Computer-mediated Communication and a Cautionary Tale of Two Cities

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ABSTRACT
This paper describes an action research project that investigated the pedagogical applicability of computer-mediated communication (CMC) tools for collaborative projects. The research involved two groups of students studying to become ESL/EFL teachers, one group at a university located in the US Midwest and the other in the Catalan region of Spain, engaging in collaborative projects of their own designs which examined potential uses of CMC for language learning. As part of this project, the students also learned about and used a number of CMC tools, ranging from email to message boards to video chat, as part of their collaborative process. The participants reported a number of positive experiences with the technology, but this report focuses on the challenges encountered during the CMC and potential solutions to those issues.

KEYWORDS
Computer-mediated Communication (CMC), Asynchronous CMC, Synchronous CMC, Message Board, Network-based Language Teaching

INTRODUCTION
Computer-mediated communication (CMC) refers to both asynchronous communication, such as email and message boards, and virtual synchronous communication, which might utilize tools such as text chat, audio telephony programs (e.g., Skype), or videoconferencing. The report that follows is a "tale of two cities," one in the US and one in Spain, engaging in computer-mediated communication. As will be shown, just as in Dickens' worthy novel of the same name, "It was the best of times, it was the worst of times ... ."

While there are many proponents of the place of computers in language learning, and in particular regarding the potential for computer-mediated communication in that role, there have been relatively few large-scale, long-term projects in which CMC tools have been put into practice across a distance in real life and authentic communicative situations. This project began when the researcher created a course on CMC for students primarily studying TESOL at a large Midwestern university. Rather than having a group of students sit in a computer lab and "talk" with their partners sitting several feet away over a network connection, the researcher wished to have communication take place between students in different continents while working on a collaborative research assignment.

During the process of planning the class, the researcher made contact with a number of faculty from other universities who shared an interest in the field and, after a number of attempts, found a collaboration partner teaching at a university located in the Catalan region of Spain whose students were all planning to become EFL teachers. After much negotiation and planning, the instructors decided to participate in a student-centered collaborative project in which students would discuss a variety of topics related either to CMC or education in gen-
eral, utilizing a variety of CMC tools, with the possible range including email, message boards, MOOs,\(^1\) text chat, audio chat, and video chat.

**REVIEW OF CMC RESEARCH**

The role of computers in the ESL/EFL classroom is increasingly important in today’s educational environment, and there have been a large number of studies investigating the role of computer-assisted language learning (CALL). While it may be the case that many computers in classrooms sit idle or are used for simple computerized exercises that hearken back to audiolingual methods, there is a growing movement to instead make use of computers to engage in authentic communication with native speakers. This type of communication is often referred to as CMC or Network-based Language Teaching (NBLT). According to Kern and Warschauer (2000, p. 1),

> NBLT is language teaching that involves the use of computers connected to one another in either local or global networks. Whereas CALL has traditionally been associated with self-contained, programmed applications such as tutorials, drill, simulations, instructional games, tests, and so on, NBLT represents a new and different side of CALL, where human-to-human communication is the focus.

This shift in the “dynamic from learners’ interaction with computers to interaction with other humans via the computer” is a very important distinction because computers are now viewed as tools that enable students to engage in authentic communication with other learners (Kern & Warschauer, 2000, p. 11). This notion of the importance of interaction was also mentioned by Vygotsky (1978), who believed that an individual’s ability to learn was bracketed by two factors: on the lower end by what that person could accomplish independently and on the upper end by what that individual could accomplish with the aid of a more knowledgeable helper. The area between these two extremes is Vygotsky’s Zone of Proximal Development. As a tool, CMC gives language learners access to more knowledgeable individuals, either native speakers of the target language or more advanced nonnative speakers, than they might be able to encounter in a face-to-face environment, thus increasing their potential ability to learn. Indeed, in some environments, CMC provides the only possibility for access to NSs.

Whatever one’s feeling about the role of computers and CMC in the classroom, it is impossible to deny that students are now making extensive use of them for communication outside of educational environments. This also holds true in the business world, where “E-mail is now surpassing face-to-face and telephone conversation as the most frequently used communication tool” (Shetzer & Warschauer, 2000, p. 171). However, even the ubiquitous email is falling by the wayside in some countries such as Korea, where a recent study found that two thirds of middle and high school students polled rarely or never used email. Believing that “mail is an old and formal communication means,” these students prefer instant messaging, either via computer or cell phone, rather than the interminable wait for traditional email communication (Ki-hong, 2004). As email has become the new ‘slow’ form of communication for today’s youth—‘electronic snail mail’ if you will—there has been an explosion of synchronous tools that have benefited from the increasing availability of broadband connections around the world. Today’s students use these tools as a natural part of their everyday communication, and it seems that many of them spend more time electronically communicating with friends than they do face-to-face. Language learners have at their disposal a range of tools to enhance language learning that were not imagined (or were in only their crudest stages of development) when I was first entering a language classroom in the early 1980s and was amazed at the ‘high tech’ audiolingual lab that used audio tapes for language drills.
We have now come to a stage when CMC communities have become important discourse communities in their own merit—places where Vygotsky’s Zone of Proximal Development is valid not just within a single classroom but for individuals collaborating across the world. Given this situation, the question becomes not should we use CMC tools in our classrooms? but how should we properly use CMC tools to enhance language learning?

