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# Characteristics and Transferability of Text-Based CMC to Oral Performance

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This study examines characteristics of linguistic output in the synchronous and asynchronous computer-mediated communication (SCMC versus ASCMC) modes. Furthermore, it explores the possible transfer of skills gained from the different CMC modes into oral performance since the text-based CMC encourages a higher level of interaction and facilitates both written and oral output. Results show that there were significant differences in lexical and syntactic complexity between the two modes and only syntactic complexity skill was found to be transferred into oral performance. That is, the ASCMC group revealed significant improvement in the number of clauses and syntactic complexity in oral performance. Besides, CMC activity tends to be more reflective than face-to-face conversation because text on the screen allows learners to consider and revise their statements. This awareness gained from both CMCs was also transferable to oral performance, indicating significant improvement in accuracy. These findings could suggest text-based CMC as a supplementary tool to promote Korean EFL students' oral performance. Also, the distinctive characteristics of the SCMC and ASCMC should be exploited in effective ways according to different instructional goals.

## I. INTRODUCTION

As an innovative way to increase language use, computer-mediated communication (CMC), such as chat, e-mail and bulletin boards, are beginning to be used in second/foreign language learning environments. Many researchers have found that CMC increased learners' output (Beauvois, 1995; Blake, 2000; Kern, 1995; Warschauer, 1996), interactive discourse (Chun, 1994; Darhower, 2000; Sullivan & Pratt, 1996), and improved the quality of written language (Chun, 1994; Sotillo, 2000).

Furthermore, Chun (1994) first suggested "the transferability of written competence gained from CMC to speaking competence based on the strong resemblance between the types of utterances generated in text-chatting and what would be said in a spoken

conversation" (p. 29). Since CMC has been claimed to have the characteristics of both speaking and writing, it can be suggested that CMC should be incorporated into the Korean EFL curriculum to facilitate oral as well as written output. However, only a few studies to date have addressed the transferability of CMC. The results have been mixed (Beauvois, 1997; Kost, 2004; Payne & Whitney, 2002). Some methodological problems were also pointed out; a short duration of treatment, absence of the equivalent treatment time conditions in synchronous and face-to-face groups and valid scales on which to measure. Therefore, future research needs to take into account these limitations and to examine whether or not CMC activity can help develop oral output in Korean EFL students.

Previous CMC research has usually been done with real-time chatting, synchronous CMC (SCMC) because it was argued to be closer to speaking. Besides, asynchronous or delayed-time CMC (ASCMC) is increasingly used because of its time- and place-independent nature. It allows extended time to plan, edit and revise the content and embodies well-structured language. Although ASCMC is claimed to be more similar to writing, its transfer effect on spoken production can also be supported. Rivers and Temperly (1978) showed some of the advantages to using writing in helping develop oral skills in the foreign language classroom. They explained that writing could allow students with physical or emotional difficulties or slow reactions to demonstrate their abilities through a more relaxed medium (p. 277). When students utilize written modalities as an interactive medium, the result can be a more natural-sounding conversational style. Warschauer (1997) also noted the same benefits in oral communication skills through many-to-many collaborative online writing. Thus, ASCMC, like SCMC, can be shown to result in increased written skills and the transfer of those gained skills into oral skills.

Some studies have suggested that voice-based CMC, such as voice mail or voice-chatting, is more effective than text-based CMC in improving oral proficiency (Han, 2004; Kim, J., 2003; Kim, S., 2002). At the same time, they admitted technological difficulties in conducting voice-based CMC because it requires a large computer hardware capacity as well as mechanical aids to record voices. Text-based CMC, by contrast, has practical applicability and is worth being implemented in the language classroom. Therefore, this study will focus on synchronous and asynchronous text-based CMC.

This study aims to explore the characteristics of linguistic output in the synchronous and asynchronous text-based CMC and their transferable effects on the oral performance[1] of Korean English learners in small group discussions. The SCMC will be implemented in the form of on-line text-chatting, while the ASCMC will be conducted through

[1] This study is limited to oral performance because it is a small-scale exploratory study that doesn't include a treatment time sufficiently long to reflect the multiple traits of oral proficiency.

bulletin-board postings on a web site. The research questions are postulated as follows:

1. What are the characteristics of linguistic output produced in the synchronous and asynchronous CMC modes?
2. Are the linguistic characteristics gained from the synchronous and asynchronous CMC transferred into oral performance?

