

Negotiation of Meaning between an L2 Teacher and Students in Face-to-Face Interactions and CMC*

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This article describes an analysis of negotiations of meaning between an English-as-a-second-language (ESL) teacher and her students as they use two communication modes: face-to-face interaction and computer-mediated communications (CMC) interaction. The analysis focuses on signals, that is, utterances by one or the other interlocutor that indicate the speaker has a problem in comprehension. In each negotiation routine, a signal is identified and classified as one of four categories: global clarification, local clarification, global confirmation, and local confirmation. Important findings include the following: 1) in both communication modes the teacher used global confirmation more frequently than any other signal category; 2) in face-to-face interactions the teacher's signals were more often intended to help her decode student messages, whereas in CMC they were intended to help her elaborate her understanding of what the student had said; 3) the students initiated negotiation in CMC much more frequently than they did in face-to-face interactions; and 4) most of the signals used by the students in CMC were local clarifications of unfamiliar lexical items. The findings suggest that, depending on the classroom context and pedagogical goals, each of the two communication modes can be used effectively either individually or as a complement to the other.

I. INTRODUCTION

The development of networked computers has created new possibilities for human communications. Since 1990, language teachers have begun to utilize networked computers in their classrooms to improve student learning. Indeed, studies have provided ample evidence that computer-mediated communications (CMC) play positive roles in language learning. Some of the advantages of CMC over face-to-face interactions include

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increased participation and participation that places speakers on equal levels (Beauvois, 1992; Kern, 1995; Warschauer, 1996, 1997; Warschauer, Turbee, & Roberts, 1996); increased quality of learner output (Kern, 1995; Warschauer, 1996); a less anxiety-provoking learning environment (Beauvois, 1992; Kim, 1998); and a text-based medium that focuses learners' attention on linguistic forms (Warschauer, 1997).

Although early studies (e.g., Beauvois, 1992; Kelm, 1992; Kern, 1995) have explored the nature of CMC and identified several advantages of this innovative tool in language learning, their results were rather limited by the informal and anecdotal nature of their data. During the last decade, however, CMC research has undergone remarkable expansion. Kern (2006) pointed out that, "unlike early CALL (computer-assisted language learning) studies that tended to test technologies, current studies more often test SLA-derived hypotheses and thus represent a considerable evolution in the field" (p. 195). For example, some studies based on interactionist theories (e.g., Blake, 2000; Fernández-García & Martínez-Arbeláiz, 2002; Fidalgo-Eick, 2001; Pellettieri, 1999; Smith, 2001) have investigated synchronous CMC as it applies to negotiation of meaning, a particular type of interaction that has received considerable attention since the 1980s.

While a sizeable number of studies have investigated negotiation of meaning in face-to-face settings, only a few have examined negotiation in CMC. Of the few CMC studies that do address negotiation, all have focused on learner-learner negotiations; none has focused on teacher-student negotiation in the L2 classroom. That lack of attention in second-language-acquisition (SLA) research on teacher-student negotiation is somewhat surprising given that many studies have suggested that CMC can help balance the power relationships between teachers and students (Beauvois, 1992; Kelm, 1992; Warschauer, 1996, 1997; Warschauer et al., 1996).

In addition, little research has attempted to compare negotiations of meaning as they occur in either mode—face-to-face interaction or online interaction. Although some studies have observed that negotiation patterns during oral interactions are different from those during online interactions (Blake, 2000; Fernández-García & Martínez-Arbeláiz, 2002; Pellettieri, 1999; Smith, 2001), no study has compared those patterns with data from the same set of participants. Instead, the studies merely compared negotiation-related behaviors found in CMC with those found in the traditional face-to-face interactions reported in other studies. To fill the gap, the current study attempts to explore differences in the way the teacher and the students in an English-as-a-second-language (ESL) classroom negotiate meaning in the two modes of interaction. To do so, the study focuses on signals, that is, utterances indicating that the speaker is experiencing a comprehension problem (Pica, Holliday, Lewis, & Morgenthaler, 1989). A better understanding of the two communication modes and their similarities and differences in language use may suggest effective ways that the modes can complement each other in classroom teaching and

learning.

II. LITERATURE REVIEW

1. Negotiation of Meaning

Considerable research suggests that social interaction is essential to language learning. An important type of social interaction is negotiation of meaning, in which interlocutors attempt to modify their linguistic productions to repair communication breakdowns. Interactionist research has suggested that negotiation of meaning promotes language learning by increasing the comprehensibility of language input (Long, 1983) and by compelling language learners to produce comprehensible output (Swain, 1985).

The underlying hypothesis of comprehensible input is that mere exposure to L2 input is not sufficient for learners to internalize the input; rather, the input must be comprehensible if it is to figure into the process of acquisition (Krashen, 1985; Long, 1983). Long (1983) claimed that interactional modifications, such as clarification requests, confirmation checks, and comprehension checks, made by native speakers to L2 learners could contribute to L2 acquisition by providing the learners with comprehensible input.

