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Writer's Use of Lexical Retrieval Strategies in the L2 Writing Process of EFL Students

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Although productive skills such as writing is being continually emphasized in the area of English teaching, studies on the writing process of students learning English as a foreign language (EFL) have been overlooked in the Korean context. Also, there is scarcity of studies that systematically examine the process of writing with respect to performance-based lexical (PBL) problems, which require the use of strategies for writers to retrieve lexical knowledge to produce target words. As such, this study investigates the L2 writing process by categorizing the types of retrieval strategies, and the PBL problems which trigger the use of strategies when writers try to retrieve the best word for their target meaning. The strategies used to solve the different types of PBL problems indicated that it is a cluster of strategies rather than an independent strategy that leads to effective strategy use. To obtain data on the retrieval strategies for PBL problems, 12 Korean university students were asked to think-aloud while writing in English with word processors. The findings of the study contribute to model building of the L2 writing process regarding lexical aspects.

[L2 writing/performance/lexical problems/retrieval strategies/think-aloud protocol]

I. INTRODUCTION

In spite of the evidence that vocabulary is what contributes to making writing in a foreign language most difficult (Chin, 2007; Chon, 2007; Leki & Carson, 1994; Kim, T.-E, 2007; Raimes, 1985; Uzawa & Cumming, 1989), research in vocabulary or L2 writing has not paid separate attention to the types of productive vocabulary problems that L2 writers confess to have (Nation, 2002), or the strategies to solve them. The categorization on the different types of productive lexical problems has been presented as those arising from

form, *meaning*, and *use* (Nation, 2001), however, without detailed demonstration on how the lexical problems may occur from the writers' point of view. Also while it is the drafting stage where most vocabulary problems are bound to occur since preconceived ideas have to be transferred to written text (Levy & Ransdell, 1995; Roca de Larios, Manchón, & Murphy, 2006; Wang & Wen, 2002), vocabulary or L2 writing scholars have failed to take interest in the L2 writers' strategies to solve vocabulary problems that occur during the writing process. Moreover, for Korean educators at tertiary levels, there is scarcity of studies that systematically classify the types of strategies that are used to overcome lexical problems (Chon, 2008 is an exception), which would require the use of think-aloud (TA) for data collection so as to view the writers' cognitive process. In this paper, the writer tries to illustrate how different retrieval strategies are used to solve different performance-based lexical problems. In the context of the present study, performance-based lexical (PBL) problems arise when writers experience problems accessing lexical information that already exists in the mental lexicon (ML)(mental store of words) so that solutions (i.e., strategies) to the problems always come from the ML. The following, which is a 'word retrieval problem', illustrates the type of problem we are interested in. In the protocol, the subject has a PBL problem where the writer is ultimately trying to retrieve the target word 'cherishable.' However, the writer rereads the L2 sentences, and pauses before the target word can be retrieved from his existing linguistic knowledge (see Appendix for a sample of the protocol and illustration of the conventions).

> you'll find that they actually have a very intimate relationship....you'll find that they ac-tually [actually have very intimate] have very [very] intimate relationships2 [according to what I think] which I find …<Pause> ……cherishable which I find ..highly cherishable.

II. LITERATURE REVIEW

1. Knowing a Word for Production

According to the vocabulary literature, Laufer (1997) and Nation (2001) point out that a word in most linguistic analyses is described as a set of properties or features. Knowing a word for production involves being familiar with multiple features of form (spoken and written), word structure, syntactic pattern of a word in a phrase and sentence, lexical relations with other words (e.g., synonymy, antonymy, hyponymy), and common collocations. In fact, Laufer points out that the multiplicity of features to be learned increases the probability of the words being problematic and therefore only partially learned, since problems can arise from one or more of the areas. In connection with our

interest in PBL problems, Laufer also notes that there are words which learners know in the sense of knowing what they mean in certain contexts, but which they cannot use productively so that some words vary in how easily they can be produced. Some words can be retrieved only with effort; some are momentarily inaccessible (i.e., tip-of-the tongue phenomenon) while others can be expressed at will instantaneously without the aid of an outside source such as the dictionary or teacher.

As another way of classifying word knowledge, we use the dichotomy of competence and performance, which has been discussed by language scholars to deal with the nature of language ever since Chomsky (1965) first drew the distinction concerned with the theory of syntax. He makes the fundamental distinction between *competence* ('the speaker-hearer's knowledge of the language') and *performance* ('the actual use of language in concrete situations') (p. 4). In connection with productive vocabulary knowledge, the strategies used to solve competence-based lexical problems[1] have been illustrated previously by the author (Chon, 2008) while PBL problems, which is of interest in the present study, relate to instances when the writer experiences temporary problems in accessing lexical information that already exists in the mental lexicon. The examples are later illustrated in *Results and Discussion.*

2. Strategies for Solving Vocabulary Problems in L2 Writing

While there is lack of cognitively oriented studies that systematically categorize the types of strategies that are used to solve the L2 writers' lexical problems, we review some studies that give attention to those aspects.

Raimes (1987) conducted a study with ESL writers at different levels of instruction to describe their writing strategies. The results indicated that most ESL students rehearsed a great deal which was used for generating content as well as syntax and vocabulary, and this indicated that concern for meaning was more important to them than accuracy. Further Raimes observed that some ESL students spend an unusual amount of time 'rehearsing' their thoughts and phrasing (i.e., vocabulary) before writing them down which is an aspect of a PBL problem that we intend to investigate in the present study.

