

The effect of computer-mediated communication (CMC) interaction on L2
vocabulary acquisition: A comparison study of CMC interaction and face-to-face interaction

by

Ju Young Lee

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Program of Study Committee:
Carol A. Chapelle, Major Professor
Dan Douglas
Stacey Weber-Feve

Iowa State University

Ames, Iowa

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ABSTRACT

This study investigates the differential effects of CMC interaction (both text-chat and voice-chat) and face-to-face interactions on university level of ESL students' vocabulary acquisition. More specifically, this study examines (a) whether learners engage in negotiated interaction when they encounter new lexical items, (b) whether CMC interaction help learners acquire new lexical items productively, (c) whether there are any special features related to negotiation routines in the most acquired words and the least acquired words, and (d) whether ESL students find CMC interaction helpful for their English learning.

The participants consisted of 12 (6 male, 6 female) international students and visiting scholars at Iowa State University. The research design included a pre-test, a treatment activity, an immediate post-test, and a 1 week delayed post-test. The pre-test containing 24 vocabulary whose referents were auto parts items was given to choose the target lexical items. The type of treatment activity used in this study was an information-gap activity in which the students were required to request and obtain information from each other to complete the task. Two post-tests (immediate and delayed) were administered to assess the acquisition of new lexical items. The immediate and delayed post-tests were offered to students on the treatment day and 1 week after the initial treatment. Finally, a follow-up survey from each participant in CMC interaction group was also used to determine the strengths and weaknesses of computer-assisted language learning (CALL) task and the drawbacks or advantages of using such activities for language learning.

The results showed that all ESL learners in both CMC and face-to-face interaction negotiated to complete their tasks, and all of the twelve target lexical items prompted negotiation for all of the dyads. Moreover, the results revealed that the students in all three

groups recalled more than half of the previously unknown target lexical items in the immediate post-test and delayed post-test. For both productive oral and written acquisition, the results revealed that all three conditions seem to facilitate the acquisition of L2 words, as well as to ensure a good level of retention. However, there were no statistically significant differences between groups and posttests. Thus, meaning negotiation during computer-mediated and face-to-face interaction seems to promote both oral and written acquisition of L2 vocabulary.

In addition, the results indicated that students tended to acquire new lexical items when they had some background knowledge about the target words or they were negotiating both form and meaning with their partners. A follow-up survey data showed that most of the students in both text-chat and voice-chat CMC interaction group had a positive attitude towards this type of activity in online, and they found synchronous chat as an interesting and helpful way of English learning.

CHAPTER 1. INTRODUCTION

According to an interactionist perspective on SLA, conversational interaction in the target language (TL) is the most important way in which learners obtain data for language learning (Long, 1996). Long (1996) argues that interactive tasks that promote negotiation of meaning among learners can facilitate the development of a second language in his Interaction Hypothesis theory. Negotiation of meaning is a process that speakers use to better understand one another, that is, to increase the comprehensibility of language input. In addition to increasing the comprehensibility of input, negotiation of meaning may also raise speakers' awareness of target language forms (Jepson, 2005). Furthermore, while negotiating, the learners receive modified input and produce pushed output (Swain, 1985), and it is thus conscious noticing which makes the input become intake (i.e., internalized into a learner's interlanguage) (Schmidt, 1990). Negotiation of meaning, thus, can promote incidental acquisition of certain features of the L2 that learners attend to both the form and the meaning of these L2 features and also compare these noticed 'gaps' with their output.

Some of the benefits of computer-mediated communication (CMC) are to supply rich input, promote pushed output, provide plentiful and dynamic feedback, focus learners' attention on aspects of the TL, and enhance noticing. CMC interaction is based on interactionist theory in SLA in the sense that while learners are interacting with the task, they can make connections between form and meaning, and this could benefit the learners (Long, 1996; Pica, 1994). Until now, although several studies in computer-mediated communication (CMC) have investigated the benefits of negotiation of meaning in synchronous interaction on L2 development (Chun 1994; Blake 2000; Pelletieri 2000; Salaberry 2000; Fernandez &

Martinez 2002, 2003), there have been only few studies examining the effect of CMC on L2 vocabulary acquisition (De la Fuente 2003; Smith 2004, 2005). De la Fuente (2003) examined the differential effects of CM interactions and face-to-face interactions in the acquisition of L2 word meanings and found that both face-to-face and CM synchronous interaction, seem to be equally effective in promoting written receptive and productive acquisition. However, he also discovered that CM interaction seems to be less effective in promoting oral acquisition of L2 words so that it may not be the best answer for development of productive, oral skills.

Even though CM, text-based interaction seemed to be a good substitute for face-to-face interaction (Blake 2000; Pelletieri 2000; F&M, 2003; de la Fuente 2003; Smith 2003), it may be that voice-based CM interaction would be a good solution for promoting oral productive acquisition since voice chat negotiation routines are an even closer approximation of face-to-face interaction. However, unlike text-based CM interaction, there is a meager quantity of published research concerning second languages and the effects of voice-based chat (Sauro, 2001; Jepson, 2005; Sykes, 2005) and no other investigations specifically appears to address the differential effects of CMC (written or oral) on vocabulary acquisition. In addition, in my knowledge, there seems to be no study that compares face-to-face negotiated interaction and both conditions (text chat and voice chat) with respect to L2 vocabulary development. This research gap suggested the need for examining the differential effects of CMC interactions using both the voice-based chat and text-based chat on L2 lexical acquisition and in response to this need this study addresses this lack of research.

Purpose of the study

The purpose of the study is to investigate the differential effects of CMC interaction (both text-chat and voice-chat) and face-to-face interactions on university level of ESL students' vocabulary acquisition. More specifically, this study focuses on (a) whether learners engage in negotiated interaction when they encounter new lexical items, (b) whether CMC interaction helps learners acquire new lexical items productively.

Research Questions

According to Long's (1996) updated Interaction Hypothesis Theory, interactive tasks that promote negotiation of meaning among learners can facilitate the L2 development. In order to increase the comprehensibility of language input, speakers usually use this negotiation of meaning to better understand one another and thus may also raise speakers' awareness of target language forms. Until now, although several studies in computer-mediated communication (CMC) have shown the positive effects of synchronous interaction on: (a) conversational communication skills (Chun 1994; Kitade 2000); (b) morphosyntactic development (Pelletieri 1999; Salaberry 2000); (c) quality and quantity of production of learner output (Beauvois 1998; Kern 1995; Kitade 2000); (d) amount and equality of participation (Beauvios 1998; Chun 1994; Kern 1995); (e) participant roles (Warschauer 1996; Darhower 2002; Abrams 2001; Bohlke 2003); (f) negotiation of meaning (Blake 2000; Pellettieri 2000; Fernandez-Garcia & Martin-Arbelaiz 2002, 2003; Smith 2003a), there have been only few studies examining the effect of CMC on L2 vocabulary acquisition (De la Fuente 2003; Smith 2004; 2005), especially compares face-to-face negotiated interaction and both CMC conditions (text chat and voice chat) with respect to L2 vocabulary development.

From the literature review, I hypothesize that, as it is the case with face-to-face interactive negotiations, text-based computer-mediated negotiations would make learners notice meanings and forms of certain focused lexical items because the mode of communication is written, and not oral, and therefore can enhance noticing, reflection, and focus on form of the lexical item, through output production and modified output production. In addition, voice-based CMC interaction could be a good substitute for face-to-face interactions for the many reasons specified in the literature review. Accordingly, the following research questions were investigated.

The research questions include:

- (a) To what extent do ESL learners negotiate the meaning for new lexical items through both text-based and voice-based synchronous CMC interaction in comparison to face-to-face oral interaction?
- (b) To what extent do ESL learners acquire new vocabulary through SCMC interaction?
 - Does SCMC interaction help ESL learners to acquire oral and written productive knowledge of new vocabulary?
 - If so, is it as effective as face-to-face oral interaction?
- (c) Are there any special features related to negotiation routines in the most acquired words and in the least acquired words?
- (d) To what extent do ESL learners find CMC interaction helpful in their English learning?

Organization of this Study

The following chapters will include a literature review, Chapter 2, that firstly focuses on several previous CMC studies which have investigated the benefits of negotiation of meaning in synchronous interaction on L2 development. This will be followed by a brief look at smaller body of research in SLA that has looked at the potential effects of negotiation of meaning on L2 vocabulary development, and few studies examining the effect of CMC on L2 vocabulary acquisition. I will also discuss recent CALL research that investigates the effects of voice chat. In chapter 3, I will delineate the materials, and the methods of analysis used throughout the study. Chapter 4 presents and discusses both the quantitative and qualitative results of the study that MSN chat scripts, recordings, descriptive statistics, and a follow-up survey my participants revealed. In Chapter 5, I will conclude this thesis with a summary of the results and implications for EFL teachers and material developers; this chapter also addresses limitations of the study and suggestions for further research.

CHAPTER 2. LITERATURE REVIEW

This chapter provides an overview of research areas related to CMC interaction in L2 vocabulary learning. The first section of this chapter reviewed several previous CMC studies that have investigated the benefits of negotiation of meaning in synchronous interaction on L2 development (Blake 2000; Pelletieri 2000; Fernandez & Martinez 2002, 2003; Smith 2003a). In the second section, a smaller body of research in SLA that has looked at the potential effects of negotiation of meaning on L2 vocabulary development (Ellis et al., 1994; De la Fuente, 2002; Ellis & He, 1999) and few studies examining the effect of CMC on L2 vocabulary acquisition (De la Fuente 2003; Smith 2004, 2005) are examined. The third section deals with some research investigating the effects of voice-based chat (Sauro 2001; Jepson, 2005; Sykes, 2005).

Negotiation of meaning, Interaction, and Language Learning in CMC

In Long's updated version of the Interaction Hypothesis (1996), he stated that interactive tasks that promote negotiation of meaning among learners can facilitate the development of a second language because it connects input, internal learner capacities-particularly selective attention-and output in productive ways. Negotiation is often product of interactional exchanges where communication breakdowns take place. While negotiating, the learner normally receives interactionally modified input, and s/he is also pushed to produce interactionally modified output (Swain 1985). Such negotiation can direct learners' attention to either a discrepancy between their interlanguage and the TL (target language) since learners notice certain input features, and compare them with their own output. Learning may

take place during this negotiated interaction, or negotiation may provide an initial step, serving as a “priming device” for learning (Gass 1997; Mackey, 1999). Negotiation of meaning, thus, can promote incidental acquisition of certain features of the L2, that learners attend to both the form of these L2 features and the meaning they convey and, more importantly, provided that they compare these noticed ‘gaps’ with their output.

A number of studies have shown that on-line interactive negotiations trigger the same processes and create the same conditions seen to favor L2 learning in face-to-face interactions. In particular, within the field of Computer mediated communication (CMC) it is also considered that successful implementation of computer-based, interactive, communicative tasks can yield numerous benefits for L2 learners (Blake, 2000; Chapelle 1997, 1998; Kitade 2000; Pelletieri, 2000; Salaberry 1999; Warshauer, 1997). Blake’s study on CM interaction (Blake 2000) provided evidence on the effect of learner-computer interaction and L2 vocabulary acquisition. Even though Blake (2000) did not focus on lexical acquisition, he showed that synchronous CMC interactions might foster L2 word learning by promoting the types of conditions necessary for interlanguage vocabulary development.

Participants for this study were 50 native speakers of English who enrolled in university-level intermediate Spanish courses and they were asked to carry out networked discussions in pairs during their lab time using a synchronous chat program, *Remote Technical Assistance (RTA)*. Each dyad attempted to solve a series of online tasks such as jigsaw, information-gap, or decision-making that required cooperation with their assigned partner to complete successfully. The results show that lexical confusions make up the most common form of negotiation in these learner/learner networked exchanges and well-designed networked tasks promote learners to notice the gaps in their lexical interlanguage. In

particular, jigsaw tasks were superior to other types of tasks (e.g., information gap, decision-making tasks) to stimulate students' focus on form. Moreover, he noticed that investigated tasks were producing "pushed output" of the type proposed by Swain (1985), since they are text-based and learners must type out or produce the structures in question. Therefore, this study seems to support findings with respect to the beneficial effects of negotiated interaction, and pushed output on L2 vocabulary acquisition and retention.

Pelletieri (2000) examined the effects of task-based NBC on the development of grammatical competence using *ytalk* software. Participants were 20 intermediate-level learners of Spanish from undergraduate Spanish program. During one university quarter, students performed five communication tasks, in which students had a specific topic to discuss, such as jigsaw-type activities. Learners then were asked to jointly compose, on-line, a short piece of discourse based on the information they shared during the task. Each dyad met once a week to complete a specific language task. The results show that the negotiation of meaning occurred across all five communication tasks in task-based interaction. When communication trouble arose, learners negotiated to resolve the problem, and their patterns of interaction look much like those seen in NNS oral conversation. In addition, learners negotiated over all aspects of the discourse, including both meaning and form. However, a great majority of negotiations were triggered by lexical items and the overall content of utterances. The results also show that learners indeed attended to form in their output and produced lexical, syntactic, and semantic output modifications in response to negotiations as well as corrective feedback. The chatting data indicate many instances where learners manipulated the linguistic form of their utterance (lexical, syntactic, or semantic) in order to more precisely convey meaning. The results suggest that corrective feedback was indeed

offered on all aspects of the grammar, although a majority was lexical. Corrective feedback was present in almost equal amounts in both explicit and implicit forms, and that the quality of the feedback was quite good.

Fernandez & Martinez (2002) investigated whether negotiation of meaning occurred when exchanging ideas in synchronous computer-mediated interaction. The participants of the study were 28 native English-speaking learners of Spanish who were enrolled in a third-year course on grammar and composition in foreign language university. All students enrolled in the class were randomly assigned to one of four groups and participated in the chat group discussion in two different sessions approximately 20 days apart from each other. The task consisted of discussing several content questions about a reading assignment. The results showed that the OT (Open Transport) Chat allowed participants to engage in the negotiation of meaning, that is, to indicate a breakdown in communication and to work towards its resolution. In addition, learners negotiated the meaning of a lexical item in the majority of the routines. Nevertheless, some of the types of primes used in the electronic medium differed from those documented in the oral medium. Participants also showed a preference for certain types of indicators and responses. In the overwhelming majority of routines, learners indicated a breakdown in communication by means of an explicit statement of non-understanding in the form of a classroom learned formula learned and other types of indicators were either absent or very infrequent.

