Effects of Depth and Breadth of Vocabulary Knowledge On English Reading Comprehension Among Korean High School Students

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Roles of vocabulary knowledge in reading comprehension have recently received increasing attention in the field of L2 vocabulary and reading research. Despite the consensus among researchers and practitioners that vocabulary knowledge is composed of at least two dimensions, breadth (size) and depth (quality), most research has been concerned predominantly with vocabulary breadth in comparison with vocabulary depth. The present study attempts to fill this gap by investigating roles of both breadth and depth of word knowledge in reading comprehension. With regard to the vocabulary depth, this study focuses on the semantic properties (i.e., synonymy, polysemy, and collocations). The participants were 98 Korean high school students in the 11th grade. To measure their breadth and depth of vocabulary knowledge, and reading comprehension, three main tests were administered: a Vocabulary Levels Test (VLT), a Word Associates Test (WAT), and a Reading Comprehension Test (RC). A supplementary test designed by the researcher, Vocabulary Knowledge in a Yes/No Format (VKS), was adopted in scoring WAT with the aim of reducing possible guessing effects on WAT, which was represented as WAT+VKS. The scores were analyzed through correlation and multiple regression analyses. The results revealed that a significant association existed between breadth and depth of vocabulary knowledge, and reading comprehension. The alternation from WAT to WAT+VKS for a depth measure rendered a stronger correlation between vocabulary depth and reading comprehension. Specifically, the strength of correlation between the depth dimension and reading comprehension exceeded that of the breadth and reading comprehension. It was also found that vocabulary depth and breadth each contributed significantly to the prediction of reading comprehension. The degree of predictability, however, increased when the combinations of the two dimensions were used as a predictor variable. Furthermore, the replacement of WAT with WAT+VKS led to the improvement in the predictive power of the vocabulary depth measure. The present study is expected to offer a finer understanding of L2 vo-

cabulary knowledge and its crucial role in reading comprehension among L2 learners. It is proposed that theoretical considerations and pedagogical practices need to encompass not only simple expansion of vocabulary size but also enrichment of knowledge about words. Consequently, this well-balanced vocabulary knowledge would ensure a successful reading comprehension.

Keywords: L2 vocabulary knowledge, breadth of vocabulary knowledge, depth of vocabulary knowledge, L2 reading comprehension

1. Introduction

In the field of L1 reading and vocabulary research, it has been widely acknowledged that vocabulary knowledge plays a fundamental role in reading comprehension (e.g., Anderson & Freebody 1981, Nation 1990, 2001). Over the past few decades, a great deal of studies have confirmed that a large L1 vocabulary size is a prerequisite for successful L1 reading comprehension (Meara 1996). Only recently, however, have a few studies begun to investigate the roles of L2 vocabulary knowledge in L2 reading in ESL/EFL settings (e.g., de Bot, Paribakht, & Wesche 1997, Laufer 1996, Qian 2002).

Meanwhile, there is an increasing recognition that vocabulary knowledge is composed of multiple dimensions rather than being a single construct; several researchers have proposed various frameworks in an attempt to define the complex nature of word knowledge. Generally, it is agreed that vocabulary knowledge comprises at least two primary dimensions, namely, breadth (i.e., the number of words known) and depth (i.e., how well the learner knows a word) (Qian 1998, Read 1988, 1989, Wesche & Paribakht 1996).

Despite this consensus, most research has been devoted to the dimension of breadth, with less attention paid to the depth. In particular, few studies have examined the impact of vocabulary depth on reading comprehension, compared with that of vocabulary size on reading comprehension. This may be derived from a lack of awareness about the significance of depth of word knowledge in reading skills, coupled with the complexity of the assessment of the depth (Schmitt & McCarthy 1997).

This rather unbalanced approach, still prevailing in vocabulary instruction as well as in vocabulary assessment in both L1 and L2 con-

texts, can be misleading. That is, a learner's good performance on a vocabulary size test does not necessarily guarantee her deeper knowledge about the words. In fact, it has been documented that learners are often challenged in L2 reading, due to their lack of knowledge of various dimensions of words such as syntactic, semantic, and pragmatic properties (McKeown & Beck 2004).