CMC affords an additional and possibly less anxiety-provoking means of learner-to-learner communication within language classrooms than face-to-face interaction. In addition, it extends the interaction possibilities beyond the classroom walls, hence “beyond its time constraints and the usual limited circle of interlocutors of classroom pair and group work” (Belcher, 1999, p. 255). This aspect of convenience is often cited as being an important advantage of CMC for classroom communication because it enables participants to collaborate outside of the classroom on their own time (Egbert, Chao, & Hanson-Smith, 1999; Snookes, 1995).

Research in second language classrooms indicates that networked computers can indeed enhance motivation (Hofsoy, 2001; Paver, 2003; Samsonov, 2001; Warschauer, 1996), increase opportunities for authentic interaction and meaning negotiation (Kern, 1995; B. Smith, 2003), reduce anxiety and produce more talk (Fanderclai, 1995; Kelm, 1996; Reid, 1994), improve sociolinguistic proficiency (Belz & Kinginger, 2002, 2003; Chun, 1994; Kern, 1995; Meskill & Anthony, 2005; Pellettieri, 2000), and increase self-confidence (Beauvois & Eledge, 1995/1996; Ware, 2004). In ESL/EFL writing classes, observations of the use of CMC in various formats also indicate students’ enhanced confidence in writing and increased quantity in both peer and teacher feedback (Braine, 1997). Researchers also suggest that CMC has great potential for leveling the playing field in the multilingual, multicultural classroom (Rheingold, 1993; Sproull & Kieller, 1991), thus empowering minority students or nonnative English-speaking students in composition classrooms with linguistically and culturally diverse backgrounds (Belcher, 1999). Warschauer (1996, p. 31) found much more equitable conversations in the CMC mode than in face-to-face as the less vocal students seemed to participate more, perhaps because it provides “a less threatening means to communicate.” This finding of increased participation was confirmed by Sullivan and Pratt (1996) whose study showed full student participation in electronic discourse as compared to 50% participation in face-to-face interaction. In terms of the quality of interaction, Warschauer (1996) reported that the participants in his study tended to express their own ideas during written electronic communication rather than directly answering questions posed to them, suggesting increased creativity. Also, the electronic discussions involved significantly more complex sentence structures than face-to-face discussions. Other studies have emphasized the similarities between the language produced in face-to-face in-class and CMC discussions (Chun, 1994; Kern, 1995; B. Smith, Alvarez-Torres, Zhao, 2003; Warschauer, 1996).

This is not to say that all research on CMC has been glowingly positive. Indeed, a number of studies contradict the previously mentioned ones, finding that CMC and face-to-face communication patterns are substantially different (Blake, 2000; Pellettieri, 2000; D. B. Smith, 2001) and that CMC communication may be sometimes lacking in depth (Belz & Kinginger, 2003; O’Dowd, 2003).

THE PRESENT STUDY

Participants and Settings

The participants in this study included the two groups mentioned above. The first group, as summarized in Table 1, consisted of 17 students at a large Midwestern university in the US, 14 of whom were enrolled in an MA TESOL program, with the remaining 3 being Ph.D. students in Education. As seen in Table 1, all but 5 of these students came from countries other than the
US. The second group consisted of 23 students from a large university in the Catalan region of Spain, all of whom were nonnative speakers of English. All of the students from Spain were undergraduate students studying to become EFL teachers.

Table 1
Project Participants

<table>
<thead>
<tr>
<th>Country of origin</th>
<th>US</th>
<th>Spain</th>
</tr>
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<tbody>
<tr>
<td>Korea-6</td>
<td>United States-5</td>
<td>Spain-17</td>
</tr>
<tr>
<td>United States-5</td>
<td>Taiwan-3</td>
<td>Argentina-1</td>
</tr>
<tr>
<td>Taiwan-3</td>
<td>Argentina-1</td>
<td>Colombia-1</td>
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<tr>
<td>Argentina-1</td>
<td>Colombia-1</td>
<td>Japan-1</td>
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<table>
<thead>
<tr>
<th>Level</th>
<th>US</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 MA TESOL</td>
<td>B.A. English Teacher</td>
<td></td>
</tr>
<tr>
<td>3 Ph.D. Education</td>
<td>Education</td>
<td></td>
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<table>
<thead>
<tr>
<th>Participants</th>
<th>US</th>
<th>Spain</th>
</tr>
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<tbody>
<tr>
<td>17</td>
<td></td>
<td>23</td>
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</table>

As might be expected, given the variety of language backgrounds and their field of study, the language chosen for communication during the project was English.

According to questionnaires filled out by the students before the project began, the students’ knowledge of CMC in the two groups was quite similar in terms of the more commonly used tools such as email and text chat (e.g., Messenger chat, Yahoo chat) and audio chat (e.g., Skype), but the familiarity with video chat (e.g., Messenger video, ICQ), message boards (e.g., Simple Machines, phpBB) and MOOs was considerably lower for the students from Spain (see Table 2).