In addition, Fernandez & Martinez (2003) compared the negotiations generated by dyads of non-native speakers (NNS-NNS), native-speakers (NS-NS), and non-native and native speakers (NNS-NS) in the oral and the electronic mediums. A total of 37 participants consisted of NSs and NNSs of Spanish pairs in the following way: 14 NNS-NNS dyads, 4

NS-NNS dyads, and 9 NS-NS dyads. The NS-NS dyads were functioned as a control group. The NNS were English-speaking learners of Spanish who were enrolled in one of two sections of a third-year grammar and composition course at an American university. The software program used for this study was Chatnet, a simple Macintosh interface that allows for synchronous networked communication. Two tasks were used in this study: one was to ask participants to find out about each other's lives before coming to the university and the other was to ask participants to find out their plans once they had finished at the university. All dyads completed one task in the oral mode and one in the computer mode. Dyads were given 10 minutes to complete the task in the oral mode; 20 minutes were allotted for the computer written interactions. The results showed that the NS-NNS dyads were the ones with the highest number of negotiation routines. Nevertheless, it was only in the oral mode that the number of negotiations of this group was significantly higher than the number of negotiations in the other two groups. In other words, this study provided evidence that learners of Spanish in a foreign language context negotiated more with native speakers than with other learners in oral conversations. The results also showed that there was a difference between both modes only in the case of the NS-NNS. These dyads negotiated significantly more in oral than in written mode.

Smith (2003a) examined task-based, synchronous computer-mediated communication (CMC) among intermediate-level learners of English. This study specifically explored (a) whether learners engaged in negotiated interaction when they encountered new lexical items, (b) whether task type had an effect on the amount of negotiation that transpires, and (c) how this computer-mediated negotiation compared to that found in the face-to-face literature. Participants for this study were 28 intermediate-level learners of English who were

enrolled in intensive English classes at a Midwestern university. The participants met once a week for 5 weeks in a computer lab during regularly scheduled class meetings. After they received an introduction to the ChatNet Internet Relay Chat (IRC) program, fourteen nonnative-nonnative dyads collaboratively completed 4 communicative tasks in total over the duration of the study, two jigsaw tasks and two decision-making tasks. The results showed that learners, when engaged in CMC tasks designed to facilitate negotiation, engaged in negotiated interaction in about one-third of their total turns. In addition, task type did indeed seem to have an effect on how much learners negotiated for meaning. Learners negotiated a significantly higher percentage of turns when they were engaged in the decision-making tasks than when they worked on the jigsaw tasks. The results also showed that the negotiation patterns in this CMC study were similar to those observed in face-to-face communication, fitting loosely into the Varonis and Gass (1985) model. However, the author argued that this model was insufficient to deal adequately with negotiation in a CMC environment in a detailed manner and must be expanded in order to incorporate better the observed features of negotiation episodes during task-based CMC.

Smith (2005) explored the relationship between negotiated interaction, a type of focus on form episode, and learner uptake. Participants were 24 intermediate-level ESL students (14 females and 10 males) from an intensive English language program at a North American university. They consisted of two intact groups and participated in the study as part of their regularly scheduled ESL classes. The main study employed a within-groups pretest, an immediate posttest, delayed posttest design. Learners met once a week in a campus computer lab during regularly scheduled meeting times over a 6-week period. The treatment included two of each task type: the jigsaw tasks and the decision-making tasks. Immediately

following each task, learners completed an immediate productive posttest (P1) and delayed posttest 7 days after the respective SCMC session. The results showed that uptake moves that were successful occurred very rarely in the data: only 7 such moves occurred in the 66 NFFEes recorded. The author suggests that one possible explanation for the lack of immediate uptake might be because learners were focused primarily on completing the tasks and thus felt a pressure to respond, they may have been less inclined to uptake a previous utterance. In addition, there was no indication that complexity had an effect on learner uptake. In other words, the complexity of the negotiation routine did not seem to affect whether or not learners' uptake information from the interlocutor, nor did it seem to affect the type of learner uptake when it did occur. Finally, the results showed that the presence or absence of learner uptake (successful or unsuccessful) during task-based SCMC activities did not seem to be an important variable in the short and middle-term acquisition of target lexical items. Thus, the results suggested that there seemed to be no relationship at all between uptake occurring during or after an NFFE and lexical acquisition.

The Effect of CMC Interaction on L2 Vocabulary Acquisition

In order to look at the effect of interaction on L2 vocabulary acquisition, I firstly focused on three articles in SLA (Ellis et al., 1994; de la Fuente, 2002; Ellis & He, 1999) and then examined three other CMC research studies (de la Fuente 2003; Smith 2004, 2005). Ellis et al. (1994) investigated the effects of modified interaction on comprehension and vocabulary acquisition among high-school students of English in Japan. Based on the same design, two separate classroom studies which they called the Saitama study and the Tokyo study were undertaken in different teaching contexts. In the Saitama Study, the participants

were 79 third-year high-school students of English and they had been divided into three classes (28 in Group 1, 27 in Group 2, and 24 in Group 3) according to their previous English grades at the school. In the Tokyo Study, the participants were 127 first-year high-school students and they were in three intact classes (43 in Group 1 and 42 each in Group 2 and 3). They all received six English classes each week, one of which was taught by a native speaker of English. Both studies used the same multifactorial design with two dependent variables (listening comprehension and vocabulary acquisition) and two independent variables (premodified input and negotiated input). The three groups in both studies were designated *Baseline Group* (B), which functioned as a control group, the *Premodified Group* (PM) and the *Interactionally Modified Group* (IM). Each group experienced the pretest, the treatment, the posttests, and the follow-up test. The results showed that interactionally modified input resulted in better comprehension than premodified input and it also led to more new words being acquired than premodified input. This result provided the first clear evidence that that interactionally modified input facilitated both comprehension and acquisition of L2 word. However, learners who actively participated in negotiation of meaning did not understand any better than those simply exposed to modified interaction, and did not learn more new words as well. This finding lent some support to the claim that active participation might be less important for acquisition than is sometimes claimed (Ellis, 1988).

Ellis and He (1999) examined an experimental study of the differential effects of premodified input, interactionally modified input, and modified output on the comprehension and the acquisition of new words. The participants of this study were 50 students from six intermediate-level classes of the Intensive English Language Program (IELP) at a university. This study used a multifactorial design with three dependent variables (comprehension),

vocabulary acquisition (recognition), and vocabulary acquisition (production)), and three independent variables (premodified input, interactionally modified input, and modified output). Each class in the IELP were designated as the *Premodified Group* (n=18), the *Interactionally Modified Group* (n=16), and the *Output Group* (n=16). The three groups each completed a pretest which administered one week before the treatment, the treatment, and five posttests. The results of this study indicated that the modified output condition worked better than the input conditions and the modified output group proved superior to either of the input groups in promoting retention as well. The results also revealed that the comparative effects of the different task conditions were very similar to those for comprehension and vocabulary recognition; the modified output group outperformed the other two groups, whereas there was no difference between the premodified and interactionally modified input groups.

De la Fuente (2002) investigated the differential effects of three oral interactions (nonnegotiated premodified input, negotiation without “pushed output”, and negotiation plus pushed output) on L2 learners’ vocabulary comprehension, receptive acquisition and productive acquisition. A total of 32 intermediate-level English learners of Spanish at a university participated in the study and belonged to five intact classes in the basic language program. They were randomly assigned to one of three experimental groups: nonnegotiated, premodified input (NNPI); negotiation of input without output (NIWO); and negotiation of input plus output (NIPO). Each group performed two listening comprehension tasks (of the information gap format) and tasks were carried out in two sessions (consecutive days) of 20 minutes each. Three posttests were administered to measure the immediate and delayed effects of the treatment. The results showed that the group exposed to negotiated interaction

(NIWO+NIPO) demonstrated a significantly higher level of comprehension of L2 words than the NNPI group. The results also revealed that both negotiated interaction groups appeared to have promoted receptive acquisition of words and no significant difference was observed between NIWO and NIPO group. Although negotiated interaction plus output (NIPO) did not promote receptive acquisition more than negotiation without output, the results showed that significant differences were found between the NNPI and the NIPO groups for all three posttests. In other words, the NIPO group was more effective in promoting productive acquisition than the NNPI group.

In her recent CMC studies, De la Fuente (2003) examined the differential effects of CM interactions and face-to-face interactions in the acquisition of L2 word meanings by learners of Spanish. Three intact classes of Elementary Spanish in university participated in the study and they were randomly assigned to one of two experimental groups: Oral Interaction group (OIG), and Virtual Chat group (VCG). A pre-test consisting of two segments (productive and receptive) was administered the day before the treatment to select the target lexical items. Both the Oral Interaction Group (N=12) and the Virtual Chat group (N=12) was given two paired, interactive, information-gap activity tasks per day. The only difference between two groups was that the tasks were networked and computer mediated; that is, students had to communicate with their pairs via Virtual Chat. Three receptive and productive, oral and written post tests were used to assess acquisition of the target items 1 day, 1 week, and 3 weeks after the initial treatment. The result indicated that synchronous CM interaction did help students to develop written knowledge of L2 Spanish words. There was no significant difference between the levels of written acquisition (receptive or productive) of the two groups. Thus, CM interaction seemed to be as effective as face-to-face

interaction in promoting this type of written learning of new words. The results also showed that CM interaction did facilitate the oral receptive and productive acquisition of words. However, Group 1 (OIG) showed an overall higher rate of oral receptive and productive acquisition of the target words than did Group 2 (VCG). The results seemed to indicate that face-to-face interaction might be more beneficial than CM interaction for short-term oral acquisition of L2 words, especially the productive end of acquisition.

Smith (2004) reported a paired-groups experimental study in a computer-mediated communicative environment. Participants in this study were 24 intermediate-level ESL students (14 females and 10 males) from an intensive English language program at a large Midwestern university. The learners met once a week in a campus lab during regularly scheduled class meeting times over a 5-week period. The two task types chosen for this study were jigsaw and decision-making tasks. A pretest-posttest-delayed posttest design was employed for the study. The results showed that computer-mediated negotiated interaction facilitated learners' ability to recognize and produce new lexical items. It was evident that those items that were negotiated were retained at an impressively high rate on the immediate receptive (R1) posttest and delayed receptive (R2) posttest. The result also showed that the mean score for the target words that were negotiated was significantly higher than target items where preemptive input alone was provided for both the immediate posttests as well as the delayed receptive posttest.

Smith (2005) also explored the relationship between negotiated interaction, a type of focus on form episode, and learner uptake. The research questions examined (a) whether there was the relationship between computer-mediated negotiated interaction and learner uptake (b) whether the complexity of negotiation episodes influenced the type and amount of

learner uptake (c) whether there was the relationship between learner uptake and subsequent acquisition of that feature.

Participants were intermediate-level ESL students (n=24, 14 females and 10 males) from an intensive English language program at a North American university. They consisted of two intact groups and participated in the study as part of their regularly scheduled ESL classes. The main study employed a within-groups pretest, an immediate posttest, delayed posttest design. Learners met once a week in a campus computer lab during regularly scheduled meeting times over a 6-week period. Prior to week 1, participants were pretested on a written list of 83 lexical items (concrete nouns). Based on the results, the 32 least known words used in each treatment session were then selected as the target lexical items for the study (8 for each task).

During each of the subsequent meetings (treatment phase), learners completed a short warm-up task and this warm-up was followed by the day's task, which involved pairs of participants chatting with their partners to complete the task at hand. The treatment included two of each task type: the jigsaw tasks and the decision-making tasks. Each task included a total of eight target lexical items (four for each learner) and the tasks consisted of two parts. Immediately following each task, learners completed an immediate productive posttest (P1), which was limited to 7 minutes. During each posttest, participants viewed images of the eight target items encountered in the task, along with eight distracter images (objects) arranged in no particular order. Each delayed posttest was administered 7 days after the respective SCMC session.

In terms of the first research question, uptake moves that were successful occurred very rarely in the data. In the 66 NFFE's recorded, only 7 such moves occurred. The author

suggested that one possible explanation for the lack of immediate uptake might be because learners were focused primarily on completing the tasks and thus felt a pressure to respond, they may have been less inclined to uptake a previous utterance. In terms of second research question, there was no indication that complexity had an effect on learner uptake. In other words, the complexity of the negotiation routine did not seem to affect whether or not learners' uptake information from the interlocutor, nor did it seem to affect the type of learner uptake when it did occur. Finally, with regard to the third research question, the results showed that the presence or absence of learner uptake (successful or unsuccessful) during task-based SCMC activities did not seem to be an important variable in the short and middle-term acquisition of target lexical items. Thus, the results suggested that there seemed to be no relationship at all between uptake occurring during or after an NFFE and lexical acquisition.

Voice-based chat in CMC interaction

As I have mentioned in the previous section, unlike text-based CM interaction, there is a meager quantity of published research concerning second languages and the effects of voice-based chat and no other investigations specifically appears to address the differential effects of CMC (written or oral) on vocabulary acquisition. Sauro (2001) investigated two different communicative language tasks, a jigsaw task and a decision-making task specifically designed to make use of resources available online for use in the CALL classroom. Both tasks were performed by four dyads using a voice/text-chat application over the Internet. For participants, two of dyads consisted of non-native English speakers with different L1s and two of which consisted of one non-native English speaker and one native

English speaker. The results showed that there was a difference between task types, that the decision-making problem facilitated more negotiation of meaning overall. Also, there was a difference between dyad types that the NNS dyads produced more negotiation of meaning than did the NS/NNS dyads. Between the NNS dyads, the decision-making tasks facilitated more negotiation of meaning. However, between the NS/NNS dyads, the reverse was true with jigsaw task producing more negotiation of meaning. In addition, negotiation of meaning was found in both types of dyads, but more so among one of the non-native speaking dyads which made use of a voice-activated microphone. The order in which the tasks were carried out also had an effect on the amount of negotiation of meaning that took place.