The present study thus aims to examine the relationship between these two dimensions of vocabulary and reading comprehension. More specifically, it focuses on the semantic properties, among other domains, which encompass the identification of word meanings as well as a word's relation to other words (i.e., synonymy, polysemy, and collocations). Additionally, in response to the dearth of research in EFL settings, the current research focuses on the contribution of breadth and depth of word knowledge in predicting reading comprehension performance among a sample of EFL Korean high school students in the 11th grade. It is hoped that the finindgs of the present research will help to advance the field toward a clearer understanding of the complex vocabulary knowledge and its role in reading comprehension among EFL learners. It may also have implications for vocabulary instruction and assessment as well.

2. Literature Review

2.1. What is Vocabulary Knowledge?

Over the years, in the field of L1 and L2 research, attempts have been made to explain what it means to know a word, yielding a variety of proposals to define vocabulary knowledge (e.g., Cronbach 1942, Kieffer & Lesaux 2012, Nation 1990, 2001, Qian 1998, 1999, Richards 1976).

An early definition of vocabulary knowledge (Cronbach 1942) classified it into two categories: one is knowledge of word meaning (generalization, breadth of meaning, and precision of meaning) and the other is levels of accessibility to this knowledge (availability and application). Focusing mainly on the meaning aspect of a word, this pioneering explanation neglected to include other aspects of word knowledge, such as spelling, pronunciation, morpho-syntactic properties, and collo-

cation (Qian 2002).

Subsequently, a more inclusive definition of word knowledge was offered by Richards (1976). According to his series of assumptions about what is meant by knowing a lexical item, the following aspects constitute lexical competence: frequency, register, syntax, derivation, association, semantic values, and polysemy (Richards 1976). Although his set of assumptions was neither intended as such nor as comprehensive (Meara 1996), it has been considered as a general framework for defining vocabulary knowledge since it spotlighted the multifaceted nature of word knowledge.

By integrating Richards' framework and a number of other constituents, Nation (1990, 2001) proposed that vocabulary knowledge can be divided into three categories and that each category involves both receptive and productive aspects: a) form – spoken and written forms and word parts; b) meaning – form and meaning, concept and reference, and associations; and c) use – grammatical functions, collocations, and constraints on use. The learners were assumed to have reached native-like competency and fluency if they have full ownership of these aspects of word knowledge (Schmitt & Meara 1997). Similarly, categorizing word knowledge into several aspects, Vermeer (2001) suggested that words are composed of a network of interrelated nodes: thematical, phonological, morphological, conceptual, or sociolinguistical. According to Vermeer (2001), the deeper the network surrounding a word becomes, the greater the knowledge of the given word.

There clearly seems to be a tendency to regard vocabulary knowledge as a multidimensional construct rather than a single construct. This acknowledgement of the complex nature of vocabulary knowledge is also well reflected in other various but complementary frameworks, which posit that at least two primary dimensions constitute vocabulary knowledge: breadth and depth (Qian 1998, 1999, Read 1988, 1989, Wesche & Paribakht 1996).

2.2. Breadth and Depth of Vocabulary Knowledge

Breadth of vocabulary or vocabulary size refers to the number of words known, whereas *depth* of vocabulary is defined as how well the learner knows a word. While breadth of vocabulary knowledge is considered as the number of vocabulary items for which a learner pos-

sesses at least minimum knowledge of their meanings, depth of vocabulary knowledge ranges from partial understanding of a word to full mastery of multiple aspects of a given word including its various related meanings and its appropriate use in varying contexts (Kieffer & Lesaux 2012, Qian 1999).

Although some conflicting argument arose in the literature as to whether this dichotomous distinction between the breadth and depth is valid (Kieffer & Lesaux 2012), a majority of lexical researchers appear to accept that those two areas tap different dimensions of vocabulary knowledge (Read 2000, Tannenbaum, Torgesen, & Wagner 2006). When discussing the two dimensions, however, caution is required so as not to interpret them as independent or separate constructs. Rather, they are closely interconnected (Schmitt & Meara 1997).

2.2.1. Breadth of Vocabulary Knowledge

It has long been acknowledged that breadth of vocabulary, or vocabulary size, is a fundamental dimension of lexical ability of a language learner. The crucial role of the number of words known has been emphasized by a number of studies including Meara (1996), who argued that learners equipped with a large vocabulary possess more expertise in using the language than ones with a smaller vocabulary.