Cumming (1990) conducted a study with aims for describing episodes of concurrent metalingustic and ideational thinking of 23 adult Francophone ESL learners composing on two tasks, writing an informal letter and an expository argument. The findings of the study indicated that two goals appeared to have guided the vast majority of the learners' writing processes: (a) searching for and assessing appropriate words and phrases (b) comparing

[1] Competence-based lexical problems occur due to the writer's lack of lexical knowledge, and require consultation of a reference source such as the dictionary or asking the teacher.

cross-linguistic equivalents which all imply existence of vocabulary problems. However, Cumming did not pay separate attention to the lexical aspects of the writing process.

Whalen and Ménard (1995) in their study on L2 writing strategies attempted to see how L2 writers employ their strategic knowledge while writing and to characterize the interactions between strategic knowledge and linguistic knowledge during writing. In the study, the 12 Anglophone second-year French undergraduate students were asked to write argumentative texts in both English (L1) and French (L2) while thinking-aloud. The results of their study showed that 77% of all processing in L2 writing which occurred at the linguistic level seemed more problematic when writers had to concentrate on 'searching, accessing, and retrieving linguistic forms' (p. 406). One of the explanations for this is that the writers had to constantly search for appropriate lexical items within their lexical knowledge, and verify morphological rules at which point writers are likely to meet vocabulary problems. However, there is no systematic classification of the strategies writers may have used to solve the lexical problems.

Second language writing strategy studies conducted with Spanish EFL writers pay (Roca de Larios, Murphy, & Manchon, 1999; Roca de Larios, Marin & Murphy, 2001; Roca de Larios *et al.,* 2006) separate attention to the 'formulation' (i.e., translating) phase where there is reference to writing vocabulary problems in the think-aloud protocols. The studies generally show that writers engage in use of strategies to 'upgrade expression of meaning' to find a better match between intention and expression' (i.e., *fluent formulation*). According to Roca de Larios et al., fluent formulation processes consist of writers progressing through the text by tackling performance problems, which includes categories such as 'writing down the linguistic units', 'repairs' (immediate modifications), and 'formulating a pre-text to putting it down on paper.' In the protocols, the EFL writers showed explicit signals of their problems by a variety of means: candidate formulations ('what is the right word, help or helping?'), explicit problem indications ('I don't know how to write this'), or repairs that prompt a search episode. These were all signs of vocabulary problems that the researcher also expected to observe in the think-aloud protocols of Korean university students.

As a whole, the literature supports the prediction that L2 students would consciously recognize a linguistic problem as a result of producing, or trying to produce the target language (Cumming, 1989; Raimes, 1985; Roca de Larios *et al.*, 1999; Roca de Larios *et al*., 2001; Whalen and Ménard, 1995). However, the process-oriented studies have given scant attention to the classification of the PBL problems, or the strategies that are used to solve the problems. Having recognized that there is lack of any systematic classification of the types of PBL problems that writers are aware of during the process of L2 writing, the present study attempts to answer the following research questions:

Q1. What are the types of vocabulary problems that are identified by writers in the translating (drafting) stage as a result of meeting performance-based lexical (PBL) problems?

Q2. What lexical strategies do L2 writers use to solve the PBL problems that have been noticed by the L2 writers?

III. METHOD

1. Context and Participants

There were 12 students who took part in the study, and they were from an English compulsory course *English II* offered at a university in Seoul. Korea. This was a course that focused on the development of the productive skills (i.e., speaking and writing) so that this course was considered appropriate for data collection on the writing process at the end of the semester. The researcher participated in the study and in the instruction of the course as a researcher-teacher in order to acquaint the students with the writing tasks of the course and to conduct a think-aloud writing task at the end of the semester. By being a researcher-teacher, the researcher was able to take control of any intervening variables (e.g., type and amount of instruction) that might have influenced the context of the study tasks. The students, who were volunteers from the course, had learnt English for a mean of ten years, and consisted of majors in English (n = 6), French (n = 4) and Sociology (n = 2). There were 7 male and 5 female students. The mean age of the subjects was about 20 and they were all freshmen in the second semester of the year.

Evaluation of the students in both formative and summative forms of assessment during the semester on the four language skills indicated that the students were high-intermediate learners of English. Measurement of the subjects' active vocabulary proficiency with Nation's Productive Vocabulary Levels Test (2001) indicated that the subjects' vocabulary size was sufficient to communicate in English to make themselves understood in academic contexts where native English is the norm, and be able to read authentic general English texts or academic texts successfully (mean= 3487.78/10,000.00; SD= 1376.88; min= 1938.00, max= 7569.00). However, scores calculated descriptively for the university word list subsection (i.e., mean= 376.24/ 836; SD= 167.31; min= 0, max= 624) indicated that some of the subjects may not be able to write accurately in English to make themselves understood.

2. Writing Task

Data were collected mainly through think-aloud (TA) protocols through which the students' L2 writing process could be viewed. Although researchers have expressed doubts about TA as to whether it may distort the writers' normal composing processes (Bracewell & Breuleux, 1994; Dobrin, 1986; Faigley & Witte, 1981), Ericsson and Simon (1980, 1993) and Smargorinsky (1994) emphasize that verbal reports when elicited with care and interpreted with full understanding of the circumstances under which they are obtained are a valuable and thoroughly reliable source of information about cognitive processes. While acknowledging that the data yielded by think-aloud protocols, as with any other conceivable methods of data collection, are neither perfect nor complete, think-aloud protocols collected with care provide rich and direct data about the cognitive processes of composing not afforded by other methods of investigation.