# II. LITERATURE REVIEW

## 1. Computer-Mediated Communication (CMC): SCMC versus ASCMC

Previous research on CMC has frequently compared the quantity and nature of learner output with face-to-face communication (FFC) and suggested various benefits to CMC over FFC. First of all, CMC generates a higher frequency of interaction and this type of interaction encourages learners to construct the conversation collaboratively (Beauvois, 1997; Warschauer, 1996). Other benefits of CMC include greater participation by shy students (Chun, 1994; Kern, 1995; Warshauer, 1996) and positive attitudes towards language learning (Beauvois, 1995; Chun, 1994; Kern, 1995). Learners also produce a greater amount and more complex language in CMC activities than in face-to-face settings (Abrams, 2003).

These early studies have mainly addressed synchronous CMC (SCMC) as a tool to aid in language learning. With the increasing use of computer-assisted language learning, asynchronous CMC (ASCMC), another popular mode of CMC, also needs to be exploited in the educational context. ASCMC provides a communication mode distinguishable from SCMC. While SCMC is a time-dependent activity, ASCMC is free from this constraint. Participants in this mode do not need to meet at the same time. It allows a broad range of interaction outside the classroom; for example, students can work in pairs, small groups, or as a whole class. Besides, compared with the continuous threads of discussion in SCMC, the delayed nature of bulletin boards and e-mail in ASCMC allows for more in-depth analysis and critical reflection on messages (Warschauer, 1997).

As reviewed above, the SCMC and ASCMC modes provide learners with different communication contexts and have been claimed to represent different linguistic characteristics. More language output was seen in SCMC due to the rapid exchange of messages (Hirotani, 2004), but more syntactically complex structures were observed in ASCMC due to its delayed nature (Hirotani, 2004; Sotillo, 2000). Furthermore, Sotillo (2000) found significant differences in discourse functions between the two modes. The discourse functions in the chat mode were more varied and similar to those of interactional

modifications in face-to-face conversations. Those in the bulletin board mode were more constrained and similar to the question-response evaluation sequence in the traditional language classroom. Consequently, for more effective use of the SCMC and ASCMC modes, they should be selected appropriately in the language curriculum according to their different linguistic characteristics.

## 2. Transferability of CMC into Oral Communication

Since CMC is a form of text-based, interactive networked communication, it has been claimed that CMC has the characteristics of both speaking and writing (Smith, 2003; Warschauer, 1996). The transferability of CMC to oral performance was first suggested by Chun (1994). The strong resemblance of language between text-chatting and spoken conversation prompted her to speculate that competence gained from written practice could be gradually transferred to the students' spoken discourse competence.

Since Chun's (1994) suggestion of transferability, one pilot study by Beauvois (1997) and four experimental research studies (Abrams, 2003; Hirotani, 2005; Kost, 2004; Payne & Whitney, 2002) have been done on this transferability. Abrams (2003) and Hirotani (2005) examined the effects of SCMC and ASCMC on oral performances and oral proficiency after CMC activities and showed contradictory results. SCMC was found to be more effective than FFC and ASCMC for oral performance in the amount of language output in learners of German (Abrams, 2003), but face-to-face communication (FFC) produced greater gains on the linguistic indices of the oral tests than SCMC in learners of Japanese (Hirotani, 2005). Kost (2004) investigated the effects of SCMC on the development of oral proficiency and found no statistically significant difference in the increase in scores in linguistic indices between SCMC and FFC. Payne and Whitney (2002), exploring this issue from a psycholinguistic point of view, claimed that CMC can indirectly enhance the development of oral proficiency, especially for those with a lower phonological working memory capacity.

Recently, some studies have been conducted in the Korean EFL context and have supported the claim that CMC is effective for developing oral proficiency (Chang, 2002; Han, 2004; Hong, 2004). Jin-Tae Chang (2002) claimed that students' communicative strategies gained from the CMC activity were transferable to oral proficiency based on his analysis of the content of student's e-mails and chatting. Sun-Mi Hong (2004) also found that CMC instruction contributed more to improving speaking, especially discussion, than FFC instruction.