A good deal of research on vocabulary size has been undertaken in both L1 and L2 environments, entailing useful insights for various contexts. For example, researchers interested in the impact of vocabulary knowledge on reading comprehension of native speakers of English have examined their size of vocabulary through childhood, adolescence, and adulthood. The findings from this kind of studies, according to Anderson and Freebody (1981), provided well-grounded suggestions on how many new lexical items should be presented in reading classes to learners at different ages. More recently, ESL students studying in English speaking countries have also become the focus for vocabulary researchers in estimating the threshold number of words learners should know to handle academic work. For instance, Sutarsyah, Nation, and Kenny (1994) reported that, in order for learners to comprehend undergraduate economics textbooks written in English, 4000 to 5000 words were required.

In line with the strong interest in the size of vocabulary, the development of vocabulary size tests have also received considerable atten-

tion. One of the widely used vocabulary size test is the Vocabulary Levels Test, which was developed by Paul Nation to provide an adequate vocabulary teaching and learning programs and proved to effectively serve as diagnostic testing for learners from non-English backgrounds. It is composed of five parts, each measuring words at four frequency levels (2000, 3000, 5000, and 10,000 word levels) and the University word level. The 2000- and 3000-word levels contain high-frequency words, which are deemed prerequisite for the effective use of the English language (Nation 1990); 5000-word level creates the boundary limit of general high-frequency words; 10,000- word level includes the lower-frequency words; and finally, the University word level consists of academic words which frequently appear in university textbooks. The test requires test-takers to match the words to the meanings. What is noteworthy of this test is that the items tested are the meanings rather than the words themselves. At each word-level, 6 questions made up of six words and three definitions are presented, as illustrated in Figure 1. It was intended by the developer that this format prevents the chances of guessing by de-contextualizing the words from text.

1) apply		
2) elect	_____	choose by voting
3) jump	_____	become like water
4) manufacture	_____	make
5) melt		
6 threaten		

Figure 1. The Vocabulary Levels Test (Read 2000).

2.2.2. Depth of vocabulary knowledge

Over the past few years, acknowledgement of depth of vocabulary or vocabulary quality as a construct of lexical knowledge has been growing. Mezynski (1983) pointed out:

> Word meanings can be "known" to varying degrees. Depending on the task, a person could perform adequately with relatively imprecise knowledge. In other situations, a much finer notion of the word's meaning might be required (p. 285).

Similar views may be found in several proposals which incorporated vocabulary depth into a definition of lexical competence. For instance, Chapelle (1998) claimed that a definition of vocabulary should include four dimensions: (a) vocabulary size, (b) knowledge of word characteristics, (c) lexicon organization, and (d) processes of lexical access. The depth dimension is also included in Henrikesen (1999), which proposed that lexical competence comprises three distinct dimensions: (a) partial-to-precise knowledge, (b) depth of knowledge, and (c) receptive and productive knowledge. With various aspects constituting the depth dimension, Henriksen considered this as a process, rather than a single continuum, of constructing a network which connects one word with other words.

In a more recent study, Qian (2002) developed a framework of vocabulary knowledge[1)] on the basis of other earlier definitions (e.g., Chapelle 1998, Henrikesen 1999, Nation 2001), as described in Table 1.

Table 1. Qian's Model of Vocabulary Knowledge (Qian 2004)

(a) vocabulary size	the number of words of which a learner has at least some superficial knowledge of meaning
(b) depth of vocabulary knowledge	all lexical characteristics, such as phonemic, graphemic, morphemic, syntactic, semantic, collocational, and phraseological properties, as well as frequency and register
(c) lexical organization	the storage, connection, and representation of words in the mental lexicon of a learner
(d) automaticity of receptive-productive knowledge	all the fundamental processes through which access to word knowledge is achieved for both receptive and productive purposes, including phonological and orthographic encoding and decoding, access to structural and semantic features for the mental lexicon, lexical-semantic integration and representation, and morphological parsing and composing

1) Designed on a basis of the merits of previous definitions, this model was selected as the conceptual framework of vocabulary knowledge for the present study. Among the four dimensions, the scope of current research is limited to two dimensions: (a) vocabulary size, and (b) depth of vocabulary knowledge.

Along with other frameworks, Qian's (2002) model acknowledged that depth of vocabulary knowledge is an essential part of the multi-faceted lexical knowledge.

Two generally used assessments for estimating depth of word knowledge are the Vocabulary Knowledge Scale and the Word Associates Test. The Vocabulary Knowledge Scale, designed by Sima Paribakht and Mari Wesche (1997), can be used to assess any vocabulary items (See Figure 2).