In more recent literatures, Jepson (2005) investigated the different patterns of repair moves in synchronous non-native (NNS) text chat rooms in comparison to voice chat rooms on the Internet. The participants were NNSs of English at e-English, the world's largest private, online English language school, according to the company's Web site. The number of participants in this study was set by the number of NNSs who actively participated in the random chat sessions sampled—averaging six in the text chats and three in the voice chats. An active participant was defined as one who sent at least one message or spoke at least once during the 5 minutes. Participants were anonymous and used nicknames and they presumably logged in to the chat room willingly. All participants used English as the main language of communication and many participants seemed to be bilingual or multilingual, and code switched frequently. The study consisted of 10 groups (NNSs in 5 conversational text chat sessions and NNSs in 5 conversational voice chat sessions), observed for 5 minutes during five different sessions on five different days. The author signed up for an e-English user nickname and observed the participants conversing in both the text and voice chats. Data

were collected concurrently from the two environments. The chi-square results showed that voice chat generated a number of repair moves that was significantly higher than the number in text chat. In addition, voice chat generated a number of negotiation of meaning repair moves that was significantly greater than the number in text chat. In terms of types of repair moves, clarification requests were the most prominent repair move in both chat types. Qualitative data analysis also showed that repair work in voice chats was often pronunciation-related.

Lastly, Sykes (2005) examined the connection between pragmatic instruction and CMC by measuring the effects of three types of synchronous group discussion (written chat [WC], oral chat [OC], and traditional face-to-face [FF] discussion) on the acquisition of a speech act (refusals of an invitation) in the target language. Participants for this study were two classes of third-semester Spanish students who had the same primary instructor and whose native language was American English. The students were divided into small groups of 3 each (N=27) and remained in the same group throughout the course of the study. There were a total of nine groups included in the final analysis (three groups of written chat, three groups of oral chat, and three groups of traditional face-to-face discussion). Each participant completed the same tasks with only the mode of discussion differing-written chat, oral chat, or face-to-face discussion. The day prior to the computer-based model dialogues and treatment discussions, each of the triads participated in a pretest (face-to-face role plays) of pragmatic knowledge in the classroom. Three days following the treatment, the participants then completed a posttest (similar role plays) in order to determine the level of improvement. Each group received a written prompt 5 minutes prior to the taping of their role play in the pretest, and each participant was assigned the role he or she was going to play (Person A, B,

or C) in both dialogues. The results showed that two-thirds of the participants participated in some form of electronic discussion, and all improved in their pragmatic competence in some way. All three discussion groups performed more like native Spanish speakers in the formal situation than in the informal situation, indicating that they internalized the differences more in a formal setting. Despite the overall improvement and some of the similar behavior among the groups, the WC group outperformed the other two groups in terms of complexity and variety since they had to be more explicit in their communication without the tolls oral communication often provided (e.g., intonation, body languages, etc.).

CHAPTER 3. METHODOLOGY

This chapter, which addresses the methodology used in data collection for this study, is divided into five main sections: pilot study, description of participants, materials, procedure, and analysis. In the first section, I will explain how the pilot study was performed and discusses decisions made about the scope of the target lexical items. The second section will address the participants involved in this study. The third section will describe the materials used in this study including a pre-test, an immediate and a delayed post-test, a treatment activity, and a questionnaire; the software and hardware used for data collection will be also presented in this section. The fourth section will describe the study design and procedure for this study. Finally, I will explain the methods used to analyze the data in order to answer the two research questions. Both quantitative and qualitative data collection methods were used in this study. Quantitative instruments consisted of a pre-test and two post-tests. Qualitative instruments included the Audacity recordings, MSN messenger scripts, and a follow-up survey.

Pilot Study

The pilot study for this research was completed as a class project in a CALL class for Spring 2008. The idea for task design used in this pilot study was originally from De la Fuente's (2003) research and modified by the researcher. Participants consisted of 4 low intermediate-level ESL students (2 females and 2 males) from 99L and 99R ESL courses at Iowa State University. Proficiency level was determined by participants' self-report questionnaire survey. The students had been in the United States for less than 1 year and all

participants were first-year students at ISU. Participants ranged in age from 19 to 21 and their native language was Chinese. They were randomly assigned to one of two experimental groups: Text Chat group (TCG) and Voice Chat group (VCG).

The goal of this activity was for ESL learners to notice and learn the meaning of new lexical words while they were exchanging information with each other. While they were negotiating, they were to notice the target lexical items and try to find out the meaning and then produce the correct form of vocabulary items. In the first part of the treatment activity, the students were given six target lexical items in the form of an information-gap activity in which one student had the target items with a name in English, and the other student had a piece of paper to write down the target lexical items in English and Chinese. In the second part of the activity, the roles were reversed and the lexical items were changed for the other six items.

A pre-test consisting of 34 auto parts vocabulary items was administered one day before the treatment activity. The students were given the written form of each item (concrete nouns) and asked to write their L1, Chinese. They received a list of the 36 written words in English, and were asked to write their L1 (Chinese) translation. After the data was examined, the 12 least known words were selected as the target lexical items for the study (6 for each task). The treatment activity was performed for one day and participants were asked to perform two paired, interactive, information-gap activities. Each pair was given a task with an information gap format. In the first task, one of the speakers had to fix some auto parts items in the mechanics, but first had to chat with his/her partner in which the relevant instructions (the auto parts list) were communicated. The speaker giving the instructions had six pictures, corresponding to six (half) of the target words. The other speaker had a blank

sheet where he/she had to write the repair list (the six items) in both English and Chinese. After this, roles were reversed, and each participant in the pair received the same task (slightly different situation) with different roles (information suppliers would be receivers, and vice versa). In total, each of the participants had to orally negotiate lexical meaning in 12 different instances. Each participant had been exposed to all the target words and had participated in the same amount of tasks and interactions. In this study, both text chat and voice chat groups used a Skype program which is a basic Internet Chat program that allows users to type messages and use voice chat as well.

The results showed that the students were all engaged in both text-based and voice-based negotiated interaction. However, the students in the voice-based group negotiated the meaning of new lexical items much more than those in the text-based group. The major negotiation for voice-chat group was spelling and this might be due to the learners' lack of familiarity with their partners' pronunciation. Since language was transmitted orally over the internet and also they were not allowed to use text-chat, learners might have some difficulties with understanding their partner's pronunciation. In order to get the right form of words, they often used spelling communication strategy and thus much more focused on form of the words.

In addition, the results of the posttest showed that CMC interaction task helped ESL learners to acquire new lexical items in both written productive and receptive knowledge. Both text and voice-chat group gained almost same amount in their vocabulary scores in the posttest and this finding was somewhat different from our assumption at the beginning of our experiment. We assumed that text-based SCMC could better promote learners' L2 lexical acquisition through negotiation of meaning than voice-based SCMC

because it helps ESL learners to pay more attention to the form of lexical items and facilitate their association with meaning. One possible explanation for this result was that since ESL learners in the voice-chat group focused on form of the words much more while they were negotiating, they also could attain almost same amount of target vocabulary items as much as learners in the text-chat group.

Based on these findings from the pilot study, I have extended my ideas to my thesis research to examine the differential effect of CMC interaction on L2 vocabulary acquisition. In order to support the effectiveness of CMC interaction over face-to-face group, I have decided to compare three experimental groups: text-chat group (TCG), voice-chat group (VCG), and face-to-face group (FFG).

Participants

Participants for this study consisted of 12 (6 male, 6 female) intermediate-level ESL students who were enrolled in an English pronunciation and communication class for Fall 2008 at Iowa State University. Proficiency level was determined by participants' scores on a general English proficiency interview with two raters when they enrolled the course. Participants were international graduate students and visiting scholars and ranged in age from 23 to 35. Based on a background questionnaire, the range of duration was from 5 to 13 months and they represented seven countries (China, France, Korea, Lebanon, Malay, Thailand and Vietnam). They were randomly assigned to one of three experimental groups: Text Chat group (TCG), Voice Chat group (VCG), and Face-to-Face group (FFG). Once designated to a group, they worked in pairs (two pairs in each group). The members of these dyads were of the same gender (three male pairs and three female pairs). Since two

participants who were supposed to come did not come to do the treatment activity due to the bad weather, the researcher had to assign two Korean students to one group which was the text-chat.

Materials

The tasks used in this study included a pre-test, treatment activity, immediate post-test, and delayed post-test. The pre-test contained 24 vocabulary words whose referents were auto parts items. The task type used in this study was an information-gap activity in which one student holds some information that the other student needs to solve a problem together. Among various types of tasks, Pica et al. (1993) claimed that the most effective tasks in terms of generating negotiation of meaning are information-gap and jigsaw tasks. For example, in a one-way task (e.g., information gap), one participant holds all the information required to complete a task (i.e., information flows only in one direction). Participants may produce negative feedback, including negotiation moves such as clarification requests and confirmation checks when they have not understood their partner's speech. In other words, negotiation of meaning occurs when an information-receiving participant does not understand the information that the original sender provides. For this reason, I have designed the information-gap activity for my task.

In the treatment activity, one of the speakers (information receiver) had to chat with his/her partner in which the relevant instructions (the auto parts list) were communicated (Appendix A). The speaker giving the instructions (information provider) who had six pictures (half) of the target words has to explain the items to the information receiver in English. The English term was given for each of the pictures. The other speaker had a blank

sheet where he/she had to write the repair list (the six items) in English. After this, roles were reversed, and each participant in the pair received the same task (slightly different situation) with different roles (information suppliers would be receivers, and vice versa). The speakers now in charge of giving instructions received at this time a similar list with six pictures (the other six target words), and the same procedure was followed. In total, each of the participants had to orally negotiate lexical meaning in 12 different instances. Each participant had been exposed to all the target words and had participated in the same amount of tasks and interactions. Two post-tests (immediate and delayed) were given after finishing the treatment activity. Finally, each student completed a questionnaire regarding the CALL activity.

CALL Activity

The goal of this activity was for ESL learners to notice and learn the meaning of new lexical words while they were exchanging information with each other. While they were negotiating, they were to notice the target lexical items and try to find out the meaning and then produce the correct form of vocabulary items. The treatment activity was performed for one day and participants were asked to perform two paired, interactive, information-gap activities. Each pair was given a task with an information gap format. In the first part of the treatment activity, the students were given six target lexical items in the form of an information-gap activity in which one student had the target items with a name in English, and the other student had a piece of paper to write down the target lexical items in English. In the second part of the activity, the roles were reversed and the lexical items were changed for the other six items.

Target Items

Before the treatment activity, participants were given a pre-test to select target lexical items (Appendix B). After the data were examined, the 12 least known words were selected as the target lexical items for the study (6 for each task). The target words chosen were as follows: *steering wheel, gas gauge, odometer, hubcap, windshield, exhaust pipe, ignition switch, glove compartment, hood, sun visor, hand brake, and roof rack.*

Software and Hardware

In this study, both text chat and voice chat groups used the MSN messenger which is a popular Internet Chat program that allows users to type messages and use voice chat as well. It was chosen as the interface because most of students had the MSN account so they might be familiar with using it. The 24 auto parts pictures used in this study were chosen by the researcher from Google images. Messages in the text chat group, which were automatically saved on the computer screen, were copied and pasted into a Microsoft Word document and used as transcriptions for analysis. The voice chat data, for which transcripts were not automatically generated, were recorded live using Audacity recording software and then manually transcribed by researcher.

Procedures

A pre-test consisting of 24 auto parts vocabulary items was administered one day before the treatment activity. For the productive knowledge segment, the students had to sit in the computer lab and go through a series of images, each of them representing one of the 24 original words. For each of the images, students were asked to speak the word in English

that corresponded to the presented images, and their responses were recorded using a microphone. Students were shown the images a second time, and were at this point asked to type the word in English on their computer screens. After the data were examined, the 12 least known words were selected as the target lexical items for the study (6 for each task).

The main treatment activity was administered on the following day and participants were assigned to one of three experimental groups. Participants were asked to perform two paired, interactive, information-gap activities for about 30 minutes. The Face-to-Face Interaction group (N=4) was divided into two pairs. Each pair was given a task with an information gap format. In the first task, one of the speakers had to fix some auto parts items in the mechanics, but first had to chat with his/her partner in which the relevant instructions (the auto parts list) were communicated. The speaker giving the instructions had six pictures, corresponding to six (half) of the target words. The English term was given for each of the pictures (e.g., gas gauge, bumper). The other speaker had a blank sheet where he/she had to write the repair list (the six items) in English. After this, roles were reversed, and each participant in the pair received the same task (slightly different situation) with different roles (information suppliers would be receivers, and vice versa). The speakers now in charge of giving instructions received at this time a similar list with six pictures (the other six target words), and the same procedure was followed. In total, each of the participants had to orally negotiate lexical meaning in 12 different instances. Each participant had been exposed to all the target words and had participated in the same amount of tasks and interactions.

Participants in the text-based chat group (N=4) were asked to work in the language laboratory, sitting in front of separate computers and communicate with their partners via Virtual Chat (a MSN messenger software). They were given the same tasks as the Face-to-

Face Interaction group. The only difference was that the tasks were networked and computer-mediated; that is, students had to communicate with their pairs via Virtual Chat. Participants in the voice-based chat group (N=6) were also working in the language laboratory and performed the same tasks orally with their partners using a microphone. All oral entries from the voice-chat group were recorded using Audacity recording software and all written entries from the text-chat group were automatically saved in a MSN program. Immediately following the task, the researcher took control of all the recordings and transcripts for chatting logs. Recordings were converted to mp3 file and chat scripts were copied and saved as a word file. After this, learners completed the immediate productive posttest (P1), which was limited to 10 minutes. For the productive knowledge segment, they were first asked to speak in English the target word corresponding to the image, and then type in English the word on their computer screens (Appendix C). The self-report questionnaire (Appendix D) was given to each student right after the immediate posttest. It was administered to see the students' thoughts and feelings about the CALL activity they had performed. The delayed post-test was performed one week after the immediate post-test, and the procedure was the same as that for the immediate post-test.

Testing Instruments & Scoring Procedure

Two productive oral and written posttests were used to assess acquisition of the target items on the treatment day, and 1 week after the initial treatment. Post-treatment tests were administered to measure the immediate and delayed effects of the treatment. All tests were carried out in the language laboratory, where participants recorded their answers (for the oral

tests) on computer. During the oral productive portion of the test, the students first saw images of the target words on their computer screens. For each image they had to say in English what the image was. Their responses were recorded. Similarly, in the written productive portion, students saw images of the target words on their computer screens, and were asked to type in English the corresponding word.