As a part of the procedure of the study, the students received training with a reading task before the actual writing tasks until they were comfortable with the method, and students were asked to think-aloud in the language most comfortable for verbalization while recording on digital voice recorders (Forus Electronics, DVR-004) for a 60-minute TA session. Each subject was asked to write on two writing tasks with an interval of a week, and the tasks were counterbalanced so as not to have an order effect on the subjects. One writing prompt asked them to compare and contrast differences of Korean and Western culture that contribute to a successful relationship, and the other writing prompt asked them to describe strategies or methods they used to improve their English speaking skills. The researcher's choice to use more than one writing prompt grew from the expectation that protocols produced from two writing topics differing in extent of cognitive demand would produce a variety of PBL problems and retrieval strategies used to solve them.[2] Since the study was trying to simulate the students' usual writing process, they were provided access to word processors. As a procedure of the study, the subjects were also asked to save their documents every 7-8 minutes as a different document (i.e., Gildong 1, Gildong 2 ....) on their computers so as to trace the writing processes together with the TA protocols. The interval was considered frequent enough to trace the writing process according to a pilot study.

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[2] According to a pilot study, the topic on *Relationships* required the students to manipulate abstract concepts when writing to compare cultural characteristics. In comparison, topic on *Strategies* allowed more flexibility for the students to use concrete words and draw on more common experiences as that related to learning to speak English.

3. Data Analysis

The writing tasks from the 12 subjects produced 24 TA protocols, and essay drafts written with Microsoft Word were also available for analysis. For identifying the PBL problems and the retrieval strategies that are used to solve those problems, the first step of the analysis was to transcribe and segment the protocols with indications of what they showed. Through reading, rereading the protocols, PBL problems were extracted from the TA protocols for the categorization of different types of PBL problems, based on the subjects' report of meeting vocabulary problems (e.g., 'I knew this word, but I can't remember it') or signs of them (e.g., use of a strategy to retrieve the target word from the mental lexicon). Here there was attention to distinguishing between when subjects were having vocabulary problems and the subjects' process of planning content.

In order to validate the coding scheme of the PBL problems and the strategies, a second judge coded the PBL problems and the strategies. The second judge was an experienced instructor in applied linguistics at a British university. The intra-judge reliability was taken care of in the process. When approximately ten percent of all the protocols of the whole items were randomly chosen and checked by the researcher, there was 85% intra-judge reliability. Regarding inter-judge reliability, a third judge who was an experienced member of the faculty in an English language teaching department checked the same ten percent of the instances. The results indicated 90% reliability. The instances of PBL problems and the retrieval strategies that had been coded differently were discussed between the judges and modified when considered necessary.

IV. RESULTS AND DISCUSSION

1. Classification of Performance-based Lexical (PBL) Problems

This section answers research question Q1: What are the types of performance-based lexical (PBL) problems that are identified by writers in the translating (drafting) stage of writing? After having identified the signals of lexical problems, the TA protocols were further categorized according to the types of PBL problems. As a whole, the three main types of PBL problem situations that were identified in the protocols can be categorized as 'No word', '1 word', and '2+ word' PBL problems, which is a categorization based on the number of words causing problems for the writer. Table 1 explains the three types of problems. This is similar to the coding system the researcher has previously used in another study (Chon, 2009).

TABLE 1

Performance-based Lexical (LPB) Problems in the L2 Writing Process

Type of Problem	Vocabulary Problem Situations
I. No Word PBL problem	The subject temporarily cannot retrieve an L2 known word.
II. 1 Word PBL problem	The subject retrieves a L2 word but it is perceived wrong or inappropriate by the subject.
III. 2+ Word PBL problem	The subject retrieves more than one L2 words and has to choose between them.

The categories and subcategories of the PBL problems are explained in more detail in the following. Examples of each problem are presented as a foundation for later explanation on the strategies since it is the PBL problems that trigger the use of retrieval strategies.

1) No Word PBL problem (Word Retrieval Problem)

This is a situation where the subject has the target word in the ML or thinks she/he has it in the ML but temporarily cannot retrieve it so that the writer has to concentrate on searching, accessing, and retrieving words (Cumming, 1989, 1990; Whalen & Ménard, 1995). Indications of 'retrieval problems' were: Explicit statements such as 'I had forgotten this word'; 'I know this word'; repeating L2 words preceding target word; repeating translation of target word in L1; rereading; pausing; shift to L1 to say or question the target word; retrieving another word (similar in meaning and phonology); and retrieving another L2 word with the same beginning syllable. Refer back to the *Introduction* for an example of a 'No Word PBL problem.'

2) 1 Word PBL problem (Retrieved word wrong or inappropriate)

The '1 word' PBL problem occurs when a subject has retrieved a word but realizes that some aspect of one's knowledge of the word is wrong or inappropriate. They are problems that can ultimately be solved by the subject with knowledge from the ML (e.g., repairs; Roca de Larios *et al*., 1999) so that the writer does not need help from other sources such as the dictionary or the teacher. However, in these cases the lexical knowledge is not immediately retrievable so that the subject needs to execute strategies in order to retrieve the target word. In this category, there were 7 subcategories for these problems. Writers retrieved a word, but found the word wrong or inappropriate due to *meaning, spelling,*

lexical grammar, collocation, style, repetition of a word, and *inappropriate lexical sophistication*. The details of '1 word' PBL problems are explained in the following.

(1) Wrong or inappropriate meaning

Explicit signals of this problem were comments such as: 'This word is strange', 'This word is not what I want', and questioning the retrieved word. Implicit signals are: Repeating of the problematic L2 words or the solution chosen (i.e., retrieval of the target word from the ML). Consider the example:

> keeping a successful bond [BOND? No, BOND is a bit strange; let me use TIE, TIE] keeping a successful tie, keeping a successful tie

Here the subject retrieves the word 'bond' but perceives it to be the incorrect word for conveying his intended meaning, and changes his mind to write 'tie.'