Swain (1985) drew our attention to a related and equally essential element of L2 acquisition, namely, comprehensible output. Swain argued that comprehensible input alone does not lead to the learners' development of grammatical, discourse, and sociolinguistic competence. Learners must also develop the ability to modify their output as necessary to render their productions comprehensible during conversational interactions. By being able to adjust their outputs, learners become more effective in their attempts to negotiate meaning. Negotiation of meaning, in turn, forces the learners to experiment with alternative expressions, a process that concentrates their attention on target language forms and thus speeds their acquisition of a language (Schmidt, 1990).

Much of the research on negotiation of meaning has employed the model developed by Varonis and Gass (1985) to identify and analyze negotiation routines. According to that model, a negotiation routine consists of four stages: trigger, indicator (now more commonly called signal), response, and reaction to response. A negotiation routine begins with a trigger, an utterance that raises a comprehension problem for the hearer, who responds with a signal that he or she did not understand the trigger. The first speaker then provides a response to remedy the problem, which is followed by the hearer's reaction.

Several studies have classified signals into a number of categories. For example, Varonis and Gass (1985, p. 77) presented seven categories of signals: (1) an explicit indication of nonunderstanding (e.g., "Pardon?" or "What?"), (2) an echo word or phrase from the

previous utterance, (3) a nonverbal response, (4) a summary (e.g., “Do you mean. . .?”), (5) a surprise reaction (e.g., “Really?” or “Did she?”), (6) an incongruous response, and (7) an overt correction. On the other hand, Long and Sato (1983, pp. 275-6) categorized signals into three types: (1) confirmation checks, that is, an “exact or semantic, complete or partial repetition of the speaker’s previous utterance” by which the recipient of the message elicits confirmation that he or she has understood the utterance correctly; (2) comprehension checks, that is, “any expressions by a [speaker] designed to establish whether that speaker’s preceding utterance has been understood by the interlocutor”; and (3) clarification requests, that is, “any expressions by a [speaker] designed to elicit clarification of the interlocutor’s preceding utterance.”

In addition, Rost and Ross (1991) classified strategies for signaling comprehension difficulties into three types: (1) global strategies, in which the respondent indicates nonunderstanding without identifying the trigger (e.g., “What? I don’t understand”); (2) local strategies, in which the respondent indicates the precise location of the trigger (e.g., “What does ‘pound’ mean?”); and (3) inferential strategies, in which the respondent tests hypotheses based on his or her interpretation of what was heard. Thus, previous studies have identified and classified various types of signals according to their surface forms and/or functions, and those categories have been widely used in negotiation studies (although some categories have been altered or augmented by later researchers).

The use of signals is an important element in discourse because it alerts the speaker that his or her partner is having a comprehension problem of a certain type. The two interlocutors can then enter into the type of negotiation that is appropriate to the resolution of the problem. For that reason, the type of signal an interlocutor uses at any given point in an interaction is not arbitrary (Long, 1983); rather, it is closely related to the degree and character of the nonunderstanding and to the interlocutors’ skills in resolving comprehension problems.

2. CMC Studies on Negotiation of Meaning

In general, CMC tools are categorized into two types: synchronous and asynchronous. During synchronous CMC, such as online chat, language learners interact instantly and directly. During asynchronous CMC, such as e-mail and e-bulletin boards, learners experience a delay between message and response. Because of its potential for dynamic interaction, synchronous CMC, especially online chat, has received more attention in the negotiation research. As Levy and Stockwell (2006) observed, “The nature of chat may make it more conducive to negotiation than are asynchronous forms of CMC [because] when partners are waiting for responses in real time, learners may find it easier to ask their partner for information rather than consult other resources, such as a dictionary” (p. 89).

A small but growing number of studies (e.g., Blake, 2000; Fernández-García & Martínez-Arbelaz, 2002; Fidalgo-Eick, 2000; Dami Lee, 2004; Soyoung Lee, 2002; O'Rourke, 2005; Pelletier, 1999; Smith, 2001; So Young Kim, 2006; Toyoda & Harrison, 2000) have investigated language learners' use of synchronous CMC from an interactionist perspective. Much of that research has explored negotiation of meaning between pairs of speakers (e.g., Blake, 2000; Fidalgo-Eick, 2001; Soyoung Lee, 2002; Morris, 2005; O'Rourke, 2005; Pelletieri, 1999) or within small groups of participants not exceeding four people (e.g., So Young Kim, 2006; Kötter, 2003; Dami Lee, 2004; Toyoda & Harrison, 2000).

Presumably, turn-taking during online chats involving multiple participants is highly complicated, and a number of overlaps can be expected. In addition, messages in online chats appear on the screen in the order they are sent, not in the order they are written. As a result, it might be much harder to detect a communication breakdown and trace its resolution in online chats involving multiple parties. Probably for that reason, CMC researchers have preferred pair interaction to large-group interaction in their study designs. It has been reported (Schallert et al., 1999), however, that CMC users quickly adapt to the peculiar turn-taking system in synchronous chats, and they can soon handle message exchanges skillfully after an initial period of confusion. Because the purpose of the current study is to determine negotiation patterns used by classroom participants as they engage in both online and offline whole-class settings, the study will focus on multi-party CMC interactions.

