Korean College Students' Vocabulary Profiles as Predictors of English Reading and Writing Proficiency

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The present study aims to identify the association between Korean students' vocabulary profiles and their reading and writing proficiency. For the purpose of the study, 107 college students from two universities in Seoul were asked to write an argumentative essay on the following two topics: English Only Classes (EOC) and the Additional Point System for conscripts (APS). In addition to the writing tasks, the students took a reading comprehension test. Then based on their scores on the reading test, the students were assigned to a high proficiency group (n=17) or a low proficiency group (n=17). The students were also classified into a high (n=26) or a low proficiency group (n=29) based on their performance on the first writing task (EOC). A Lexical Frequency Profile (LFP) was then used as a measure of vocabulary knowledge to examine the relationship with other variables, such as writing topic, writing proficiency, and reading proficiency. The findings indicate that the students' written essays on the two topics displayed significantly different vocabulary profiles. Interestingly, the students' vocabulary profiles did not differ according to their writing proficiency whereas their use of academic words differed according to their reading proficiency. The findings are discussed in greater detail, along with pedagogical implications.

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Ⅰ. INTRODUCTION

Recent research on vocabulary teaching has suggested a variety of measures to assess L2 learners' vocabulary knowledge (Laufer & Nation, 1999; Nation, 1983; Wesche & Paribakht, 1996). Nation (2001) presents several ways of obtaining information about language learners' vocabulary: the Vocabulary Levels Test (Nation, 1983), the Productive Levels Test (Laufer & Nation, 1999), and the Vocabulary Knowledge Scale (Wesche & Paribakht, 1996). Other types of vocabulary measures include multiple-choice tests, word translation tests, and word recognition tests. However, the accuracy of these tests is open to question because they appear to measure vocabulary as a discrete component. Productive vocabulary should be measured in the L2 learners' actual writing.

Laufer (1991) analyzed the lexical richness of compositions written by L2 learners using the following four criteria: lexical variation (type/token ratio), lexical density (percentage of content words in a text), lexical originality (number of tokens unique to one writer in a group divided by total number of tokens used), and lexical sophistication (percentage of advanced words). Recognizing the limitations of this model, Laufer and Nation (1995) proposed a new measure called the Lexical Frequency Profile (LFP) designed to be a more objective measure of L2 learners' vocabulary use in writing. Later, Laufer and Nation (1999) added that the "distinction between high- and low-frequency words makes it necessary for teachers to know what stage their learners are at in their vocabulary development" (p. 36). In a more recent study, Morris and Cobb (2004) examined vocabulary profiles as predictors of the academic performance of TESL students and found that the students' vocabulary profiles functioned as a tool of assessment of the students' language proficiency.

Vocabulary profiles provide instructors with two important characteristics of learner vocabulary. First, it allows us to access information about L2 learners' productive vocabulary profiles. For instance, if a learner's vocabulary profile demonstrates a large proportion of high frequency vocabulary, this means that the learner has limited vocabulary knowledge and thus has to learn more words. Second, knowing L2 learners' vocabulary distribution also helps to check the progress learners have made in their vocabulary use in writing. In other words, the vocabulary profile provides specific guidelines for L2 writing teachers about their students' use of vocabulary, such as which words have been acquired and which words need more practice.

Despite the increased attention to vocabulary in L2 writing, little attempt has been made to comprehensibly examine the association between language learners' productive

vocabulary and their written language proficiency. Most previous studies have simply focused on the relationship between vocabulary knowledge and reading proficiency (Laufer, 1997; Qian, 1999). Few studies have attempted to investigate whether and to what extent L2 learners' productive vocabulary knowledge is associated with their writing and reading performance (Astika, 1993; Koda, 1989). Thus, this study aims to examine Korean college students' vocabulary profiles in their writing and how these profiles differ according to writing topic and students' proficiency in writing and reading. If a sufficiently predictive relationship can be found between the vocabulary profiles of L2 students' written texts and their reading and/or writing performance, the study results may lead to improved efficiency in L2 writing assessment and research. The research questions posed for the study are as follows:

1) Do students' vocabulary profiles differ according to writing topic?
2) Do students' vocabulary profiles differ according to writing proficiency?
3) Do students' vocabulary profiles differ according to reading proficiency?