Table 2
Student Knowledge of CMC Tools

<table>
<thead>
<tr>
<th>Percentage of participants familiar with CMC tools</th>
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<tbody>
<tr>
<td>US</td>
</tr>
<tr>
<td>Email</td>
</tr>
<tr>
<td>Text chat</td>
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<tr>
<td>Audio chat</td>
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<tr>
<td>Video chat</td>
</tr>
<tr>
<td>Message boards</td>
</tr>
<tr>
<td>MOO</td>
</tr>
</tbody>
</table>

Methodology

Rather than falling under the domain of experimental and/or semiexperimental research, this project was designed as action research with the following goals:

1. to investigate the pedagogical applicability and use of various CMC tools,
2. to engage students in two countries in a collaborative project, and
3. to investigate potential benefits and problems in such a project, especially with respect to the use of CMC.
Because the semester at the US university began several weeks earlier than the one in Spain, the US students began by discussing what types of projects they would be interested in, with the only restriction from the instructor being that the projects must in some way deal with language education and/or language acquisition. In addition, this class also explored the types of CMC tools that might be useful, including email, message boards, MOOs, text chat, audio chat, and video chat.

The US students agreed that one way to begin the discussion with the class in Spain would be to brainstorm some topics on The CMC Forum\(^2\) a message board created by the instructor for that purpose using the Simple Machines open source software (see Figure 1).

As the semester began in Spain, the instructor there explained the project to her students and had them brainstorm additional topics which were also added to the message board. Students were then instructed to look over the entries and give feedback on the postings. These ideas could include simple statements of interest in any of the postings, suggestions for modifications, and so forth.

After approximately 1 week of joint discussions on the message board, the students in both countries were asked to form interest groups with their classmates from the same country based on the existing discussion board topics. A list of these local groups was then shared with the participants in the other country. After some negotiation and merging of groups, international groups of 3-5 students were formed (see Table 3).
After the groups were formed, the participants were expected to negotiate, either by email, chat, or any other CMC tool of their choosing, the exact objectives of the collaborative project and to work together to complete the project. As could be anticipated in this type of interaction, just as in classroom-based cooperation, some groups formed quite cohesive, collaborative partnerships, whereas other groups did not seem to be able to reach much of a level of understanding among the group members. Possible reasons for these diverse results and outcomes are discussed below.

RESULTS AND DISCUSSION

In the spirit of action research, the results of this study will be presented from the perspectives of the participants involved in the project, including those of the instructors in the US and Spain and their students. The students kept journals of their experiences throughout the semester and completed a final report on their experience. While this paper will mainly focus on challenges encountered during the project, this is not meant to imply that there were not positive experiences as well. In fact, there were a number of positive experiences among many of the groups. In this section, the full range of these experiences will be reported.

Positive CMC Experiences—aka The Best of Times

Perhaps the most commented upon benefit of this project was that it gave the participants the opportunity to meet people from another culture who were located thousands of miles away. Although many students, such as Dae (all names in this report are pseudonyms) from Korea, were initially “nervous” about working with students located in another country, it was an “exciting experience” at the same time. Indeed, some of the students, like David from the US, saw this type of communication as having important implications for the future: “As CMC reaches further in a global context, I believe it will promote more of an exchange of different cultures. It will be interesting to see in the interchanges of different culture if a distinct homogenous CMC culture will arise.” This comment parallels that by Shetzer and Warschauer (2000) in their discussion of the ubiquitous nature of email (Belz, 2002; Belz & Reinhardt, 2004; Kelm, 1992; Müller-Hartmann, 2000; O’Dowd, 2003; Tudini, 2003). For students like David, who make use of email and other CMC tools (e.g., text, audio, and video chat) on a daily basis, it has become a natural form of communication. As classroom teachers, this has important implications for our teaching.
Soo, from Korea, also enjoyed the cross-cultural communication but added an additional benefit: “my partners can be my toolboxes and my friends, since we shared resources and ideas for teaching and we are in the same profession and in the similar position.” Because the participants from Spain were all enrolled in a program for future English teachers, they immediately shared something in common with the students in the US. In addition, rather than experiencing the perils of open chat rooms, where many participants are most certainly not there for scholarly reasons, this project provided a safe and controlled environment for the participants.

Another positive aspect of this project mentioned by a number of members of the groups was their ability to choose a topic of mutual interest for their group assignment. As noted earlier, groups were allowed to choose a topic of interest agreed upon by all that would form the basis for discussion. One of the most successful groups in terms of the amount of conversation was one that used their time to create a miniresearch project of their own that investigated which CMC tool would create more conversation: email or chat. Because these groups could discuss whatever topic(s) they wished, they followed their interests and engaged in a large amount of authentic social interaction in order to accomplish tasks that they could not have done alone.

Some students also mentioned that engaging in synchronous communication was “interesting, exciting, and productive,” especially in comparison to email, resulting in the sort of increased production of “talk” mentioned by a number of researchers (Fanderclai, 1995; Kelm, 1992; Reid, 1994). These benefits of synchronous discussion were discussed by Jung regarding his group’s chat about religion and fasting:

My partner explained fasting in his own religious terms. I was able to share how some people I knew would do it for other reasons than religion, and my partner brought up the idea of dieting as well. Because of the speed of interaction in a synchronous mode, we were able to share the same word in different contexts, contexts that each of us was probably comfortable in. I believe this type of interaction is also related to schema theory in that we can understand new things better by relating them to a given knowledge that we already have.