Most CMC studies investigating negotiation of meaning have examined interactions between language learners. A few studies, however, have looked into the negotiation patterns appearing in interactions between nonnative speakers (NNSs) and native speakers (NSs) (Fernández-García & Martínez-Arbelaz, 2002; Fidalgo-Eick, 2001; Kötter, 2003; Dami Lee, 2003; O'Rourke, 2005). In the Fidalgo-Eick (2001) study, the participants were NSs and NNSs of Spanish. The author compared negotiations in NS-NNS groups with those in NNS-NNS groups and found that the NSs used less English (the learner's native language in this case) and supplied more corrective feedback than did the NNSs.

In another study, Fernández-García and Martínez-Arbelaz (2002) found that NS-NNS groups engaged in a significantly higher number of negotiations than did the NNS-NNS groups. The authors suggested that the NNS groups engaged in fewer negotiations because of their shared classroom background and native language. Two studies, Kötter (2003) and O'Rourke (2005), focused on online tandem learning, "a configuration involving pairs of learners with complementary target/native languages" (O'Rourke, 2005, p. 433). In tandem learning, learners switch back and forth between NS and NNS roles as they switch from one language to the other. Both studies reported some differences between NS and NNS learners in their ways of signaling and responding.

Whereas studies have focused on NNS-NS negotiation in CMC, none of the native speakers who participated in the studies took the role of a teacher. Thus, negotiation of meaning in CMC between teacher and student is another area that needs investigation.

One of the appealing characteristics of synchronous CMC is that its language resembles the spoken language. Although CMC is a writing activity, it involves active, real-time interaction among participants, just as in face-to-face interaction. This resemblance between synchronous CMC and face-to-face interaction may be one reason that some educators have incorporated CMC into their strategies for communicative language learning. As Smith (2001) observed, "We may be tempted to assume that computer-mediated (negotiated) interaction among learners occurs to the same degree and in the same fashion as that found in a face-to-face environment" (p. 38).

The fact is, however, that some studies have identified differences between the negotiation patterns of synchronous CMC and those of face-to-face interaction (e.g., Blake, 2000; Fernández-García & Martínez-Arbelaiz, 2002; Pellettieri, 1999; Smith 2001). For example, the CMC data from Fernández-García and Martínez-Arbelaiz (2002) showed a low incidence of echo questions and a high frequency of explicit statements of nonunderstanding. Those results are in clear contrast with findings regarding face-to-face interactions. Pellettieri (1999), moreover, found that, in CMC interactions, students tended to elaborate or modify their meaning in their responses to their interlocutor's signals. In contrast, other studies (Oliver, 1995; Pica, 1988; Pica et al. 1989) have shown that students involved in face-to-face interactions tend to limit their responses to one- or two-word utterances.

Those findings, however, should be carefully interpreted, because the CMC interactions observed in any one study are compared with face-to-face interactions reported in other studies. For a more rigorous comparison, the current study examines the interactions between the same participants in both CMC and face-to-face settings. By doing so, this study may increase the credibility of the argument that any differences found in participant behaviors across the two communication modes are more likely to be due to differences in the modes.

3. L2 Classroom Negotiation

In general, interactionist researchers (Doughty & Pica, 1986; Long & Sato, 1983; Pica, 1987; Pica & Doughty, 1985; Pica & Long, 1986) have argued that teacher-student interaction does not provide as favorable an environment for negotiation of meaning as does student-student interaction or NS-NNS interaction outside the classroom. Pica (1994) suggested that the rarity of teacher-student negotiation in the L2 classroom may be due to the imbalance in the power relations between the teacher and students, to traditions in

language teaching, and to expectations about the language classroom.

Whereas the interactionist claims are based on the frequency of negotiation routines between teacher and students, other studies (e.g., Liebscher & Dailey-O’Cain, 2003; Musumeci, 1996) have called attention to the actual process of negotiation between teacher and students. For example, Liebscher and Dailey-O’Cain (2003) found that both the teacher and the students initiated repairs and participated in negotiation of meaning in the classroom, but in ways that reflected their institutional roles. One finding of the study was that the teacher and the students used different types of repair initiation or used the same types in different ways. The authors explained that “the initiation of repair in this classroom seems to be governed by a complex set of guidelines that permit both students and the teacher to interact with each other within the boundaries of their respective roles as learners and the instructor” (p. 387).

On the other hand, research has rarely addressed teacher-student negotiation in the CMC environment. Some studies (e.g., Kelm, 1992; Kern, 1995) reported that CMC seems to afford classroom members a more equal footing and more democratic participation because the medium “has the potential to subvert the traditional roles enacted by teachers and students” (Fernández-García & Martínez-Arbelaiz, 2002, p. 282). Nevertheless, little is known about whether and how teacher and student participate differently when they engage in the particular type of interaction, negotiation of meaning, in CMC.

III. METHOD

1. Setting and Participants

Data collection was conducted in an intermediate listening/speaking ESL class at a large university in the U.S. The teacher of the class was a female native speaker of American English with more than five years of teaching experience. The student participants included five Koreans (three men and two women), two female Chinese, one female Colombian, and one female Brazilian. The participants represented a wide range of professional and educational backgrounds and included university students, visiting scholars, businesspeople, and family members. Reflecting the diversity of the general student population, the students participating in this study had diverse English-learning goals, such as improvement in general communication, achievement of educational or business objectives, or simply the pleasure of learning the language. The participants, however, were homogeneous in terms of English proficiency, although the Asian students seemed to have a generally greater competence in vocabulary and grammar than the students from South American countries. All of the student participants had resided in the U.S. less than a

year at the time of data collection.