Ⅱ. LITERATURE REVIEW

1. Topic Effect on Writing

Researchers in the field of L2 writing assessment have perceived writing topic as one of the potential factors that contribute to variance in writing scores. As an example, Tedick's (1990) study found that students showed significantly better performance in terms of the length and the linguistic measures when given a specific topic rather than a general topic

Similarly, Reid (1990) examined whether topic types influence writers' performance. For the purpose of the study, the students were given two topic types: comparison/contrast (CC) and graph description (G). The study found significant differences in the students' lexical choice in relation to the topic types although the syntax in their writing did not significantly differ. The students used longer words in the graph description task but more content words (e.g., nouns, adjectives, adverbs) in the comparison-contrast task. These different lexical distributions in L2 writing suggest that topic is an important factor affecting writers' vocabulary use.

Likewise, Lee and Anderson (2007) reported an association between topics and learner performance in the chemistry TEACH test. The study found that topics rather than

students' majors were related to learners' writing performance. Based on the results, Lee and Anderson argued for selecting a general topic for a writing test, warning that writing topics could have a great influence on test outcomes.

Other studies suggest that L2 writers prefer certain types of writing prompts. For example, Polio and Glew (1996) investigated how ESL students chose a prompt from several options when they had to write under time constraints. The results showed that the students' preferences for a writing topic were determined according to how familiar they were with the given topic and how much background knowledge they had about the topic. Lee (2008) and Laufer and Nation (1995) also argue that topic familiarity is one of the possible factors affecting lexical richness in writing. These studies indicate that writing outcomes can be closely related to the writers' topic familiarity and background knowledge.

It can be inferred from the findings reviewed above that the vocabulary used by L2 learners in their writing is likely to vary according to their topic familiarity and background knowledge. Thus, this study aims to identify whether and to what extent writing topics affect L2 learners' vocabulary profiles.

2. Previous Studies on the LFP

The LFP was originally formulated by Laufer (1994), and Laufer and Nation (1995). As Laufer and Nation (1995) describes it, "the LFP shows the percentage of words a learner uses at different vocabulary frequency levels in her writing" (p. 311). They claim that the LFP allows us to access "the relative proportion of words from different frequency levels" (p. 311). Laufer and Nation recommend the LFP as a reliable measurement of vocabulary in L2 writing in that "it provides similar stable results for two pieces of writing by the same person and discriminates between learners of different proficiency levels" (p. 319). Due to such benefits, the LFP has been extensively used as a reliable instrument in vocabulary research (Laufer, 1998; Laufer & Paribakht, 1998; Lee 2003; Lee & Muncie, 2006; Morris & Cobb, 2004; Muncie, 2002).

As one of the studies to examine learner vocabulary profile, Laufer (1998) measured Israeli EFL learners' vocabulary in terms of three types of lexical knowledge: passive, controlled active, and free active. Laufer defines the three types of vocabulary as follows: passive as understanding the most frequent and core meaning of a word; controlled active as producing words when prompted by a task; and free active as the use of words at free will. The findings indicate that after one year of high school instruction the students made the greatest progress in passive vocabulary but made no progress in free active

vocabulary. Interestingly, the learners' passive vocabulary was highly correlated with their controlled active vocabulary, whereas their free active vocabulary did not correlate with the other types of vocabulary.

Another study that looked into the association between vocabulary profiles and academic success is Morris and Cobb (2004). Morris and Cobb suggested that vocabulary profiling could predict TESL applicants' academic success. The highest correlation was found between the TESL students' academic word list (AWL) and their grades in the pedagogical grammar course (G2). In contrast, the students' most frequent 1000 word and function word knowledge negatively correlated with their grades in G2.

More recently, Lee and Muncie (2006) investigated whether L2 learners' vocabulary use in writing (LFP) was influenced by their encounter of the target vocabulary, single words, and lexical phrases while reading. Their findings revealed that intermediate level students' use of 1000–2000 words remained constant while their productive use of advanced vocabulary improved. This indicates a qualitative change in their LFP.

As a slightly different approach, other researchers analyzed L2 student writing with the LFP to determine whether there was any significant increase in vocabulary use. For example, Muncie (2002) investigated whether a process writing approach was useful to improve Japanese students' vocabulary in writing. For the study, the students were asked to perform a set of timed writing tasks: the first draft written about friendship and the final draft on the same topic after two more revisions. The LFPs of the first and the final draft were then obtained. The study noted a higher percentage of more sophisticated vocabulary in the final draft than in the first one. This finding indicates that process writing can help students to expand their vocabulary knowledge.