As mentioned above, ASCMC tools have also been widely used in educational contexts due to their time- and place-independent advantages. Although this mode is claimed to be closer to writing, its transferability of gained skills to oral performance has also been

examined (Abrams, 2003; Hirotani, 2005). A number of authorities have emphasized the close relationship of oral and written language. Kroll (1981) stated that, "speaking and writing are multidimensional processes and the influence is reciprocal." Rivers and Temperly (1978) strongly advocate writing for developing oral skills and Cramer (1978) noted that writing "can foster the growth of oral language" (p. 161). So, ASCMC, like SCMC, generally precedes oral communication and can play a facilitating role in improving oral output in the Korean EFL context.

Research examining possible differences in transferability between SCMC and ASCMC modes to oral performance is not yet available within the Korean EFL context. The present study aims to identify whether linguistic characteristics that Korean EFL learners produced in the SCMC and ASCMC modes can be transferred into face-to-face interaction.

## III. METHOD

The main purpose of this study was to examine the transferability of SCMC and ASCMC with the Korean EFL students. This study was designed to answer the research questions postulated for this purpose.

### 1. Participants

Participants in this study comprised two intact classes enrolled in general English classes at a large university (n=48). They were all freshmen and ranged in English proficiency from low-intermediate to mid-intermediate based on scores from an entrance exam. A couple of students who initially demonstrated much higher or lower levels of English were excluded from the analysis (n=46).

For the purpose of the study, one class was assigned to SCMC (n=24) and the other to ASCMC (n=22) mode. There were more male students than female students in both classes; 6 males and 3 females were assigned to each SCMC and ASCMC group. The students in each mode were randomly grouped into four- or five-student subgroups for small-group discussion[2].

During small-group discussion, students were instructed to interact with other students in their own group. This study focuses on learner-to-learner interaction. Learner-to- learner

[2] It is important to consider group size and frequency of interaction when planning CMC activities. The optimum group size for SCMC may be different from that for ASCMC, but this study focuses on small group discussion and has a group of 4 or 5 for both modes. Too large a group can pose the problem of too many writings or postings to be read.

interaction is more practical because Korean EFL classes are so large that a teacher cannot take part in every group discussion. Also, learner-to-learner interaction was found to be more interactive than teacher-to-learner interaction (Blake, 2000; Darhower, 2000; Kim, H., 2006; Warschauer, 1996). Warschauer and Kern (2000) suggested that electronic learning activities should be learner-centered to be successful and effective.

## 2. Procedures

This study began on March 7, 2007 and ended in the first week of June. During the spring semester, all students in the two modes attended their regular general English classes twice a week for two and half hours total. Each unit was covered in three lessons. Small group discussions were presented in the last lesson of each unit after they had received background knowledge, read the appropriate section of the textbook and studied the vocabulary and grammar from the chapter. The topic for discussion was selected together by the researcher and the students as the most relevant and interesting one from the writing topics suggested in the textbook.

Both SCMC and ASCMC groups had seven small group discussions throughout the course. The first and last discussions were performed orally to serve as the pre-treatment and post-treatment oral discussions. They were audio-taped using an MP3 and then transcribed by the researcher. The other five discussions were conducted in the assigned CMC modes during the treatment sessions. The SCMC group text-chatted using MSN or Daum Messenger for 20 to 25 minutes[3] and were asked to print out and submit their chat logs. The ASCMC group participated in week-long discussions using a bulletin board in Daum café. Their own opinion on the topic and two comments on other's opinions were required as this was estimated to most closely approximate the amount of chatting done by the SCMC group. Both SCMC and ASCMC activities were conducted outside the classroom taking advantage of place-independence.

Students were also informed of how their writings would be evaluated. Since CMC is an extra activity, it was minimally included in evaluation (5%). In order to encourage output, evaluation focused on how much students participated in discussions, instead of the quality of their linguistic output.

[3] Time assigned on CMC activities varies from study to study. Abrams (2003) set 40 minutes for whole-class discussion, whereas Smith (2003) did 30 minutes for a dyadic conversation. This study has adjusted the time to 20 to 25 minutes after pre-treatment oral discussion. Most groups did not even keep the oral discussion going for 20 minutes.

