TESL-EJ Teaching English as a Second or Foreign Language
The Electronic Journal for English as a Second Language

Vocabulary Transfer from Reading to Writing: A Comparison of Essay Writing and Synchronous CMC

May 2022 – Volume 26, Number 1
https://doi.org/10.55593/ej.26101a8

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Abstract

Reading-integrated writing is known as an effective approach to teaching and learning vocabulary as it allows students to transfer vocabulary from a source text to writing. This study examines whether vocabulary transfer from an input text to writing varies according to the two types of tasks: essay writing and synchronous text chat. One hundred Korean college students from four "Reading and Writing" classes performed both tasks, and their vocabulary use was compared between the two tasks. The tokens and the types of words used in essay writing and chatting were compared against a base wordlist constructed from the input text, and their lexical profiles were analyzed using various programs, such as RANGE, VocabProfile, and WordSmith. The findings show that more varied words were transferred from the source text to the chat scripts than to the essays. While the lexical diversity was slightly greater in the chat scripts than in the essays, the difference was not statistically significant. Interestingly, the chat scripts exhibited the same level of lexical density (i.e., the ratio of content words to function words) as the essays. It can be inferred from the findings that the synchronous chat provides a valuable context for practicing target language, and that it is as useful as essay writing for promoting vocabulary transfer from reading to output production. In addition, the findings suggest that reading can become a beneficial source of language input that leads to output production.

Keywords: reading-integrated writing, synchronous CMC; essay writing; vocabulary transfer; lexical diversity; lexical density

Vocabulary is one of the basic components of language and plays an essential role in second language proficiency development (Schmitt, Schmitt, & Clapham, 2001). A number of studies have attested how lexical knowledge is related to learner proficiency level, reading comprehension, verbal ability, and writing competence (King, 2011; Lee & Muncie, 2006; Nation, 2005; Uchihara & Saito, 2019). Thus, there has been a growing interest in finding effective methods for teaching vocabulary. For L2 vocabulary instruction, researchers often make a distinction between receptive and productive vocabulary. Receptive vocabulary knowledge refers to the ability to recognize a word and comprehend its meaning whereas productive vocabulary knowledge indicates the ability to use a word in output. Underlying this distinction is that being able to recognize words in input resources does not automatically lead to the ability to use them in writing or speaking (Hsu, 2013; Lee, 2003; Lee & Muncie, 2006; Nation, 2005).

What then would be an effective way to narrow the gap between these two types of vocabulary knowledge? Researchers have argued for the need for learning tasks that are tailored to convert receptive vocabulary into productive vocabulary (Webb, 2009). This line of research highlights the importance of reading-integrated writing tasks as a way to develop productive vocabulary (Laufer, 1998; Lee & Muncie, 2006). Reading-integrated writing tasks prompt learners to use vocabulary from the source text in their output production.

The present study is designed to examine EFL learners' vocabulary transfer from reading to writing. One hundred Korean university students were recruited to compare their vocabulary use in two types of productive tasks: essay writing and text chat, a type of synchronous computer-mediated communication (SCMC). Given the increased popularity of text chat in language instruction (Al-Sa'di & Hamdan, 2005; Blake & Zyzik, 2003; Sauro & Smith, 2010), this study is significant in that it uncovers the pedagogical value of text-based CMC for productive vocabulary development, while exploring the possibilities of the reading and writing connection. Specifically, the study aims to examine how students would use vocabulary from a reading text by comparing the amount of vocabulary transfer and the lexical properties of vocabulary used in essays and chat scripts. The study was designed to answer the following research questions:

1) Are there differences between the two writing tasks in terms of vocabulary transfer?
2) What are the lexical features of productive vocabulary across the tasks, in terms of lexical diversity, lexical density, average word length, and average sentence length?

Literature Review

Vocabulary for Reading and Writing

There seems to be some consensus about the distinction between receptive (passive) vocabulary and productive (active) vocabulary: receptive vocabulary is usually associated with comprehension whereas productive vocabulary generally implies the ability to use words in speaking and writing (Fitzpatrick & Clenton, 2017; Nation, 2005). Accordingly, productive vocabulary is considered to require more time and effort to acquire than receptive vocabulary as it entails cognitive processing to retrieve words for output production, compared to simple input processing (Kavanoz & Varol, 2018). As a result, L2 learners possess a larger repertoire of receptive vocabulary (Hsu, 2013; Nation, 2013). This gap has led researchers to explore ways to foster productive vocabulary development.

A particular focus has been placed on developing those tasks that can help students convert receptive vocabulary into productive vocabulary. Webb (2009) explored how different tasks (receptive or productive) would affect student performance and found that productive tasks

led to better outcomes in both writing and vocabulary tests. In contrast, receptive tasks resulted in higher scores only in the comprehension test. This indicates that while receptive tasks are effective for improving receptive skills, they are not sufficient to trigger the use of the target vocabulary (Webb, 2009). This is because receptive tasks simply expose learners to language input, but not necessarily providing opportunities for them to actually produce vocabulary (Laufer, 1998). The relationship between receptive and productive vocabulary is closely tied to Swain's (1985) output hypothesis: the production of output contributes to language acquisition.