Self-report categories

Ⅰ I don't remember having seen this word before.

Ⅱ I have seen this word before, but I don't know what it means.

Ⅲ I have seen this word before, and I think it means _____. (synonym or translation)

Ⅳ I know this word. It means _____. (synonym or translation)

Ⅴ I can use this word in a sentence: _____. (Write a sentence.)

Figure 2. The Vocabulary Knowledge Scale (Paribakht & Wesche 1997).

Test-takers are presented with five categories with a list of words, and then are required to mark the category that best describes their knowledge about the word.

A more formal test, intended to measure how well learners know words, is the Word Associates Test (WAT) developed by Read (1993). Instead of estimating the complete dimensions of the learners' word knowledge, the WAT assesses how well they know of various relationships of the stimulus word with other words. Read (1993) defined three main types of relationship between a stimulus word and related words, as in Table 2.

Table 2. The Relationship Between the Stimulus Word and Associates (Read 2000)

(1) Paradigmatic	The two words are synonyms or at least similar in meaning, perhaps with one being more general than the other: *edit-revise, abstract-summary, assent-agreement, adjust-modify*
(2) Syntagmatic	The two words often occur together in a phrase, that is, they collocate: *edit-film, team-sport, abstract-concept, occur-phenomenon*

(3) Analytic	The associate represents one aspect, or component, of the target word and is likely to form part of its dictionary definition: *team-together, edit-publishing, electron-tiny, export-overseas*

Only adjectives, which have multiple meanings, were selected as stimulus words in order to maintain more regularity between target words and their associates. As shown in Figure 3, the stimulus adjective words are presented on the left with eight associates located into two separate groups of four with distracters among which the test-takers are asked to select four.

sudden

beautiful	quick	surprising	thirsty	change	doctor	noise	school

Figure 3. The Word Associates Test Format (Read 2000).

The left box contains associates having a paradigmatic relationship with the target word. The right box includes associates which have a syntagmatic relationship with the stimulus word, thus can collocate with it. In selecting four associates, three patterns are possible: (a) two on the left box and two on the right box; (b) one on the left and three on the right box; and (c) three on the right and one on the left box. The intention behind varying the pattern was to minimize the potential guessing effect during test-takers' performance. It was reported, however, that the guessing problem was still present.

2.3. Roles of Vocabulary Knowledge in Reading Comprehension

It has been generally recognized among vocabulary researchers that vocabulary knowledge plays important roles in reading comprehension, with a substantial amount of findings which concluded that a large vocabulary size is necessary for successful reading comprehension (Meara 1996). There is, however, a relative lack of empirical studies on roles of vocabulary depth in reading comprehension. Recently, a few studies were conducted to examine effects of vocabulary depth on reading comprehension among monolingual and bilingual children (Nation &

Snowling 2004, Ouellette 2006, Proctor et al. 2009, Tannenbaum et al. 2006, Vermeer 2001). Most of these studies have found that depth of vocabulary knowledge significantly contributes to predicting reading. For example, Ouellette (2006) revealed that, even when vocabulary size and decoding skills were controlled, vocabulary depth had a significant impact on predicting reading outcomes of 60 fourth-grade students.

In comparison with research on this topic in L1 settings, there are only a handful of studies involving learners from L2 backgrounds, most of which focused mainly on the relationship between vocabulary size and reading comprehension (Koda 1989, Laufer 1992, 1996, 1997, Liu & Nation 1985). Generally, the studies which examined the relationship between vocabulary size and reading comprehension among L2 students agreed that there exists a strong interrelationship between those two factors. For example, Laufer (1992, 1996, 1997) worked with 92 freshmen in university whose L1 was either Hebrew or Arabic, using two standardized reading tests (a section of *Examen Hoger Algemeen Vortgezet Onderwijs* and an English sub-test of the Israeli university psychometric entrance test) and two vocabulary tests (the Vocabulary Levels Test and the Eurocentres Vocabulary Test). It was found that the correlation between scores on the Vocabulary Levels Test and reading comprehension was .50, and between the Eurocentres Vocabulary Test and reading comprehension was .75.