(2) Retrieval of spelling

The indication of this problem (which also operates as a strategy) is the verbalization of spelling by the subject. In these instances, knowledge of spelling is available in the ML but needs some effort on the part of the subject to retrieve it. Consider the following where the subject verbalizes the spelling of 'listening' to retrieve it.

> First, uhhhh not TAKE A TIME, *listening, listening is important, concentrate*] concentrate to improve your e-n-i-n-g, listening ability. ……Listening, l-i-s-t-e-n…

Here we note that with use of computers in the writing process, spelling problems recognized by the spellchecker (in Microsoft Word) were not included in the analysis since they were not performance-based. We are solely interested in problems recognized by the subject since they have to be aware of them to be able to eventually execute strategies.

(3) Wrong or inappropriate grammar

Lexical grammar problems also appeared in the '1 word' PBL problem category. This category was further divided into problems arising from *wrong part of speech, wrong inflected verb form, wrong non-count/count nouns, and wrong complementation patterns*. Due to space limitation, examples are presented with details on wrong part of speech, wrong non-count/count noun and wrong complementation pattern.

① Wrong part of speech

This refers to the situation where the subject retrieves a word, but realizes that it is the wrong part of speech and tries to solve it through his/her knowledge from the ML. The signal of this problem, which is not immediately apparent, is the repetition of the L2 word in the wrong part of speech and the solution chosen which is via knowledge from the ML. Consider the following example:

> I'll provide you 3 strategies to improve an English speaking skill. The one……..… to be a confidence and …to be a confidence and… and eager to be confidence and eager; eager to, eager…to, to uhh…..The one thing that you have to have in mind is to be a confidence and eager.. to study.. ….eager to, to. The one thing you have to have in mind is to be.. [It's not TO BE A..] to be confident and eager.

Here the repetition of 'eager' which is retrieved fairly rapidly prompts him to realize that another adjective is needed (confident) and not a noun (confidence). The writer initially retrieved the wrong part of speech, but is able to retrieve the target word by self-correction.

② Wrong non-count/count noun

This is a situation where the subject retrieves a noun word but has a temporary problem of retrieving the information on the countability of the word, but self-resolves the problem. Explicit signs of this problem were comments such as: 'Is the word a countable noun?', and implicit signals such as when writers question the retrieved word or words in two alternative forms (in singular and plural forms of the word). Consider the following example:

> prices of commodities help cut down cut down …of western, of western countries cut down cut down to mmm to upgrade upgrade [*quality*] the quality of life, their quality of life, quality, qualities, quality, qualities of life, [Is it LIVES?] qualities of life [QUALITY OF LIFE, QUALITY is going to be better, material <seems to want to say 'material noun'>…] quality of lives

Here there are two problems occurring simultaneously with the target words being 'quality' and 'life' when trying to produce 'quality of life.' The subject goes through repetition of words (e.g., quality, qualities), and by questioning (e.g., lives?) self-resolves

to write 'qualities of lives' in the end, however, committing an error with 'lives' which should have been 'life.'

③ Wrong complementation pattern

This refers to instances when the subject retrieves the wrong word (e.g., preposition) to complement a verb/noun or the wrong grammar rule, but has trouble trying to retrieve the target preposition or the grammar rule needed to produce one's message. Explicit signals were comments such as 'Do I need word A after word B?' and implicit signals such as repeating/reading L2 words with two different (e.g. preposition) complementation patterns, shift to L1 to get help via the complementation pattern of the problematic word in L1. Consider the following example:

> It is well-known that, it is well-known that, it is well-known that women are attracted, feel, women feel attractive, woman feel attractive *with*, ..Uhh a man,…attractive...that woman feel attractive with men of good humor sense. Uhh

Here the target sentence seems to be: 'It is well-known that women are attracted to men with a good humor sense', but has some problem retrieving the target sentence structure. Here the subject retrieves the verb 'attract', repeats alternative L2 sentence structures in an attempt obtain target sentence structure 'feel attracted to', but ends with producing a sentence that does not match original message that 'women feel attracted to men.'

(4) Wrong or inappropriate collocation

This is a situation occurring when a subject retrieves a word but temporarily experiences a problem with retrieving complete information on the collocation pattern of the word. An explicit signal of the problem was the comment such as 'What comes before/after it?', and implicit signals such as questioning the word, and shift to L1 to remind oneself of the problematic collocation in L1. Consider the following example:

> Therefore, the visual, visual [hear, hear] hearing.. ability [ahh, right, for now HEARING ABILITY, see, see, HEARING, visual ability] visual and hearing [right, HEARING is better than SOUND……Here let me use HEARING, and then I'll use SOUND later.]

Here the subject with 'sound' in his mind retrieves 'hearing' instead upon realizing that it is not going to collocate with 'ability' when saying 'visual and hearing ability.'

(5) Word stylistically wrong or inappropriate

This is a situation where the writer feels that a word retrieved is stylistically inappropriate. The only way to detect the problem is through report from the subject that she/he does not like the style of the retrieved word. See later *2) Strategies for solving wrong or inappropriate 1 word PBL problems* for an example and explanation of the problem.

(6) Repetitive word wrong or inappropriate

The problems in this category refer to the situation where the subject retrieves a word, but realizes that the word has been used repetitively in the composition (Roca de Larios *et al*., 1999). The signals used to detect repetition problems are through explicit signals such as 'I don't want to repeat the word' or 'I have used this word too many times.' An implicit signal of the problem was through seeing that the word had been repeated in the text before. Consider the following for an example of the problem where the writer realizes that he is about to repeat 'other people' within the same sentence, and executes a strategy by using a general word such as a pronoun 'them.'