## 3. Data Collection and Analysis

Before determining the transferability of CMC, this study first investigated the characteristics of linguistic output produced in the SCMC and ASCMC modes during the treatment session. The identified characteristics in each CMC mode were then compared with linguistic output in oral performance to detect the transfer. In addition, to examine the possible transfer of SCMC and ASCMC, this study conducted oral discussions prior to and after the CMC treatments. The scores of pre-treatment and post-treatment oral discussion were compared to see if there was a significant improvement in oral performance.

For this analysis, all linguistic output in the CMC and oral sessions were collected and calculated according to the three constructs of learner output: fluency, accuracy, and complexity. First, fluency was measured by counting the number of words, AS-units (the Analysis of Speech Units), and clauses. While the number of words or clauses has been widely used in previous studies (Abrams, 2003; Kern, 1995; Warschauer, 1996), AS-units have only recently been employed as a language unit for measuring spoken language. The AS-unit is defined as "a single speaker's utterance consisting of an independent clause, or sub-clausal unit, together with any subordinate clause(s) associated with either" (Foster et al., 2000, p.365), and so this language unit is adequate for analyzing predicate-free utterances frequent in SCMC and oral modes. Second, accuracy addresses the ability to produce speech with fewer errors and was assessed by the percentage of error-free clauses in relation to the total number of clauses (Foster & Skehan, 1996; Tajima, 2002). Third, complexity includes the lexical and syntactic complexity of linguistic output. Lexical complexity was calculated by the square root of the doubled number of tokens based on Tajima's findings (2002) that type-token ratio did not correspond to OPI ratings. Syntactic complexity was counted by the number of clauses per AS-unit because the coordination index did not capture sub-clausal units in oral mode (Hirotani, 2004; Tajima, 2002).

Next, calculated scores on each of the three linguistic measures were compared using statistics. For the first research question, independent sample *t*-tests were conducted on the SCMC and ASCMC groups in order to determine whether or not there were significant differences in linguistic output produced during the CMC treatment. For the second research question, paired *t*-tests were performed to examine if there was a significant improvement in oral performance within each group.

Additionally, individual questionnaires on the use of SCMC and ASCMC were administered to both groups in the form of a journal in which participants were urged to write freely about their attitudes and opinions on the use of CMC. They were used to give complementary explanations on the results form data analysis.

# IV. RESULTS AND DISCUSSION

Data from the CMC treatment and oral discussion were compared to examine whether characteristics in different CMC modes could be transferred into oral performance. The results of the data analysis were described and discussed according to each research question.

## 1. Characteristics of Linguistic Output in Synchronous and Asynchronous CMC

To identify characteristics of linguistic output produced during the different CMC treatment sessions, *t*-tests were conducted on the mean score of all five small discussion groups. As shown in Table 1, the ASCMC group produced more lexically ($p$=.001) and syntactically complex output ($p$=.000) than the SCMC group. However, neither group showed any significant differences in either fluency or accuracy measures.

**TABLE 1**
**Linguistic Output in the SCMC and ASCMC Modes during the CMC sessions**

| | | SCMC | | ASCMC | | *df* | T | *Sig* |
|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | | | |
| Fluency | Word | 79.45 | 35.66 | 97.49 | 41.76 | 44 | -1.570 | .121 |
| | AS-unit | 14.43 | 5.78 | 11.4 | 4.37 | 44 | 1.983 | .054 |
| | Clause | 17.49 | 7.01 | 16.7 | 6.75 | 44 | .363 | .718 |
| Accuracy | | 44.64 | 13.5 | 47.6 | 14.7 | 44 | -.729 | .470 |
| Complexity | Lexical | 3.79 | .61 | 4.39 | .55 | 44 | -3.475 | **.001** |
| | Syntactic | 1.2 | .11 | 1.5 | .22 | 44 | -6.022 | **.000** |

The results of the fluency measure do not seem to support Hirotani's (2004) finding that the SCMC mode produced more output than ASCMC. The SCMC was found to allow students to practice rapid interaction and to facilitate their output (Kroonenberg, 1994; 1995). The failure of superiority of SCMC to ASCMC in this study might be explained by some constrains on the implementation of the SCMC mode. The responses from the individual questionnaires illustrate various complaints, which have been brought up in previous studies. First, students in the SCMC mode were often confronted with multiple threads of discussion and gradually began to lag behind in the discussion. Half of the students stated that they could not jump into the discussion because they couldn't read a couple of messages and write their own at the same time. Thus, their discussion lost focus and tended to be "divergent monologues" than "convergent conversation" (Moran, 1991). Second, while allowing free expression within a less-threatening atmosphere, SCMC mode can increase the use of hostile language or the repetition of irrelevant words that finally interrupts communication (Sproull & Kiesler, 1991). Some unfavorable expressions were

observed in the SCMC mode, for example, *'you wanna die??'* and '*but you have no pride kkkk*'. Consequently, these complaints negatively affected students' attitudes towards the use of text-chatting and discouraged them from participating actively in the discussion.