In light of this theoretical emphasis on output, other researchers have demonstrated the positive effects of vocabulary teaching on productive vocabulary acquisition (Lee, 2003; Lee & Muncie, 2006; Nation, 2005). For example, Lee (2003) investigated how pre-learning of target vocabulary would affect ESL learners' vocabulary use in a post-reading composition task. She found that without vocabulary learning, only 13.19 percent of the target vocabulary in the reading was converted to productive vocabulary. After vocabulary learning, however, 63.62 percent of the target words were utilized in student writing. Solati-Dehkordi and Salehi (2016) also reported that the writing task combined with explicit vocabulary instruction contributed to the increased use of productive vocabulary. More recently, Wong (2017) found that when students were explicitly reminded to use target words in their writing, they used significantly more target words in their essay writing than those in the non-reminded group.

The prior research studies taken together highlight the value of productive tasks for vocabulary acquisition. Yet, few studies have examined the effects of productive tasks on vocabulary learning, particularly vocabulary transfer. There are only a handful of empirical studies on vocabulary transfer from reading to writing (Lee, 2003: Lee & Muncie, 2006). While those two studies are meaningful in that they examined the connection between reading and writing, their focus was on the role of vocabulary instruction in vocabulary transfer. Few studies to date have explored the effects of task type on vocabulary transfer from reading to writing. One potential area of research is online learning tasks as they are readily available for language learners. Given that synchronous CMC (SCMC) is widely adopted as a medium of communication and a classroom task, it seems timely to investigate its pedagogical effectiveness in comparison with essay writing in terms of vocabulary transfer. This study aims to compare essay writing and SCMC with respect to vocabulary transfer. In consideration of the purpose, it is crucial to understand if and to what extent SCMC can contribute to L2 vocabulary acquisition.

SCMC and L2 Vocabulary Development

CMC has been widely adopted in language learning and teaching as it is effective for increasing the amount of interaction among participants (Reynolds & Anderson, 2015). In particular, synchronous CMC (SCMC) is known to foster fluency development as L2 learners in the online communication context can use the target language with primary focus on meaning (Blake & Zyzik, 2003; Sauro & Smith, 2010). This may have to do with the fact that learners can take risks and express their ideas more freely via SCMC because it is less threatening than face-to-face interaction (Baharudin & Maskor, 2020; Golonka, Tare, & Bonilla, 2017; Kim, 2002; Kim, 2017; Rabab'ah, 2013; Reynolds & Anderson, 2015). For instance, Rabab'ah (2013) found that Arabic female participants produced more words than males and attributed the finding to the anonymous nature of CMC. Baharudin and Maskor (2020) also showed that SCMC helps learners feel safe, and thus enhances learner engagement and motivation, leading to learners' linguistic gains in learning Arabic. In a study that compared voice chat with text chat in the Korean context, Kim (2017) found that both types of CMC were effective for promoting positive affect and reducing anxiety,

although the beneficial effects were observed to be greater for text chat.

Among the many benefits of SCMC is its effects on meaning negotiation in vocabulary acquisition (Coyle & Prieto, 2017; Jackson, 2011; Lai & Zhao, 2006). Meaning negotiation around new words can make input more comprehensible and facilitate learners to notice the gap between their interlanguage and the target language (Blake & Zyzik, 2003; Rezaee & Ahmadzadeh, 2012). For instance, Coyle and Prieto (2017) found, from an analysis of 16 Spanish children's chat scripts, that SCMC helped the children notice gaps in their lexical knowledge and complement the gaps even outside of class. SCMC also creates an optimal context for focus on form (Peterson, 2009) as it can draw learner attention to linguistic form through language-related episodes (LREs), where learners talk about the language they are producing, question their language use, or provide self- or other-correction (Eslami & Kung, 2016; Rouhshad, Wigglesworth, & Storch, 2016). LREs are significant in that they delineate how participants utilize communication strategies in the course of interaction. Jackson (2011) reported that learners used comprehension checks, clarification requests, and confirmation checks during their interaction in the text chat setting. As Jackson put it, text chat contributes to language development by providing opportunities for comprehensible input, modified output, and peer feedback.

In particular, increased processing time in SCMC due to pauses between turns promotes the comprehension of input and enables learners to plan and monitor their own output (Hung & Higgins, 2016; Smith, 2008; Teng, 2015). This increase in processing time also allows learners to detect problems and self-correct their output before submitting it (Kitade, 2000; Kung, 2004; Sykes, 2005). The act of awareness-raising and noticing, consequently, helps L2 learners improve their language proficiency in terms of linguistic complexity (Jones, Murphy, & Holland, 2015; Sauro & Smith, 2010), lexical diversity (Sauro & Smith, 2010), and accuracy (Alwi, Adams, & Newton, 2012). In addition to the increased processing time, the visual saliency and re-readability of the messages in text-based chat amplifies learners' attention to linguistic form (Lai & Zhao, 2006; Meskil, 2005). The beneficial effect of the visual saliency on language learning was confirmed in a recent study by Wigham (2015), who argued that text chat helped students attend to tutor feedback.