The scores for the pre-test and two post-tests were entered into an Excel worksheet as either correct (1) or incorrect (0) based on whether the students were able to produce the target words in oral and written output in English. For each of the three tests, first, each student had to speak (oral production) and type (written production) the corresponding word the student saw on the computer screen in English, and when answered correctly, the student received 1 point each for the oral production and written production parts of the test. In both tests, the minimum score was 0 points and the maximum score 12 points (all 12 target words).

Analysis

After the students had completed two post-tests, the researcher analyzed the data in order to answer the two research questions. In order to answer the first research question, what extent ESL learners negotiated the meaning of new lexical items, the students' chatscripts and recordings were collected and marked for instances of negotiation. Based on the model for NNS negotiation established by Varonis and Gass (1985), negotiation routines are defined as those exchanges that "push down" the participants from the main line of discourse and in which there is some overt indication of the need for negotiation (e.g., echo questions, clarification requests, explicit statements of misunderstanding, inappropriate responses). In accordance with this model, negotiation routines were identified by means of

their four main components: triggers, which spur the negotiation routines; signals, the indicators of communication trouble or nonunderstanding; responses, which respond to the signals; and, optionally, a reaction to the response. Table 3.1 below defines these four parts.

Table 3.1 The Four Parts Compromising a Negotiation of Meaning Routine

Trigger	The initial word or utterance which indicates the misunderstanding
Indicator	The Listener's signal that something was misunderstood.
Response	The Speaker's response to the Listener's signal.
Reaction to the Response	The Listener's reaction to the Speaker's response.

(Varonis & Gass, 1985)

The researcher marked for the instances when the students signaled the need for negotiation, such as explicit statement of non-understanding, echo questions, request for clarification, comprehension checks, request for elaboration, and inappropriate responses. The responses to these signals (e.g., repetition, elaboration, rephrasing, paraphrasing) were also marked as instances of negotiation. In addition, instances of self-repair were also included in the data. Table 3.2 shows some of the examples of these instances. In terms of inter-rater reliability, a second rater was selected to increase the confidence of the results.

Table 3.2 Sample instances of negotiation

Signal (signal underlined)	Examples
a. Explicit statement of non-understanding	HP: Next one is hubcap. SM: <u>What is that??</u>
b. Echo question	AP: Another part is a sunvisor. YT: <u>Sun visor?</u>
c. Request for clarification	TH: The second one is gas gauge. HJ: Gas gauge? HY: I'm not sure. <u>Is that part on the bottom back of the car...a pipe?</u>

d. Request for elaboration	HJ: Hey we need Ignition switch. SY: <u>Would you explain it?</u> HJ: this is a switch of a car.
e. Comprehension check	IZ: The first part we need is ignition switch. EC: Ignition switch? IZ: <u>Do you know what it is?</u>
f. Confirmation check	HP: its shape is round.. SM: <u>oh..u mean the cover for protecting the frame of tires..??</u> HP: Yes!
g. Inappropriate response	HJ: I also need “windshield”. SY: <u>oh, that moves in front of your window?</u> SY: <u>it is a pair of ...isn't it?</u> HJ: No,,
h. Nonverbal Response	HJ: Next I would like to order Glove Compartment SY: <u>huhh....</u>
Responses (response underlined)	Examples
a. Repetition	IZ: Another thing is glove compartment. EC: What's that? IZ: <u>Glove compartment!</u>
b. Elaboration	TH: This is the cover of your engine. HY: Cover? Cover of engine? TH: <u>For example, when you energy or you have some problem with your battery, your car cannot run..so you have to open your hood to see...</u>
c. Rephrasing	HP: Next one is hubcap. SM: what is that? HP: <u>wheel cover</u>
d. Paraphrasing	HY: Hubcap? What's that? TH: <u>It is the area inside your car.</u>
Self-repair	SY: oh, that moves in front of your window? SY: bruch your window? SY: <u>brush.. sorry.</u>

The second research question asked to what extent ESL learners acquired new lexical items through SCMC interaction in comparison to face-to-face interaction. In order to answer this question, descriptive statistics were used to show the total test scores for each student. The scores for pre-test and two post-tests were entered into an Excel worksheet as either correct (1) or incorrect (0) based on whether the students were able to produce the

target words in oral and written output in English. Thus, for each student, the minimum score was 0 points and the maximum score was 24 points for twelve items for each of the three tests. The mean scores for the pre-test and two post-tests were calculated and a direct comparison between the pre-test and two post-test scores for each group was performed.

In addition, in order to compare productive oral and written acquisition scores among three experimental groups, the mean scores of two post-tests for each group were calculated and compared for each segment of knowledge. To investigate whether the most acquired words and the least acquired words had any features related to negotiation routines, the total word scores for the two post-tests were analyzed. For each target lexical item, each student spoke or wrote the target item in English, and the student received 1 point for each of the following: oral production, and written production. All of the target words, along with the initials of the participating students, and their corresponding total scores for the immediate and delayed post-tests, were entered into an Excel worksheet and calculated. Then, the words which received the highest score by most of the students were categorized as the most acquired words. In addition, the words which received the lowest total scores by most of the students were categorized as the least acquired words. After categorizing the words, the students' chat scripts were analyzed to find any negotiation routines.

A follow-up survey was also used to determine how much ESL learners found the CMC interaction helpful in their oral and written language production. The researcher carefully read all the comments which were about how the students in CMC groups felt about using MSN instant messenger for interaction while doing their tasks.

CHAPTER 4. RESULTS AND DISCUSSION

This chapter presents the results pertaining to two research questions by analyzing the data quantitatively and qualitatively. The first research question addressed to what extent ESL learners negotiated meaning of new lexical items through both text-based and voice-based synchronous CMC interaction in comparison to face-to-face oral interaction. To answer this question, the students' MSN messenger chat scripts and transcriptions from recordings were analyzed to mark the instances of negotiation. The instances of negotiation included evidence for signals of non-understanding, responses to these signals, and self-repair. The second research question addressed to what extent ESL learners acquired new vocabulary through SCMC interaction in comparison with face-to-face interaction. Descriptive statistics were used to summarize the total word scores for each student of each group. Then, the results of the pre-test and two post-tests were used to assess the differences in word knowledge before and after the task. Both oral and written productive acquisition scores for each group were calculated and compared to examine which group acquired the most target lexical items. The third research question addressed if there are any special features related to negotiation routines in the acquired words. The most acquired words and the least acquired words were analyzed to investigate the third research question. The fourth research question addressed to what extent ESL learners found CMC interaction helpful in their English learning. A follow-up survey conducted on the same day after the immediate post-test was used to examine the participants' attitudes towards the CMC interaction.

CMC Interaction and Negotiation of Meaning

The first research question asks if ESL learners negotiated the meaning of new lexical items through both text-based and voice-based synchronous CMC interaction. In order to answer this question, quantitative and qualitative methods were used to analyze the data. For quantitative data, negotiation routines for each group were counted by the researcher based on Varonis and Gass's (1985) model and the incidence of negotiation routines among the three groups of this study were compared. The data revealed that all of the students in each group were involved in negotiated interaction while completing the tasks in Table 4.1.

Table 4.1 Number of negotiation of meaning episodes in each group

	TCG	VCG	FFG	Total
NOM	54	76	61	191
Mean	27	38	30.5	31.8
SD	4.24	5.65	0.70	5.94

(*Note: NOM= Negotiation Of Meaning; TCG= Text Chat Group; VCG= Voice Chat Group; FFG= Face-to-Face Group*)

First, there were 54 occurrences of non-understanding routines in the text-chat CMC interaction group, 30 in a male pair and 24 in a female pair in two dyads for an average of 27 (sd=4.24). Second, it appeared that the voice-chat group showed the greatest incidence of non-understanding negotiation routines: there were 76 occurrences in two dyads, for an average of 38 (sd=5.65). Finally, face-to-face groups appeared to have a slightly lower incidence of the negotiation routines than the voice-chat group, 61 occurrences of such a routine, for an average of 30.5 (sd=0.70). For statistical analysis, data were submitted to one-

way an analysis of variance (ANOVA). The means between the voice-chat group and each of the other two groups were not significantly different ($t= 2.68, p >.05$ [VCG vs.TCG]; $t=-1.83, p >.05$ [VCG vs. FFG]); the difference between the TCG and FFG was also not significant ($t=0.85, p >.05$).

Additionally, the number of signals and responses the students used in each group was analyzed and calculated by the researcher. As shown in Table 4.2, learners in the voice-chat group showed the greatest number of negotiation moves and these were mostly related to spelling checks due to their unfamiliarity with their partners' pronunciation.

Table 4.2 Frequency of Negotiation of Meaning Types in each group of students

Signals	TCG	VCG	FFG	Total (N)
Explicit Statement of non-understanding	12	8	12	32
Echo question	7	18	13	38
Request for clarification	7	5	4	16
Request for elaboration	5	10	8	23
Comprehension checks	9	20	10	39
Confirmation checks	10	15	14	39
Inappropriate Response	3	0	0	3
Nonverbal Response	1	0	0	1
Total	54	76	61	191
Responses	TCG	VCG	FFG	Total (N)
Repetition	0	2	6	8
Elaboration	12	11	11	34
Rephrasing	2	1	0	3
Paraphrasing	1	1	2	4
Surprise Reaction	2	0	0	2
Self-repair	1	1	1	3
Total	18	16	20	54

(*Note: TCG= Text Chat Group; VCG= Voice Chat Group; FFG= Face-to-Face Group*)

For qualitative data, the students' MSN messenger chat scripts and transcriptions from recordings were analyzed to see whether the students were negotiating the meaning of new lexical items. Such instances were marked "negotiation routines which were identified by means of their four main components: *triggers, signals, responses, and a reaction to response*" (Varonis and Gass, 1985). The negotiation routine was first triggered (T) by new lexical input which was given by the information provider, and then the information receiver signaled (S) the need for negotiation which indicated non-understanding. Then, this was followed by a response (R) from the information provider and then the reaction to the response (RR) by the information receiver.

As shown in Example 4.1 below, all students in each group signaled the need for negotiation with an explicit statement of non-understanding. For example, in lines 1-4, students showed the need for negotiation, which was most of the time triggered by new lexical items. In particular, most of the students in the face-to-face group first signaled the need for negotiation with an echo question, immediately followed by an explicit statement of non-understanding as a secondary signal in lines 5-8.

Example 4.1 Explicit statement of non-understanding (signal underlined)

(TCG)

1 SM: first, ignition switch

2 HP: what's that?

3 SY: And. Would you check my hood of car?

4 HJ: I am not sure about hood

(FFG)

5 TH: The first part is steering wheel.

6 HY: Steering wheel? What's that?

7 FM: And the fifth is hood.

8 BF: Hood? What's that?

In Example 4.2, the results clearly show that the students also used an echo question to signal the need for negotiation. As shown in lines 2 and 4, the students generally echoed a response with rising intonation, and this functioned as an indicator to negotiate meaning of the target word before they continued their conversation. However, sometimes the students showed the different patterns of echo questions. For example, in lines 6, and 8, an echo question was immediately followed by a request for elaboration to signal the need for more information from interlocutors. In particular, the students in the voice-chat group often signaled the need for negotiation with a spelling check for target words (line 8) and this might be due to their unfamiliarity with their partners' pronunciation as I have briefly mentioned above.

Similar to the students in the voice-chat group, in line 10, the students in the face-to-face group also showed the need for negotiation with spelling check. However, unlike the voice-chat group, the students in face-to-face group often echoed a response with a falling intonation and this also functioned as an indicator to negotiate the meaning of the target words as shown in line 12. For example, FM echoed a question with a falling intonation (line 12) to signal the need for negotiation and his partner, BF, responded with an elaboration of the target word.

Example 4.2 Echo question (signal underlined)

(VCG)

1 YT: I have something wrong with steering wheel.

2 AP: Steeringwheel? ( = "rising intonation")

3 IZ: The second one is gas gauge.

4 EC: Gasgauge?

5 IZ: The first part is ignition switch.


6 EC: Ignitionswitch? Can you explain it?

7 YT: Another part is windshield.

8 AP: Windshield? Can you spell it?

(FFG)

9 TH: And the second part I need to fix is gas gauge.

10 HY: Gasgauge.. Oh...How to spell gauge? ( = "falling intonation")

11 BF: The fourth one is sun visor.

12 FM: Sunvisor..

13 BF: It will just protect you because when you drive, sun or sunshine is very strong so it can protect from the sun.

(TCG)

14 HP: Next one is hubcap

15 SM: what is that??

16 HP: wheel cover

17 SM: wheel cover?? What do u mean?

18 HP: the plastic which covers the wheel

19 SM: plastic??

20:HP: Yes

In addition, the results also showed that the need for negotiation was not only triggered by lexical items but also by their partner's response. For example, in lines 14-20, HP uses a rephrasing with "hubcap" (line 16) to make his partner understand the target word and SM responds with an echo question and request for clarification (line 17) to signal the need for negotiation. Then, HP paraphrases "wheel cover" (line 18) to his partner, and to this response SM signals with an echo question for the second time (line 19), followed by acknowledgement (line 22).

With these two signals, the students showed the need for negotiation with a request for clarification. In Example 4.3, students in the text-chat group used this signal to clarify the meaning of target words. For example, in lines 1-8, HJ tried to explain the word "roof rack" to her partner (line 1) and SY responded with a statement of understanding, followed by a request for clarification (line 3). Then, SY requested for clarification again (line 7) to verify her understanding of the target lexical item. However, students in both voice-chat and face-to-face interaction group usually used this signal to check spelling with the target words. For example, in lines 14 and 16, the students signaled the need for a request for clarification with spelling check after they negotiated the meaning of the target word.