2. Procedure

The class was observed and videotaped once a week during the semester. Videotapes of 15 class sessions were transcribed verbatim to form a large database of face-to-face interactions. Six of the 15 class sessions were randomly selected, and their data were drawn from the database for analysis.

The class met every Monday, Wednesday, and Friday of a 15-week semester. Class activities included listening to audiotapes, watching videotapes, responding to dictation, performing pronunciation drills, role playing, and participating in teacher-fronted discussions and pair/group discussions.

In addition, the class members, including both the teacher and the students, had seven CMC sessions, which were held once every other week. For CMC activities, the class participants moved to a computer lab where they could use networked computers. A software program, called *Daedalus Interchange*, was used for the participants' online chats. During the periods of CMC activity, the teacher and the students, seated at individual workstations, responded to one another's comments. That is, the whole class, including the teacher and the students, interacted with one another. Because the purpose of this study was to compare negotiation patterns in face-to-face environments with negotiation patterns in CMC environments, both in whole-class settings, only the whole-class CMC interactions (as opposed to dyads or small groups) were used for this study.

At first, some students had difficulties interacting because of their unfamiliarity with the online discussion program, insufficient typing skills, or both. For that reason, data from the first CMC session was removed from the data set. After the first session, the students quickly adapted themselves to the program. For each CMC session, which lasted approximately 30 minutes, the students were asked to expand their discussion on the topic they had discussed in class for the week. Although no experimental design was adopted to control the types of interaction in the two different communication modes, the whole-class interactions in both modes shared certain characteristics. For example, interactions in both modes were open-ended and conversational. The researcher observed every CMC session and collected and analyzed printouts of the online interactions.

3. Data Analysis

The first step of data organization was to examine the videotape transcripts and identify whole-class interactions between the teacher and the students in the face-to-face setting. Because the focus of the study was on teacher-student interaction in the whole-class

environment, other types of interactions, such as peer interactions and teacher-student interactions in pair- or group-work environments, were excluded.

The next step was to identify negotiation-of-meaning routines in both the face-to-face interaction and CMC according to the model outlined in Varonis and Gass (1985). For further analysis, all the signal utterances were classified into four categories: global clarification, local clarification, global confirmation, and local confirmation. The four-category coding scheme combined categories from Long and Sato (1983) with those from Rost and Ross (1991). Actually, Long and Sato proposed three categories (confirmation checks, comprehension checks, and clarification requests), but the category of comprehension checks was excluded in the current study because comprehension checks, unlike clarification requests or confirmation checks, are concerned with anticipated, rather than perceived, comprehension problems. In addition, the current study adopted the distinction between global and local strategies by Rost and Ross; however, another category from Rost and Ross (inferential strategies) was reduced to a subcategory under confirmation checks.

The distinction between global and local signals depended on the specificity of the source of the comprehension problem, as indicated by the signal itself. If an interlocutor “explicitly identifies the trigger or indicates its precise location in the preceding discourse” (Smith, 2003, p. 43), it was classified as local. On the other hand, if the interlocutor did not specify the trigger when he or she indicated the nonunderstanding, the signal was classified as global. If the purpose of the signal was to request additional information from the speaker, the signal was classified as clarification, whereas it was classified as confirmation if the signal served to test the hearer’s understanding and interpretation of what had been said.

Details about each category are provided in the following paragraphs, with examples excerpted from the data.

Global Clarification. This type of signal is used to indicate nonunderstanding of the entire utterance previously produced and alerts the speaker of the need to repeat or explain what he or she has said. Some examples of global clarification are “I don’t understand,” “Say that again,” “What?” “Can you explain it?” or a blank face (in face-to-face interactions).

Example 1 (face-to-face interaction)

S: She visiting, they visiting the friend’s cabin, friends.

T: Say that again?

Example 2 (CMC)

S: Who did the job that you think is important to your life?

T: Glenda, I'm not sure I understand your question. Can you explain a little bit more?

Local Clarification. This strategy is used to indicate nonunderstanding and request further clarification of a specific trigger. The trigger in this case is limited to one word or a short phrase. Typical examples of local clarification are “What is *X*?” “What do you mean by *X*?” and (repetition of what is understood) + “what?” Some examples are presented below.

Example 3 (face-to-face interaction)

S: The medicine is love making? delivers

T: The medicine to do what?

Example 4 (CMC)

T: Here's another one. “Penny wise, pound foolish.”

S: What is the mean *pound*?

Global Confirmation. With this type of signal the respondent checks his or her own interpretation of an entire previous utterance. Examples are provided below.

Example 5 (face-to-face interaction)

S: He want to be a movie director

T: So, he decides to be a movie director?

Example 6 (CMC)

S: Tina [the teacher's first name], I never did ask. The salesman put in plastic bags ever.

T: Linda, do you mean that the sacker just automatically uses plastic?

Local Confirmation. With this type of signal the respondent checks his or her understanding of only part (a word or short phrase) of the previous utterance, not the entire utterance.