As Laufer, Elder, Hill, and Congdon (2004) claim, vocabulary knowledge is associated with reading, writing, and general language proficiency. The present study aims to test the assumption that vocabulary knowledge is strongly related to text production (writing) and comprehension (reading) by investigating the relationship between L2 learners' vocabulary use and their performance in both reading and writing.

Ⅲ. METHOD

1. Participants

The participants of the study were college students enrolled in four English writing classes at two universities in Seoul (3 classes from one school and 1 from the other).

Initially, 107 students participated in the study. The number, however, decreased because the students classified as intermediate level according to the test results were excluded from the data set. The students were assigned to the high reading/writing proficiency group or the low reading/writing proficiency group according to the test results (see the data collection procedure section for more specific information).

These students were from different fields of study: Law, English Language and Literature, International Relations, Economics, Social Welfare, Municipal Administration, Political Science, Urban Sociology, Taxation Business, and Chinese Language and Culture. Their age ranged from 20 to 27.

2. Instrument

The present study used the *VocabProfile* (Cobb, 2002) to obtain the Lexical Frequency Profile (LFP), a measure of lexical richness. The Web-based program, *VocabProfile* is available at http://www.lextutor.ca. The program provides profiles of vocabulary in the following four frequency word lists: the most frequent 1000 word families (K1), the second 1000 (K2), the Academic Word List (AWL), and words that do not appear on the other Lists (NIL). These categorized frequency lists indicate that the higher the percentage of infrequent words, the larger the subject's productive vocabulary. The program is both efficient and effective since it enables us to examine how many words a text contains at each of the four frequency levels. If you simply type or paste a text and click on the submit button in the computer program, you can get the results.

In addition to the *VocabProfile*, a reading test was designed to assess the participants' proficiency. The reading test was extracted from a TOEFL preparation book, *Hackers TOEFL reading* (Cho, 2002) and included a total of 15 questions on three passages, 5 questions for each passage. Since each item was counted as one point, the test scores ranged from 1 to 15. It took 15 minutes to conduct the reading test. Moreover, a writing task was designed to assess the students' proficiency. To this end, the students were asked to take a position on English-Only Classes (EOC). Then the ETS writing assessment rubric was used to identify the high- and low-proficiency groups (see Appendix A).

3. Data Collection Procedure

For the purpose of the study, the students were asked to perform two writing tasks for which they had to take a position on two controversial issues: English only classes

(EOC) and the additional point system for conscripts (APS). The APS means the additional points given to those who have completed their military service in Korea. The topics were chosen because they were provocative enough to engage college students' ideas and opinions.

Prior to the writing task, the students were given relevant reading materials to facilitate their thinking. Before reading, the students first had a warm-up activity related to the topic. After 10 minutes of reading, they learned about the meaning of new vocabulary from the reading materials. The explanation was given to the students in Korean. The students were then asked to take a position on the issue and develop an argument of their own. They were supposed to write a minimum of 200 words on the topics and posted their writing on a discussion board so that other students could respond to their peer's writing. They had sufficient time to complete the task at their own pace. For the first writing task the students wrote their opinions on EOC and then on APS for the second task. They took the reading test after performing the writing tasks.

Since learner proficiency is one of the crucial variables of this study, the participants were grouped according to their performance on the reading and the writing test. First, after grading the reading test, the researchers rank-ordered the 107 students' scores using the Microsoft Excel program to identify the high proficiency group and the low proficiency group. The students who obtained 11 or above out of 15 were classified as a high proficiency group (HR, n=17) and those with less than 3 points as a low proficiency group (LR, n=17). Based on the reading scores, the students' writing on EOC and APS was assigned either to the HR or LR group, and thus the number of essays collected for HR was 34 and the number for LR was 34.

In addition to the reading test, the students' first writing task (written on EOC) was used to group the students according to their writing proficiency. Prior to assigning scores, the two Korean raters with more than four years of experience in teaching writing had a norming session. At first, the two raters independently marked 10% of the student writing using the ETS assessment rubric (see Appendix A) and compared their scores. The student writing was assessed to discriminate highly proficient writers and low proficient writers.

Then, they discussed the results, along with their rating schemes. In doing so, they were able to narrow the gap in their marking and adjust their scores. Afterwards, they scored the rest of the student writing individually and compared the results later. The students with score 5 and score 1 were assigned to a high proficiency group (HW, n=26) and a low proficiency group (LW, n=29), respectively. The students with score 3 were

excluded in order to select the two obviously different proficiency groups. Thus the number of essays collected for HW was 52 and the number for LW was 58.