As discussed above, many studies have examined the effects of SCMC on language learning. Yet very few studies have explored the relationship between SCMC and productive vocabulary development. As one of the recent studies, Tare, Golonka, Vats, Bonilla, Crooks and Strong (2014) compared the two productive tasks (text chat versus paragraph writing) and confirmed the importance of interaction in SCMC for language acquisition. Unfortunately, however, their findings were limited due to a small sample size as only sixteen and nine students participated in each task. Thus, it is timely to examine the effects of synchronous CMC on vocabulary learning with more participants included. It would also be interesting to compare the effects of SCMC and traditional writing tasks and analyze how the two different modes of communication would contribute to students' productive vocabulary development. The present study aims to give insights to computer-assisted language learning (CALL) practitioners regarding the relationship between synchronous text chat and productive vocabulary development by focusing on vocabulary transfer through interactional exchanges.

Method

Participants

The participants were one hundred Korean college students enrolled in four "Reading and Writing" classes at two mid-tier universities located in Seoul, Korea (three classes at one and

one at the other). The students had similar levels of scholastic aptitude as they were admitted to the universities according to their performance on the Korean SAT. Their English reading competence was, however, varied, with their scores ranging from 3 to 15, as measured by the TOEFL reading test whose maximum score was 15.

The participants were all native speakers of Korean who were taking the courses as a university requirement. They were from diverse fields of study, including law, business administration, social welfare, accounting, and economics. They were mostly freshmen (n=68) with some sophomores (n=10), juniors (n=13), and seniors (n=9). Originally, a total of 108 students agreed to participate in the study, but after excluding those who did not complete the two tasks, the number of participants was reduced to 100.

Instruments

At the outset of the data collection, an English article titled "Should conscripts get priority for jobs?" was selected as the input text. The passage was chosen because the issue of mandatory military service in Korea was provocative enough to elicit opinions from students. Some believed that two years of military service should be compensated, whereas others argued that the military requirement is a legitimate policy by the government, and therefore, no compensation should be offered. As the original passage was quite long, it was shortened by removing redundant information (see Appendix for the modified version). In addition, to facilitate text-based CMC, a Korean chat program, *Nate-on Messenger*, was used. Students were asked to create their own accounts for the program so that they could participate in a synchronous text chat.

Data collection and analysis

The data were collected from four reading and writing classes taught by two Korean teachers with more than ten years of teaching experience. One of the classes was taught by one of the researchers, and the rest by the other. Prior to instruction, the two teachers collaboratively planned all the details for their instruction, including the materials, tasks, assignments, group formation, and instructional procedures. As a course requirement, the students were instructed to perform text-based CMC and essay writing tasks upon reading passages on two controversial topics (one in the middle and the other at the end of the semester). The present study is based on the second batch of data as the students were familiar with the task procedures.

For classroom instruction, all the students were guided to read the chosen passage and write a summary sentence for each paragraph in groups of three or four students sitting nearby. To facilitate the comprehension of the reading text, the instructors had the groups read their summaries, and clarified the meaning of 24 new words from the source text. They then formed groups for the text chat with students of mixed level proficiency, as learners with the same level tend to generate little meaning negotiation (van Lier & Matsuo, 2000).

The students were instructed to participate in synchronous CMC, four days apart from reading the text. They discussed the topic in English for 40 to 60 minutes as an outside class assignment. Their discussion sessions were not monitored on the grounds that instructor feedback could influence the students' use of vocabulary. The students were advised to submit their chat scripts, which amounted to a total of 26 group chat scripts (17,468 words all together). After a week interval, each student wrote an opinion essay in response to the reading and a total of 100 essays of 150 to 200 words (18,430 words all together) were collected. The interval was set to prevent the students from copying words directly from the source text if they had written their essays immediately after reading.

For data analysis, the 26 group chat scripts were combined into a single text file to create a

learner corpus, and so were the 100 individual essays. As the focus of the study was on a within-subject comparison, not a between-subject comparison, the written texts from all the students were merged and analyzed according to task type in terms of vocabulary transfer. Thus, individual variation was not a concern as all the students were required to perform the two writing tasks after reading. The composite of their written production was built into two different corpora, following Al-Sa'di and Hamdan's (2005) and Marchand's (2013) corpus construction method. The two corpora of the texts produced by the same students were then compared in terms of vocabulary transfer.

Prior to data analysis, student names, misspelled words, and CMC-specific expressions, such as onomatopoeia (e.g., *haha*, *kkk* as laughing sounds), homophonic spellings (e.g., *u* for *you*, *r* for *are*), acronyms (e.g., *lol* for *laugh out loud*), and clippings (e.g., *gov* for *government*[i]) were eliminated, as they may inflate the total number of words or contaminate the lexical range analysis (Fitze, 2006). For instance, since many variant forms of "bye," such as *byebye*, *bye~bye*, bye~kkk, bye~kkkkkk, and bye~zz were initially classified as separate tokens, they had to be excluded for a more careful analysis.

Then the two corpora of the texts produced by the same students were analyzed with three programs: *RANGE*, *WordSmith*, and *VocabProfile*. First, in the *RANGE* program was installed a base word list generated from the source text, called the Source Text Wordlist (STW), against which the essays and chat scripts were compared to analyze the vocabulary overlap between the source text and the two text corpora. The analysis yielded information on the percentage of vocabulary shared across texts including word tokens (all the running words), word types (different word forms such as run, runs, running), and word families (a word family as a base form of various forms, e.g., run for run, runs, running) (Nation, 2013). These measures were used to compute type-to-token proportions, which were then compared through a *z*-test. In addition, *WordSmith* and VocabProfile were used to measure lexical diversity, average word length, average sentence length, and lexical density.