Example 7 (face-to-face interaction)

S: have one movie, eh, interview, eh, but is, Italian movie, and in the protagonist, it's the driver, eh, eh, marriage, and, and, two husbands

T: You, you have two husbands?

Example 8 (CMC)

S: have another proverb: umidt cat have afraid water

T: A timid cat?

The four categories above were further divided into subcategories, which will be identified in the Results and Discussion section.

During the coding process, signals were classified not by surface form but by function. To determine the function of a given signal, the researcher had to carefully consider its context of the signal in the discourse as well as other situational factors pertaining to the specific moment. For example, when an interlocutor uttered a signal by repeating the previous turn with rising intonation, the signal could function as a clarification (for example, “X?” meaning “What do you mean by that?”) or a confirmation (“X?” meaning “That is what you said, right?”), even though the surface form is the same for each case. To distinguish between the two different signal types, the researcher paid careful attention not only to the preceding and the following utterances but also to the intonation and facial expression (especially in the case of face-to-face interactions) of the person producing the signal. In Example 9, the teacher’s signal served as a confirmation, as verified by the following turns produced by the student (“yeah”) and the teacher (“okay”).

Example 9 (face-to-face interaction)

S: subdirectory

T: a subdirectory? (*global confirmation*)

S: yeah,

T: okay

On the other hand, the student’s signal in Example 10 was clarification, in that the teacher responded to the signal with further explanation. The student’s intonation and facial expression may have led the teacher to interpret the signal as clarification.

Example 10 (face-to-face interaction)

T: doing a good deed, doing something nice to someone, help someone.

S: deed? (*local clarification*)

T: deed is action, doing something nice to someone. “I’ll do your homework for you.”

IV. RESULTS AND DISCUSSION

1. Initiation of the Negotiation of Meaning

A negotiation routine begins with a signal. Though a trigger precedes the signal, it “is recognized only in retrospect,” that is, when the hearer reacts to it (Varonis & Gass, 1985, p. 76). Therefore, the interlocutor who produces the signal of nonunderstanding actually initiates the negotiation.

An interesting finding of this study was that the teacher initiated most of the negotiations, especially in the face-to-face setting. As shown in Table 1, of a total of 97 negotiation routines in the face-to-face setting, 94% were initiated by the teacher. In the CMC setting, the difference was not so great; of a total of 58 negotiation routines in CMC interactions, 36% were initiated by students.

TABLE 1
Teacher-Initiated versus Student-Initiated Negotiation Routines: Percentages and Numbers

	Teacher Initiated	Student Initiated	Total
Face-to-face interaction	94% (91)	6% (6)	100% (97)
CMC	64% (37)	36% (21)	100% (58)

The students’ reluctance to signal their nonunderstanding in the L2 classroom was also reported in Musumeci (1996). Musumeci observed that L2 students rarely initiated negotiation of meaning in the whole-class setting when they experienced a problem in understanding what the teacher had said. That same reluctance was evident in the face-to-face interactions observed in the current study. In this class, the students rarely initiated negotiation, not even when the teacher encouraged the students to ask questions or request repetition when they did not understand a communication. In the CMC setting, however, the students showed a contrasting behavior; they became much more active in indicating their comprehension problems.

A possible explanation for the students’ infrequent initiation of negotiation during face-to-face interaction may be that the students did not actually experience many comprehension problems in that setting. It is possible that face-to-face interaction is rich with facial cues and paralinguistic devices that contribute to successful communication, whereas the lack of nonverbal information in CMC impedes communication. In this study, however, this hypothesis apparently was not borne out. Interviews with the student participants confirmed that they experienced frequent comprehension problems, but they avoided initiating negotiation routines for various reasons (see Young-Sook Shim, 2005,

for further information).

The more frequent signals of comprehension difficulties in CMC indicated that the students were more active in their participation in that setting. The increased activity can be attributed to several characteristics of CMC, as follows.

First, CMC offers a communication environment that is less anxiety-provoking. For that reason, students may feel more comfortable about letting others know about their comprehension problems. In fact, several studies have documented the benefits of CMC as a tool for lowering L2 learners' affective filters (Beauvois, 1992; Kelm, 1992; Kim, 1998). In face-to-face interactions, many students are reluctant to reveal a lack of understanding, because such an admission would be face-threatening (Musumeci, 1996). In the more relaxed environment of CMC, however, a student can signal a comprehension problem without drawing unwanted attention from the other class members, as would be the case in a face-to-face setting.

Second, the turn-taking rules of CMC, which are obviously different from those in the face-to-face interaction, may affect the participants' communication behaviors. One of the distinctive characteristics of multi-party CMC is that everyone can "talk" at the same time at their own pace. Therefore, participants may signal their nonunderstanding without interrupting the flow of discourse. By contrast, in face-to-face interactions, a signal of nonunderstanding necessarily brings the conversation to a halt.

Third, because CMC is a written medium, students may attempt more negotiations than they would in face-to-face communications. Sometimes a student may feel that he or she lacks the listening skills to participate in the repair of a communication breakdown in face-to-face interactions. In that case, the student may choose not to initiate an attempt to negotiate meaning (Young-Sook Shim, 2005). During CMC interactions, however, the student relies more on reading, an area in which the participants in the current study happened to have proficiency. Therefore, the students were perhaps more comfortable in signaling their nonunderstanding during CMC because they were more confident that they could understand the teacher's explanations and elaborations.

