC shows "...features of simplified registers associated with both oral and written language" (p. 397). She also reports that there are norms that are specific to CMC. These norms include the use of abbreviations, simplified syntax, the acceptance of surface errors, the use of symbols like emoticons, and formulaic phrases.

Another aspect of CMC is that conversational structures such as opening and closing conversation differ somewhat from that of face-to-face conversation. For example, self-identification is necessary in telephone conversations, but not in face-to-face conversation unless one is meeting someone for the first time. However, in CMC, it is optional because "... the technology automatically identifies the sender and recipient" (p.402). Another feature of CMC is that of Topic Thread Cohesion. What is meant by this is that, because of asynchrony, emails can contain multiple threads of topics going on at the same time, or, have one topic spread over a long period of time.

Other characteristics of CMC in language learning that have been noted include:

- * It allows collaborative learning activities (Meskil & Mossop, retrieved May 15th, 2003)
- * It encourages participants to take active roles in communication (Bikowski & Kessler, 2002)
- * It allows participants to have control over their learning (Bikowski & Kessler, 2002).
- * It facilitates negotiation of meaning between students (Blake, 2000; Toyoda & Harrison, 2002).
- * It encourages students to be less self-conscious of their language (Meskil & Mossop, retrieved May 15th, 2003; Hanson-Smith, 1999; Kiesler, Siegel, & McGuire, 1984; Sotillo, 2000; summarized by Bikowski & Kessler, 2002).

Let us now take a look at how these characteristics of CMC can be related to two current perspectives on L2 acquisition: Vygotskian Sociocultural Theory and the Interaction Hypothesis's concept of the negotiation of meaning.

Sociocultural theory and CMC

In recent years, SCT has been gaining influence in the field of TESOL. One of the key concepts of this theory is the idea that "...learning occurs when biologically determined mental-functions evolve into more complex/higher order functions through social interactions" (Lantolf and Appel, 1994; Lantolf; 2000, as quoted in Ellis, 1999; p. 17). This is called mediation. Mediation can also occur through the use of tools, which can be categorized into three areas: Mechanical, technical, and words. Mechanical tools include

items such as notebooks, and technical tools include computers.

Another aspect of SCT is that peers are believed to be capable of helping each other through interactions. Vygotsky suggests that when more expert learners assist other learners, who are then able to accomplish a task that could not have been accomplished alone, learning occurs (Vygotsky, 1978, cited in Ellis, 1999). It is important to note that since learners may be more expert in one area and less expert in others, the role of “more expert learner” may of course change from task to task. This phenomenon where “... learners, interacting among themselves, can collaboratively manage a task that would be beyond any of them acting as individuals” (Ellis, 1999, p.19), is called development in the *zone of proximal development* (ZPD).

It is not hard to see how some of the characteristics of CMC discussed above match quite well with the Vygotskian notions of learning through mediation and learning in the ZPD. Using CMC with language learners could be seen as using a technical tool and a linguistic tool for mediation. Also, as Meskil and Mossop (2003) point out, CMC allows collaborative learning activities. Such collaborative learning activities where learners have to work together to accomplish some task should, at least some of the time, result in the type of expert-less expert interactions that SCT predicts will result in learning. In fact, Kosakowski (1998) declares that an approach using SCT has been made easier by technology, and believes that the approach might be even “...driven by it” (p.2). Ioannou-Georgiou (2002) explains how some of the main principles of SCT can be used in a virtual-reality environment. She suggests that through using collaboration, negotiating knowledge, and taking an active role in authentic and meaningful contexts, teachers can incorporate SCT approaches in the virtual reality environment. Bikowski & Kessler (2002) also suggest that communication methods such as discussion boards allow learners to collaborate with others through the completion of tasks. However, one might ask, “Cannot all of these effects be achieved in a traditional classroom?”

The answer, of course, is yes. Nonetheless, CMC may have an advantage over traditional classroom learning, especially in the context of Japanese universities, because it encourages participants to take active roles in communication (Bikowski & Kessler, 2002). It is an oft-heard complaint that Japanese learners are passive, shy, and afraid to speak in foreign language classes. CMC, perhaps because it is not face-to-face communication and thus not as threatening, might allow learners who are reluctant to speak in front of others the opportunity to communicate with less self-consciousness in the L2. Van Lier (2001) points out that the cultural rules of classrooms may often make it difficult for students to depart from their customary roles, but he goes on to remark that, “The possibility that computer use may be able to circumvent these institutional constraints is intriguing” (2001, p. 93). In an article entitled “No talking in class,” Lii (1994, as cited in van Lier, 2001) describes how that (the circumvention of institutional constraints) is exactly what happened in a class (not a language learning class) that switched to using CMC. For teachers fed up with language learners who are unwilling to engage in communication

using the target language, this is indeed an exciting prospect. Of course, CMC cannot completely replace face-to-face language instruction—for one thing it need not involve *speaking*!—but it can be a useful tool in the language teaching tool box.