> It is important that you take other people's feelings and personality into perspective and you associate with other people [I have used OTHER PEOPLE twice] take other people's feelings … and you associate with them [It would be better to use THEM; let me use THEM] associate with them. It is important that you take other people's feelings and personality into perspective when you associate with them.

(7) Wrong or inappropriate level of word sophistication

This is a situation where the subject is not satisfied with the sophistication level of the word that has been retrieved. Evidence from the protocols revealed that this was often because the students wanted to impress the reader of their compositions, which was usually the teacher/researcher. The solutions chosen to solve these problems come from the writer's ML. Consider the following example where the writer realizes that 'famous' is inappropriate.

> Peter Drucker, a famous renowned [FAMOUS is so childish] re, renowned [RENOWNED should be good] …a …renowned, ..re, re, re, renowned ….future analysist future analysist [oh the spelling is wrong] ….

The subject retrieves 'famous' (which has not been repeated in the composition so that it is not a repetition problem) and then 'renowned' reporting that the former is too childish to use and 'renowned' would be good as an alternative. He further makes a spelling error which is identified by the Microsoft Word spellchecker.

3) 2+ Word PBL problem (Word Choice problem)

This is a situation when more than one word retrieved from the ML is substantially known to the writer, and the subject has to make a choice among the words. This is a performance problem where the writer is considered to have sufficient knowledge of the retrieved words or thinks she/he has but has to deal with choosing an optimum word to fit one's intended meaning. In our study, word choice problems arose from having to make choices between prepositions, synonyms, 'synforms' (similar lexical forms, Laufer, 1991), collocations, and other words related in meaning or form. Word choice problems were identified by seeing that they had been solved via one's own knowledge without the help of a dictionary.

The signals of these word problems are explicit comments such as 'Shall I use word A or word B?' and implicit comments such as repeating the alternative words, and making a swift decision to make choice of a word, or the solution chosen to overcome choice problems (by use of one's own knowledge). Consider the following example:

> Therefore, we have to make private relationship with others for successful, succession [for success-, for a successful interpersonal relationship] successful personal relationship….

Here the target word is 'successful.' The subject retrieves 'successful' and 'succession' together (i.e., synforms), shifts to L1 and thereafter swiftly chooses 'successful.' The brisk manner in which the choice of the word is made conveys that it is an instance of a 'slip of the tongue,' a performance problem. Slips can occur alternatively as lapses of the pen, or fingers on a keyboard, however they can quickly be detected and self-corrected without being aided (James, 1998) which is characteristic of performance problems.

2. Retrieval Strategies for Solving PBL Problems

This section answers research question Q2: What lexical strategies do L2 writers use to solve the PBL problems that have been noticed by L2 writers?

1) Strategies for solving No word PBL problems

As mentioned previously, this is the situation where the writers are having problems with retrieving the word that is temporarily unavailable from the ML. That is, they are the words that have been learned by the writers and are in the ML, but the words cannot be immediately retrieved and some effort is needed to recall them. Table 2 illustrates the sum and mean frequencies of the 7 types of word recall strategies. The overall mean percentage of strategy per problem, 190.93% indicates that there were almost two strategies used for each word problem.[3] Also as indicated in the table (n = 11), there was one writer who did not have any word recall problems. These strategies can be used for pre-retrieval or post-retrieval of target words in the immediate situation (e.g., drafting stage) or by delayed retrieval (e.g., reviewing stage of writing).

TABLE 2

Retrieval Strategies of Word Recall Problems

(n = 11) [190.93%]	min	max	mean	SD	sum
Pre-retrieval Strategies:					
-Repeat L2 words, phrases, sentences preceding target word	**0**	**62.50**	**35.09**	**25.06**	**22**
-Repeat L1 words, phrases, sentences preceding target word	**0**	**71.43**	**33.06**	**20.58**	**22**
-Pausing	**0**	**100**	**40.96**	**34.11**	**21**
-Shift to L1 to say and question the word preceding target word	**0**	**100**	**36.16**	**29.88**	**19**
-Retrieve another L2/L1 word preceding target word	**0**	**66.67**	**22.64**	**22.26**	**15**
Post-retrieval strategy:					
-Repeat target L2 word for confirmation after target retrieved	**0**	**60**	**15.20**	**20.22**	**13**
Delayed retrieval:	**0**	**25**	**7.82**	**10.01**	**9**

Note: [ ] indicates overall mean percentage of strategy per problem

[3] The overall mean percentage of strategy per problem was calculated with the following formula:

$$\text{Mean percentage of strategy per problem} = \frac{\text{Total frequency of strategies for that problem}}{\text{Total frequency for that problem}} \text{ X } 100$$

The most frequent retrieval strategy is 'pausing' but in fact this provides ambiguities as to what is occurring in the writer's mind (Chenoweth & Hayes, 2001). Pausing on its own may simply mean that the writer is experiencing a block (e.g., while planning content) where no lexical strategy is being used. However, with the identification of a word retrieval problem, it is likely that the writer is searching his/her ML to reach the target word in formulating a planned message (Roca de Larios *et al*., 1999).

The second most frequently used strategy was 'shift to L1 to say and question the word preceding target word.' This is equivalent to what has been referred as 'code-switching' in the communication strategies literature (Bialystok, 1983; Dörnyei & Scott, 1997; Færch & Kasper, 1983). Code-switching refers to using L1/L3 words in L2 speech or writing ranging from single words to whole chunks. However, particularly in writing they are means of re-accessing the ML to retrieve the target word where use of L1 is also of primary importance (Qi, 1998) for verifying that the writers' intentions are being fulfilled (Roca de Larios *et al*., 1999).