Fourth, the slower pace of CMC gives the students the time to process each incoming message, pinpoint what it is they do not understand, and select the wording that gives the teacher a clear idea of the problem source. In face-to-face interaction, on the contrary, the time between the teacher's input and the expected response may be too brief for the students to process the input properly (Dörnyei & Kormos, 1998), to isolate what has not been understood, and to construct an appropriate signal message.

Some researchers (Kelm, 1992; Kern, 1995; Warschauer, 1996) have suggested that, when students interact through CMC, they are more likely to participate in general exchanges and to communicate with each other on an equal basis. No studies, however, have compared students' negotiation-related behaviors in CMC with those in face-to-face interactions. In that regard, the findings of the current study may prove valuable.

2. Teacher's Signals and Students' Signals

The signals used by the teacher were classified into the four categories. The incidence of signals in each category is shown in Table 2.

TABLE 2
Teacher Signals: Types, Percentages, and Numbers

Signal Type	Face-to-Face Interaction	CMC
Global clarification	21% (19)	16% (6)
Local clarification	23% (21)	24% (9)
Global confirmation	47% (43)	57% (21)
Local confirmation	9% (8)	3% (1)
Total	100% (91)	100% (37)

What seems particularly interesting in Table 2 is that the teacher tended to use global confirmation in both media far more than she did the other types of signals (47% in face-to-face interactions and 57% in CMC). The predominance of global confirmation as the signal of choice may indicate that the teacher wanted to deflect attention from the students' failure to communicate. In contrast, a clarification request is a direct indication of such a failure (Musumeci, 1996). Musumeci provided two further explanations for teachers' frequent use of confirmation strategies. First, the teachers' intention may be "to help their students save face" (p. 315) and "to lighten the linguistic load placed upon the students" (p. 316). Second, teachers, who normally take responsibility for leading classroom discourse, may be trying "to create coherent conversational texts" (p. 315).

The students presented a different distribution of signals across the four categories (Table 3).

TABLE 3
Student Signals: Types, Percentages, and Numbers

Signal type	Face-to-face interaction	CMC
Global clarification	33% (2)	33% (7)
Local clarification	33% (2)	57% (12)
Global confirmation	33% (2)	5% (1)
Local confirmation	0% (0)	5% (1)
Total	100% (6)	100% (21)

The frequency of student-initiated negotiation in the face-to-face setting was so low—a total of six occurrences—that any discussion of each type of signal would not be meaningful. In the CMC setting, however, the students' selection of signal types was in

sharp contrast with that of the teacher. The students produced a much lower percentage of confirmation signals (10% of students' signals compared to 60% of the teacher's signals), and a much larger percentage of clarification signals (90% of the students' signals compared to 40% of the teacher's signals). Apparently, because the students' messages were often incomplete, inaccurate, and incomprehensible, the teacher frequently had to check her understanding and test her interpretation. On the other hand, because the teacher's messages were relatively accurate and complete, the students relied more on clarification strategies than inferential strategies when they faced a comprehension problem.

3. Subcategories of Clarification and Confirmation Signals

For a more detailed analysis, each category was divided into subcategories. As shown in Table 4, global clarification comprises three subcategories: explicit statement of nonunderstanding, indication of global nonunderstanding, and request for further explanation or examples. Local clarification comprised four subcategories: partial repetition along with an indication of nonunderstanding, repetition, request for further explanation, and request for meaning of a specific lexical item. Table 4 is a breakdown of the clarification subcategories and the number of occurrences of each.

TABLE 4
Subtypes of Clarification Signals (T-I: Teacher Initiated, S-I: Student Initiated)

Category	Subcategory	Face to Face		CMC	
		T-I	S-I	T-I	S-I
Global clarification	a) Explicit statement of nonunderstanding (e.g., <i>I don't know, I don't understand</i>)	0	0	0	4
	b) Indication of global nonunderstanding (e.g., <i>What? Eh? Say that again, blank face</i>)	17	2	0	0
	c) Request for further explanation or examples (e.g., <i>What do you mean? Can you explain more? Can you give some examples?</i>)	2	0	6	3
	TOTAL GLOBAL	19	2	6	7
Local clarification	a) Partial repetition + indication of local nonunderstanding	20	0	0	0
	b) Repetition (echo question)	0	2	1	1
	c) Request for further explanation (e.g., <i>What do you mean by X? Can you explain more about X?</i>)	1	0	8	0
	d) Request for meaning of a specific lexical item (e.g., <i>What is X?</i>)	0	0	0	11
	TOTAL LOCAL	21	2	9	12

According to Table 4, the teacher used indication of global nonunderstanding (17 out of 19 global clarification signals) and partial repetition with indication of local nonunderstanding (20 out of 21 local clarification signals) far more frequently in the face-to-face interaction. Examples of those signals are the following.

Example 11 (face-to-face interaction)

S: Yeah, because she didn't know the address

T: What? (← indication of global nonunderstanding)

S: She didn't know the address

T: She didn't know the address, so she couldn't mail him the letter, okay.

Example 12 (face-to-face interaction)

S: She visiting, they visiting the friend's cabin, friends.