4. Data Analysis

The current study used the *VocabProfile* (Cobb, 2002) to obtain the students' LFP. The students' essays on EOC and APS were analyzed in terms of the following categories: token, K1, K2, AWL, NIL, function words (FW), and content words (CW). The token was chosen as the object of analysis in that it has been suggested as a measure of L2 learners' written fluency. The lexical profiles of K1, K2, and AWL were also obtained to examine the students' vocabulary knowledge and use. Particularly notable is the AWL since it is useful for advanced learners in higher education (Morris & Cobb, 2004).

In addition to these categories, the profiles of FW and CW, although being subsets of K1, were examined to see if there was any difference in the percentage of the function words and content words in the total tokens according to learner proficiency and writing topic.

For data analysis, a multivariate analysis of variance (MANOVA) was performed using SPSS version 17. The different categories of LFP were the dependent variables, while the writing topic and the levels of proficiency were entered as independent variables.

Ⅳ. RESULTS AND DISCUSSION

1. Effect of Writing Topic on Vocabulary Profiles

One of the goals of the study was to examine whether writing topic would affect L2 students' vocabulary profiles in writing. The two different writing topics (EOC and APS) were used for the study. When the students completed the writing tasks, the written texts produced were analyzed using the *VocabProfile* (Cobb, 2002). From the analysis, the LFP was obtained for each student. Then a MANOVA was performed to analyze the differences in vocabulary profiles according to the writing topics. Table 1 summarizes the descriptive statistics.

[TABLE 1] Descriptive Statistics: Writing Topic

Dependent Variables	Topic	Mean	SD	N
Token	EOC	175.71	73.459	89
	APS	163.17	76.454	89
K1	EOC	89.2855	21.25241	89
	APS	82.7610	4.06674	89
FW	EOS	43.0454	7.46699	89
	APS	44.8937	3.64284	89
CW	EOC	43.7347	6.74497	89
	APS	37.8709	4.43525	89
K2	EOC	4.7551	4.08474	89
	APS	3.0049	1.36143	89
AWL	EOC	3.7896	2.16920	89
	APS	8.0649	3.46187	89
NIL	EOC	4.7320	1.92120	89
	APS	6.1653	2.59734	89

As shown in the table, the mean vocabulary profiles were different due to the topics in many categories. First of all, the students produced more words when writing about EOC as indicated in the token. The students also generated more words in the K1, K2, and CW categories when they were asked to write about EOC. It is interesting to note that the topic APS was associated with more frequent use of academic words and function words.

To see if these mean differences were statistically significant, the tests of between-subject effects was performed using a MANOVA. As shown in Table 2, the significant effects for writing topic in all categories indicate that the different topics resulted in different distributions of LFPs. In other words, significant differences were noted in most of the categories except for the token. More specifically, while the topics did not bring differences in the quantity of student writing, they influenced vocabulary profiles, such as K1, K2, FW, CW, AWL, and NIL. For instance, the topic EOC generated more K1, K2, and content words whereas the topic APS produced a higher proportion of function words and academic words than its counterpart EOC. These differences confirm findings from earlier studies (Lee & Anderson, 2007; Polio & Glew, 1996; Reid, 1990; Tedick, 1990). Writing topic affects L2 writing and thus the vocabulary used in writing.

[TABLE 2] Tests of Between-Subjects Effects

Source	Dependent Variables	Mean Square	df	F	Sig.
	Token	6996.944	1	1.245	.266
	K1	1894.322	1	8.092	.005
	FW	152.024	1	4.405	.037
Topic	CW	1530.105	1	46.960	.000
	K2	136.299	1	14.704	.000
	AWL	813.415	1	97.474	.000
	NIL	91.413	1	17.517	.000

2. Learner Vocabulary Profiles According to Writing Proficiency

The student writings from the high- and the low-proficiency group were compared to examine if there was any difference in their vocabulary profiles. As summarized in Table 3, the mean vocabulary profiles do not show great differences except for token (HW: 188.38 and LW: 163.33). This finding is notable, considering that there were three more students in the low-proficiency group. Although the high-proficiency group had fewer number of students, they produced much more than their counterparts. This finding supports the suggestion from earlier research: longer texts are indicative of greater fluency in L2 writing.