In the writing literature, repeating of L1 and L2 has been mentioned in the cognitive model of process writing. Although they are not specifically for word problems, Flower and Hayes (1980) in their original model, and Hayes (1996) in the revised model of writing process claim that repeating or rereading the 'text produced so far' in any writing is a very important part of the 'task environment' that will contribute to shaping what to write next. Manchón, Roca de Larios, & Murphy (2000) also refer to 'backtracking' as a similar concept to 'rereading' and 'backtranslation' which includes reconsidering what one has written already with the aim of evaluating or changing the text produced so far where lexical aspects are likely to be included as a way of moving forward in the composing process.

The next frequently used strategy was 'retrieving another L1/L2 word' to help recall the intended word. Uzawa (1996) also noted in his study that Japanese ESL writers came up with a list of many L1 synonyms by reading the whole text so as to retrieve an appropriate L2 word. Following is an example where the writer retrieves 'another word' before retrieving the target:

> How be intimated with them? ..[How can you become intimate to them?] the [fastest way] the best [the fastest way] the most, most, ahhh, the fastest way, the fastest way is.....

Here the writer is trying to retrieve 'fastest', but before reaching the target he retrieves a near synonym 'best', shifts to L1, repeats L2 words preceding the target, uses a filler ('ahhh') before retrieving 'fastest.'

The fifth most employed strategy was 'repeating in L2 for confirmation after target word retrieved.' Repeating L2 in this case is an important part of the writing process that helps writers consolidate the writer's decision to use the retrieved word, which may be a way to verify lexical meaning (Qi, 1998). Consider the example:

> people are usually needed to be polite in behavior to their seniors, [yielding seats] such as, polite in behavior to their seniors, such as [yielding seats] yielding their seats to seniors. …….[obey rules] ……...people are usually needed to be polite in behavior to their seniors, such as yielding their seats to seniors, yielding their seats to seniors..

Here the writer needs to retrieve 'yield seats' in English. He shifts to L1 two times, and retrieves the target word. He momentarily thinks if saying 'obey rules' might be better, but then he repeats the sentence that contains the target word 'yield seats' to confirm that it is the meaning he wishes to convey. It may be argued that 'repeating in L2' in this case is a strategy used to gain time for planning the next sentence while a writer is considering what to write next. However, in the context of a preceding word retrieval problem, this is more likely to be a post-retrieval strategy.

The least used strategy was to retrieve the target word with some time lapse, 'delayed retrieval' (as against retrieving the word immediately after the word retrieval problem is recognized by the writer). The length of delay may be as short as retrieving the target word after some struggle over a few phrases or as long as until the writer rereads his draft in the reviewing stage of writing. In the following example, the target word has been retrieved with some delay.

> Even if you have a good skill for grammar and reading [even if you] if you can't, if you can't express your thinking, thinking enough….uhhh …they, they can be unuseless, unuseless, even you have a good skills for ..[if you cannot express yourself sufficiently] they can be unuseless, [unuseless??] can be useless, okay

Here while the target is 'useless' in English, he coins the word 'unuseless' as a part of the retrieval process. However, upon retrieving the coined word 'unuseless' the writer realizes that the word is not right (where the spellchecker was not on for the student to rely on). After repeating the wrongly retrieved L2 word and shifting to L1 to question the word, he is able to retrieve the correct form of the word with some delay.

2) Strategies for solving wrong or inappropriate 1 word PBL problems

The overall strategies used to solve wrong or inappropriate '1 word' PBL problems largely consist of 1) self-correction or 2) ignoring the problem after deciding there is no problem after all. There was self-correction via retrieving the 'target word', 'paraphrase', 'general word', 'deletion' of an unnecessary word, retrieval of a 'grammar rule', and 'verbalization of spelling' (used only for spelling wrong problems). As a whole, 98 instances of strategies were used to solve wrong or inappropriate '1 word' PBL problems, and calculations indicated that approximately one strategy was used to solve each problem (i.e., 101.30%). In fact, the non-parametric Wilcoxon test indicted that there were significantly more problems solved by 'self-correction' than 'ignoring the problem' (Z= -2.67, $p < .05$) which validates that PBL problems are most commonly solved by accessing knowledge from the ML (see Table 3).

TABLE 3

Strategies for Wrong or Inappropriate '1 Word' PBL Problems

(n = 11) [101.30%]		max	min	mean	SD	sum
Self-correction		**100**	**75**	**91.12**	**8.49**	**87**
Immediate retrieval	Target word	25	100	60.33	25.05	55
	Paraphrase	0	60	11.94	19.99	9
	General word	0	12.5	2.69	4.48	4
	Deletion	0	15	1.67	5	3
	Grammar rule	0	5	.56	1.67	1
	Verbalization of spelling	0	40	10.69	17.06	12
Delayed retrieval	Target word	0	16.67	3.24	6.51	2
	Grammar rule	0				1
Ignoring problem		**25**	**0**	**10.18**	**8.75**	**11**

Note: [ ] indicates overall mean percentage of strategy per problem

Self-correction was used to solve all types of '1 word' PBL problems by retrieving whatever lexical information was perceived to be wrongly retrieved initially. Wrong 'meaning' and 'repetition' performance problems occupied the highest percentage of '1 word' PBL problems (meaning: 25.3%; repetition: 29.3% of 1 word wrong or inappropriate PBL problems), and correspondingly the range of strategies varied the most. For problems of both categories, there was self-correction via retrieving 'target word', 'paraphrase', 'general word', 'deletion' of an unnecessary word, and 'ignoring the problem.' Consider the example where the target is a single word:

> Every society has its own way of manners and the manners are decisive barometer to.. to evaluate other …one's, one's one's [What should I say, someone's VALUE? No, that is awkward] one's character, one's character. Good manners…….. Every society has its own way of manners and the manners are decisive barometer to evaluate one's character.