Compared to attention paid to the relationship between vocabulary size and reading comprehension, there have been fewer studies investigating the relationship between depth of vocabulary knowledge and performance on reading comprehension by L2 learners. Despite the lack of empirical research, the results from L2 vocabulary research have testified that a strong relationship exists not only between the breadth and reading but also between vocabulary depth and reading comprehension. It was also asserted that vocabulary depth, as well as size, makes a significant contribution to success in reading performance in L2.

For instance, Qian (2002) measured breadth and depth of vocabulary knowledge and performance on reading comprehension among 217 adult ESL learners from 19 different L1 backgrounds. The Vocabulary Levels Test, the Depth of Vocabulary Knowledge Test, which was adapted from the Word Associates Test, and a TOEFL reading com-

prehension subtest were employed to measure the variables. The findings from this study supported Qian's (1998, 1999) earlier works, in that scores on vocabulary size, depth, and reading comprehension were highly correlated and scores on vocabulary depth were capable of making a unique contribution to predicting academic reading comprehension. Moreover, the depth dimension was found to add predictive power to the prediction of reading comprehension in addition to the prediction offered by the breadth dimension.

In the Korean EFL context, a little research has explored the role of the breadth and depth dimensions of vocabulary knowledge in language skills: for example, English writing (E-J Kang 2011), English listening comprehension (Y-E Kim 2008), and overall English proficiency (C-W Shin 2011). Most recently, using The Peabody Picture Vocabulary Test-Revised (Dunn & Dunn 1981), Woodcock Reading Mastery Test-Revised (Woodcock 1998), and the standardized Passage Comprehension subtest of the Woodcock Reading Mastery Test-Revised (Woodcock 1998) to assess the participants' vocabulary breadth, depth, and reading comprehension levels, Y-S Kang et al. (2012) found that vocabulary depth, compared with the breadth, played a more important role in reading comprehension of Korean high school students.

The conspicuous lack of studies on this topic calls for an investigation into how breadth and depth of L2 vocabulary knowledge are related to reading comprehension and how the two dimensions contribute to reading comprehension among Korean EFL high school learners. Thus, the present study aims to identify a) the relationship between breadth and depth of vocabulary knowledge, and reading comprehension, and b) the contribution made by both dimensions of vocabulary knowledge in predicting reading comprehension performance, among a sample of 11th-grade high school students in a Korean EFL setting. The following research questions guided the present study:

How do depth and breadth of vocabulary knowledge affect English reading comprehension by Korean high school students?

1. To what extent are depth and breadth of vocabulary knowledge related to reading comprehension?
2. To what extent do depth and breadth of vocabulary knowledge contribute to predicting the reading comprehension?

3. Methods

3.1. Participants

The participating students included a sample of 98 Korean students in the 11th grade from a high school in Gyeonggi Province in South Korea. According to the background questionnaire, the average age of students was approximately 16 years. 20 students out of 98 had experiences of living in English- speaking countries for 6 months or more, with their length of stay ranging from 6 months to 7 years. The sample was balanced in terms of gender (47% female). They were fairly motivated in their academic achievements and of upper-intermediate or advanced proficiency level in English reading, based on their scores on several preparatory examinations for the College Scholastic Ability Test.

3.2. Instruments

The design of the current research was motivated by Qian's (2002) study. However, the instruments employed were somewhat different from the ones used by Qian (2002). Specifically, the present study, in estimating the depth dimension, used the Word Associates Test originally developed by Read (1993, 1998), instead of the Depth of Vocabulary Knowledge Test (DVK) modified by Qian (1998). Moreover, among five levels of tests within Vocabulary Levels Test Version 2 (Schmitt, Schmitt, & Clapham 2001), only the 2,000 and 3,000 Levels were used here.

3.2.1. Vocabulary Levels Test (VLT)

Vocabulary Levels Test Version 2 (Schmitt, Schmitt, & Clapham 2001) was employed as a major instrument to estimate a vocabulary size. For the current research, only 2000 and 3000 frequency levels were selected from the five frequency levels on the original test. There are two reasons for this. The first is that high-frequency words are essential for all learners to read unabridged texts without difficulty. In order to obtain useful insights into EFL high school learners' reading outcomes, it is necessary to examine their vocabulary knowledge on these high-frequency levels. The second is that participants' vocabulary

levels needed to be considered for accurate measurement. According to the English Vocabulary Guide for the 7th National Curriculum, high school students are expected to reach a 3000 words level after completing the curriculum.