Furthermore, a qualitative analysis was performed to identify interactional discourse moves or language-related episodes in the chat scripts. The moves were coded and categorized according to Golonka, et al.'s (2017) framework: language assistance (e.g., meaning negotiation, partner-correction, and self-correction), using partner as resource (e.g., clarifying instructions, modeling, helping with vocabulary and technical problems), and providing encouragement (e.g., helping with task completion, eliciting, providing positive affect).

Results

Vocabulary Transfer from the Source Text to Student Writing

Table 1 summarizes the tokens, types, and families of words in the source text, student essays, and chat scripts. The essays (18,430) produced by 100 students contained more words than the chat scripts (17,468). This difference, however, was reduced when word family was considered. In terms of word family, the student essays (1,100) contained only 100 more than the chat scripts (982). The difference was even reversed with word type, with the number of word types slightly higher in the chat scripts (1,919) than in the essays (1,779).

These frequencies, however, should be interpreted with caution due to the different size of the tokens between the two types of texts. It thus seems to make more sense to compute the type-token ratio (TTR), i.e., the total number of types divided by tokens. Interestingly, the TTR was found to be slightly higher for the chat scripts (0.11) than for the essays (0.097). Given that a higher TTR is generally associated with a greater lexical range or complexity (Breeze, 2008; Fitze, 2006), it is notable that the words in the chat scripts displayed greater

lexical variation.

Table 1. Word Tokens, Types, and Families in Different Texts

Text	Tokens	Types	Families
Source text	629	277	245
Essays	18,430	1,779	1,100
Chat scripts	17,468	1,919	982

To obtain measures of vocabulary transfer, we examined the tokens, types, and families of words in the students' essays and chat scripts in relation to the source text. For this purpose, a base word list, *Source Text Wordlist* (STW) was created from the source text with the *RANGE* program. Table 2 presents the number of words shared between the source text and the students' written production in terms of tokens, types, and families, which are labelled as STW tokens, STW types, and STW families, respectively. For instance, STW tokens indicate the number of the words transferred from the input text to the essays and to the chat scripts.

Table 2. STW Type-token Ratio and STW Family-token Ratio across Texts

Text	STW Tokens (a)	STW Types (b)	STW Families (c)	b/a	c/a
Essays	12,636	414	217	0.0328	0.017
Chat scripts	9,613	362	192	0.0377	0.019

*STW Tokens: the number of all the words in the source text shared with the essays and the chat scripts produced by 100 students
STW Types: the number of word types in the source text shared with the essays and the chat scripts
STW Families: the number of word families in the source text shared with the essays and the chat scripts
b/a: STW type-token ratio; c/a: STW family-token ratio

As seen in the table, the student essays ostensibly contained more STW tokens (12,636) than the chat scripts (9,613). While 12,636 words (68.56%) out of the total number of words (18,430) used in the essays were overlapped with the wordlist from the source text, 9,613 words (55.03%) in the chat scripts were shared with the STW. The words (n=12,636) shared in the two (the essays and the STW) consisted of 414 word types, from which the STW type-token ratio was computed as 0.0328. In contrast, among the 9,613 words shared between the chat scripts and the STW, there were 362 word types, and thus the STW type-token ratio was 0.0377.

Like the type-token ratio reported earlier, the STW type-token ratio for the chat scripts was also found to be slightly higher than for the essays, but the two type-to-token proportions, compared in a *z*-test, were not found to be significant [z (1) = -1.97, p =.05]. Interestingly, similar patterns were observed in the STW family-token-ratio. The STW family-token ratio was a little higher for the chat scripts (0.019) than for the essays (0.017), but again the z value computed for a comparison of the two family-to-token proportions was not significant [z (1) = -1.54, p >. 05]. The non-significant differences mean that the STW tokens, the STW types, and the STW families were not different across the tasks. It can be inferred from the non-significant difference that the lexical complexity of the chat scripts did not differ from that of the essays.

Lexical Features of Written Output

In order to compare the qualitative attributes of the words the students used in essay writing and chatting, lexical features were compared in terms of four measures: lexical diversity, lexical density, average word length, and average sentence length (See Table 3). These measures are considered to indicate lexical richness and sophistication, and thus are commonly used in evaluating the quality of language (Gebril & Plakans, 2009).