Here the subject retrieves the word 'value' but realizes that it is unsuitable due to wrong meaning and rightly retrieves an alternative target word 'character.' Self-correction may also take the form of a paraphrase. Consider the following example:

> [GOOD HUMOR makes people feel comfortable, make comfortable, and gives an affirmative image; …. …I have used GOOD HUMOR too many times, I shall say HUMOROUS CONVERSATIONS SKILL] humorous conversation skill make others comfortable, humorous conversation skills make others comfortable …….

Here the subject realizes that he has used 'good humor' too many times in the essay, in effect a '1 word' PBL repetition problem, and paraphrases with a substitute 'humorous conversation skill' that he thinks carries a more specific message than 'good humor' that was rejected. However, the substitute is a slightly odd combination in English. For the equivalent, a native speaker would probably write 'be able to tell jokes' or 'be a witty raconteur.'

The instances of 'ignoring problem' were common in '1 word' wrong or inappropriate word problems of repetition, style, and meaning. For these problems, writers temporarily had doubts about the appropriateness of the word retrieved, but after realizing that it was the optimum word, ignored the problem and used the word. Consider the following where the writer thinks that a word is stylistically inappropriate, but by re-accessing his knowledge in the ML, concludes that it is the right word after all and eventually accepts using the word.

- Example of ignoring or accepting word:

[personal and public *clearly*] clearly, clearly [I need a stronger word; let me just use CLEARLY]

Here the writer senses that the word 'clearly' might not be strong enough when he wants to say that 'in the West people tend to distinguish private and personal matters *explicitly*/*distinctly*.' However, after recognizing the problem he almost immediately makes the decision that 'clearly' is the best word because he is reaching the end of the think aloud session with a concluding paragraph left to write.

With regard to how fast '1 word' wrong or inappropriate PBL problems can be solved, they mostly can be self-corrected fairy rapidly after a word problem is initialized (i.e., *immediate self-correction*) although occasionally it may need some time for the writer to retrieve the target information (i.e., *delayed self-correction/retrieval*). In fact, unless otherwise mentioned, all the strategies found in the study are strategies executed fairly rapidly after word problems have been found by the writer. In our protocols, there were three instances of 'delayed self-correction/ retrieval' which appeared only for solving lexical grammar problems since grammar rules are more explicitly available for verbalization (Ellis, 2004). In fact, Ellis points out that while L2 research on explicit knowledge of vocabulary have been entirely neglected, he explains that when L2 learners are *not* pressured to produce rapidly, they may be able to improve grammatical accuracy in written tasks by monitoring their productions in the careful on-line planning condition using their explicit knowledge.

In theory, any of the performance word problems can be solved with some delay. If the time had allowed for the writers to spend more time on reviewing and editing their compositions, we might have seen more instances of 'delayed self-correction/ retrieval.' However, as seen in the protocols of the present study, writing problems caused by lexical aspects occur relatively frequently in the translating phase rather than other phases of writing.

3) Strategies for solving word wrong or inappropriate 2+ PBL problems

As mentioned previously, these are instances when the writer retrieves more than one word, but has sufficient lexical knowledge to make word choice. As illustrated in Table 4, one strategy was used for each problem (i.e., 100%), and for the 23 word choice problems, writers chose a word based on a preference (96.43%) significantly more than showing no preference (3.57%) ($Z = -2.53$, $p < .05$). The details are explained in the following.

TABLE 4

Strategies for Wrong or Inappropriate 2+ Word PBL Problems

(n= 8) [100%]	min	max	mean	SD	sum
Preference	**75**	**100**	**96.43**	**9.45**	**22**
Meaning	0	33.33	10.12	14.00	3
'Reason not stated'	66.67	100	86.31	14.17	19
No preference	**0**	**25**	**3.57**	**9.45**	**1**
Using both words	0	25	3.57	9.45	1

Note: [ ] indicates overall mean percentage of strategy per problem

(1) Word choice based on preference

When the writers stated a preference for one of the retrieved words, the criteria used was 'meaning' or 'reason not stated.' By preference of meaning, the writers try to choose the best word for their intended meaning. Consider the following example where the writer retrieves 'these days' and 'those days', one wrong and one correct word respectively. The writer rightly chooses 'these days' based on meaning.

> improve their Eng speaking skills especially umm or their umm [what should I say?] those days, these days [Let me say THESE DAYS] these days?, these days many people want to improve their English speaking skills for their career or or whatever…

'Reason not stated' is the second subcategory of word choice made on preference. It is included under this category because it is one kind of preference. However, they are instances where words are chosen without any specific statement of why one word was preferred over the other, and with no clues for the researcher to see any preference criteria. Consider the following where the writer retrieves two words simultaneously 'judge' and 'evaluate', but makes an unexplained choice of 'judge.'

> because, because [because people judge you by your exterior looks] because people [tend to] tend to tend to [*judge*; I suppose I have to say JUDGE and not EVALUATE.] judge, judge, judge, judge, judge other person

An additional point here is that the instances of choice based on 'reason not stated' executed for PBL problems show *potential* for writers to report more than they do when preferring one word over another. Hence, if the writers had been able to display more metalinguistic awareness (Ellis, 2004) there could have been more criteria for reason of strategy choice available for the researcher to code.

(2) Word choice based on no preference

The only subcategory concerned with word choice based on no preference was 'choosing both words.' It is included under no preference because there is no specific choice of one word while regarding use of both words as suitable. There was only one case of this strategy. Consider the following for an example where the subject simultaneously retrieves two words that are similar in meaning, 'trust' and 'belief', and decides to use both words because they mean the same.