[TABLE 3] Descriptive Statistics: Writing Proficiency

Dependent Variables	Writing Proficiency	Mean	SD	N
Token	HW	188.38	80.442	52
	LW	163.33	65.904	58
K1	HW	84.7715	4.26673	52
	LW	84.7778	3.93229	58
FW	HW	44.5167	4.15113	52
	LW	43.3164	6.14905	58
CW	HW	40.2533	5.34372	52
	LW	40.1164	6.75940	58
K2	HW	3.9165	1.69521	52
	LW	3.7290	2.23449	58

	HW	5.8310	3.46934	52
AWL	LW	5.9617	3.15411	58
	HW	5.4785	2.37848	52
NIL	LW	5.5262	2.33934	58

To examine whether the token difference was significant, statistical analyses were run. As presented in the tests of between-subject effects (Table 4), the difference in token was not significant. Moreover, none of the vocabulary profiles were found to be different according to writing proficiency.

[TABLE 4] Tests of Between-Subjects Effects

Source	Dependent Variables	Mean Square	df	F	Sig.
	Token	17214.635	1	3.219	.076
	K1	.001	1	.000	.994
	FW	39.505	1	1.406	.238
Writing Proficiency	CW	.514	1	.014	.907
	K2	.965	1	.242	.624
	AWL	.469	1	.043	.836
	NIL	.063	1	.011	.916

This finding contradicts the general assumption that the students' vocabulary profiles are likely to differ according to their writing proficiency. The finding seems to suggest that vocabulary is not an absolute indicator of writing proficiency. Writing involves multidimensional skills: developing and organizing ideas, producing well-formed structure, using appropriate vocabulary, achieving textual coherence, ensuring clarity, unity, and consistency, etc. Vocabulary is just one of many skills involved in the writing process. Perhaps more weight should be given to other criteria, such as content and organization when determining the quality of writing or distinguishing advanced writers from poor ones.

To further examine whether the learner vocabulary profiles would differ according to writing topic and proficiency, statistical analyses were performed for each topic. Table 5 summarizes the descriptive statistics for learners' vocabulary profiles according to writing proficiency when they were asked to write about EOC. Table 6 presents the tests of between-subjects effects, i.e., statistical differences in vocabulary profiles due to writing

proficiency for the topic EOC.

[TABLE 5] Descriptive Statistics: Vocabulary Profiles according to Writing Proficiency (EOC)

Dependent Variables	Writing Proficiency	Mean	SD	N
Token	HW	196.96	76.256	26
	LW	171.55	69.099	29
K1	HW	87.5142	3.11416	26
	LW	85.9610	3.91818	29
FW	HW	44.0338	4.44872	26
	LW	41.7321	7.86661	29
CW	HW	43.4800	4.66656	26
	LW	41.5266	8.56164	29
K2	HW	4.6265	1.84418	26
	LW	4.6786	2.45310	29
AWL	HW	3.4500	1.66633	26
	LW	4.3679	2.35256	29
NIL	HW	4.4065	1.52420	26
	LW	4.9914	1.72068	29

[TABLE 6] Tests of Between-Subjects Effects (EOC)

Source	Dependent Variables	Mean Square	df	F	Sig.
	Token	8851.393	1	1.681	.200
	K1	33.072	1	2.607	.112
	FW	72.633	1	1.728	.194
Writing Proficiency	CW	52.313	1	1.068	.306
	K2	.037	1	.008	.930
	AWL	11.551	1	2.728	.104
	NIL	4.689	1	1.763	.190

As in Table 5 and Table 6, none of the vocabulary profiles were found to be different according to learners' writing proficiency. Regardless of learner proficiency, the students showed similar patterns in their use of vocabulary when writing about EOC.

[TABLE 7] Descriptive Statistics: Vocabulary Profiles according to Writing Proficiency (APS)

Dependent Variables	Writing Proficiency	Mean	SD	N
Token	HW	179.81	85.045	26
	LW	155.10	62.667	29
K1	HW	82.0288	3.43420	26
	LW	83.5945	3.63669	29
FW	HW	44.9996	3.85706	26
	LW	44.9007	3.14470	29
CW	HW	37.0265	3.84963	26
	LW	38.7062	3.94841	29
K2	HW	3.2065	1.18864	26
	LW	2.7793	1.50943	29
AWL	HW	8.212	3.1601	26
	LW	7.556	3.0750	29
NIL	HW	6.550	2.6129	26
	LW	6.061	2.7545	29