Findings from the complexity measure indicate that text-chatting was shorter and used more code-switching strategies while most of the asynchronous postings were lengthy and included richer lexicons.

(1) Excerpt : *SCMC*

1 S. H: *Otaku* is not only obsessed in animation but also other part
2 P. J: i agree
3 S. H: they collect their favorit part's *yongpum*.
4 P. J: they collect pramodel
5 S. H: and they look that and smile disgusted
6 S. M: *yongpum*=article
7 S. H: oh i'm sorry
8 P. J : animation character

(2) Excerpt : *ASCMC*

1 R.S:
Let My opinion.
I do not depend on quacks.
I trust God. I choose what depend on superstition or quakery than death.
I overcome with faith about cancer.
Look at the christion. this people say that " God gives my life, God have my life." So am I. What depend on quaks is money waste and time waste.

2 (Comment) P.S:
um... I can't agree your opinion. First, I don't trust god.
I believe that God don't exist reality. because I don't see the god.
Therefore you don't depend on god. and you must trust yourself

As shown in (1) and (2), in spite of the high frequency of interaction, the spontaneous nature of the SCMC mode forced students to produce brief written messages using simple sentence structures (e.g., phrases without verbs or short sentences with a single conjugated verb) rather than complex ones (e.g., elaborate sentences using subordinate clauses). Students appeared to be more interested in exchanging ideas than trying to make correct linguistic output in order to follow the discussion closer. In addition, this excerpt demonstrates that students also had difficulty in expressing themselves due to their insufficient knowledge of vocabulary. In this case, they often asked for help from their

peers or employed their L1. Examples can be found in sentences like "*Otaku is not only obsessed in animation but also other part*" and "*they collect their favorit part's yongpum*". Student S.M then provided the answer using the English equivalent (*yongpum = article*).

In contrast to SCMC, asynchronous discussion allows learners to write more complex language lexically and syntactically. This result is consistent with that of previous research, which found a higher level of linguistic complexity when students were engaged in active interaction with their peers by e-mail (Li, 2000). Likewise, students' writing on bulletin board would be kept open to others and be continuously read during the course. It helped students produce more complex written language and a richer vocabulary. Also, Li (2000) suggested that students could gain greater control of their language when the writing task allowed students more freedom to express their ideas on a topic. This study employed such a conversational task and their writing displayed more sophisticated and more diverse use of written language (Li, 2000).

These differences were also reflected in the fluency measure. It was noted that the ASCMC group (M=97.49) produced more words than the SCMC (M=79.45), but that the SCMC group (M=14.43) exhibited more AS-units than the ASCMC (M=11.4). The dominance of long messages in the ASCMC mode increased the number of words and the shorter messages in the SCMC modes resulted in a dramatic number of AS-units.

Neither group showed any linguistic differences in the accuracy measure. From descriptive statistics, the average mean of accuracy rate was found to be between 45% and 48%. From the excerpts above, incorrect structures were very often seen, for example, '*and they look that and smile disgusted*' (5), '*Let My opinion*' and '*I overcome with faith about cancer*' (10). This indicates that almost half of the output produced in CMC modes is full of errors as Jong-Im Han (2005) noted. This result seems contradictory to Li's claim (2000), which suggests that there would be obvious trade-off effects between linguistic complexity and accuracy in students' writing. While the ASCMC group produced more written output (ASCMC=97.49, SCMC=79.45), they also achieved higher accuracy (48%) than the SCMC group did (45%). Thus, a different explanation is needed for the accuracy result. Comments from the questionnaire in this study revealed that most of the students in both groups expressed strong uncertainty about the grammaticality of their English. They also show implicitly that most Korean EFL students are aware of grammar in producing language output. Despite being aware of the need to produce accurate output, neither group achieved a high level of accuracy through CMC activities, so future research needs to take this problem into account. All linguistic output in CMC activities can be saved and learners can access their transcripts later, reflecting on their output in terms of vocabulary, grammar and content (Han, 2006).