A final advantage of CMC communication mentioned by several groups’ members was the automatic record kept of text conversations. This was especially useful for these students because they were required to keep a journal of their experiences. For those who used email, text chat, or the message board, they were provided with an instant reminder of their exact communication that they could then analyze further. In some cases, such as Lee from Taiwan, the ability to look over transcripts later gave students new insights into their communication patterns. She and her partner had long discussions with their Spanish counterparts, but in one transcript she noticed that ending the conversation was not always short and simple—in one instance taking 48 messages between the 4 participants to say goodbye.

Challenges in CMC Communication—aka The Worst of Times

While the students had many positive experiences during this project, the CMC medium also created a number of challenges. These challenges did not always result in entirely negative experiences for the participants, but they did make their lives more difficult and had possible negative repercussions for their projects. In this section, a number of these issues will be presented along with some potential solutions for each. These challenges are divided into three categories: asynchronous challenges, synchronous challenges, and shared issues.
Challenges to asynchronous communication

Message lag time (sometimes eternal). In today’s world of instant messages, it is ironic that one of the most commented upon difficulties with the group projects was the amount of time it took to get responses to emails, with many students finding that “responses were minimal and difficult to attain” (Susan). In the process of negotiating the form of their projects and completing the projects themselves, there was a large amount of required communication, and delays were of course frustrating. While the delays in email communication were not as lengthy as would have been the case with traditional snail mail, the pace of communication in groups such as Fang Ying’s did, at times, seem somewhat ‘snailish’ in nature:

We briefly introduced ourselves through the very first e-mail messages to and from them, and then began to talk about our project. It took us a while to hear from each other when we were e-mailing each other. We had to send another message asking for more clarification if there was a part that we did not quite understand and wait for their response for a few more days. We received their reply nine days after our first email.

This type of complaint was heard from most groups when it came to email communication, and this is certainly in keeping with the findings of other research on the topic (Ki-hong, 2004; Shetzer & Warschauer, 2000). While emails were sometimes responded to within minutes, it often took days, or even more than a week, to get a reply.

Message lag time: potential solutions. As it became apparent that some groups were not responding to emails, the instructors took two actions. First, they asked their students to track their own communication and that of their partners. This was checked periodically by the instructors, and any lack of communication by group members was then discussed individually with those students. Second, both instructors discussed appropriate response times with their classes, asking students to respond to messages on the same day. These solutions met with success, although not universal success.

Asynchronous technical problems. The “technical” problems encountered by the participants during this project were often actually more in the way of user errors. Susan, for example, was increasingly frustrated over the lack of communication from her Spanish partners and complained to her instructor about it. The instructor in Spain was contacted and it turned out that her partners had indeed been emailing her. Eventually, Susan discovered two explanations. First, there had been times when her university email account (limited to a pitiful 50 MB) was full, resulting in messages being rejected by the university email server. Second, she discovered that the messages had been going into her junk mail folder, and, because of the unfamiliar names and email addresses, she had been inadvertently deleting them.

Another problem related to email had to do with the “reply” versus “reply all” options. Some students found that they received emails while their partners did not, or vice versa. This simple keyboarding error became important as some students were left out of messages that contained critical information regarding their projects. A third problem that many of the students encountered was related to the message board. Although the students found it simple to post and read messages on the board, they also found that it became difficult to keep up to date on the messages as the number of posting increased.

Asynchronous technical problems: potential solutions. The first email-related problem, the dreaded junk mail issue, is easily solved by having the participants, preferably during class time, confirm in their email programs that messages from their collaborative partners are not sent to junk mail. In addition to this, participants should be encouraged to always
send email from the same address. Since many students now have multiple email addresses (one US participant had a university account, a Hotmail account, and a Google mail account), consistently sending from the same account will help avoid missed messages.

While the main problem with message boards was not entirely technical in nature, it certainly did relate to the way message board technology works. As the number of postings and replies in the message board grew, the message board became a bit overwhelming to some participants. The solution to this was to have the students select topics of interest and to then have them focus mainly on those postings. In addition, students should become familiar with the way this type of message board works. The forum used by the researcher for an ongoing project (http://www.eslweb.org/cmcforum) has a link that members see entitled “show unread posts since your last visit.” Clicking on this link immediately shows users only the new posts and does so without the need to search through the various conversation threads.

**Challenges to synchronous communication**

No doubt due to the greater variety of potential tools and the nature of synchronous communication, there were many more challenges encountered by the students in this area. These issues can be categorized into two basics categories: synchronous scheduling issues and technology-related issues.

**Synchronous scheduling issues.** Engaging in synchronous communication was by far the most problematic area for students, and three types of issues came to the fore: (a) conflicts due to students’ own busy schedules, (b) conflicting time zones, and (c) missed meetings. These issues and potential solutions are discussed below.

As we all know, the days of university students attending school full time without the need for outside jobs is long gone; many students have full course schedules as well as part-time or full-time jobs, and some are also raising children. Not surprisingly then, one of the challenges for the students involved in this project was simply finding a time in their busy schedules to meet online for synchronous discussion. As one student from Spain put it, he “had to work all the time and [had] not much free time” (Manuel). When combining these busy schedules among groups of up to 5 students, this came to be a logistical nightmare. Indeed, Martha found that simply “arranging meeting times seemed to be the majority of [their] email messages” and that it could take many days to arrange a meeting. In most cases students seemed to make an honest effort to arrange a meeting time, but, after a number of attempts to schedule the meeting, the participants sometimes lost motivation and decided to stick with asynchronous communication.