In western cultures, some important factors in a relationship might include psycho-logical factors like trust, trust [*belief, trust, belief*, BELIEF; they are all the same words.] trust, belief [*belief, trust*] and enthusiasm.

V. CONCLUSION

The present study has investigated the lexical aspect of the L2 writing process by systematically categorizing the types of retrieval strategies, and the PBL problems which trigger the use of strategies when writers try to retrieve the best word for their target meaning. In the study, the PBL problems were found to occur when writers could not retrieve the L2 word that the writer thinks she/he knows (No word PBL problem), retrieves a word but finds that some aspect of the word is wrong (1 word PBL problem) due to *meaning, spelling, lexical grammar, collocation, style, repetition of a word*, and *lexical sophistication*, or when more than one word is retrieved but the writer has to make the decision of selecting a word (2+ word PBL problem).

Regarding the retrieval strategies that were used to solve No word PBL problems, writers most often used strategies of 'repeating L2/L1 words' to arrive at the target word, and sometimes there were retrievals of 'another word' that may be associated with the target word in some way. 'Pausing' was further evidence of the writer's ML search process when strategies may have been used but not reported. However, here the writers' behavior of sometimes using more than one strategy for a PBL problem explains that it is the controlled orchestration of a cluster of strategies (Anderson, 1991; Graham & Macaro, 2008) rather than the use of an individual strategy that leads to effective strategy use.

Strategies for solving 1 word PBL problems in effect showed that there were three different dimensions of strategy use: Strategies could be identified 1) by the product of the strategies (i.e., target word, paraphrase, general word, deletion) 2) by explicit verbalization of a rule from the writer (e.g., 'grammar rule', Ellis, 2004) or 3) as to if these strategies were executed almost immediately (i.e., drafting) or with some time lapse (i.e., reviewing). These types of strategies, labeled as 'restructuring' (Roca de Larios *et al.,* 1999), are also executed among native speakers or writers when they experience temporary retrieval problems from the ML for 'reformulating to upgrade expression of meaning and to find a better match between intention and expression' (p. 16).

Writers also relied on own linguistic knowledge to solve 2+ word PBL (word choice) problems. For these performance problems, the writer had a preference/ no preference of a word. One of the criteria for preferring a word over another was 'meaning' while others were not explicitly stated by the writers. Writers could also show no preference by

choosing to use both words. In fact, L2 writers' process of generating and assessing lexical alternatives and evaluating according to a rule or feeling for the language has been documented in the L2 writing literature (Cumming, 1990; Swain & Lapkin, 1995). In Cumming' study (1990), a lot of cognitive effort was spent on 'seeking out a word or phrase, generating and assessing possible alternatives, and then reaching a choice that satisfied the sense appropriate to their discourse' (p. 491).

All in all, the study has tried to explain an aspect of the L2 writer's process of writing with a cognitive approach. While giving separate attention to the L2 writers' use of retrieval strategies, the present study contributes to explaining the lexical aspects of the L2 writing process model. Models of how language is processed in written production was popularly represented by Flower and Hayes' model of writing (1981) which characterized much of the work of the 1980's within the cognitive process approach to writing. Moreover, Hayes (1996) presented a refined framework of the writing model by providing a wider range of writing activities than was encompassed in the 1980 model. However, both models fail to elaborate on the possible occurrence of writers' lexical problems or the processes that may be involved to overcome the constraints. Together with a previous study of a similar kind (Chon, 2008, 2009), the taxonomy obtained from the present study tries to fill the gap for explaining the process of how lexical problems are managed in the L2 writing process model.

The study ends with recognizing a possible limitation which may occur due to the purely cognitive orientation of the findings. As suggested by Riazi (1997), writing is a socio-cognitive process in which production of text requires 'extensive interaction between the individual's cognitive processes and social/contextual factors in different ways' (p. 105). A more socio-cognitive approach, such as investigations on the L2 writers' interaction with the reader/audience or in-depth interviews with the writers would undoubtedly have allowed the researcher to gain a deeper and broader understanding of the L2 writer's behavior.

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Appendix

A sample of think-aloud protocol

- Underlined text indicates the verbalization of what is or has been written by subject in English.
- Normal text indicates verbalization said or resaid in English.
- Series of dots….. indicates a pause in the subject's verbalization.
- Text in [square brackets] indicates verbalization in L1 that has been translated
- Text in CAPITAL LETTES indicate the problematic words in English.
- Text in *italics* indicate the problematic words in Korean.
- Text in <pointed brackets> indicate researcher's comments about the subject's action to solve the vocabulary problem.
- Text in shaded blocks indicate loanwords of English used in Korean.
- Numbers (e.g., nice2) indicate number of times words repeated.
- Space and numbers (e.g., a feel for words 2) indicate number of times a phrase repeated.

Many students find, find difficulty [right], find trouble? trouble…[Shall I use TROUBLE or DIFFICULTY?] difficulties in learning the English language, but ahhh many students find trouble or difficulties in learning the English language [I did not use capital letters] learning the English language but….[let me finish the sentence at this point] Many students find trouble trouble, trouble,

difficulties [*difficulties2*, let me use the dictionary….*difficulty*, DIFFICULTY….DIFFICULTY is better] Many students <remembers to write the name of the dictionary> Many students find it difficult…… to learn the English language, to learn the English language [How do I say that *speaking is the most difficult*?] many students find it difficult…… [no, no, FIND DIFFICULTIES is better than FIND IT DIFFICULT] learning [right] learning the English language. [no, I will write first] However, speaking is the most difficult part [speaking is the most difficult part] difficult part.

Examples in: English
Applicable Languages: English
Applicable Level: Tertiary

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