Negotiation of meaning and CMC

Negotiation of meaning, an integral part of the *interaction hypothesis* (IH), is believed by many researchers in the field of second language acquisition to be one of the ways in which language acquisition can occur. Negotiation of meaning “...arises when interlocutors seek to prevent a communicative impasse occurring or to remedy an actual impasse that has arisen” (Ellis, 1999, p.3). In other words, negotiation of meaning involves interactional modifications which help learners to understand each other. Since comprehension of language input is thought to aid acquisition, negotiation of meaning is thought to aid acquisition.

However, Ellis also goes on to suggest three caveats about research into the negotiation of meaning. One is that obviously, it is difficult to separate “... components of meaning negotiation for study” (p.14). Also, negotiation of meaning is only a part of the whole interactions that learners engage in. He concludes that this is not to dismiss the IH theory, rather, this suggests that researchers need to “... broaden the scope of their inquiries” (p.15). Negotiation of meaning is not a complete theory of L2 acquisition for these reasons, but it does describe an aspect of communication that is useful for language acquisition.

Negotiation of meaning, many researchers report, also happens in computer-mediated communication (Blake, 2000; Toyoda & Harrison, 2002). These researches shows that negotiation of meaning happens in both synchronous and asynchronous communication.

Blake (2000) reported that chat conversations that took place between non-native speakers of Spanish showed that participation in the chat seemed to facilitate negotiation of meaning, which seemed to have an influence on their output. Also, he notes that jigsaw tasks elicited negotiation the most, probably because all participants have to “both request and contribute parts of the solution, exacting from L2 learners a certain level of cooperation, convergence, and a pooling of resources” (p.131). He proposes strong possibilities for using CMC in language classrooms:

These tasks appear to constitute ideal conditions for SLA, with the CMC medium being no exception. In the process, L2 learners heighten their metalinguistic awareness of where they are in their own L2 vocabulary development and where they still need to go in order to gain more target-like lexical control. Doing tasks in a CMC environment, then, generates apperceived input, which can subsequently be used to modify and improve their vocabulary (p. 131).

Toyoda & Harrison (2002) studied negotiation of meaning that happened between L2

learners and native speakers, and then categorized the difficulties that they faced. They categorized the negotiation of meaning into nine categories, which are "...recognition of new words, misuse of a word, pronunciation error, grammatical error, inappropriate segmentation, abbreviated sentence, sudden topic change, slow response, and inter-cultural communication gap" (p.1). They suggest that because no non-verbal clues such as facial-expressions are available, communications using MOO, in this case, can be challenging for L2 learners. They also pointed out that there are three levels of communication difficulties, that are, "...word, sentence, and discourse level" (p.16) and suggest that "...the higher the level of negotiation, the less clear it becomes whether the negotiation is successful" (p.17).

Thus, we can see that CMC can provide a vehicle for an SCT-based pedagogy and that the negotiation of meaning does occur in CMC. If the advantages suggested by van Lier and Lii above are kept in mind, we can see how CMC may, in some situations, be advantageous. In the following sections, some of the commonly used forms of CMC that can provide these advantages will be described in detail.

Discussion boards

"Discussion board" refers to "...an interactive message board" which is "...a place on the Web where users may post and read announcements on topics of common interest. A person interacts with a discussion board by submitting forms or sending in e-mail messages to be posted via a Web browser (as opposed to newsgroups, which require a newsreader). The boards are a popular way to interact online, because they are easy to navigate and easy to use for responding to another person's message" (Netlingo.com, retrieved May 20th, 2003). Discussion boards are one of the most widely used communication methods in L2 courses because of their ease of use and convenience.

One way that discussion boards can be advantageous is in motivating students. Bikowski & Kessler (2002) reported that through allowing students to have control over their own learning "... in a supportive and collaborative environment" the students are encouraged to reflect on their learning processes. They suggest that, "these experiences lead to increased student motivation and greater achievement" (p.28). This increased motivation level is also observed in a case study by Sutherland-Smith (2002). She observed that many of the students who participated in the discussion did so actively. She observed that students seemed to "...work harder choosing appropriate vocabulary and completing reading tasks in preparation for online discussions than they did in preparing for traditional face-to-face classroom discussions" (p.33).

Moreover, in addition to the positive aspects shared by different means of CMC, discussion boards have a clear advantage; they do not require students to be online at the same time (Hanson-Smith, 1999; Kiesler, Siegel, & McGuire, 1984; Sotillo, 2000; summarized by Bikowski & Kessler, 2002). This is very significant when you have a course with students with various time schedules. Many students will likely feel more comfortable

preparing opinions for discussion boards because of the extra time they have to plan what they want to say. This could be a great help for L2 learners who feel more confident in their language production when allowed more time to prepare for it. Because of this characteristic of discussion boards, it is also easy to catch up with what has been going on in discussions, even if students miss a good amount of work for some reason.