Example 4.3 Request for clarification (signal underlined)

(TCG)

1 HJ: Some SUV can carry big stuff on the roof you know

2 SY: oh i think I know it.

3 SY: If you want to carry your spare tire, you can put it in?

4 HJ: some times we use this transport our furniture or something big one hahahah

5 HJ: yes!

6 HJ: It is on the top of car

7 SY: Well, can you carry on your skies?

8 HJ: yes !

9 SM: Next, I need Sun visor

10 HP: I am afraid that I don't know it

11 HP: well, is it cover sunlight in front of you?

12 HP: it is haning above ?

(VCG)

13 IZ: The fifth one is the hood. It's where we check water of the car..if it's so hot...

14 EC: Ok..Hood like H-O-T?

15 IZ: No, H, double O and D like doll.

(FFG)

16 FM: You called it compartment?

17 BF: Glove compartment

18 FM: Glow? Can you spell for me?

19 BF: G-L-O-V-E C-O-M-P-A-R-T-M-E-N-T!

In addition, as shown in Example 4.4, most of the students requested elaboration which also signaled the need for negotiation. This happened when the students needed some more information from their partners after they had negotiated for target words. For example, TH paraphrases “hubcap” to her partner (line 3) and HY immediately signals a request for elaboration to get more information for the target word (line 4) based on information her partner provided.

As in a previous example with a request for clarification, students in both the voice-chat and the face-to-face group also used this signal for spelling check. For example, EC first

signaled the need for an elaboration with meaning of the word “ignition switch” (line 9) and then requested for spelling with the target word to her partner (line 11).

Example 4.4 Request for elaboration (signal underlined)

(FFG)

1 TH: And the fourth one is hubcap.

2 HY: Hubcap? What's that?

3 TH: It is the area inside your car.

4 HY: Oh, hubcap is the part of tire? It's white?

5 TH: Yes!

(VCG)

6 IZ: The first part we need is ignition switch.

7 EC: Ignition switch?

8 IZ: Do you know what it is?

9 EC: No, can you explain it?

10 IZ: So, ignition switch is a little switch...situated closed to the key hole...the place where you put to switch your car...

11 EC: Ok, I know it. Can you spell it for me? Ignition?

12 IZ: I-G-N-I-T-I-O-N!

13 EC: Ok...ignition? Ok, ignition switch!

(FFG)

14 TH: And the second part I need to fix is gas gauge.

15 HY: Gas gauge? Oh...How to spell gauge?

16 TH: G-A-U-G-E!

(TCG)

17 SM: and sunvisor

18 HP: sunvisor>?

19 HP: I need an explain

20 SM: yeah.... when sun is very shiny...u use this to avoid the direct sunlight

21 HJ: Hey we need Ignition switch

22 SY: Would you explain it ?

23 HJ: this is a switch of a car

24 HJ: when you get into a car, you need to put the key on this one!

One interesting finding in this study was that some of the students did not explicitly state their non-understanding, but rather they expressed their need for more negotiation in an implicit way as shown in Example 4.4 (lines 17-24). This could be interpreted by the students' characteristics: as three of the students in this group were all Korean students and it would be more natural for them to express their non-understanding implicitly. This result was also found in Kim's (2006) study that investigated all Korean participants doing collaborative dialogues in CMC.

The result in Example 4.5 below shows that comprehension checks occurred in many instances like after the trigger, indicator, or response. This finding corresponds with Varonis and Gass's (1985) research. In lines 1-5, the information providers, ask their partners if they know the word immediately after mentioning the target word (trigger). Another example can be seen in line 6; EC asks for a comprehension check while introducing the target word to his partner. In lines 10 and 13, comprehension checks occurred after each response.

Example 4.5 Comprehension checks (signal underlined)

(TCG)

1 HP: And Odometer..

2 HP: You know what it is?

(VCG)

3 YT: Another serious problem is exhaust pipe.

4 YT: Do you know what is exhaust pipe?

5 AP: No, I don't know.

6 IZ: Do you know steering wheel of the car?

7 EC: Steering wheel?

8 YT: Odometer actually means how many miles have you run...

9 AP: Ok,,

10 YT: You got it?

11 AP: Uh—uh..

(TCG)

12 HP: you can see rubber and this

13 HP: all right?

14 SM: yeah there is a air hole on the side of tire..

(FFG)

15 TH: There's something wrong with my hubcap!

16 HY: Hubcap?

17 TH: Do you know what is hubcap?

In addition to these findings, in lines 15-17, YT does a comprehension check before providing the information to AP to make sure his partner doesn't know the target word even though AP signaled the need for negotiation with an echo question. This was due to YT's previous exchange with AP. When YT was going to provide information about the target words, AP easily guessed the meaning of the word when YT introduced the target words. This shows that AP had background knowledge about the target words, but he did not know how to produce the target lexical items in English.

The result in Example 4.6 below shows that most of the students also used confirmation checks after they have negotiated the target words with their partner. As shown

in lines 2 and 6, students check the meaning of word “hubcap” with their partner to confirm their understanding of the target word. Also, in lines 9-11, HP paraphrases the target word (line 9) to explain the word “hood” to his partner and SM signals the need for negotiation with a confirmation check for the target word. One interesting phenomenon here was that SM, who was Korean, used the word “bonette” to check his understanding of the target word “hood”. This was due to his familiarity with using this word in Korea that Koreans often use British form “bonnet” rather than American English.

Example 4.6 Confirmation checks (signal underlined)

(TCG)

1 HP: its shape is round

2 SM: oh.. u mean the cover for protecting the frame of tires..??

3 HP: yes

4 SM: now i see

5 SY: When people changes more decorated one for this part.

6 HJ: you mean the part which stick with the tire right

7 SY: When you see the tires, it cover out of your tire.

8 HJ: yes! I got it !

9 HP: it is a cover plate of engine parts.

10 SM: oh... bonette??

11 HP: yes.

(VCG)

12 EC: I understood it but I'm not sure how to spell it.

13 IZ: H-U-B.. B like boat and C-A-P!

14 EC: D?

15 IZ: 'P' like person

(FFG)

16 TH: And the third part need to be fixed is odometer.

17 HY: Oh...autometer?

18 TH: O-D-O-M-E-T-E-R.

19 HY: A-O-T-O?

20 TH: No, O-D-O!

21 HY: O-D-O...Hmm...O-D-O-M-E-T-E-R?

22 TH: Yes!

On the other hand, the students in both voice-chat and face-to-face group often signaled the need for negotiation with a confirmation check to get the right spelling for the target words from their partners. For instance, in lines 12-15, EC signals the need for negotiation with an explicit statement of non-understanding about spelling of the word “hubcap” (line 12) and her partner, IZ, responds with a correct spelling for the target word (line 13). Then, EC immediately tries to check the spelling from her partner (line 14) whether she got the correct form of the word and IZ corrects EC’s misspelling with ‘P’ as she explains it by using the word which has this letter. This shows that the students in the voice-chat group might have experienced a problem with listening to their partners when they transmit the information orally with using only their voice.

Similarly, most of the students in the face-to-face group also have frequently requested the spelling check to their partners as shown in lines 16-22. In particular, one dyad usually focused on the spelling check before they negotiated the meaning of the target word. For example, an echo question for ‘odometer’ is immediately followed by a response with a spelling (line 18). Then, HY signals the need for negotiation with a confirmation check (line

19) and to this signal TH corrects HY's misspelling with 'O-D-O'. Finally, in line 21, HY got the correct spelling for "odometer" and confirms it again to her partner.

Furthermore, the need for negotiation was signaled with an inappropriate response by one of the students. As shown in Example 4.7 below, in lines 1-9, SY responds with an inappropriate guess about "windshield" after her partner, HJ, triggers the target word (line 2). Although HJ explained it to her and checked her comprehension in lines 4-5, the reaction to this response still came out inappropriately. It seems that SY confuses it with "windshield wiper" so that she continuously tries to clarify her guess from her partner. Also, SY signals with an inappropriate response when she negotiates the word "roof rack" with her partner. For example, in lines 10-11, HJ explains "roof rack" to SY and to this response SY seems to confuse with "sun roof" and responds with an inappropriate guess as well.

Example 4.7 Inappropriate Response (signal underlined)

(TCG)

1 HJ: I also need "windshield"

2 SY: oh, that moves in front of your window?

3 HJ: Hum..

4 HJ: This part is the glass in front of car

5 HJ: you know what I am trying to say

6 SY: it is a pair of ... isn't it?

7 SY: ha ha ha...

8 HJ: No,,

9 HJ: it is the glass part

10 HJ: Rack is the thing which carry your baggage or big box or something like that

11 SY: Can it be able to be open when the weather is wonderful?

The types of responses students used in this study brought up by the above signals are presented in Example 4.8. As can be seen in the example, the students responded to their partners by means of repetition, elaboration, rephrasing, and paraphrasing. These results are also found in other studies such as Pellettieri (2000) and Varonis and Gass (1985). As shown in Example 4.8a, the students in voice-chat and face-to-face group usually repeated the target word after their partners signaled the need for negotiation with an explicit statement of non-understanding. All of the students in three groups frequently used an elaboration to explain the target words to their partners as in example 4.8b.

Example 4.8 Types of responses (response underlined)

a. Repetition

(FFG)

1 FM: Another thing is glove compartment.

2 BF: What's that?

3 FM: Glove compartment!

b. Elaboration

(FFG)

4 TH: This is the cover of your engine.

5 HY: Cover? Cover of engine?

6 TH: For example, when you energy or you have some problem with your battery, your car cannot run..so you have to open your hood to see...

7 HY: So the hood is in the car or under the car?

8 TH: No, it's not under the car. It's like above the engine.

9 HY: Engine usually in front of car...

10 TH: Yeah, in front of car to protect your engine inside.

11 HY: Ok, I have an idea.

c. Rephrasing

(TCG)

12 HP: Next one is hubcap

13 SM: what is that??

14 HP: wheel cover

(VCG)

15 YT: Do you know what is hood ?

16 AP: No..

17 YT: It's in front of the car...it is a engine cover.. Do you know what is engine cover?

18 AP: Oh, I know it.

d. Paraphrasing

(FFG)

19 HY: Hubcap? What's that?

20 TH: It is the area inside your car.

21 TH: And the fifth is hood.

22 HY: Hood? What's that?

23 This is the cover of your engine.

In 4.9c, SM signals the need for negotiation with an explicit statement of non-understanding and to this signal HP rephrases the word “hubcap” with ‘a wheel cover’ to make his partner understand the target word better. In addition, YT rephrases the word “hood” with ‘an engine cover’ in line 17. Finally, as shown in Example 4.9d, TH responds with a paraphrasing after her partner shows the need for negotiation with an explicit statement of non-understanding in line 20. Also, in line 23, TH paraphrases the word “hood” with ‘the cover of the engine’ to help her partner better understand the target word.

The following results shown in Example 4.10 revealed that the students were doing self-monitoring when they were interacting with their partners and spelling was that students self-repaired the most. For example, in lines 1-4, SY noticed her mistake in spelling before her partner's turn and self-corrected the mistake. In contrast, in lines 5-10, YT seems not to identify his mistake in spelling until his partner, AP, signals the request for clarification with the correct spelling. Also, another example in lines 11-19 shows that FM also recognizes his mistake when his partner checks the spelling to confirm in line 18.

Example 4.10 Self-repair

(TCG)

1 HJ: I also need "windshield"

2 SY: oh, that moves in front of your window?

3 SY: bruch your window?

4 SY: brush.. sorry.

(VCG)

5 YT: There's also something wrong with my hood.

6 AP: Hood?

7 YT: H-U-U-D!

8 YT: Do you know what hood is?

9 AP: No...could you spell it again?

10 YT: H-U-U-D...oh,no..H-O-O-D!

(FFG)

11 FM: The last one is roof rack.

12 BF: Roof rack?

13 FM: It's fixed in roof of your car and you can put many things...

14 BF: Ok..It's a one word?

15 FM: Sorry?

16 FM: No, it's..roof...R-O-O-F R-O-C-K

17 BF: R-O-C-K?

18 FM: No, A!

19 BF: R-A-C-K..Ok, I get it.

In response to the first research question, when communication trouble arose, all ESL learners in both voice and text CMC interaction negotiated to complete their tasks, and their patterns of interaction looked much like those seen in face-to-face oral interaction. Moreover, the data indicated that all of the twelve target lexical items prompted negotiation from all of the students.

CMC Interaction and Acquisition of L2 Lexical Items

In order to address the results for the second research question to what extent ESL learners acquired new lexical items through CMC interaction in comparison to face-to-face interaction, the researcher first examined descriptive statistics to determine how many words were recalled by each student of each group in a pre-test and two post-tests. All the words the students were able to produce in oral and written output in English were counted and summed to determine total word scores across three tests (pre-test, immediate post-test, and delayed post-test). Then, the mean scores for each test were calculated and are presented in Table 4.3.

Table 4.3 Descriptive data for all target lexical item scores across a pre-test and two post-tests

Students	Pre-test	Posttest1	Posttest2
TCG (Text-Chat: n=4)			
HP	0	24	24
SM	2	18	20
SY	0	6	5
HJ	2	20	21
Totals	4	68	70
Totals in %	4.1%	70.8%	72.9%
Mean	1.0	17	17.5
SD	1.155	7.746	8.505
VCG (Voice-Chat: n=4)			
YT	1	20	13
AP	2	18	19
IZ	0	23	20
EC	0	9	9
Totals	3	70	61
Totals in %	3.1%	72.9%	63.5%
Mean	0.75	17.5	15.25
SD	0.957	6.028	5.188
FFG (Face-to-Face: n=4)			
FM	2	21	24
BF	0	22	19
HY	0	14	13
TH	0	15	13
Totals	2	72	69
Totals in %	2.1%	75.0%	71.8%
Mean	0.5	18	17.25
SD	1.000	4.082	5.315

(Note: The numbers in the table means the acquisition scores students gained for oral and written production)

As can be seen in Table 4.3 in the pre-test, 2 out of 4 students in the text-chat group, 2 students in the voice-chat group, and 3 students in the face-to-face group indicated that they did not have previous knowledge (scored 0) about the target lexical items. The twelve target

lexical items received 1 point each for each of the two parts (oral production, written production) when the students were able to speak or write in the production parts of the pre-test. The maximum score for each student was 24 points and the minimum score was 0. Firstly, the mean score for the text-chat group was 1.0 (sd 1.15) points in the pre-test, 17.0 (sd 7.75) points in the immediate post-test, and 17.5 (sd 8.50) points in the delayed post-test. The TCG students recalled 70.8% of the previously unknown words in the immediate post-test and 72.9% in the delayed post-test. Secondly, the mean score for the voice-chat group was 0.75 (sd 0.95) points in the pre-test, 17.5 points (sd 6.02) in the immediate post-test, 15.25 points (sd 5.18) in the delayed post-test. The students recalled 72.9% of the previously unknown words in the immediate post-test and 63.5% in the delayed post-test. Lastly, the mean score for the face-to-face group was 0.5 (sd 1.00) points in the pre-test, 18.0 points (sd 4.08) in the immediate post-test, 17.25 points (sd 5.32) in the delayed post-test. The students recalled 75% of the previously unknown words in the immediate post-test and 71.8% in the delayed post-test. Thus, it reveals that all students in each group acquired more than half of the target lexical items while completing their tasks.