[TABLE 8] Tests of Between-Subjects Effects (APS)

Source	Dependent Variables	Mean Square	df	F	Sig.
Writing Proficiency	Token	8366.654	1	1.525	.222
	K1	33.604	1	2.678	.108
	FW	.134	1	.011	.917
	CW	38.677	1	2.540	.117
	K2	2.502	1	1.338	.253
	AWL	5.907	1	.609	.439
	NIL	3.283	1	.454	.503

Table 7 presents the mean differences in vocabulary profiles due to learners' writing proficiency for the writing topic APS. The differences seem marginal in most categories except for the token. Particularly notable is that the students from the high-proficiency group wrote more than the low-proficient students, although this token difference was not found to be significant. Furthermore, other vocabulary profiles did not differ across the

proficiency groups.

All these findings seem to suggest that, whatever topic learners were asked to write about, their vocabulary profiles did not differ according to their writing proficiency. In other words, the advanced writers did not necessarily use more sophisticated vocabulary than their counterparts did. This implies that vocabulary knowledge alone cannot adequately account for writing proficiency. The finding is noteworthy in that it is not consistent with Laufer and Nation's (1995) argument that LFP is a sensitive research tool that discriminates learners at different proficiency levels. This finding instead highlights the importance of other components of writing, such as content, organization, structure, etc. Therefore, other factors, such as coherence and the development of ideas, should receive greater weight when teaching writing. In addition, vocabulary should not be used as the sole determinant of writing skills,

3. Learner Vocabulary Profiles According to Reading Proficiency

Learner vocabulary profiles were also examined in relation to their reading proficiency. As indicated earlier, the students were assigned to the high- or the low-proficiency group according to their scores on the reading test and then their vocabulary profiles were compared according to proficiency. Table 9 indicates the mean percentages of vocabulary profiles according to learners' reading proficiency. We can see from the marginal mean differences that vocabulary profiles do not differ much except in academic words.

[TABLE 9] Descriptive Statistics: Reading Proficiency

Dependent Variables	Reading Proficiency	Mean	SD	N
Token	HR	155.26	73.780	34
	LR	165.06	79.905	34
K1	HR	89.6044	34.80035	34
	LR	86.4812	4.62742	34
FW	HR	43.6771	8.90094	34
	LR	44.5394	3.98306	34
CW	HR	41.6759	7.71675	34
	LR	41.9412	5.84130	34
K2	HR	4.5012	6.06220	34
	LR	3.4606	1.76912	34

AWL	HR	7.0509	4.67294	34
	LR	4.8921	3.01865	34
NIL	HR	5.5538	2.44607	34
	LR	5.1656	2.51355	34

It is interesting to note that low-proficient students (165.06) produced larger number of word tokens than the highly proficient ones (155.26), although this difference was not statistically different. This differs from the finding about the effects of writing proficiency on vocabulary profiles, where highly-proficient writers produced more than their counterparts. Overall, the students in the high-proficiency group and the low-proficiency group displayed similar vocabulary profiles in each frequency band. The high-proficiency group produced approximately 89.5% of the K1 words, 4.5% of the K2 words, and 5.6% of the NIL words. Similar patterns were observed in the lower proficiency group.

For significance testing, a MANOVA was carried out. The statistical analysis noted a significant effect for academic words (see Table 10) and this significant effect indicates that AWL is a major predictor of Korean college students' reading proficiency. In other words, the students with advanced reading proficiency were found to use more academic words than those with limited proficiency in reading. This finding is in line with Morris and Cobb's (2004) suggestion that the AWL should be a useful indicator of learner proficiency in higher education.

[TABLE 10] Tests of Between-Subjects Effects

Source	Dependent Variables	Mean Square	df	F	Sig.
	Token	1630.721	1	.276	.601
	K1	165.828	1	.269	.606
	FW	12.642	1	.266	.608
Reading Proficiency	CW	1.196	1	.026	.874
	K2	18.408	1	.923	.340
	AWL	79.229	1	5.120	.027
	NIL	2.562	1	.417	.521

In order to further investigate whether there was a significant difference in vocabulary profiles according to topic, a MANOVA was run again. The results are displayed in

Tables 11 through 14. Surprisingly, the significant effect for AWL disappeared when the unit of analysis was limited to essays on EOC (see Table 12). More specifically, highly proficient readers and low proficient readers did not show differences in the way they used academic words when they were asked to write about English-only classes.