Table 3. Descriptive Statistics: Lexical Features

Categories	Text	Ratio	N
Lexical Diversity (TTR)	Source text	42.81	
	Chat scripts	11.28	100
	Essays	9.68	100
Lexical Diversity (STTR: standardized TTR)	Source text	-	
	Chat scripts	33.91	100
	Essays	32.93	100
Lexical Density	Source text	0.61	
	Chat scripts	0.55	100
	Essays	0.55	100
Avg. Word Length	Source text	4.79	
	Chat scripts	4.55	100
	Essays	4.90	100
Avg. Sentence Length	Source text	35.22	
	Chat scripts	13.66	100
	Essays	14.39	100

First of all, lexical diversity shows how many different words appear in a given text, which indicates the quality of linguistic output (Laufer & Nation, 1995; Nation & Webb, 2011). It is often represented by the type-token ratio (TTR), the proportion of different types of words to the total words used. A higher TTR means a greater lexical range or higher lexical complexity; a lower TTR indicates a limited lexical repertoire (Breeze, 2008; Fitze, 2006). However, as the measure of TTR is sensitive to text length, the present study also analyzed standardized TTR (STTR), i.e., TTR calculated for every 1,000 words in a text, then averaged, and reported the measure along with TTR.

As seen in the table, the STTR of the chat scripts was slightly higher than that of the essays (33.91 and 32.93, respectively), indicating that the words in the chat scripts were lexically varied, although the value of z computed for the two STTRs was not significant [z (1) = -1.54, p >. 05]. This finding is in agreement with Tare et al.'s (2014): the text-chat group increased their type-token ratio in three weeks whereas the paragraph-writing group did not show any progress. This may be because individual writers, when they are engaged in essay writing, often adopt a "safety-first" approach and prefer to stick to familiar words and repeat them rather than taking risks with words (Breeze, 2008, p. 64).

It is also notable that their chat scripts did not differ from essays in terms of lexical density, which refers to the ratio of content words (lexical words) to function words (grammatical words). The lexical density measure indicates how content is substantiated topically, and it was found to be exactly the same (0.55) for both tasks. In other words, the students' use of content words did not differ across tasks. With respect to word length (number of characters per word), however, the essays contained slightly longer words than the chat scripts (4.90 and 4.55, respectively). The same patterns were observed for average sentence length (number of words per sentence), with longer sentences produced in the essays than in the chat scripts (14.39 and 13.66, respectively).

To sum up, although the essays contained slightly longer words and sentences than the chat scripts, the two text corpora were identical in terms of lexical density. It is interesting to note that the chat scripts contained a more diverse range of words than the essays. It seems that the interactive features of chatting have allowed the participants to expand their linguistic repertoire (Fitze, 2006; Jepson, 2005; Teng, 2015). In other words, the occurrence of more varied vocabulary in chatting may be because CMC facilitates interactional discourse moves or language-related episodes (Coyle & Prieto, 2017; Golonka, et al., 2017; Reynold et al., 2015; Tare et al., 2014). In fact, the analysis of the chat scripts based on Golonka, et al.'s (2017) framework revealed that most of the interactional moves identified in their framework were also observed in this study: offering language-related assistance (e.g., meaning negotiation, self-correction, and partner-correction), using partners as a resource (clarifying instructions and helping with unknown words), and providing encouragement (helping with task completion, providing positive affect). To demonstrate how the students used vocabulary in the interaction with their peers, a few interactional moves are presented in the following excerpts. Excerpt 1 below illustrates an instance of meaning negotiation where the students were discussing ways to compensate for two-year military service requirements for men in Korea.

Excerpt 1: Meaning negotiation about new lexical items (Language assistance)

1. Student 1: I think men need to compensate for **there effort**
2. Student 2: during the army, especially about 2years... 2years is very valuable time
3. Student 1: I think so
4. Student 3: **what kind of effort?**
5. Student 1: hmm. **for example shoveling or protect our country**
6. Student 2: **when a disaster occur...**
7. Student 2: **soldier help many people..**.
8. Student 2: **without no payment**
9. Student 3: it's obligation which is stated in Korea constitution

When Student 1 mentioned "there effort" in Turn 1 (only numbers hereafter), Student 3 requested clarification by asking "what kind of effort?" (4). Student 1 provided examples of effort by saying "shoveling or protecting our country" (5), and then Student 2 added the word, "disaster" (6) to contextualize the situation proposed by Student 1 and further exemplified by saying "soldier help many people" (7) "without no payment" (8). In other words, the students brought in new words such as shovel, protect, disaster, and payment in their meaning negotiation. This finding is in line with Jepson (2005), who reported that a clarification request was the most commonly observed repair move in both text chat and voice chat.

A similar finding was noted in the following excerpt in which the interactional exchanges

resulted in more varied forms of vocabulary. Excerpt 2 shows how partner correction can lead to the use of a more appropriate form. When Student 3 used the word "distinction" (3), Student 2 reformulated Student 3's utterance using an alternative expression, "discrimination" (4). The scaffolded interaction created a context where Student 1 expressed his/her own opinion using another word "equal" contrastive in meaning to "discrimination." (5).

Excerpt 2: Partner correction (Language assistance)

1. Student 1: So, if man passed the public servant test, give them more salary
2. Student 2: No, I don't think so
3. Student 3: but that also **distinction**
4. Student 2: That is also **discrimination** for woman.
5. Student 1: But.. I think it is more **equal** than give point in test.

In addition to the peers offering feedback voluntarily, there were also many instances where peers were used as resource. In excerpt 3, when Student 1 asked what type of additional system was available, Student 2 suggested "salary class," for which Student 4 requested clarification, as shown in Turn 4 and 6.