In addition to descriptive statistics, a statistical analysis was used to test whether acquisition of vocabulary for each group could be detected statistically. Since the sample size was small and did not follow a normal distribution, the nonparametric Wilcoxon signed rank test was performed to show the statistical significance. Differences between the pretest and the posttest1 for all three groups were statistically significant ($t=10.78$, $p < .05$). Moreover, for all three conditions, there were no significant differences between posttest1 and posttest 2 ($t=-1.07$, $p > .05$) indicating that students seemed to retain the vocabulary after 1 week.

Besides, two other methods were used to address the second research question. For both productive oral and written acquisition of L2 vocabulary, the mean scores for each group were compared across the two post-tests (immediate and delayed post-tests). Mean scores and standard deviations (SD) for the productive oral acquisition task for each group on the two respective tests (Treatment Day, Week 1) are provided in Table 4.4.

Table 4.4 Mean Scores and Standard Deviation (SD) for the Oral Productive Acquisition

Test	Group	n	M	SD
Posttest 1	1 (TCG)	4	8.5	3.873
	2 (VCG)	4	9.25	3.594
	3 (FFG)	4	9.25	2.217
	Total	12	9.0	3.015
Posttest 2	1 (TCG)	4	8.25	4.349
	2 (VCG)	4	8.00	1.826
	3 (FFG)	4	8.75	2.754
	Total	12	8.08	3.089

(*Note: TCG= Text Chat Group; VCG= Voice Chat Group; FFG= Face-to-Face Group*)

Data were also submitted to the Wilcoxon signed rank test and results showed that there were no statistically significant differences among three groups for either posttest 1 or posttest 2 ($p > .05$); no significant changes occurred between Posttest 1 and Posttest 2 for each group ($p > .05$).

In addition, mean scores and standard deviations (SD) for the productive written acquisition task for each group on the two respective tests (Treatment Day, Week 1) are provided in Table 4.5.

Table 4.5 Mean Scores and Standard Deviation (SD) for the Written Productive Acquisition

Test	Group	n	M	SD
Posttest 1	1 (TCG)	4	8.5	3.873
	2 (VCG)	4	8.25	2.500
	3 (FFG)	4	8.5	2.380
	Total	12	8.42	2.712
Posttest 2	1 (TCG)	4	9.25	4.193
	2 (VCG)	4	7.50	2.646
	3 (FFG)	4	8.00	3.162
	Total	12	8.25	3.502

(Note: TCG= Text Chat Group; VCG= Voice Chat Group; FFG= Face-to-Face Group)

The same statistical analyses were performed on this written acquisition data and results showed no significant main effect of group ($p > .05$) and no significant effect of time ($p > .05$) for each group, that is, all three groups showed no statistically significant changes in written production across tests.

Negotiation of Meaning and Acquisition of L2 vocabulary

Acquisition of individual words for each group was examined to further investigate the second research question. In order to examine individual words, the most acquired words (total word score of 2= oral production (1) + written production (1)) and the least acquired words (total word score of 0) were analyzed and the results are presented in Table 4.8. The scores were based on each student's performance on two post-tests. For each post-test, each student had to speak (oral production) and write (written production) in English the corresponding word that the student saw on the computer screen, when the items was answered correctly, the student received 1 point each for the oral production and written

production parts of the post-test. Thus, for each post-test, for each student and for each twelve target lexical item, the minimum score was 0 points and the maximum score was 2 points (oral production, written production).

The most acquired words and the least acquired words were analyzed to see if they had any specific features in their negotiation routines. Thus, the total word scores for all target lexical items were calculated, and then the words on which most students scored 2 were marked with an *. Then, MSN messenger scripts were analyzed to look for any specific features in their negotiation routines for those most and acquired words.

Table 4.6 Total word scores for all target lexical items by all students in three groups

S	T	*I1	I2	I3	I4	I5	I6	I7	I8	*I9	I10	*I11	*I12
HP	P1	2	2	2	2	2	2	2	2	2	2	2	2
	P2	2	2	2	2	2	2	2	2	2	2	2	2
SM	P1	2	0	2	0	2	1	1	2	2	2	2	2
	P2	2	0	2	1	2	2	2	2	2	2	2	2
SY	P1	0	0	0	0	0	0	0	0	2	0	2	2
	P2	0	0	0	0	1	0	0	0	2	1	0	1
HJ	P1	2	2	2	0	0	2	2	2	2	2	2	2
	P2	2	1	2	1	1	2	2	2	2	2	2	2
YT	P1	2	1	1	2	0	2	2	2	2	2	2	2
	P2	2	0	0	2	1	2	2	1	2	0	2	0
AP	P1	2	2	1	2	2	0	2	0	2	2	2	1
	P2	2	2	0	0	2	1	2	1	2	2	2	2
IZ	P1	2	2	2	2	2	2	1	2	2	2	2	2
	P2	2	2	2	2	2	0	0	2	2	2	2	2
EC	P1	0	2	0	2	0	0	0	0	0	1	2	2
	P2	0	2	0	0	0	2	0	0	1	0	2	2
FM	P1	2	2	2	2	2	2	2	0	2	1	2	2
	P2	2	2	2	2	2	2	2	2	2	2	2	2
BF	P1	2	2	2	2	1	1	2	2	2	2	2	2
	P2	2	2	2	1	2	0	2	2	2	2	0	2
HY	P1	2	0	2	0	1	2	1	2	0	2	2	0
	P2	2	0	2	0	0	2	0	2	1	2	2	0
TH	P1	2	1	2	2	0	2	0	0	2	2	0	2
	P2	1	1	2	0	0	2	0	0	2	2	0	2
Total	P1	10	7	8	8	5	7	6	7	10	9	11	10
	P2	9	6	8	4	6	8	7	7	10	9	9	9
Total	P1	2	3	2	4	5	3	3	5	2	1	2	1
	P2	3	4	4	6	3	3	5	4	2	3	2	2

Note. S=students, T=tests, P1=immediate post-test, P2= delayed post-test, * = the words which received total word scores of 2 by most of the students in the P1.

(Item 1: steering wheel; I2: gas gauge; I3: odometer; I4: hubcap; I5: windshield; I6: exhaust pipe; I7: ignition switch; I8: glove compartment; I9: hood; I10: sun visor; I11: hand brake; I12: roof rack)

As shown in Table 4.8 above, 11 out of 12 students recalled the word “hand brake” in the immediate post-test, and among those students, 9 students acquired this word as indicated

by the delayed post-test. The result from the chat scripts in Example 4.11 below reveals that most of the students appear to easily understand the meaning of the word “hand brake” when their partners explained the target word even though they did not negotiate the meaning of the target word very much. For example, in lines 3 and 6, the students explained the word “hand brake” by mentioning the place such as “*it is right next to the driver’s seat*” or “it is in the middle of two front seats” so that their partners could easily get the meaning of this word. Also, some of the students explained it like “*it is used when you park in the hill or mountain*” so that they could easily imagine the target word.

In lines 17 and 19, it also seems that students easily guessed the meaning of the target word when their partners just introduced it. One possible explanation is that most of the students answered this word as “some brake” or “side brake” in their pre-test. Thus, it may be the fact that when their partners introduced the target word, they used their background or previous knowledge to associate the meaning with the word without having much negotiation of meaning or elaboration for this word.

Example 4.11 Example chat scripts of the most acquired words (“Hand Brake”)

(TCG)

1 SM: and the hand brake

2 HP: all right

3 SM: it is right next to the driver's seat

(FFG)

4 TH: The sixth one is hand brake. Hand B-R-A...

5 HY: Hand Brake..

6 TH: Hand brake is in the middle of two seats...two front seats..in the middle of...you can use hand brake to change speed...or other things...

(TCG)

7 HJ: Next one is Hand brake

8 SY: um.... is it when you park your car on a hill

9 HJ: yes

10 SY: that makes your car stable.

11 HJ: ok, next plz

(VCG)

12 EC: The fifth one is a hand brake.

13 IZ: Hand brake?

14 EC: IF you stop your car in the mountain and the slope is very steep, if you have no hand brake, if you leave your car, then your car maybe will not stop in the slope.

15 IZ: Ok, I get it.

16 AP: The next one is hand brake.

17 YT: Hand brake? I think I know this one.

(FFG)

18 BF: The third thing is hand brake.

19 FM: Oh...hand brake...What's wrong with your brake? Is it broken?

Next, the word “hood” was recalled by 10 students in the immediate post-test, and all of the 10 students acquired this word as indicated by the delayed post-test. As shown in Example 4.12, the results showed that the students usually explained the word “hood” by paraphrasing so that their partners seemed to gain the meaning of the target word without any difficulty. For example, in lines 1-8, two students paraphrased the word as “a cover of engine” to explain the target word “hood”. As I have explained in a previous section, one interesting finding here was that one Korean student used the word “bonette” (bonnet) to confirm his understanding of the target word (line 4) because it seemed that he was more familiar with

this British term. Additionally, students in the voice-chat and face-to-face group often negotiated the spelling of the target word. For example, in lines 10 and 13, they usually checked the spelling for the target word.

Example 4.12 Example chat scripts of the most acquired words (“Hood”)

(TCG)

1 SM: hood??

2 SM: what's that??

3 HP: it is a cover plate of engine parts.

4 SM: oh... bonette??

5 HP: yes.

(FFG)

6 TH: And the fifth is hood.

7 HY: Hood? What's that?

8 TH: This is the cover of your engine.

(VCG)

9 YT: Do you know what hood is?

10 AP: No...could you spell it again?

11 YT: H-U-U-D...oh, no..H-O-O-D!

12 IZ: The fifth one is the hood. It's where we check water of the car..if it's so hot

13 EC: Ok..Hood like H-O-T?

14 IZ: No, H, double O, and D like doll.

15 EC: All right...

Along with these two most acquired words above, the word “roof rack” was recalled by 10 students in the immediate post-test, and among them, 9 students acquired this word as indicated by the delayed post-test. As shown in Example 4.13, the results showed that the

students were considerably involved in the negotiated interaction to get the meaning of the target word “roof rack” from their partners. For example, in lines 1-13, SY seems to confuse it with a “sun roof” so that she responds inappropriately to her partner (line 5). However, SY understands the meaning of the target word after noticing her partner’s explanation in line 7 and she requests a clarification about what she has understood with the target word in line 8. The result shows that this negotiation seemed to lead students to acquisition of L2 vocabulary. Also, like the previous example “hood”, the students in the voice-chat and face-to-face group often negotiated for the spelling check. For instance, in lines 14-26, FM signals the need for negotiation for the word “rack” in line 22 even though he did not understand the exact meaning of the target word.

Example 4.13 Example chat scripts of the most acquired words (“Roof Rack”)

(TCG)

- 1 HJ: Next I need to order Roof Rack
- 2 SY: I know the roof but what is the next word?
- 3 HJ: rack?
- 4 HJ: Rack is the thing which carry your baggage or big box or something like that
- 5 SY: Can it be able to be open when the weather is wonderful?
- 6 HJ: Some SUV can carry big stuff on the roof you know
- 7 SY: oh i think I know it.
- 8 SY: If you want to carry your spare tire, you can put it in
- 9 HJ: some times we use this transport our furniture or something big one hahahah
- 10 HJ: yes!
- 11 HJ: It is on the top of car
- 12 SY: Well, can you carry on your skies
- 13 HJ: yes !

(FFG)

14 BF: Roof rack

15 FM: Come again?

16 BF: Roof rack...rack rack...

17 FM: Roof rack..

18 FM: Where is it?

19 BF: In the front of...in the above the...roof

20 FM: Oh,,,sun roof? Is it sun roof?

21 BF: No..it's not..It's a roof rack.

22 FM: Roof rack...Hmm...roof and then?

23 BF: R-O-O-F R-A-C-K!

24 FM: R-A-C-K

25 BF: Sometimes we can put some...

26 FM: Oh...roof rack...this is like a carrier....yeah I got it. I can fix for you.

Lastly, 10 students recalled the word “steering wheel” in the immediate post-test, and among them, 8 students acquired this word as indicated by the delayed post-test. As shown in Example 4.14, it seemed that even though students did not much negotiate the meaning of the target word as in the word “hand brake”, they easily understood the meaning of the word. One possible explanation is that because most of the students answered this word as “some wheel” in the pre-test, they could easily guess the meaning of the word without negotiation with their partners when they first encountered the word. Also, one interesting finding here is that two Korean students used “handle” to confirm their understanding of the word to their partners because they used to use this Konglish (Korean+English) term in Korea.

Example 4.14 Example chat scripts of the most acquired words (“Steering Wheel”)

(FFG)

1 TH: The first part is steering wheel.

2 HY: Steering wheel? What’s that?

3 TH: Um..Actually this is like the most familiar of part of the car. You can see when you enter your car and you need this to control the way to change direction. If you want to turn left or turn right...

4 HY: Oh, I know. Ok, I see. Steering Wheel...

(VCG)

5 IZ: Do you know steering wheel of the car?

6 EC: Steering wheel?

7 IZ: That wheel that we can drive that go left or right..Do you know it?

8 EC: Oh, yeah..I see.

9 YT: I have something wrong with steering wheel.

10 AP: Steering wheel?

11 YT: Do you know what is steering wheel?

12 AP: Umm...what problem in steering wheel..IT’s like a control or move the car left or right?

(FFG)

13 FM: Steering wheel...

14 BF: Do you know steering wheel?

15 FM: Ok, I see.

16 BF: You know steering wheel?

17 FM: Yes, I know...Very important part....

(TCG)

18 HP: first. steering wheel

19 SM: steering wheel??

20 HP: it is a tool which let you can make a turn (left/right)

21 SM: u mean handle??

22 HP: when you sit in ther car, it is just in front of you.

Turning to the least acquired words, most of the students failed to acquire “glove compartment” and “windshield”. As shown in Example 4.15, although students seemed that they were not familiar with the word “glove compartment”, they did not engage in negotiated interaction very much because they easily understood the meaning of the target word when their partners explained it as “a place which people put insurance or car manual”.