T: Say that again? (← indication of global nonunderstanding)

S: They visiting the friend

T: They were visiting a friend

Example 13 (face-to-face interaction)

S: The person asked to me do you want a plastic or paper bag, it was (**) to me, in Korea, we use the vinyl instead of plastic, okay?

T: You use what instead of plastic? (← partial repetition with indication of nonunderstanding)

S: Vinyl bag.

T: Vinyl.

(**) inaudible speech

According to the data, the teacher often used linguistic strategies, such as "Say that again," and "What?" in Examples 11, 12, and 13, to signal her comprehension problems. Those signals were made not because the teacher was unable to interpret what she had heard, but because she did not hear or decode what the student had said. In those cases, students simply repeated their previous utterance in response to the teacher's signals. The teacher's decoding problems may have stemmed from several factors, including background noise, the students' inaccurate pronunciation, and their low voices because of their lack of confidence. Such decoding problems, however, are not relevant to CMC, and therefore they do not appear in the CMC data.

Note that the teacher made requests for further explanation more frequently in CMC (6 out of 6 global clarification signals and 8 out of 9 local clarification signals) than in face-to-face interactions. Examples are presented below.

Example 14 (CMC)

S: Bush's favorite word is ax

T: what do you mean Taehoon? (← request for explanation for the entire utterance)

S: evil of axes. In address, president Bush said that Iraq and north korea were the evil of axes.

T: Axis... Axis of Evil... That means a coalition, a partnership, an alignment. Axes, Axis, it sounds the same.

Example 15 (CMC)

S: no, but someone is using strange perfume.

T: Laura, what do you mean by strange perfume? What kind of perfume is strange? (← request for explanation for part of the prior utterance)

S: I do not know what is strange perfume. maybe its means some smell I can not used to it, and people do not use it more often.

The nature of CMC may have contributed to the teacher's frequent requests for further information. Many researchers (Kern, 1995; Warschauer, 1996) have suggested that CMC gives learners more time to prepare lengthier and more complex utterances than they have in face-to-face interaction. Similarly, the students in the current study seem to have attempted to express relatively complicated ideas, attempts they would not have made in face-to-face interaction. The additional complexity of the ideas, in turn, often required the teacher to ask for clarification. In addition, in the CMC setting the teacher may have felt she could elicit more student production because the students were more capable of handling her requests for explanations. As shown in Examples 14 and 15, the students were indeed actively involved in clarifying their meaning. Thus, the more complex and longer utterances in CMC suggest that the medium can be effectively used to help students acquire more sophisticated communicative skills.

Table 4 also shows how the students' strategies for initiating negotiation differed in the two modes. As indicated earlier, in the CMC setting the students were much more active in initiating negotiation of meaning. They even made explicit statements such as "I don't know" and "I don't understand" to signal their nonunderstanding, statements that were rare in the face-to-face interactions. Another interesting observation is that the students' clarification signals were requests for the meaning of specific lexical items unfamiliar to them, as shown in Example 16.

Example 16 (CMC)

T: And the disposal of that waste is not always taken care of in an environmentally friendly manner.

S1: What is waste?

S2: waste is trash

The students made frequent use of this type of clarification signal probably because CMC is a written mode of communication in which the students could more easily segment the prior utterance and pinpoint the trigger causing their nonunderstanding, a hypothesis supported by Fidalgo-Eick (2000) and Fernández-García and Martínez-Arbelaz (2002). The small number of student initiations in the face-to-face interactions in this study prohibits us from making any tenable comparisons between student behaviors in the two modes. Nevertheless, we can speculate that the students may tend to use this strategy less frequently in face-to-face interaction because they would lack the time and language ability to identify the trigger.

Table 5 shows the subtypes of confirmation signals and the number of occurrences for each type.

TABLE 5
Subtypes of Confirmation Signals

Category	Subcategory	Face to Face		CMC	
		T-I	S-I	T-I	S-I
Global confirmation	Repetition (echo question)	9	1	0	0
	Rephrasing	24	1	5	0
	Inference	10	0	16	1
	TOTAL	43	2	21	1
Local confirmation	Repetition (echo question)	5	0	0	0
	Rephrasing	3	0	0	0
	Inference	0	0	1	1
	TOTAL	8	0	1	1

As shown, global confirmation and local confirmation were subdivided into repetition, rephrasing, and inference. *Repetition* refers to echo questions that participants used to indicate nonunderstanding. An echo question duplicates the whole or a part of the previous utterance, but it is not necessarily identical with what has been uttered. Instead, interlocutors repeat in the echo question what they believe has been said. A signal is classified as *rephrasing* when the interlocutor repeats the trigger, but with some modification in form. Finally, a signal is coded as *inference* when the confirmation utterance contains rich interpretation that goes beyond what has just been said. Each category is illustrated in the following examples.

Example 17 (face-to-face interaction)

S: doing a good food

T: doing a good food? (← repetition of the entire utterance)

S: good food

T: You can't do a food, you can do, make a food.

Example 18 (face-to-face interaction)

S: Suddenly, they saw strange light from sky, strange light in out from sky.

T: Three lights? (← partial repetition)

S: No, they saw a strange light.