Many of the participants found that one of the greatest nontechnological challenges in engaging in synchronous CMC with partners from other countries was working across time zones. While it would certainly be possible for students in the US to work with international students in similar time zones, such as in Canada, Mexico, Central America, or South America, it is more common to collaborate with students in Europe or Asia due to the availability of high speed networks in many of the countries in those regions. Unfortunately this means that they must often deal with a time difference of at least 6 hours for Europe (7 for Spain) and 13 for Asia—with a change of date added in as well. Due to the busy schedules of students on both sides of the Atlantic in this project, one of the only times open for meeting was in the evening (US time). However, the time difference made this, as mentioned by Lee, “mission impossible” because “in [our] evening...it’s their midnight.” Another time zone-related issue had to do with students accurately calculating what time it actually was in their partners’ locations. According to Martha, “our first attempt to meet online with our European contacts did not work because
of misprojecting the time difference. Later on we were able to meet and discuss phone text messaging.”

The third scheduling-related synchronous issue involved students either showing up late for meetings or not showing up at all. This issue is interesting in that it is the one that most clearly involved two separate questions. Some of these problems were connected to the two other issues in this section, busy schedules and conflicting time zones, but at other times the explanation seemed to be more culturally and/or motivationally based. Unfortunately, it is not always clear which is which. After a partner missed their first synchronous meeting, Hisae and Xiu were able to reschedule the meeting for a later date with the following results:

Xiu and I were waiting for an hour, but again, no one appeared. [Our partner] appeared online an hour later. We could finally start our discussion. Xiu seemed to be very unhappy about [him] because he did not say sorry for being late. She told me she did not have energy to discuss with him because she waited too long.

This scheduling issue became so prevalent that the US students came to identify this pattern of late arrival on the part of their Spanish collaborators as “running on Spanish time,” a term used by a number of the Spanish partners and their instructor.

The second question was related to one of the problems with email: lag time in responses. In some cases, tentative dates for synchronous collaboration were set by groups (emphasis on tentative). However, because some participants took much longer than others to read and reply to emails, this meant that the date for some meetings came and went before everyone had given a definite reply.

Synchronous scheduling issues: potential solutions. As discussed above, scheduling was one of the most daunting challenges for the groups. In terms of dealing with students’ busy schedules, there are two potential solutions. First, have students fill out a schedule of times they are available. This schedule should be designed by the instructors and show days of the weeks and hours, with the hours given for both time zones (see Table 4).

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Student Schedule for Group CMC Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Monday</td>
</tr>
<tr>
<td>8:00 am US/</td>
<td></td>
</tr>
<tr>
<td>3:00 pm Spain</td>
<td></td>
</tr>
<tr>
<td>9:00 am US/</td>
<td></td>
</tr>
<tr>
<td>4:00 pm Spain</td>
<td></td>
</tr>
<tr>
<td>10:00 am US/</td>
<td></td>
</tr>
<tr>
<td>4:00 pm Spain</td>
<td></td>
</tr>
<tr>
<td>11:00 am US/</td>
<td></td>
</tr>
<tr>
<td>5:00 pm Spain</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>

These schedules should then be collected either by one of the instructors or, preferably, by a student member of the group selected as the group’s scheduler. This process would eliminate the need for extended emailing to find appropriate times and the accompanying lag time for such emails. In this project, the instructors’ initial reasoning for this scheduling
issue was that negotiating the time to meet would be an important part of the collaboration process, but it became apparent that the effort spent on this task took up far too much time that could have been spent more profitably on discussions. This finding corroborates those of other researchers on the importance of the instructor as a facilitator (Gilisan, Dudt, & Howe, 1998; Kern, 1996; McGrath, 1998; Stepp-Greany, 2002).

The second, and ideal, solution for scheduling synchronous communication is to have classes that meet at the ‘same’ time. This allows for synchronous CMC between entire classes and/or smaller groups. However, scheduling such a time is not an easy task. For example, the time difference between the Spanish and American schools means that a course must be scheduled early in the morning in the US and in the afternoon in Spain (e.g., 8 am in the US and 3 pm in Spain). Getting such a course in an official university schedule requires a large amount of preplanning, and time for such preplanning was not available for this project.

A solution to the third issue, students arriving late or not at all to meetings, is more complex. In terms of culturally related time issues, it is important that all participants come to a mutual agreement on what, exactly, time represents to them. In particular, students who show up late should be reminded by their instructor that the other participants are equally busy and cannot afford to wait an extended period online. Because this became an issue in this project, the US instructor had his students periodically fill out a “collaboration checklist” that allowed him to quickly get an overview of what the groups were (or were not) doing. If any groups were having problems with meetings, the two instructors discussed the problems and attempted to resolve the issues.

Technical problems (technology is your friend ... or is it?). The tools used in synchronous communication are in general of a more complicated nature than those used in asynchronous communication, and this means that the potential for problems increases. However, the majority of the problems in this area did not relate to the computer programs in particular but rather to the nature of the technology in general.