One noticeable finding here was that unlike the previous results from the most acquired words, students in the voice-chat and the face-to-face group did not negotiate for the spelling (form) very much even though they negotiated the meaning of the target word. For example, in lines 15-24, the students did not ask for the spelling with the target word to their partners. This might be the case that students did not want to check the spelling because the word was relatively long and combined as well. From the post-test result, students mostly got the first word “glove” correct, but they seemed not to remember the second word “compartment”. This result indicates that they seem not to remember and acquire the words if they do not focus on the form of the words.

Example 4.15 Example chat script of the least acquired words (“Glove Compartment”)

(TCG)

1 SM: and glove compartment

2 HP: glove compartment?

3 SM: ok...i'll explain it to you..

4 SM: glovebox..

5 HP: Ah

6 SM: u put something like insurance documents in here..

7 HP: Right Right

8 SM: it's located in the front seat

9 HJ: you know there is one drawer

10 SY: I am still don't know

11 HJ: usually people put manual there

12 HJ: car manual

13 SY: oh oh...

14 SY: I got it.

(VCG)

15 IZ: The third one is glove compartment.

16 EC: Glove compartment? I get it..but what.. I don't know..

17 IZ: What it is? When you sit in the passenger's position in front of the car, you are not driving, you are not a driver, in front of you, you have a big pocket...it's called glove compartment.

18 EC: Ok..

(FFG)

19 HY: The third part is glove compartment.

20 TH: Glove..

21 HY: Compartment! (Repetition)

22 HY: This part can..you can put something in there.

23 TH: So it's in front of the seat...?

24 HY: Yeah, in front of right seat...you can put some map, glass, some other things in it...

25 HY: So it will be like beside you and your right...

26 TH: Yeah...

With the word "glove compartment" above, the word "windshield" was the second least acquired words. As shown in Example 4.16, the students engaged in negotiated

interaction when they were explaining “windshield”. For example, in lines 1-6, SY seems to confuse “windshield” with a “windshield wiper” so many instances of misunderstanding happened with responding inappropriately. It seems that the background knowledge sometimes might prevent students from understanding of the word. In addition, like the previous example, the students in the voice-chat and the face-to-face group did not negotiate the form (spelling) for the target word as shown in lines 16-26. As a result, it seems that most of the students did not learn the words to get them correct on their posttests.

Example 4.16 Example chat scripts of the least acquired words (“Windshield”)

(TCG)

1 HJ: I also need "windshield"

2 SY: oh, that moves in front of your window?

3 SY: bruch your window?

4 SY: brush.. sorry.

5 HJ: Hum

6 HJ: This part is the glass in front of car

7 HJ: you know what I am trying to say

8 SY: it is a pair of ... isn't it

9 SY: ha ha ha...

10 HJ: No,

11 HJ: it is the glass part

12 SY: Well,,, explain more plz

13 HJ: Ok, windshield is that the glass which is on the front of the car

14 SY: ok. i got it

15 HJ: Gottcha!

(FFG)

16 HY: The second part I want is windshield. W-I-N-D-S-H-I-E-L-D!

17 TH: Windshield...

18 HY: In front of your car...the big window. You know it?

19 TH: So it protect your car from the wind?

20 HY: Yeah, to protect the wind..against wind..

21 TH: What's it made of?

22 HY: I think...

23 TH: Plastic or metal?

24 HY: Not metal...I think it's like a special glass maybe. But I'm not sure.

25 TH: So like a glasses?

26 HY: Yeah, like a glasses...right.

One interesting finding was that while the word “hubcap” was the least acquired word for the students in the text-chat group, it was the most acquired word for the students in the voice-chat and face-to-face group. As shown in Example 4.17, the students in the text-chat group negotiated the meaning for the target word with their partners in lines 1-22. However, the posttest result showed that all of students in the text-chat group did not acquire this word. On the other hand, the students in the voice-chat and face-to-face group negotiated both form (spelling) and meaning for the target word and it appears that most of the students in these two groups have acquired the word on their post-tests.

Example 4.17 Example chat scripts of “Hubcap”

(TCG)

1 HP: Next one is hubcap

2 SM: what is that??

3 HP: wheel cover

4 SM: wheel cover

5 SM: what do u mean?

6 HP: the plastic which covers the wheel

7 SM: plastic??

8 HP: Yes

9 SM: i'm a little bit confused..

10 SM: explain more

11 HP: when you see side of the car

12 SM: yes..

13 HP: side of tire

14 HP: you can see rubber and this

15 HP: all right?

16 SM: yeah there is a air hole on the side of tire..

17 SM: u mean this one??

18 HP: no

19 HP: its shape is round

20 SM: oh.. u mean the cover for protecting the frame of tires..??

21 HP: yes

22 SM: now i see

(VCG)

23 YT: There's something wrong with my hubcap!

24 AP: Hubcap?

25 YT: Do you know what is hubcap?

26 AP: No, I don't know. Could you please explain more?

27 YT: The spelling is H-U-B-C-A-P.

28 AP: Ok..

29 YT: Do you know what it is?

30 AP: No...

31 YT: It's a something in the tire..maybe protector in the tire?

32 AP: Oh, I got it, got it!

33 IZ: The fourth one is hubcap..hubcap. It's inside wheel of the car...

34 EC: Ok...I understood it but I'm not sure how to spell it.

- 35 IZ: H-U-B B like boat C-A-P..
- 36 EC: D?
- 37 IZ: P like person! It's a hubcap!
- (FFG)
- 38 BF: Last week, I lost my hubcap.
- 39 BF: Do you know hubcap?
- 40 FM: I don't know hubcap.
- 41 BF: At your tire, there's a cap. That's what we call it "hubcap".
- 42 FM: How to spell?
- 43 BF: H-U-B-C-A-P!
- 44 FM: ok..H-U-B-C-A-P.....oh, I see.

As I have briefly mentioned above, another interesting finding in this study was that one of the Korean students in the text-chat group checked his understanding of target words by using Konglish (Korean + English) term to his partner. For example, HP explains the word "steering wheel" to his partner in line 3 and to this response SM uses the word "handle" to check his understanding, followed by an acknowledgement in line 6. In addition, in lines 7-15, after HP explains the target word "hood" in line 10, SM uses "bonette" (bonnet) to confirm his understanding in line 11. Finally, in lines 16-23, when HP introduces the target word "exhaust pipe" in line 16, SM immediately responds by stating the word "Maura" which means muffler in Korea. Then, HP corrects the word and checks his understanding in line 18 and SM responds with an elaboration for the target word to make sure that he understood that word to his partner. As can be seen in Example 4.18, it seems that when students have same L1 background, they negotiate the meaning by using their common background knowledge. Thus, this result shows that the students were likely to use the word

which had a close relationship to their experience or common knowledge to negotiate the meaning of the words.

Example 4.18 Example chat scripts of learner strategy

1 HP: first. steering wheel

2 SM: steering wheel??

3 HP: it is a tool which let you can make a turn (left/right)

4 SM: u mean handle?? (“handle” means “steering wheel”)

5 HP: when you sit in ther car, it is just in front of you.

6 HP: Yes

7 HP: next one is hood.

8 SM: hood??

9 SM: what's that??

10 HP: it is a cover plate of engine parts.

11 SM: oh... bonette?? (bonette=bonnet)

12 HP: yes. Koreans use that word.

13 SM: really??

14 SM: is it konglish??

15 HP: dunno

16 HP: the last one is exhaust pipe.

17 SM: maura?? (maura= muffler)

18 HP: u mean muffler?

19 SM: yes... it is giving off the smoke

20 SM: right??

21 HP: yes

22 SM: oh...maura

23 SM: that's exhaust pipe.

Additionally, this finding was somewhat different from Varonis and Gass's (1985) results in terms of the number of negotiation routines that NNS dyads who shared a language and a proficiency level showed the lowest incidence of pushdown routines among other NNS dyads. However, in this NNS dyad (same language, same proficiency), 30 non-understanding routines occurred on average and this was almost same as other NNS dyads which did not share the same language background. Therefore, these results does not support their findings that the greater the degree of difference which exists in the backgrounds of the conversational participants, the greater the amount of negotiation in the conversation between two non-native speakers. It seems that this result might be optimistic for EFL context where most of students could only negotiate the meaning with non-native English speakers as their partners in the classroom settings.

Attitudes toward CALL activity in CMC interaction group

To investigate the students' attitudes toward the activity, especially toward using synchronous messenger and to better answer whether this CMC interaction task was helpful to the learners, a follow-up survey was administered right after the immediate post-test. As shown in Table 4.7, the results revealed that all students in both text and voice chat group showed positive attitudes toward using MSN messenger. Some of the students mentioned that it allowed them to have enough time to prepare for what they wanted to say to their partners. One student commented that text chat helped him memorize the words because he could continue to see the conversation so that he could re-read about what his partner wrote. Another student felt that it was less threatening and more comfortable than face-to-face interaction and also that it would be efficient to save time and even money.

However, there were also six comments about the downside of using MSN or online chatting. Most of students in the text-chat group mentioned that because they lost face-to-face interaction, which was much more complex than just exchange words or sentences, it was hard to deliver their feelings or emotions to their partners and also inconvenient because they could not use body languages to explain the words. Some of students mentioned that they cannot learn the right English since people usually use slang or online languages (e.g., OMG, c-ya, u-). One student in the text-chat group also mentioned that she could not learn pronunciation or improve listening skills. For the voice-chat group, one student commented about technological problems that the sound quality was poor in some situations so that he could not understand the conversation sometimes. Another student in the voice-chat group also commented that it was a little bit disturbing because it was her first time using voice-chat.

Table 4.7 Summary of questionnaire results (Question 1)

Q1. How did you feel about doing CMC interaction instead of face-to-face interaction	
Strengths	Weaknesses
TCG	
“Text chatting helps me to memorize what my partner said, because I could continue to see the conversation even if the chat was ended.” (HP)	“It’s hard to deliver my feeling. Sometimes chatting could cause misunderstanding. (If my partner and I chat in the same time, it’s starting to cause misunderstanding.” (HP)
“When I meet American face-to-face, I sometimes feel nervous and don’t know what to say. But I could join the conversation more easily when I use chat messenger. I feel more comfortable than when I meet American in person.” (SM)	“When we communicate with others, we usually use the body language besides the oral language. But we can’t see the other’s response when we use the chat program for talking.” (SM)
“Quick and no limitation of time, distance and so on. It could be worked with other things to do simultaneously on my	“There is no emotional interaction in a computer rather than face to face communication. Somehow I cannot learn the

computer.” (SY)	right English because of slang or online language (e.g. OMG, c-ya or something else....).” (SY)
“have more enough time to think about what I want to say” (HJ)	“It is limited in using body language to explain object. Also, you can’t learn pronunciation, or improve your listening skills” (HJ)
VCG	
“Save time and money” (YT)	“In some situation, the sound quality is poor, you would not understand the conversation.” (YT)
“It is efficient and you can have more time to communicate. You need not to stay in the same place. (AP)	None
“It was so beneficial more than what I considered.” (IZ)	“Because it’s my first time, it was a little bit disturbing.” (IZ)
“Depending on the person with who I chat (beginner or not, patient or not...), it may be a very good opportunity to improve my English.” (EC)	None

For the attitudes toward the type of activity, the data in Table 4.8 shows that all eight students in both text-chat and voice-chat CMC interaction group had a positive attitude towards this type of activity. One student mentioned that he took more time to think about the words by using various types of activities so that it allowed him to memorize the words more efficiently. Overall, students found this type of activity really fun and exciting experience and indeed it did help them learn some new vocabulary which they did not know. However, one student in the text-chat group commented that it would be not convenient when we want to say something long and urgent because it takes time. In addition, one student in the voice-chat group mentioned, “I think it will have some risks in some vocabulary, if both of them don’t know about that words”.

Table 4.8 Summary of questionnaire results (Question 2)

Q2. What do you think about this computer-assisted language learning (CALL) activity?	
Strengths	Weaknesses
“Repeating using words, it is easy to memorize. Using various type of activities, I took more time to think of words → memorize In Text Chatting→ consider a lot of times to write exact sentence.” (HP)	None
“It was really fun and exciting experience. I don’t usually use English when I chat with my friend. It was very new to me.” (SM)	“It takes times and not convenient chatting when you want to say something long and urgent.”
“Fun and realized what I didn’t know about a car.” (SY)	None
“This help to memorize words, because I still remember and use them!” (HJ)	None
VCG	
“In this activity, it helps me to gain some vocabulary. You can ask you partner when you don’t understand the words. Especially, some vocabulary you always use but you don’t know what it calls.” (YT)	“I think it will have some risk in some vocabulary, if both of them don’t know about that words.” (YT)
“It is good and have a lot of fun. It’s also very good to learn vocabulary, make new friends, and also know about slang word.” (AP)	None
“It was so good to learn such terms, that we use it in our daily life.” (IZ)	“I was shocked, because I know nothing about it.” (IZ)
“Good to learn some new words. The good point is that we can have a reading support to learn new words, visualize them.” (EC)	None

As shown in Table 4.9, all of the students had a positive attitude towards using this type of activity in their English classes. Most of students in both groups think this type of activity would be helpful for them to acquire new vocabulary. Some of students in the text-chat group commented that this activity can help students improve their writing skills and

vocabulary acquisition. Another student also commented, “I am glad if that kind of activity included in English classes. The way you learn English from friends is much faster than from teacher.” In addition, one student in the voice-chat group mentioned that it would help students to improve speaking skills because the students will not shy when they talk together.