In summary, the ASCMC mode was found to facilitate more complex language than the SCMC through CMC activities. However, neither group revealed any significant

difference in either fluency or accuracy measures.

## 2. Transferability of CMC to Oral Performance

This study showed a higher complexity in linguistic output produced in the ASCMC mode for research question one. The second research question asks whether or not these characteristics can be transferred into oral performance. As noted in Table 2, the ASCMC group had a significant overall increase especially in the number of clauses, accuracy, and syntactic complexity. The SCMC group showed significant improvement in accuracy only.

**TABLE 2**
**The Paired T-test Results of the Pre-Treatment and Post-Treatment Oral Discussion**

| | | SCMC | | | ACMC | | |
|---|---|---|---|---|---|---|---|
| | | Pre | Post | *Sig* | Pre | Post | *Sig* |
| Fluency | Word | 68.48 | 61.86 | .391 | 44.04 | 55.85 | .102 |
| | ASunit | 10.62 | 9.38 | .350 | 6.85 | 7.95 | .349 |
| | Clause | 14 | 13.43 | .724 | 8.10 | 11.60 | **.037** |
| Accuracy | | 38.62 | 56.61 | **.003** | 33.63 | 51.89 | **.006** |
| Complexity | Lexical | 3.39 | 3.49 | .547 | 3.24 | 3.38 | .531 |
| | Syntactic | 1.33 | 1.46 | .126 | 1.28 | 1.56 | **.020** |

First, it is noteworthy that the ASCMC group improved in general fluency, particularly in the number of clauses ($p$=.037), and that the SCMC group decreased though not a significant amount. The increase in the number of words, AS-units and clauses from the ASCMC group seems to be reflected in a greater confidence in English. This confidence may have been gained through writing practice on bulletin boards. Some students reported that they felt more confident writing in English, as shown in (3).

(3) S7 (ASCMC): At first, to write in English was very difficult to me.
Now, I feel that it is taking shorter time to do it.

Furthermore, since the ASCMC group got accustomed to writing longer and more subordinate sentences while preparing for their postings, they were able to use more clauses in oral performance. This result suggests that the skill of using more clauses, gained from the text-based ASCMC, might be transferred into oral performance.

As mentioned above, the SCMC group was de-motivated by several complaints in using text-chatting and was not as actively engaged. They did not show higher amounts of language output. Thus, it can be inferred that because the SCMC activity was disruptive and de-motivating, it had a negative effect on the amount of written and oral output.

On the other hand, the decreased output could be explained in relation to the familiarity

of the topic. Pellettieri (2000) suggest that the tasks, which involve topics beyond the repertoire of the learners, can increase the quantity of negotiation produced. In other words, students solve the task through more frequent negotiation when an unfamiliar topic is presented. According to the data from this study, more than half of the students regarded the post-treatment oral discussion topic as less familiar to them than that of the pre-treatment oral discussion. Both classes were mostly composed of male students with only a few of female students. The topic of the post-treatment discussion, "fashion"[4], is typically not very attractive and interesting to male students compared to the pre-treatment discussion, "advertising on tobacco or alcohol"[5]. Unlike Pellettieri's claim, most students in the SCMC mode in this study had difficulties in organizing ideas about the unfamiliar topic and accessing appropriate lexical and syntactic elements and finally chose to hesitate and remain silent instead of negotiating meaning. By contrast, the ASCMC group showed an increase in oral output under the same conditions.

Second, the ASCMC group showed significant oral improvement in syntactic complexity ($p$=.02), but not in lexical complexity ($p$=.531). This is partially consistent with the result in CMC sessions. The ASCMC group produced more lexically and syntactically complex output than the SCMC group during the CMC sessions. This result seems to be related to significant improvement in the number of clauses and suggests the transferability of syntactic complexity in ASCMC.