Excerpt 3: Helping with vocabulary (Partner as resource)

1. Student 1: What kind of dditional system is existed?
2. Student 2: or.. a **salary class**
3. Student 3: yes.
4. Student 4: **salary class???**
5. Student 2: um...
6. Student 4: **what is salary class?**
7. Student 2: **promotion is**
8. Student 3: **In company,**
9. Student 2: **faster than women**
10. Student 4: so realy??
11. Student 3: **they are acknowledging 2 years**

When students faced uncertainty of lexical meaning, they asked their peers questions for clarification. The process of meaning negotiation led both Student 2 and Student 3 to use other words such as "promotion" (7), "company" (8), "faster" (9), and "acknowledging" (11). The students also provided a written model of the language for their peers to refer to in the course of interaction. In excerpt 4, when Student 1 presented her opinion using a new phrase "reverse discrimination" (1), Student 2 recycled the phrase in the later turn (4), modelling what Student 1 used in the first turn.

Excerpt 4: Modeling (Partner as resource)

1. Student 1: I think so. but some women group argue that **reverse discrimination** will be occured.
2. Student 2: so we have to compensate soldiers that don't have enough ablilty to employ
3. Student 2: One of the way is additional Job point for discharged soldiers
4. Student 2: In fact, I think that **reverse discrimination** is availabe too
5. Student 3: I think so...

The students also attempted to elicit opinions from other participants in their group, as in the following excerpt. Here, when Student 1 said he supported the idea of giving additional points to those who had completed their military service, Student 2 sought opinions from other members, and Student 3 presented her thoughts. Asking a question obviously resulted in a more interactive engagement, and thus the use of more varied vocabulary.

Excerpt 5: Elicitation for participation (Providing encouragement)

1. Student 1: so.. i agree..
2. Student 2: **how about other people?**
3. Student 3: i tell instead of additional points, there are several ways to compensate!!!

The next excerpt illustrates a case in which one student's question had the effect of extending the topic or content of the discussion. As indicated in the excerpt, Student 1 (under a pseudonym, Sumi) asked the other members to consider incentives for women, offering such reasons as giving birth and doing house chores. This obviously broadened the scope of the topic to the role of women. These eliciting behaviors expanded the coverage of discussion and thus resulted in an increase in L2 output (Peterson, 2009).

Excerpt 6: Elicitation for topic expansion (Providing encouragement)

1. Student 1: What about the other insentive for woman?
2. Student 1: like childbirth, chore, etc
3. Student 2: However, Sumi.
4. Student 2: I think woman's condition is improving

Scaffolded interaction was used not just for modelling and elicitation but also for task completion. As shown in the excerpt below, when Student 1 (under a pseudonym, Daehan) mentioned "draft system" (1), Student 2 pointed out that it was not the topic of discussion. Then, in his next turn (5), he reminded the group members of the discussion topic so that the group could stay on task.

Excerpt 7: Helping with task completion (Providing encouragement)

1. Student 1: Draft system makes problem
2. Student 2: **Daehan, oh we are not debationg on draft system**
3. Student 1: no
4. Student 3: because of this difficulty, Goverment is striving to give them credits
5. Student 2: **We debate about military incentive system.**

To sum up, SCMC enabled the participants to scaffold one another in various ways, including meaning negotiation, partner correction, modelling, elicitation, and assistance for task completion. This kind of scaffolded interaction seems to be better supported via SCMC rather than a solitary act like individual essay writing.

Discussion

The findings on the lexical properties of words used in essay writing and SCMC deserve some interpretation and discussion. First, in terms of lexical diversity, the vocabulary used in the text chat was as varied as in the essays, and in terms of lexical density, the two types of written texts were about the same. Considering that essays and the source text share the features of formal written language, it is noteworthy that the text-based CMC or quasi-spoken communication showed almost the same level of lexical diversity as the essays, with

reference to the source text (Al-Sa'di & Hamdan, 2005). It seems that the interactions with multiple participants in SCMC have contributed to the lexical diversity. CMC might have allowed the students to notice the words that their group members have used in the course of interaction, in addition to the words directly transferred from the source text (Golonka et al., 2017; Jepson, 2005; Tare et al., 2014).

In addition, the unique nature of interaction in SCMC, such as meaning negotiation, peer correction, and elicitation, induced the use of varied vocabulary. This may be because the interactants were only physically "absent," as they were present in SCMC. They were actually participating in the threads of discussion and reacting to one another (Al-Sa'di & Hamdan, 2005). Moreover, the fact that they were all nonnative speakers might have led them to assist one another in their meaning-making process (Smith, 2004). In other words, writing in synchronous chat involves real-time interaction that facilitates meaning negotiation, and thus fosters co-construction of meaning (Warner, 2004). Such interactional exchanges might have caused the students to produce the chat scripts that were lexically diverse in terms of TTR or standardized TTR. This is in agreement with Coyle and Prieto (2017), which revealed that non-native English-speaking children acquired vocabulary incidentally as a result of interacting with their native English-speaking counterparts. In other words, the ongoing, fluid nature of communication in synchronous text chat may have enabled the students to notice words while reading others' lines and to experiment with the words while discussing the topics related to the text (Lai & Zhao, 2006; Teng, 2015).