Table 4.9 Summary of questionnaire results (Question 3)

Q3. What do you think about this type of activity in English classes?	
Strengths	Weaknesses
TCG	
“Can help students improving their writing skills, and acquiring idioms and new expressions.” (HP)	“It takes long time, so there will be difficult to continue progress.” (HP)
“I believe that this helps improving writing skills, and vocabulary acquisition.” (SM)	“We can learn the wrong expression from the non-native speaker. Most Korean people use their own expression (Konglish).” (SM)
“It would be helpful to memorize some words” (HJ)	“However, It can be in damage to only learn how to type that word, not in how to speak it! I mean pronunciation for words.” (HJ)
“I am glad if that kind of activity included in English classes. The way you learn English from friends is much faster than from teacher.” (SY)	“Students may not have their listening and speaking skills as developed as they would be in a “traditional” English class. The overall benefits of face-to-face interaction would be lost.” (SY)
VCG	
“It will help students to improve speaking skill because the students will not shy when they talk together.” (YT)	“You must have computer and internet for every student to support class.” (YT)
“It is good and helpful to each of the participant.” (AP)	“Need facilities and MSN account ☺” (AP)
“It will be like learning with fun.” (IZ)	“In the first time using this type of activity will be messy, but by time it will be more effective.” (IZ)
“It can be a good opportunity to improve my English with discussing with other students and have a teacher feedback at the same	None

time.” (EC)	
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However, many comments addressed concerns about using this type of activity in English classes. Two students in the text-chat group mentioned that students may not have their listening and speaking skills as developed as they would be in a “traditional” English class so the overall benefits of face-to-face interaction would be lost. One student mentioned time constraint that it takes a long time so there will be difficult to continue progress and also another student commented, “You must have computer and internet for every student to support class.” Moreover, one student, who was one of Korean students in the text-chat group, mentioned that “We can learn the wrong expression from the non-native speaker. Most Korean people use their own expression (Konglish).”

In sum, the results showed that all ESL learners in both CMC and face-to-face interaction negotiated to complete their tasks, and all of the twelve target lexical items prompted negotiation for all of the dyads. Moreover, the results revealed that the students in all three groups recalled more than half of the previously unknown target lexical items in the immediate post-test and delayed post-test. In addition, the results indicated that students tended to acquire new lexical items when they had some background knowledge about the target words or they were negotiating both form and meaning with their partners. A follow-up survey data showed that most of the students in both text-chat and voice-chat CMC interaction group had a positive attitude towards this type of activity in online, and they found synchronous chat as an interesting and helpful way of English learning.

CHAPTER 5. CONCLUSION

This study investigated the differential effects of CMC interaction (both text-chat and voice-chat) and face-to-face interactions on university level of ESL students' vocabulary acquisition. The study discussed some positive aspects of CMC interaction on ESL learners' L2 lexical development in comparison to face-to-face interaction. Specifically, the data showed that the students in all three groups were all involved in negotiated interaction, and various types of negotiation were observed. Along with a summary of the results, implications for teachers and materials developers are presented. Finally, certain limitations observed in this study and further suggestions for future research are provided in the final section of this chapter.

Summary and Implications of the Study

The results from the first research question revealed that ESL learners in all three conditions appeared to negotiate the meaning in order to resolve their comprehension problems when communication trouble arose. There were no statistically significant differences in the number of negotiation routines among three experimental groups and thus all of the students were engaged in negotiated interaction while completing their tasks. Qualitative data also showed that all of the twelve target lexical items prompted negotiation for both meaning and form.

To summarize the findings of the second research question, the students in all three groups recalled more than half of the previously unknown target lexical items in the immediate post-test and delayed post-test. For both productive oral and written acquisition,

the results revealed that all three conditions seem to facilitate the acquisition of L2 words, as well as to ensure a good level of retention. Thus, meaning negotiation during interaction (computer-mediated and face-to-face) seems to equally promote written acquisition of L2 vocabulary.

In addition, the results indicated that students tended to acquire new lexical items when they had some background knowledge about the target words or they were negotiating both form and meaning with their partners. A follow-up survey data showed that most of the students in both text-chat and voice-chat CMC interaction group had a positive attitude towards this type of activity in online, and they found synchronous chat as an interesting and helpful way of English learning.

From the results, it is worth noting that learners in the VCG and FFG also achieved good written production scores as well as the learners in the TCG. The result for the text-chat group is not surprising if we consider that, learners in TCG were interacting in a written environment, and the written mode of the online virtual interaction has been said to help students monitor (hence paying more attention to) both their input and output (Salaberry, 2000; Warschauer, 1997a). The data revealed that the attention to and noticing of the form and meaning of lexical input are considerably presented in both voice-chat and face-to-face interactions (hence, the significant gains for both groups) when they engaged in negotiated interaction. From the chat scripts, we observed that learners in both groups, most of the times, negotiated for the spelling and this interaction seems to lead them to focus on form of the target lexical items. These oral interactions appear to allow them to have a high “noticing” effect (which may help their conscious learning) and thus to acquire the written form of L2

vocabulary. Thus, a voice-chat also may help in the development of both oral and written skills.

Limitations of the Study and Suggestions for Further Investigation

First of all, although participants were from seven different countries, more than half of participants were Asian students because they were recruited from the researcher's former English pronunciation class which consisted of students mostly from Asia. However, it would be better for future research if the study includes the same portion of students from Europe, Asia, South America, etc. Secondly, only 1-week delayed posttest after the initial treatment was used for this study; however, for future studies, 3-week delayed posttest should be considered to properly measure the learners' retention of vocabulary. Thirdly, only nouns (or concrete nouns) were investigated because I found that it was very hard to design the tasks with other classes of vocabulary. However, future research should explore whether other classes of words such as verbs or prepositions can also be acquired in ways similar to those demonstrated here.

Fourthly, the participants were 12 students for all three experimental groups so each group consisted of only 2 dyads. This sample size limits our ability for generalizing the results. For future investigations, I suggest that researchers should include more participants to increase generalizability of the results. Fifthly, some students seemed under the pressure during their tasks because of the time limit (15 minutes) even though they did not spend the whole activity time. As I analyzed the data, I noticed that students were in a hurry to finish the activity on time and did not negotiate much with each other. Other studies should conduct the study with no time limit, where it may be observed that much negotiation takes place.

Finally, female students appeared not to enjoy the activity while male students were very interested in the task. For future studies, researcher should concentrate more on task design that can make all learners enjoy the activity and also develop interesting CMC learning opportunities with rich and authentic contexts.

Conclusion

This study showed that both *text*-based, *voice*-based CMC interaction and face-to-face interaction, where learners need to negotiate the meaning of target words, seemed to be equally effective in promoting both oral and written productive acquisition of L2 vocabulary. Unlike the previous results in de la Fuente (2003), the present study showed that CMC interaction also seemed to be as effective as face-to-face interaction in promoting oral acquisition of L2 words. In particular, voice-based CMC interaction may be a good substitute for both text-based CMC and face-to-face interactions for many reasons mentioned above. The data suggest that because in voice-based conversations students were more frequently involved in negotiations to check the spelling than in the text-based CMC interaction, those in the voice chat were able to focus on language form as well as those in the text chat group and thus promote their written acquisition of L2 vocabulary.

From a pedagogical perspective, I think that it may be possible that synchronous CMC, through well-designed interactive tasks in which students negotiate word meanings, will become an optimal medium to help students advance in their lexical interlanguage. By providing learners with lexical input and generating pushed lexical output, on-line negotiation tasks would be facilitating a much-needed incidental vocabulary development outside of the classroom setting. The key for making this new ideal learning environment

would be adequately designed tasks that make learners focus their attentional resources on certain L2 vocabulary. Since both types of synchronous CMC interaction fosters the negotiation of meaning and form-focused interaction, and students communicating through the text chat have more time to process and monitor their interlanguage, I believe, that CMC chatting can play a significant role in the development of lexical competence among classroom language learners.

APPENDIX A. SAMPLE OF TASK

Main Treatment Activity



Task Instruction

Activity 1

Student A

Name: _____

Recently, you have got a used car, but it has several problems. So you have to fix your car, but you don't have time to deal with it because of the mid-term exam. You want to ask your friend to take care of that. Please tell him/her in English the names of auto parts that have problems. If he/she has no idea about the auto parts, try to explain and describe them as much as you can. You have a total of 15 minutes to go through the list and negotiate with your friend. Here is a list that you have to repair.

		
Steering Wheel	Gas gauge	Odometer
		
Hubcap	Hood	Exhaust pipe

APPENDIX A. (continued)**Activity 1****Student B****Name:** _____

Recently, your friend has got a used car and he/she is going to ask you to fix his/her car because he/she doesn't have time to deal with it. She / he is going to send you the names of specific car parts during your online chatting. If any of the items you don't know, just ask her/him to explain it. Please put down in the blank list what your friend needs in English. You have a total of 15 minutes to negotiate with your roommate and make it clear what your roommate is going to buy.


Defective auto parts:

APPENDIX A. (continued)

Activity 2

Student B

You are working in an auto factory that is in great need of auto parts from overseas auto part manufacturers. The following auto parts are what your factory needs for new cars recently. Please call your overseas auto part provider to place an order of them. Give necessary explanation of auto parts if they have no idea about the exact items you are ordering. You have 15 minutes to do the activity.

		
<p>Ignition Switch</p>	<p>Windshield</p>	<p>Glove compartment</p>
		
<p>Sun visor</p>	<p>Hand brake</p>	<p>Roof rack</p>

APPENDIX A. (continued)**Activity 2****Student A****Name:** _____










You are working at an auto part factory that provides auto parts for major car manufacturers. Your customer is now calling you to place an order of auto parts. Please put down a list of auto parts your customer requires in English. If you have no idea about the auto parts your customer orders, ask him to explain or clarify until you completely understand. You have 15 minutes to do the activity.

A list of auto parts:

APPENDIX B. SAMPLE OF PRE-TEST

Pre-test (Oral)

Speak the word in English that corresponds to the presented images below.

		
1.	2.	3.
		
4.	5.	6.
		
7.	8.	9.
		
10.	11.	12.



13.



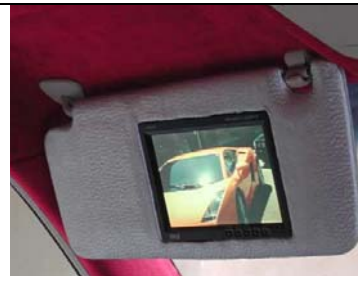
14.



15.



16.



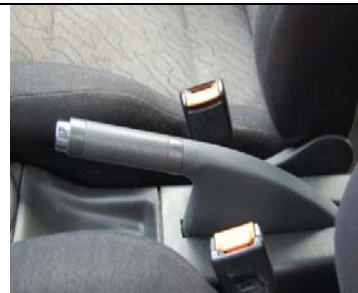
17.



18.



19.



20.



21.



22.



23.







24.

APPENDIX B. (continued)

Pre-test (Written)

Name: _____

Type your answer in English below.

		
<p>1.</p>	<p>2.</p>	<p>3.</p>
		
<p>4.</p>	<p>5.</p>	<p>6.</p>
		
<p>7.</p>	<p>8.</p>	<p>9.</p>
		
<p>10.</p>	<p>11.</p>	<p>12.</p>



13.



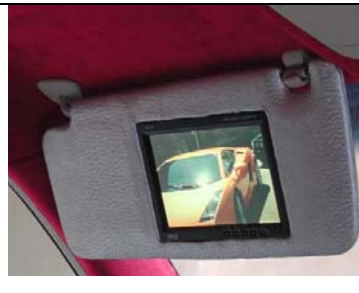
14.



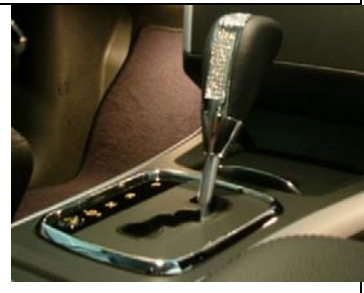
15.



16.



17.



18.



19.



20.



21.



22.



23.















24.

APPENDIX C. SAMPLE OF POST-TESTS

Post-test (oral test)

Direction: Please say the names of specific auto parts in English.






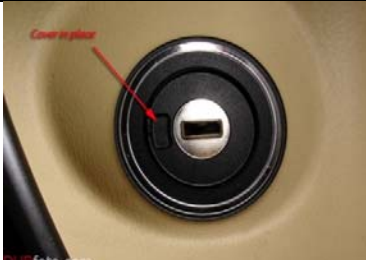




		
<p>1.</p>	<p>2.</p>	<p>3.</p>
		
<p>4.</p>	<p>5.</p>	<p>6.</p>
		
<p>7.</p>	<p>8.</p>	<p>9.</p>
		
<p>10.</p>	<p>11.</p>	<p>12.</p>

APPENDIX C. (continued)

Post-test (written test)

Name: _____

Direction: Please type the names of specific auto parts in English.

		
<p>1.</p>	<p>2.</p>	<p>3.</p>
		
<p>4.</p>	<p>5.</p>	<p>6.</p>
		
<p>7.</p>	<p>8.</p>	<p>9.</p>
		
<p>10.</p>	<p>11.</p>	<p>12.</p>

APPENDIX D. SAMPLE OF SURVEY**Participant Post-Questionnaire**

This is a questionnaire about your experience of learning vocabulary through internet text and voice chat. Please circle one that best describe your experience in doing chatting activities.

1. How do you rate your English vocabulary level?
 - Beginner
 - Low-intermediate
 - High-intermediate
 - Advanced

2. Have you ever used English in internet chatting with your friends?
 - Not at all
 - A little
 - Somewhat
 - A lot

3. If so, how often do you chat in English per week?
 - None
 - 30 minutes or less
 - About 1 hour
 - Over 3 hours

4. To what extent do you think that chatting in English helps you improve your English?
 - Very much
 - Some extent
 - Not much
 - Not at all

5. Which environments do you think that you can improve your English most?
Text-based chat
Voice-based chat
Face-to-face interactions

6. How comfortable do you feel doing vocabulary activities on computer?
Not at all
A little
Somewhat
Very much

7. How much did your partner's explanation help you to understand the vocabulary?
Not at all
A little
Some
A lot

8. How much did you remember the vocabulary after chatting with your partner?
Not at all
A little
Some
A lot

9. To what extent did chatting activities help you learn vocabulary?
Not at all
A little
Some
A lot

10. How did you feel about doing CMC interaction instead of face-to-face interaction?

Pros:

Cons:

11. What do you think about this computer-assisted language learning (CALL) activity?

Pros:

Cons:

12. What do you think about this type of activity in English classes?

Pros:

Cons:

Thank you for your participation!

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