[TABLE 11] Descriptive Statistics: Vocabulary Profiles according to Reading Proficiency (EOC)

Dependent Variables	Reading Proficiency	Mean	SD	N
Token	HR	153.71	70.365	17
	LR	172.29	77.422	17
K1	HR	98.2259	48.11353	17
	LR	88.7253	4.10317	17
FW	HR	43.5059	12.17206	17
	LR	43.3135	3.77664	17
CW	HR	46.2153	6.40159	17
	LR	45.4106	5.33579	17
K2	HR	5.8988	8.34501	17
	LR	3.9382	2.03652	17
AWL	HR	3.9241	2.81185	17
	LR	3.1876	1.65876	17
NIL	HR	5.3718	2.56564	17
	LR	4.1476	1.95318	17

[TABLE 12] Tests of Between-Subjects Effects (EOC)

Source	Dependent Variables	Mean Square	df	F	Sig.
Reading Proficiency	Token	2936.941	1	.537	.469
	K1	767.220	1	.658	.423
	FW	.314	1	.004	.951
	CW	5.504	1	.159	.693
	K2	32.673	1	.886	.354
	AWL	4.610	1	.865	.359
	NIL	12.737	1	2.450	.127

On the other hand, with regard to the other topic (APS), the results showed different patterns. For the topic APS, the effects of learners' reading proficiency on their vocabulary profiles are summarized in Table 13 and Table 14. Interestingly, the effects of reading proficiency were found to be statistically significant for K1 and AWL. Namely, low-proficient readers used more K1 words than highly-proficient readers, whereas advanced readers produced more academic words than their counterparts.

The different patterns of the findings across the two topics may be because the topic (EOC) was not so sophisticated as APS. This difference in the nature of topic might have influenced the way the students used academic words in their writing. That is, the effects of their reading proficiency on the use of academic words can become even greater when learners are given a more specialized topic like APS. Therefore, it can be reasonably presumed that cognitively more demanding topics would lead to variability in L2 learners' performance, particularly in the use of academic words. These findings indicate that the effects of reading proficiency interact with writing topic, which in turn influences learners' vocabulary profiles.

[TABLE 13] Descriptive Statistics: Vocabulary Profiles according to Reading Proficiency (APS)

Dependent Variables	Reading Proficiency	Mean	SD	N
Token	HR	156.82	79.188	17
	LR	157.82	84.043	17
K1	HR	80.9829	4.99576	17
	LR	84.2371	4.07759	17
FW	HR	43.8482	3.89667	17
	LR	45.7653	3.90701	17
CW	HR	37.1365	6.16844	17
	LR	38.4718	4.04045	17
K2	HR	3.1035	1.41677	17
	LR	2.9829	1.35018	17
AWL	HR	10.1776	4.04420	17
	LR	6.5965	3.14156	17
NIL	HR	5.7359	2.38486	17
	LR	6.1835	2.64838	17

[TABLE 14] Tests of Between-Subjects Effects (APS)

Source	Dependent Variables	Mean Square	df	F	Sig.
	Token	8.500	1	.001	.972
	K1	90.009	1	4.329	.046
	FW	31.238	1	2.052	.162
Reading Proficiency	CW	15.156	1	.557	.461
	K2	.124	1	.065	.801
	AWL	109.011	1	8.314	.007
	NIL	1.703	1	.268	.608

The findings described above suggest that learners' vocabulary profiles are influenced by their reading proficiency. Good readers are more likely to acquire vocabulary from reading input and use it in their output production, compared to poor readers. Particularly, the two groups of learners were found to be different in the way they used academic words when they had to write about a more sophisticated and demanding topic. To summarize, the relationship between vocabulary knowledge and reading proficiency was complex and dynamic, compared to the association between writing proficiency and vocabulary profiles.

V. CONCLUSION

The present study examined if Korean college students' vocabulary profiles would differ in relation to writing topic and learner proficiency. For the purpose of the study, the students enrolled in writing classes were asked to take a reading test so that groups could be formed according to proficiency (the low-proficiency group and the high-proficiency group). They also performed two writing tasks: opinion essays on EOC and APS, the first one of which was then assessed by two Korean raters. Based on the results of the writing test, the students were assigned to the highly-proficient or the low-proficient writer group. Then, with the *VocabProfile* (Cobb, 2002), students' written vocabulary was analyzed to obtain the LFPs for each student. The vocabulary profiles were also statistically analyzed to see if they were significantly different due to topic and/or due to learner proficiency.