With regard to lexical density, the ratio of content words to function words was even identical across the tasks, which means that the students used about the same percentage of content vocabulary in both tasks. Given that lexical density is a more rigorous measure than lexical diversity (Abrams, 2003), the finding that the chat scripts were lexically dense was quite surprising. Despite the general expectation that written texts have a higher proportion of content words than spoken texts (Stubbs, 1996), text-based CMC, commonly believed to resemble speaking, was found to be identical to writing in terms of lexical density (Yates, 1996). The finding is in line with Chang and Sperling's (2014) suggestion that text-chat should be used to engage students in academic dialogues as it allows them to have more control over their discourse (Chang & Sperling, 2014).

Regarding average word and sentence length, the essays contained slightly longer words and sentences than the chat scripts. This is not surprising as essays are expected to exhibit the characteristics of the written language, and average word or sentence length of written language is usually greater than that of spoken language (Biber, Conrad, Reppen, Byrd & Helt, 2002; Hughes, 1996). In general, in text-based CMC, words are usually shortened, and sentences are often produced over two or three turns (Al-Sa'di & Hamdan, 2005; Ware, 2005). This may be partly due to the nature of synchronous CMC. Text chat is often fragmented and dispersed over many turns as the interaction in CMC is multi-directional and involves multiple participants. In some senses, shortened words or reduced sentences in cyber language may not be a drawback but strategies commonly used to maintain the flow of conversation and maximize the efficiency of interactional exchanges (Ware, 2005). Al-Sa'di and Hamdan (2005) also reported that e-chatters often truncate words to reduce the number of keystrokes so that they can maintain the conversation flow. They presented many examples that illustrate the features of cyber language that e-chatters use, for instance, a single letter or a numeral in place of a word (e.g., *2morrow* instead of *tomorrow*, *u* instead of *you*). Besides, whereas a sentence in formal writing should be well formed, composed of meaningful strings of words, sentences in CMC are simple and short, often one-word with a filler or an interjection (Al-Sa'di & Hamdan, 2005). These features do not connote the collapse of the English language but instead reflect the natural, inevitable change in tandem with

technological advances. To sum up, the students' vocabulary use did not differ much across the tasks and the quality of words produced in chatting was as good as in essay writing. Their vocabulary used in chatting was also found to have great diversity, which supports the pedagogical value of SCMC.

Conclusion

In this study, vocabulary transfer from the source text to student writing was compared between two reading-integrated writing tasks: essay writing and text chat. One key conclusion to draw was that text chat or synchronous CMC was as effective as essay writing in terms of vocabulary transfer and productive vocabulary development. As for overall word transfer, essay writing ostensibly induced more transfer of word tokens than text-based CMC (68.56% and 55.03%, respectively). However, when the STW type-token ratio and the STW family-token ratio were computed to examine the vocabulary transfer from the input text to the students' written production, the measures were not statistically different between the two tasks: essay writing and SCMC. Given that cyber-English is known to have more commonality with spoken English than with written English, it is surprising that text chat did not differ from essays in light of vocabulary transfer and involved the use of more varied vocabulary and shared the formal features of language with the source text.

These findings prompt us to reconsider the pedagogical potentials of text chat for productive vocabulary development. The unique features of CMC, such as the presence of the addressee, nonthreatening nature of communication, meaning negotiation, and noticing in the input generated by peers, seem to create a venue for using and learning vocabulary. For instance, as presented in the excerpts earlier, the participants in the text chat expanded the range of vocabulary while assisting one another and negotiating the meanings of words together. This collaborative aspect of online chatting seems to have facilitated the students' vocabulary use, compared to essay writing, which is solitary in nature. This points to the need for using SCMC as an essential medium of target language practice.

The pedagogical benefits of SCMC seem to outweigh some limitations, such as decentering teacher authority, lack of coherence and continuity of discourse, negligence of grammatical accuracy, and a large number of spelling errors (Zhang, 2013). While the overall findings demonstrate the usefulness of text chat for productive vocabulary development, they are limited due to a possible task order effect. All the students performed the two tasks with a one-week interval, with online chatting followed by essay writing. As the sequence of the tasks was not counter-balanced, a practice effect may have intervened and affected the way the students used vocabulary when writing their essays.

Despite the anticipation that the practice effect might have resulted in more transfer and a greater range of words in the essays than in the chat scripts, the findings denoting the beneficial effects of SCMC are particularly notable and have some meaningful implications. First, text chat should be used to foster productive vocabulary development because it was found to induce as much lexical complexity as essay writing, as indicated in the STW type-token-ratio, the STW family-token ratio, the TTR, and the STTR. In addition, the students used the same percentage of content words regardless of task type, indicating that synchronous text chat is more like academic discussion when it involves the use of vocabulary directly related to the content-specific texts. This means that synchronous text chat can be used as an effective medium for language practice. It is therefore essential to design more engaging and authentic CMC tasks that can allow learners to notice, retrieve, use, and retain vocabulary.

Besides, practitioners need to pay attention to the interactional effects that SCMC generates.