On the contrary, the ASCMC group did not show significant improvement in lexical complexity. One possible explanation may be that lexical complexity was independent of the topic. Even though students in the ASCMC modes gained lexical complexity with access to on-line dictionaries, those lexicons may be confined to a specific topic and be irrelevant to a new topic. The extended time necessary to access a dictionary or reference book in the ASCMC modes was not possible during oral performance. Real time exchanges require immediate feedback in oral performance. Another explanation could be made in relation to the SCMC group. When they did text-chatting, ignorance of accurate spelling might hinder the flow of the conversation. A few of the students in the SCMC mode stated that ignorance of exact spellings often distracted their conversations with repeated confirmation questions being asked. As a result, lexical difference between the two modes through CMC sessions was found to be significant. When performing in oral mode, by contrast, they were not discouraged by the pressure of spelling any longer and

[4] Most people believe that the teenage years are a time when young people are very concerned about looking good. How did you feel about your appearance when you were a teenager? And what advice would you give to teenagers who feel that they are unattractive? You can present your opinion about using cosmetic surgery.

[5] Do you agree or disagree with laws that forbid advertising campaigns for alcohol and tobacco on TV?

could produce closer to the limit of their linguistic output. Accordingly, significant differences in lexical complexity in the two CMC modes might be obscured in oral performance. The following excerpts (4) and (5) from oral discussion demonstrate this result:

(4) Excerpt: *SCMC*

1 P: When I was a teenager, / I was very concerned about looking good, But like MG. say, it was very stressful and / say / / /*sinkyengssuita*.

2 S: I think / positive in plastic surgery.
Plastic surgery / give a confidence / confidence to people.
So, plastic surgery is good.

(5) Excerpt: *ASCMC* ,

1 R: When I was a teenager, I can't/ I can't concerned about appearance. My face / no. My body is given by parents and my body is important.

2 K: *inwucekinkey mwe nya? cayencekinkey aninke*
(Unnatural?)
Unnatural beauty is not a beauty. Because I think / naturally beautiful is best beautiful. So cosmetic surgery is is not good.

As shown in (4) and (5), when students in either group could not find an appropriate word, they came to a halt in the middle of their conversation and used code-switching strategies or asked for help. The ASCMC group did not take advantage of on-line dictionaries or references and were interrupted by poor vocabulary.

Noticeably, both groups showed a greater improvement in accuracy through CMC activity ($p$=.003 in SCMC, $p$=.006 in ASCMC). During oral communication, many messages can be misunderstood because speakers do not have time to reflect on or correct any mistakes they may have made. However, both CMC modes provide an environment for students to reflect and monitor their output on a screen. As the students in both groups got accustomed to noticing their grammatical errors through CMC, they become aware of their errors in oral output through consciousness-raising. This finding is consistent with Pellettieri's study (2000), in which synchronous chatting played a significant role in the development of grammatical competence among classroom language learners. It also suggests that self-correction from CMC could be transferable and beneficial in promoting accuracy in oral performance. If CMC is accompanied by an activity on corrective feedback, improvements in accuracy could be much greater.

In summary, this study found some possible transfer of skills gained from CMC to oral performance. The SCMC group improved accuracy significantly and the ASCMC group showed a significant increase in the number of clauses, accuracy and syntactic complexity.

# V. CONCLUSION

CMC has been considered a promising tool to aid in language learning on account of its interactional features. Recently, various modes of CMC, in particular, synchronous and asynchronous CMC, have been widely implemented in educational contexts, but few studies have addressed how effectively each CMC mode contributes to language learning. As the two modes possess distinctive features, linguistic output in SCMC should be different from that in ASCMC. Furthermore, the strong resemblance between speaking and real-time text-chatting along with the strong relationship between writing and speaking have prompted speculation on the possible transfer of skills gained from text-based CMC to oral performance.

This study investigated the characteristics of linguistic output produced in SCMC and ASCMC and explored the transferability of those characteristics gained from the different CMC modes into oral performance. Both research questions were examined for linguistic output in the CMC and oral modes in terms of fluency, accuracy, and complexity.

In the CMC sessions, the ASCMC mode facilitated more complex output than the SCMC. Real-time communication in the SCMC mode entails numerous fragments or shorter utterances due to rapid conversation. In contrast, delayed-time communication in the ASCMC mode was more lexically and syntactically complex because students were conscious of their peer's feedback on their writing and the extended time helped them to employ more complex structures and diverse vocabulary. Thus, students in the ASCMC mode practiced writing in English and got accustomed to making long and complex sentences with richer lexicons. This improvement in skills was reflected in their comments on greater confidence making sentences in English.