Typing speed. One of the most commented upon ‘technical problems’ related to synchronous communication was typing speed during chats. While typing speed was not an issue for students using asynchronous communication, where they could take as long as they wished to compose a message, it was often mentioned regarding synchronous communication. While some research has found that CMC is beneficial to NNS in that it increases their amount of communication (Fanderclai, 1995; Kelm, 1996; Reid, 1994), that was sometimes not the case in this project. In Soo’s group, for example, she found that two members of the group were fast typists (one a NS and the other a near NS), while the other two (Soo from Korea and Isabela from Spain) were much slower. For Soo, this became very frustrating as her reading speed was also slow, and she had “trouble following their talks:"

While I was thinking of answers to a question, already other partners were talking about other issues. My question was already three lines ahead. My untimely responses sounded abrupt and stupid. Instead, I gave up sending my responses.

Typing speed: possible solutions. First, it is important that students understand that “lurking” in a conversation is perfectly acceptable in cyberspace, just as it is acceptable to be involved in a face-to-face group discussion without talking. Indeed Soo tended to have a low participation level in face-to-face oral communication in class as well. Once students grow more comfortable with the technology, it is likely they will join in and, perhaps, increase their participation in comparison to face-to-face communication (Sullivan & Pratt, 1996; Warschau-
er, 1996). This, as the semester progressed, was the case for Soo. In addition, students should be aware that issues that come up in synchronous communication may also be discussed further via asynchronous means. Writing an email to the group members will allow the slow typists the time they need to formulate their messages while also adding to the group discussion in a beneficial way.

**Group dynamics in cyberspace.** Face-to-face communication in a group in a traditional classroom is often much easier than in cyberspace where facial or vocal cues may be totally lacking. Most often, this resulted in situations where the students were not sure to whom messages were directed:

Hye and I met with our collaborators through MSN Messenger, and since there were five of us, it sometimes was hard to figure out who was talking to whom. Furthermore, we got into miscommunication for a couple of times. Hence, I often typed the name of the person that I was talking to first before I sent out a message, but not all people did the same way. (Shin)

This problem was also exacerbated by the issue of typing and reading speed. For students like Soo, keeping up with a chat with a single partner was feasible but attempting to read and respond to messages from four partners was simply impossible.

**Group dynamics in cyberspace: potential solutions.** The simplest solution to this issue would be to have the students work in smaller groups, but this also takes away from much of the discussion. Instead, some of the participants themselves had very good suggestions. Shin proposed “the need for a discussion moderator” in her group. Unfortunately, “no one seemed to be brave enough (or willing) to do so.” This would be a good role for teachers to assign, just as is often done in classroom environments. In addition, Shin’s suggestion of starting chat messages with the name or initials of the person it is directed towards should be encouraged.

Another solution to this issue is to teach participants who are novice chatters some of the tricks used by their more experienced peers. Lee, for example, found that posting short messages in sequence helped her to “keep the floor” in the conversation more effectively than students who attempted to type out complete ideas in a message before sending it to the chat window. Sending a message with an ellipsis at the end (e.g., And another thing I’d like to discuss …) serves the same purpose in cyberspace as a verbal pause filler does in oral communication (e.g., ummm). In addition these shorter messages make it easier for slower readers to keep up with the flow for conversation.

**True technical issues.** The most commonly mentioned technical problem among participants from both countries was Internet speed—or the lack thereof. While all the students from the US and Spain had access to broadband connections on their campuses, this was often not the case at home where a few students had no Internet connection at all. Some students, like Xiu, found that text chat took approximately 30 seconds to appear when using dial up and that audio and video were impossible. Some students were able to get around the problem of a wired connection entirely by using their laptops with wireless modems. However, as is still often the case, this sometimes required hunting expeditions for wireless hotspots with good signal strength.

Students without DSL connections and/or wireless high speed connections needed to use a computer lab at school or an Internet café, especially for synchronous communication. However, this was problematic because most of the synchronous tools like Messenger
required that a program be downloaded onto the computer (this is no longer the case), and most computers in labs and Internet cafés are set up not to allow downloading.

A final issue related directly to technology was access to the equipment needed for more advanced CMC. While some students had their own webcams and headsets appropriate for audio or video conversations, others did not. In the US class, the instructor was able to lend out webcams with integrated microphones for his students, but the Spanish students did not have similar access.

True technical issues: possible solutions. Unfortunately, the solution to most of these issues involves money. With well equipped labs at both ends—and synchronous scheduling of the classes—the access and speed issues would be resolved. However, at many schools this is simply not possible. The less-than-ideal solution to this issue is to encourage students to use as great a variety of CMC tools as possible and to explore the use of different kinds of tools at as high a level as possible. When possible, groups should be formed to share technology. For example, if a group has two American and two Spanish students, it is helpful to try to ensure that at least one student on each end has a webcam. This way, the online meeting can be held among all four partners by sharing the two webcams.

General problems
In addition to challenges specific to either asynchronous or synchronous communication there were also issues that carried across modes. These issues included conflicting university schedules and waning enthusiasm as the semester progressed.

Conflicting university schedules. As discussed earlier in this paper, this collaborative project took place over the course of a semester. However, as seen in Table 5, the impression that the semester-long project resulted in a full semester of collaboration is simply not the case for several reasons. First, the semester in Spain began 5 weeks later than the one in the US, and the US semester ended 1 week earlier. The Spanish students also had a holiday near the start of their semester and needed to become familiar with the project and technology, so they were not able to join the collaboration until late October. In addition to these lost weeks, there were also other holidays to consider. The US students had a full week off for Thanksgiving holiday, while the students in Spain had Semana Santa, which lasted three days, although most of the students unofficially made it a full week (see Table 5).