Finally, I would like to show a summary of different ways that SCT approaches can be taken when combined with the use of discussion boards to illustrate strengths that discussion boards have as a teaching/learning tool:

Support the construction of knowledge as a collaborative process	<ul style="list-style-type: none"> * Establish a peer review system by posting compositions within subgroups and whole-class discussion boards. * Create areas for discussion of group projects.
Increase teacher-supported learner control	<ul style="list-style-type: none"> * Allow learners to control the time, place, pace, and possibly content of their tasks. * Add teacher support with models, guide sheets, frequently asked questions (FAQs) sheets with answers, and a buddy system.
Encourage learners to be active	<ul style="list-style-type: none"> * Ask students to analyze a number of papers or messages written by classmates to determine what is effective or ineffective. Peer feedback encourages thoughtful writing.

(Bikowski & Kessler, pp.29 - 30)

Chat & MOO

Chat, according to Netlingo. com, is “a form of interactive online communication that enables users to have real-time conversations with other people who are also online. Chatting on the Internet can take place via Web sites, in areas known as chat rooms, via instant messaging, or on IRC channels. In any case, when participating in a chat discussion, your messages are instantaneously relayed to other people and their messages are instantaneously relayed to you, no matter where in the world you or the other people happen to be” (Netlingo.com, retrieved May 15th, 2003). In addition, MOO stands for *multi-user dungeon*, that is, “... a multi-user simulation environment, usually text-based. It incorporates an object-oriented programming language that participants use to construct their own characters and worlds” (Netlingo.com).

There are many articles that report positive language outcomes using Internet chat (see Freiermuth, 2002). According to Freiermuth, it is reported that chat sessions can be a place for a true collaboration and frequently observe wider participation than in face-to-face

conversations (Freiermuth, 1998, 2001; Warschauer, 1996). He shares one chat conversation that took place among three U.S. university students and discusses how "... the actual give-and-take of real conversation" occurred with everyone involved taking part actively (p.38). He also suggests that one of the "... attractive characteristic of online chat is that the teacher can adjust the tasks easily according to the students' language level; the lower the level, the less complex that task" (p.38). Another characteristic of online chat is that "In most cases, students opt to use the target language exclusively while online" (p.38). This is very good news for teachers who have homogenous classrooms where many students rely on their native language whenever negotiation of meaning can take place. Just like with discussion boards, it is easy for teachers to keep track of the language used in chat in order to give feedback.

In addition, he suggests that "...online chatting can be used as a tool of communication to break down cultural and social barriers that tend to restrict natural conversation in the target language" by providing a "comfort zone of communication for less vocal [learners]."

Yet another beneficial aspect of online chat is that it is easy to catch up with what is going on even when participants miss a word or two, unlike in the real face-to-face conversation.

Also, for MOO, there are various studies that report on the different uses and benefits enjoyed by students. Ioannou-Georgiou (2002) proposes that "implementing the general principles of constructivism [SCT] within language learning can come almost naturally and effortlessly with the introduction of virtual reality environments" (p.23). She suggests building/constructing, simulations/role-plays, surveys, discussions with native speakers, and projects as some of the ways that collaborative learning environments can be applied in the context of MOO.

One obvious weakness of chat & MOO as opposed to asynchronous forms of communication such as discussion boards is that you have to be a good/fast typist. This can be a challenge in L2 classrooms, especially in Japan, where many of the students have never learned how to type.

Suggested usages of IT in L2 classrooms at Japanese universities

Asynchronous CMC such as discussion boards might be a better choice in L2 classrooms in Japan because of the limited proficiency in computers and limited typing ability. Discussion boards can be a great approach to encourage collaboration between learners. Peer feedback is a great way to adopt an SCT approach. For example, in a writing class, teachers can set up a discussion board where students can post and respond to each other's writing. There are many sites that promote students' interactions this way. For example, The International Writing Exchange (Vilmi, retrieved May 1st, 2003) offers discussion boards, issues to write about, and specific guidelines on how to write, post, and give feedback to peers' writings from all over the world. In a reading course, students can be asked to post reading journals on discussion boards and to provide peer feedback to each

other (see Hata, retrieved May 1st, 2003).

Also, projects are a great idea. You can either use CMC or face-to-face classroom time for collaborative group work. Robb (retrieved May 15th, 2003) has great websites that students built after researching and writing about different topics about Japan.

It is always a good idea to conduct an extensive needs analysis to determine not only students' goals and levels, but also their levels of knowledge about computers. Hata & Shirai (2002) suggest conducting needs analyses using established computer proficiency guidelines such as the Technology Competencies by the Office of Adult Literacy of the State Board for Community and Technical Colleges of the State of Washington. Also, using CMC can be beneficial for conducting group needs analyses (2000). For example, at the beginning of a course, I asked students to log on anonymously to a discussion board and post what they wanted to learn in the class. This worked very well, not only because I could get and give immediate feedback regarding what students wrote, but also because students could see what their peers wanted to learn and give feedback without communicating face-to-face in a still awkward classroom atmosphere.

Conclusion

It is obvious that IT cannot replace teachers. However, there are many approaches that teachers can adopt using IT to facilitate the L2 learning process. One such technique that we looked at in this paper is using CMC. There are many ways to use CMC such as discussion boards and chats to aid L2 acquisition through collaborative work and negotiation of meaning. In the future, I hope to explore further the possibilities of IT use in the L2 classroom, in order to help students attain greater L2 proficiency.

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