In VLT, 20 questions (six words with three definitions each) were presented. The participants were required to match the three definitions with three of the six vocabulary items by writing the relevant number for the word. The maximum possible score (MPS) for this test was 60 points.

3.2.2. Word Associates Test (WAT)

The participants' depth of vocabulary knowledge was assessed by means of WAT, which comprises 31 multiple-choice questions carefully chosen out of the original 40 target stimulus words. The selection of 31 target words was based on the results from the pilot study. That is, vocabulary items unfamiliar to most of the test-takers were excluded. For each correct associate choice, one point was awarded (Maximum Possible Score: 124).

3.2.3. Vocabulary Knowledge in a Yes/No Format (VKS)

VKS, invented by the researcher based on a five-point Vocabulary Knowledge Scale (Wesche & Paribakht 1996), was designed to discover whether the participants know the meanings of 31 words on WAT. Figure 3 illustrates an example of VKS.

beautiful

① I do **not know** the meaning of this word.
② I do **know** the meaning of this word,
and the meaning is
_____.

Figure 3. Vocabulary Knowledge in a Yes/No Format (VKS).

Students were to self-report whether they knew the meanings of presented words or not based on a Yes/No format. Figure 4 displays what the participants saw on the test. They were, then, required to write definitions in Korean, once they had marked the item with a

Yes. No point was given to a response representing the absence of knowledge about the meaning, and one point was given for a response showing an accurate knowledge about the meaning, together with the provision of the correct definition.

3.2.4. Reading Comprehension Test (RC)

Reading Comprehension Test (RC) was employed to measure the participants' reading comprehension level. The test consisted of 14 questions, extracted from *2010 Nationwide Unified Academic Ability Evaluation*.[2] The question items were selected to make possible the balanced assessment of the constructs of reading comprehension skills presented by Grabe (2002). The participants were asked to produce the correct answers to questions after reading passages. One point for each right answer (MPS: 14) was awarded, and no point for wrong answers.

3.3. Procedures

Table 3 summarizes the procedures for the data collection.

Table 3. Data Collection Procedures

Session	Tests	Number of Items	Time (min)
1	RC	14	25
	VKS	31	15
2	WAT	31	30
	VLT	20	15

Three vocabulary measures and one reading comprehension measure were administered across two testing sessions: RC and VKS, followed by WAT and VLT at a four-day interval. VKS, among vocabulary measures, was first conducted in order to reduce potential learning effects from VLT and WAT, both of which consist of definition provi-

2) *Nationwide Unified Academic Ability Evaluation* is a preparatory test, conducted in the same way as College Scholastic Ability Test, which aims to measure academic abilities of test-takers. The exam is designed by Offices of Education in Seoul, Busan, Gyeonggi Province, and Incheon, and scored by Korea Institute for Curriculum and Evaluation.

sion or meaning selection questions.

All measures were timed and administered to three classes of 30 to 35 students by a teacher well-informed about the instructions. The time set for each measure was carefully determined on the basis of the results from the pilot studies, with the aim of minimizing pressure imposed on learners in demonstrating their abilities, along with consideration of the constraints of class hours.

3.4. Data Analyses

The main purposes of the present study were to find out: (a) to what extent depth and breadth of vocabulary knowledge, and reading comprehension are related to each other, and (b) to what extent do breadth and depth of vocabulary knowledge contribute to the prediction of reading comprehension by EFL high school students.

Descriptive and inferential statistics were computed including the reliability coefficient for all measures. In answering the first research question, correlation analyses were carried out to investigate the relationship between the variables. For the second question, force-entry multiple regression analyses were conducted to identify the unique roles of breadth and depth of word knowledge in explaining reading comprehension. SPSS (Statistical Package for Social Studies) was used as the main statistical program for the analyses.

4. Results and Discussion

4.1. Descriptive Statistics

Table 4 shows the means, standard deviations, MPS (Maximum Possible Score), score ranges, and percentages converted from the raw scores (percentage of correct answers) of RC, VLT, WAT, VKS, and WAT+VKS.

As can be seen in Table 4, the participants achieved the highest percentage of correct answers on RC. One of the possible reasons for the relatively high scores may be the participants' familiarity with the test formats. In fact, RC, the preparatory test for CSAT (College Scholastic Ability Tests), had a format which the participants had already

been accustomed to during their high school years.