Table 5
University Schedules

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>August</td>
<td>25: US courses begin</td>
<td>5: Spain courses begin</td>
</tr>
<tr>
<td>September</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td>18: begin collaboration</td>
<td>18: begin collaboration</td>
</tr>
<tr>
<td>November</td>
<td>20-28: Thanksgiving Break</td>
<td></td>
</tr>
<tr>
<td>December</td>
<td>10: US Courses End</td>
<td>6-8: holiday</td>
</tr>
</tbody>
</table>

Semana Santa also came on the same week as the last week of the US courses, which meant that collaboration needed to end by December 3. The result of the different university calendars meant that there were actually a total of 6 weeks of potential collaboration instead of the 16-week semester available in the US school. When one then considers the lag time in
email communication, the time required to set up synchronous meetings, and so on, it quickly becomes apparent that collaboration time was short.

**Conflicting university schedules: potential solutions.** There are few easy solutions to these scheduling issues. Starting so much earlier than Spain allowed the US participants to familiarize themselves with the theory behind CMC and the available tools, but the Spanish students did not have this advantage. Once their courses began they were forced to have a much quicker overview of both CMC theory and practice, potentially resulting in those students being less comfortable with the tools. This situation reemphasizes the need for preplanning on the part of instructors, including possibly limiting the topics available for discussion, having the instructors schedule synchronous meetings for groups based on schedules provided by the students, and maximizing the amount of communication that can take place during class time.

**Waning enthusiasm.** As mentioned in the literature review of this paper, CMC has been shown to have a motivating effect on students (Hofsoy, 2001; Paver, 2003; Samsonov, 2001; Warschauer, 1996), but this motivation can rapidly decrease. This trend was the case for a number of participants in this study, as mentioned by Dae in regards to her Spanish partners:

Actually they were very enthusiastic at the beginning of the semester when they initiated this topic and posted many messages in the forum. However, as time went by and they got busier, they seemed to have less motivation to do this.

Sometimes this waning motivation occurred because the participants were very busy or because a student, such as Valentina, had a partner who either took a long time to respond to communication or did not respond at all. Because the project required a significant time commitment of the students outside of class, some participants grew discouraged when they had the types of problems with technology or scheduling discussed earlier.

**Waning enthusiasm: potential solutions.** One way we tried to deal with waning enthusiasm was by having students fill out the collaboration checklist mentioned earlier and by having class discussions on challenges they were having in the communication. This latter activity seemed to have a therapeutic effect for the students since they saw they were not alone in their challenges. Also, this time allowed students to get suggestions from their classmates on resolving problems. Finally, the discussions also brought issues to the attention of the instructors who were then able to communicate directly with each other.

**PEDAGOGICAL IMPLICATIONS AND CONCLUSION**

**Pedagogical Implications**

This project has a number of pedagogical implications that are being incorporated in a current CMC project, resulting in a much more successful experience for both the students and instructors involved.

1. Teacher planning and involvement are critical.
2. Technical support plays an important role.
3. Students need training in the technical and cultural aspects of CMC.
4. Tasks must have a concrete framework; provide students with a collaboration contract.
5. Tasks must be motivating and engaging.
6. Collaborative projects should include a “getting-to-know-each-other” time.
Teacher planning and involvement

The idea of teachers taking a hands-off approach and allowing their students to engage in collaborative learning projects across the globe in a Vygotskian Zone of Proximal Development is enticing. Unfortunately, it is also not always realistic. In order to ensure a successful CMC experience for students, instructors need to do a great deal of preplanning, especially if they wish to have their students engage in synchronous communication. Ideally, courses should be arranged so that they can meet, at least occasionally, at the same time so that synchronous communication can take place using lab facilities with high speed connections and adequate equipment.

In the current project between the US students and students in Turkey, the details were planned out nearly a year in advance. The US class meets at 8:30 am local time, and the Turkish class meets at 4:30 pm their time—the same virtual time. The year of early planning was necessary because many universities schedule classes and classroom assignments this far ahead and ensuring a synchronous schedule was crucial.

Instructors must also make prearrangements regarding how to match students, what topics might be discussed, what tools might be utilized, and a minimum of how many contacts should take place. While it is not necessary that the instructor should take the role of controller in this type of project, the instructor must become both a facilitator and guide both before and during the communication. All of this takes time, sometimes a great deal of time, and instructors must begin the planning process early.

Technical support

Without good technical support all the preplanning in the world may be for naught. If, ideally, courses engaged in CMC collaboration can meet synchronously in labs, lab assistants can provide valuable support. However, this still does not ensure success. At the US university in the current project, getting programs installed in the lab was often difficult. One program we wanted to have installed in the lab was Messenger. Although the program was eventually installed, the lab administrators initially maintained that installing it was problematic because instructors in the past had complained about their students using it to chat with friends instead of paying attention in class. In addition, lab administrators were hesitant to install CMC programs they were not familiar with due to security risks. Obviously, installing programs in labs that allow for the two-way transfer of information also carries the potential risk of creating security vulnerabilities. Once again, preplanning is necessary to avoid these issues. In the current project between the US and Turkey the groups are in labs—both of which have excellent technical support.