Online chatting by nature prompts learners to engage in interactional exchanges through which they initiate, negotiate and act on the learning content (Coyle & Prieto, 2017). In doing so, learners are bound to notice words their partners use, and to repeat them on occasion during the interaction. SCMC provides more opportunities for students to retrieve, discuss and even problematize words. This sustained engagement in learning is likely to produce positive outcomes in vocabulary learning and retention (Golonka et al., 2017; Tare et al., 2014). In the course of interaction, in particular, learners should be encouraged to adopt communication strategies. In order to facilitate student use of strategies, teachers should offer strategy instruction or create a context where students can employ strategies so that they can take risks in using language and focus on interactional exchanges (Liu, 2017; Satar & Akcan, 2018).

Another important point we confirm in this study is that reading is surely a beneficial source of input. Thus, classroom teachers should select and use reading materials that cover different genres, topics, and cultural contexts so that learners can build up not only content schema but also formal schema, such as grammar and vocabulary, which can then be used for output production. Reading-integrated writing tasks are particularly valuable for EFL learners who do not have a large repertoire of language when writing in L2. Students can refer to the source text and identify some useful language, including vocabulary and sentence structure, and apply that to their writing process. In other words, source texts can become an essential resource to promote L2 learners' writing. If EFL practitioners, therefore, want to use SCMC for academic reading and writing, tasks should be carefully designed to keep student attention on the discursive or lexical features of the source texts. This will enable learners to expand their L2 vocabulary, even if they do not directly transfer words from the input texts.

Lastly, it is important to select the technology most appropriate for the goal of language teaching and design tasks that can maximize the effectiveness of features specific to the technology. Teachers should determine how to best incorporate technology to achieve specific learning goals and design tasks accordingly. For instance, teachers can use text chat as a pre-writing activity to facilitate student vocabulary use in essay writing by organizing these two tasks sequentially, chatting and then essay writing. A long-term use of text chat, on a weekly basis, for example, in L2 writing classrooms might help learners acquire productive vocabulary and improve writing fluency (Peterson, 2009; Reynolds & Anderson, 2015).

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To cite this article

Kim, S-Y. & Kim, K-S. (2022), Vocabulary Transfer from Reading to Writing: A Comparison of Essay Writing and Synchronous CMC. *Teaching English as a Second Language Electronic Journal (TESL-EJ), 26*(1). https://doi.org/10.55593/ej.25101a8

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Appendix: Modified version of the source text

Should conscripts get priority for jobs?

For most South Korean young men, the country's two-year-long compulsory military service is an unavoidable source of trouble as they must suspend their studies in colleges or quit jobs at the peak of their youth. Though the government has been making efforts to improve the welfare of soldiers and their service environment, conscripts still moan and groan over the duty. They argue the draft system compromises their social competitiveness and want to be compensated for their sacrifice.

A heated debate has been underway in recent months over the issue, eight years after the Constitutional Court said "no" to it. In 1999, the court ruled against a system to give additional points to discharged soldiers when they take state-run exams to become public officials, upholding a petition from an association of women's groups. It said the measure is "too excessive" and breaches the equal rights status of women and the disabled who are not obliged to serve in the military.

In South Korea, all able-bodied men over 19 are required to serve in the military for 24-27 months. Women can serve in the military as non-commissioned officers or officers but are not obliged to under the conscription system.

Last month, Rep. Ko, Jeou-heung of the main opposition Grand National Party (GNP) submitted a bill to revive an incentive system for discharged soldiers, re-igniting controversy over the issue. Under Ko's bill, passed by a national defense subcommittee of the National Assembly on June 22, those who served in the military are able to receive up to two additional percentage points to their scores in exams to become public servants or work at public firms.

The lawmaker stressed the new system would not be in violation of equal rights since the advantages under the bill have been eased to a greater extent not to harm the rights of women and the disabled. Ko's bill, however, is applicable to the both on a graded point basis. In addition, only 20 percent of applicants in an exam would be allowed the additional points, and the advantage would be limited after a certain test period, the lawmaker said.

"Many other nations in the world, even those adopting a voluntary conscription system, are implementing systems to support discharged soldiers," Ko said, citing examples of the United States, Germany and Thailand. The United States gives five to ten additional points to discharged soldiers and disabled veterans when they take state-run exams to become civil servants, and the retired soldiers are also given the support for school fees and a preference in employment, Ko said. Germany and Thailand also have similar social systems to support discharged soldiers and their family members. According to a survey conducted by Pollever last week, three in four people are in favor of Ko's revision bill. The poll of 1,204 adults over 19 found that 73.6 percent of the respondents supported the incentive for discharged soldiers, while 26.3 percent opposed the plan.

Women and disabled groups are blasting the move, saying the incentive system could harm job opportunities for "minority groups." Nam, Yoon-insoon, the representative of the Korea Women's Associations United, said the "men-oriented" incentive system would harm women's increasing social role. She cited the results of a simulation survey on Ko's incentive system conducted by the MND recently. According to the survey based on the 2006 exam for level nine public officers, two additional points increases the ratio of successful male applicants from 32.9 percent to 44.1 percent, while the women's ratio decreases from 58.8 percent to 49.1 percent. She proposed that men with military experience receive pension

credits or expanded job educational opportunities during and after their service period. Ko said he will seek to pass the revision in the regular session of the Assembly in September after a number of public hearings on the bill.

[i] The expression "gov" had to be deleted, as the word, "government" had already been counted and included in the STW.