Example 19 (face-to-face interaction)

S: They, they took off the car.

T: They got out of the car? (← rephrasing)

S: Yeah

Example 20 (CMC)

S: we prepare individual shopping bag so we don't need plastic bag or paper bag

T: Sumi, I see, you mean you just have your own bag that you keep and reuse. You take it with you everytime you go to the grocery store, right? (← inference)

S: You bet! It's uncomfortable but we can product nature right?

As shown in Table 5, students rarely used confirmation signals in either communication mode. Therefore, the focus of discussion here will be on the teacher's use of confirmation signals.

First, the teacher used repetition and rephrasing frequently in face-to-face interaction to confirm her understanding, but far less frequently in CMC. In fact, there was no occurrence of echo question in CMC. A low incidence of echo questions in CMC was also reported in Fernández-García and Martínez-Arbelaz (2002) and Fidalgo-Eick (2000). The primary function of repetition or rephrasing is to confirm that the interlocutor has heard or understood correctly. In the current study, because the students' oral proficiency was low, the teacher may have frequently felt it necessary to confirm what she had heard during face-to-face interactions. In contrast, because of the written nature of CMC, the teacher likely perceived significantly fewer difficulties in decoding messages, and as a result she relied less on the strategies of repetition or rephrasing,

Table 5 also shows a difference between the two modes in the teacher's use of inference signals, which represented 76% of the total occurrences of global confirmations in CMC and only 23% of global confirmations in the face-to-face mode. That difference can be explained by comparing the characteristics of student language during CMC and those

during face-to-face interactions. In face-to-face oral interactions, the students rarely initiated interaction with the teacher, perhaps because of their lack of confidence and relatively low oral proficiency. Their turns were mainly responses to the teacher's elicitations. For that reason, student messages were often simple and brief, and therefore there was little that the teacher needed to infer. In contrast, the students were inclined to compose more complex and longer messages in CMC. With the additional complexity and length of the student's messages came the increased likelihood that the teacher would encounter expressions that she could not be sure she understood correctly. The teacher may have needed to confirm her understanding by creating meaning from the student's words and by experimenting with rich interpretation (Musumeci, 1996) rather than by merely repeating or rephrasing what she had heard.

V. CONCLUSION

This article has reported an analysis of teacher-student negotiations in face-to-face interactions and in CMC. The focus was on signals that indicated the occurrences of comprehension problems. The first step of the analysis was to identify negotiation routines in the data and to determine who—teacher or student—initiated the negotiation in each routine. In addition, the signal for each negotiation routine was classified into one of four categories: global clarification, local clarification, global confirmation, and local confirmation. The categories were further divided into subcategories. Next, for each mode, the number of each type of signal was calculated for the students and the teacher.

This quantitative approach was not intended for statistical analysis; rather, it was intended to be a comparison of negotiations initiated by students with negotiations initiated by the teacher in both face-to-face and CMC modes of communication. The findings of the study were discussed in relation to the differences in the communication media, differences in institutional roles assumed by the teacher and students, and differences in linguistic ability between the teacher as a native speaker and the students as nonnative speakers. Some of the important findings are summarized as follows.

- 1) Of the four categories of signals, the teacher used global confirmation most frequently in the face-to-face environment and in the CMC setting.
- 2) In face-to-face interactions, the teacher tended to use both clarification and confirmation signals to indicate her comprehension problems while decoding her students' messages.
- 3) In CMC, to acquire a more elaborate understanding where simple decoding problems did not exist, the teacher tended to initiate negotiation of meaning by requesting

further explanation and checking her rich interpretation.

- 4) Students initiated negotiation in CMC much more frequently than they did in the face-to-face interactions.
- 5) Most of the signals used by the students in CMC were local clarification requests for the meaning of unfamiliar lexical items.

The study is valuable in that it is the first attempt to investigate teacher-student negotiation in the two different modes—face-to-face and CMC interactions—with data from a single group of participants. As mentioned earlier, there has been no study investigating how similarly or differently the same participants are involved in face-to-face interactions and CMC. One of the most significant contributions of this study, therefore, is that it sheds light on the characteristics and patterns of language use, particularly language use related to negotiation of meaning, in the two different communication modes. In addition, the study gives careful consideration to the institutional and linguistic roles of the teacher and students, as well as the different characteristics of the two communication modes. Therefore, the findings of this study may help L2 teachers devise methods to employ the two interaction modes—both individually and as complements to each other—depending on given contexts and pedagogical purposes.

The study has at least two limitations. First, the category assigned to each signal may not correspond to the speaker's true intention. For instance, a speaker's repetition of the interlocutor's words for signaling his or her comprehension problem can be categorized as clarification or confirmation, depending on the function of the signal. Admittedly, we are not entirely privy to the speaker's true intention, although careful consideration of the situational and linguistic context is given to distinguishing the speaker's real intention. Introspective research methods, such as think aloud and stimulated recall, would help verify the reliability of the researcher's categorization. Another limitation of the study is that the number of negotiation routines identified in the data of this study was too small for any meaningful statistical analysis. More evidence is necessary to determine whether the negotiation-initiation patterns identified in this study were typical of L2 classrooms. Future research based on a larger database is necessary for more creditworthy and generalizable results.

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