Training in technical and cultural aspects of CMC

As discussed in this paper, a variety of CMC tools is available for collaborative projects. While many students are already familiar with some, such as email and basic chat, they may not be accustomed to others, such as message boards, MOOs, and some forms of audio and video chat. If we wish our students to make use of this technology we must first train ourselves and then our students, and this is not a small task. The administrators of the Lingua MOO (http://lingua.utdallas.edu), for example, recommend that instructors spend a minimum of 20-40 hours exploring the technology themselves prior to bringing students there. After this, instructors must explore the environment with their students, train them how to use it, and be ready to answer their questions. This is not to say that instructors must be experts in all the technologies they utilize, but they must at the very least be able to give basic technical training to their students and point them towards resources that might answer their more advanced
questions, whether that be a lab administrator or a help address for the various products they are using.

In addition to technical conventions, instructors should give some instruction to their students regarding the cultural conventions of CMC communication. This would include basic information about ways to hold the floor in synchronous communication and ways to ensure successful asynchronous collaboration. This discussion should also include a cross-cultural analysis of communication conventions for the participants. In this project, for example, it became clear that the concept of time was very different for some participants.

**Concrete framework and collaboration contract**

While the initial instructional plan for this project was to allow the students maximum freedom in designing and implementing their collaborative projects, this was not necessarily realistic. For example, the restricted amount of collaboration time due to conflicting university schedules meant that there was little time for the students to spend on designing projects and this sometimes resulted in a lack of ownership within the groups. This problem again underscores the need for preplanning on the part of instructors. Instructors must provide their students with a concrete framework to follow, including steps in their collaborative projects and incremental deadlines for those steps. Much of this could be included in a collaborative contract that lays out deadlines for the steps in the project but also includes information regarding rules for interaction—how to set up meetings, what to do if a partner does not show up, and so forth.

**Getting-to-know-each-other time**

Even though time is often very limited in this type of collaboration, the importance of interpersonal connections between the participants is crucial for successful CMC projects. It appears that the initial phase of getting to know each other is as necessary in virtual working groups as it is in face-to-face working groups. The groups which used chats to develop the collaborative projects eventually produced far more developed and in-depth projects than the other groups, and they also showed greater levels of enthusiasm for the entire project. Transcripts of their chat sessions indicate that they spent more time in social exchanges than the other groups, and, in some cases, the collaboration grew into solid relationships which continued even after the project had ended. Susan very succinctly summarized the situation:

> Building a relationship via CMC can really increase the motivation of a student. After I began building a relationship with Carlos, I was much more motivated to complete the project. Furthermore, I was actually excited to discuss our assigned topic. This relationship proved to be a great tool in my learning about the topic.

> On the whole, the students’ final evaluation of the experience was extremely positive. One of the aspects that the students from both groups evaluated most positively was the opportunity to contact people of their same field of study. One US student summed it up thus, “I had a good opportunity to meet qualified and filtered students living in outside the U.S., and learned their new cultures, school systems, interests, and even their religious perspective.”

**CONCLUSION**

This report began with the statement that this cautionary tale of two cities included both the best and worst of times. The best of times included opportunities to meet and work with partners across the world, a finding mentioned by a number of other researchers (Belz, 2002;
Belz & Reinhardt, 2004; Kelm, 1992; Müller-Hartmann, 2000; O’Dowd, 2003; Tudini, 2003), the safe environment provided by the collaborative situation, the potential for authentic communication while engaging in a collaborative project, and the technological ability of some forms of CMC to keep an automatic transcript of communication. In short, CMC allowed the participants to communicate with students across the ocean in an interesting and exciting way that would not be possible otherwise.

Unfortunately, in addition to these best times, there were also experiences on the other end of the spectrum. While these were not always necessarily the worst, they were, at the very least, challenging times. The challenges were divided into three categories: asynchronous, synchronous, and shared issues. Some of the problems were related to the nature of CMC (e.g., the need for high speed connections for synchronous CMC and the requirement that programs be downloaded onto computers), while many of the other challenges related to the participants themselves. These issues included failures to use the programs properly, difficulties in attempting to schedule synchronous meetings, and problems related to group dynamics—including the need to learn the rules of participating in CMC and problems with waning enthusiasm. Fortunately, as discussed in the pedagogical implications and earlier in the paper, all of these challenges have potential solutions, which, when implemented, should lead to successful CMC collaboration.

NOTES

1 MOO is an acronym for MUD Object Oriented, which is a bit meaningless unless one knows that a MUD is a MultiUser Dungeon (or MultiUser Domain). MUDs first appeared in the late 1970s as an online environment on PLATO where fans could get together to play games like dungeons and dragons. MUDs were strictly text based. MOOs are a later evolution of MUDs and, as their name implies, are more “object oriented.” An example of this is the LambdaMOO, which began in 1990 (http://www.lambdamoo.info). This study utilized the Lingua MOO (http://lingua.utdallas.edu), which utilizes a Java-enhanced web interface.

2 The forum pictured is an updated version of the original forum and is being constructed by new membership (see http://www.eslweb.org/cmcforum). The original forum was lost to the scourge of cyberspace—a hacker.

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