Table 4. Means, Standard Deviations, Score Ranges, MPS, and Percentages of Correct Answers on RC, VLT, WAT, VKS, and WAT+VKS

	M	SD	MPS	Score range	Percentage of correct answers
RC	11.03	2.972	14	(3, 14)	84.9%
VLT	44.14	13.686	60	(4, 60)	73.6%
WAT	70.91	23.330	124	(11, 106)	57.2%
VKS	21.27	6.242	31	(6, 30)	68.6%
WAT+VKS	57.56	23.743	124	(9, 103)	46.4%

(MPS: Maximum possible score. N= 98.)

With regard to VLT, a majority of items with a higher percentage of correct answers were from VLT 2000 level, whereas the ones with a lower percentage were from VLT 3000 level. This may be a result of learners' increased familiarity with higher frequency words such as 2000 level in comparison to less high frequency words such as 3000 level.

The low percentage of correct answers on WAT may be a result of two factors: 1) the participants may not have known the primary meaning of target words, and/or 2) they may have lacked a deeper knowledge of those items.

All words on WAT were tested on VKS prior to the administration of WAT in order to reduce possible guesswork in selecting associates without knowing the target word meanings. Compared to WAT (57.2%), VKS was easier for the participants (68.6%). This difference in mean scores on the two tests indicates that choosing associates was more difficult than merely supplying a definition.

Finally, the adjusted scores (WAT+VKS) were calculated in such a way that when answers were wrong or not provided on VKS, the corresponding items on WAT were also counted as incorrect. It is noticeable that the mean of the adjusted scores (WAT+VKS) decreased by more than 10% points, compared to that of WAT. This drop may indicate the presence of some guesswork in choosing the associates even when the participants did not possess knowledge of target word mea-

nings. The possible evidence of the guesswork was that items showing sharp decreases in the mean score were the ones with a low percentage of correct answers on VKS. It is precisely the employment of VKS that ensured the exclusion of items solved by the participants' guesswork. In other words, the complementary measure made it possible to represent more refined outcomes than the ones by WAT alone.

Reliability analyses were conducted to check the internal consistency of each test. Table 5 shows that the estimates of internal consistency reliability for all of the tests were adequate.

Table 5. Internal Consistency Reliability of RC, VLT, WAT, VKS, and WAT+VKS

Test	Cronbach's Alpha reliability coefficient	Number of ttems
RC	.812	14
VLT	.961	60
WAT	.958	31
VKS	.909	31
WAT+VKS	.941	31

4.2. Relationship between Vocabulary Knowledge and Reading Comprehension

In order to determine the relationship between the two dimensions of vocabulary knowledge and reading comprehension, correlation analyses were conducted between RC, VLT, WAT, and WAT+VKS. The result of the analyses is presented in Table 6.

Table 6. Correlations among Scores on the RC, VLT, WAT, and WAT+VKS

Correlation	RC	VLT	WAT	WAT+VKS
RC	-	0.765***	0.712***	0.790***
VLT		-	0.762***	0.809***
WAT			-	0.939***
WAT+VKS				-

(N = 98, $^{***}p < 0.001$)

Overall, as shown in Table 6, the interrelations among the variables were fairly strong supporting the claims made in previous studies (e.g., Qian 2002). Both VLT and WAT were significantly correlated with RC, producing a correlation of .765 and .712, respectively. The correlation between VLT and RC was slightly higher than its counterpart, which is, WAT and RC correlation. On the whole, however, the results indicate that vocabulary depth, as well as vocabulary size, is strongly related to reading comprehension. A strong association among variables was also found in the relationship between VLT and WAT (0.762), indicating that vocabulary size and depth are related to a significant extent.

A substitution of WAT with WAT+VKS produced three things that are worth noting. One is that the correlation coefficient of WAT+VKS with RC (0.790) increased in comparison to that of WAT with RC (0.712). This increase, though very slight, may indicate that the replacement may help improve the strength of association between vocabulary depth and reading comprehension performance. Another is that the correlation of WAT+VKS with RC (0.790) exceeded that of VLT with RC (0.765). This was not the case with WAT and RC, which displayed a weaker correlation than VLT and RC. This reversed result may imply that depth of vocabulary is at the very least more interrelated with RC than vocabulary size, by WAT+VKS measure rather than WAT only. Finally, the coefficient between WAT+VKS and VLT (0.809) was higher than between WAT and VLT (0.762). It is intriguing that the relationship between the two dimensions became stronger by means of employing WAT+VKS.