The results indicate that the learners' vocabulary profiles differed due to topic in most

of the categories except for token. More specifically, the topic EOC generated more K1, K2, and content words whereas the topic APS produced a higher proportion of function words and academic words than its counterpart EOC. These differences are consistent with previous findings (Lee & Anderson, 2007; Polio & Glew, 1996; Reid, 1990; Tedick, 1990).

With regard to the effects of proficiency, while writing proficiency had minimal effect on vocabulary profiles, reading proficiency was associated with the use of academic words. To further investigate, the vocabulary profiles of both reading and writing proficiency groups were analyzed in relation to writing topics. The results showed that there was no significant difference in vocabulary profiles of the HW group and the LW group. In contrast, significant differences were noted for K1 and AWL between advanced and poor readers when the assigned topic was APS. In other words, when learners were given a relatively more sophisticated and demanding topic, advanced readers produced more academic words, whereas low-proficient readers used a higher proportion of K1 words.

Although the findings are interesting and pedagogically important, the present study has a limitation: the length of the student writing was not strictly controlled. Although researchers made it clear at the outset that the participants should write a minimum of 200 words for their writing task, some students did not meet the requirement. This might have influenced the reliability of the data in that Laufer and Nation (1995) suggested that written texts should be more than 200 words to yield stable results. Lee and Muncie (2006) also recommended the use of at least 200 words for the same reason. Therefore, future research should control for the length of student writing. In addition, it would be interesting to examine the association between general language proficiency and learners' vocabulary profiles. It is hoped that a carefully designed future study will stimulate further debate with regard to the role of vocabulary in L2 writing.

Yet, the findings of this study are significant in that they provide a different perspective for learner vocabulary profiles. Previous research has suggested that the LFP is stable across different writings of the same learners regardless of their language proficiency levels or writing topics. The present study, however, found that learners' vocabulary use varied according to writing topic and reading text. For example, highly proficient readers and low proficient readers did not differ in their vocabulary profiles when they were asked to write on an easy topic. They, however, differed in their vocabulary use for a more specialized topic like APS. While advanced readers used more academic words, poor readers relied on K1 words.

This finding seems to indicate how reading is connected to writing. The highly proficient readers used in their output production the words they had encountered in the reading text. In other words, they transformed passive vocabulary into active vocabulary. Classroom teachers should, therefore, design instructional methods to facilitate this process and teach students the strategies advanced readers use. Moreover, teachers should put more weight on developing fluency than accuracy when teaching writing. Since multidimensional skills, such as generating ideas, developing an argument, and organizing ideas, are involved in the task of writing, teachers should shift learners' attention from vocabulary to content and organization.

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APPENDIX

Writing Scoring Guide

6 : Strongly indicates the ability to write a well-organized, well-developed, and logical
essay. Specific examples and details support the main ideas. All the elements of
the essay are unified and cohesive. A variety of sentence structures are used
successfully and sophisticated. Some grammatical and mechanical errors will
appear.

5 : Indicates the ability to write an organized, developed, and logical essay. The main
ideas are adequately supported by examples and details. Sentence structure may be
less varied than that of a level 6 essay, and vocabulary less sophisticated. Some
grammatical and mechanical errors will appear.

4 : Indicates some ability in writing an acceptable essay, but involves weaknesses in
organization and development. Sentence structure and vocabulary may lack
sophistication and there may be frequent grammatical and mechanical errors.

3 : Indicates a moderate ability to write an acceptable essay. Although main ideas may
be adequately supported, serious weaknesses in organization and development are
apparent. Sentence structure and vocabulary problems occur frequently.
Grammatical errors are frequent and may make the writer's ideas difficult to
comprehend.

2 : Indicates the inability to write an acceptable essay. Organization and development
are very weak or nonexistent. May lack unity and cohesion. Few specific details
are given in support of the writer's ideas. If details are given, they may seem
inappropriate. Significant and frequent errors in grammar occur throughout the
essay, making it difficult to understand the writer's ideas. Writer may not have
fully understood the essay prompt.

1 : Strongly indicates the inability to write an acceptable essay. No apparent
development or organization. Sentences may be brief and fragmentary and
unrelated to each other. Very significant grammatical and mechanical errors occur

throughout the essay and make it very difficult to understand any of the author's ideas. Writer may have completely misunderstood the essay prompt.

  0 : Did not write an essay, did not write on the topic, or wrote in a language other than English.

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