In oral performance, these same characteristics in the ASCMC mode were found to be transferred into oral performance with respect to syntactic complexity and the number of clauses. Confidence gained in writing in English can be transferred to oral performance. Students were able to make longer and embedded sentences and employ more clauses in their utterances. On the other hand, the ASCMC group did not show an improvement in lexical complexity. This result may be explained by different discussion topics or in relation to the SCMC group, as mentioned above in the result and discussion section.

Awareness of output was enhanced by both of the text-based CMC activities, and it was employed in oral performance as well, which facilitated the accuracy of oral performance. Unlike speaking, the text-based CMC allows students in both modes to save and reflect on their language output. As a result, they are induced to become more aware of errors or mistakes in their oral output.

# VI. PEDAGOGICAL IMPLICATIONS

The findings of this study suggest that text-based CMC should be integrated into the English curriculum in a supplementary way to facilitate oral performance. Most Korean EFL learners are not provided with abundant opportunities to produce language output orally and they tend to remain silent during oral conversation. Since text-based CMC encourages a higher level of interaction among the students and has characteristics both of speaking and writing, increased skill from the written mode could help improve oral skills, too.

Moreover, some significant differences between the SCMC and ASCMC were found in both the CMC and oral sessions. Based on the results of this study, syntactic complexity can be promoted through asynchronous writing on bulletin boards. Further study needs to be done to examine other distinctive characteristics between the two CMC modes. These characteristics should be exploited for their different pedagogical purposes. Some pedagogical suggestions could be made for effective use of each CMC mode. ASCMC demonstrated positive overall effects on learner output from this study. For ASCMC to be more effective, posts to the discussion boards need to be frequent for students to maintain an interest in the boards. If the levels of participation drop below a certain degree, further postings might not take place. In order to overcome this problem, the discussion should be made time-dependent so students cannot procrastinate.

Although the SCMC mode failed to show significant improvement in language output, this form of communication is still worthwhile in improving oral performance. SCMC has been found to have many linguistic and non-linguistic benefits. As mentioned in the result and discussion section, unfavorable reactions to the use of SCMC might have had negative effects on linguistic output in written and oral modes. Implementing text-chatting efficiently seems imperative for it to be used effectively. Students' complaints and difficulties in implementation must be addressed and minimized. The solution to this is to have a fixed order for the students to respond in. Students could be instructed on the procedure for participation, it could help avoid multiple threads of discussion. For example, if students don't wish to comment then they would have to say "pass." Students may also be asked to give their opinions, and then have the members of the group respond to those opinions in turn. Another solution might be to ask students to prepare statements or questions before the chat session starts. It can make the students' comments a bit more considered. In addition, SCMC should be done with a closed-ended task rather than an open-ended task. Closed-ended tasks can provide students with a challenge and prompt them to make rapid exchanges (Han, 2003). For example, a jigsaw or information-gap task could be chosen for online chatting to elicit a high degree of negotiation of meaning. Students have different parts of information and must exchange information through more

active interaction to solve a problem or to complete a task.

Accuracy improved significantly through CMC activity. Lots of errors, however, could still be seen in the transcripts from the two modes. Participants in this study were at a low to mid-intermediate level and their errors could not be focused on and corrected without an authority figure or a highly proficient speaker. In order to solve this problem, post-task activities focused on grammar may be a good idea for improving accuracy. CMC activity allows students to save their written work and to reflect on it. Using this advantage, a teacher could give instructions on those mistakes most commonly made after looking through students' work. Another activity could be to give time to make self-corrections of their own work or to have students read and correct other group's work by providing interactive feedback.

Despite these valuable findings, this study has some limitations. This study focused on the difference in linguistic output between the SCMC and ASCMC modes. Because they are different, adjustments were made to try and balance the amount of time spent on each. Despite these attempts, this study admits that in practice it was very difficult to control the amount of time spent on either mode. Therefore, careful interpretation should be presented in the comparison between the two modes. Another limitation is related to the large variance in the amount of linguistic output. This study quantitatively compared mean scores of the two groups for the research questions asked and revealed a large variance in the quantity of linguistic output within each group. A detailed qualitative follow-up study should be carried out to explain the large variance in individual differences.

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