The results from the correlation analyses demonstrated that the participants' breadth and depth of vocabulary knowledge are significantly correlated with their reading comprehension performance, and that a significant relationship existed between the two vocabulary dimensions, corroborating previous research findings (Tannenbaum et al. 2006, Vermeer 2001).

The alternative use of WAT+VKS as a depth measure made several changes in relationships between variables. That is, the relationship between vocabulary depth and reading comprehension became stronger. This strengthened relationship surpassed that of vocabulary size and reading comprehension, which was not the case when only WAT was used. It can be suggested from the findings that diminishing the guess-

work on WAT by means of the modification of scores by VKS may contribute to the adjustment of correlations among the variables, providing more refined data.

4.3. Roles of Vocabulary Knowledge in Predicting Reading Comprehension

In order to investigate the roles of breadth and depth of vocabulary knowledge in reading comprehension, multiple regression analyses were conducted. First, five regression models were built to analyze a) individual contributions of the independent variables to explaining the variance in the RC, and b) joint contributions of independent variables to predicting the RC variance. Then, a series of stepwise multiple regression analyses was conducted to examine whether each independent variable provided any unique contribution even after the contribution afforded by the other variable.

Table 7 summarizes the results from multiple regression analyses with VLT, WAT, and WAT+VKS each, and combinations of VLT and WAT, and VLT and WAT+VKS.

Table 7. R-Square of the Correlation Coefficient between Each Predictor Variable and RC

MODEL	R^2
Model 1: VLT	0.585***
Model 2: WAT	0.506***
Model 3: WAT+VKS	0.624***
Model 4: VLT & WAT	0.625***
Model 5: VLT & WAT+VKS	0.669***

In general, each measure, whether used in isolation or in combination, served as a strong predictor for reading comprehension performance. VLT and WAT predicted 58.5% and 50.6% of the variance in RC, respectively, with VLT slightly higher than WAT. In addition, WAT+VKS alone accounted for 62.4% of the RC variance. It is worth noting that WAT+VKS led to an increase in the magnitude of contribution by 11.8% points, compared with that of WAT alone serving as a predictor variable. Moreover, WAT+VKS, unlike WAT, ex-

ceeded the R^2 of VLT by 3.9% points. In short, all the independent variables were capable of predicting the RC variance to a considerable extent; with vocabulary depth (WAT+VKS) contributing more significantly than vocabulary size (VLT).

Two combinations of breadth and depth measures (VLT & WAT and VLT & WAT+VKS) were also put into the equation. The first combination of VLT and WAT was inserted concurrently, predicting together a total of 62.5% of the variance in the RC. Another combination of VLT and WAT+VKS conjunctly accounted for 66.9% of the RC variance. It is noteworthy that the second combination (VLT & WAT+VKS) led to an increase in the percentage of explained variance by 4.4 % points. It can be concluded that whichever combination of variables is selected, it provides greater predictive power than individual variables alone.

In order to further investigate whether the independent variables would explain any unique variance in RC after the contribution of the other variable, a series of forced-entry multiple regression analyses[3)] was conducted. The focus was on the R^2 change, which represents the magnitude of the contribution of each independent variable at the point of its entry. Differences between variances of the former and the latter variables were then regarded as the additional and unique amount of variance of the latter variable, not accounted for by the pre-existing variables in the equation (Kerlinger & Pedhazur 1973).

Tables 8 and 9 show the first set of forced-entry regression analyses. Table 8 presents the results of forced-entry regression analysis with VLT entered as the first step and WAT as the second.

Table 8. Forced-entry Regression Analysis with VLT and WAT as Independent Variables

Model	Variables entered	R	R^2	Adjusted R^2	Std. Error of the estimate	Changes Statistics		
						R^2 Change	F Change	Sig. F Change
1	VLT	.765	.585	.581	1.925	.585	135.228	.000
2	VLT& WAT	.790	.625	.617	1.840	.040	10.040	.002

3) A forced-entry procedure allows for comparisons of each selected predictor variable by varying the order of variable entry into the regression model (Kerlinger & Pedhazur 1973).

With VLT first entered into the equation, an R^2 of .585 was produced, which indicates that this independent variable alone accounted for 58.5% of the RC variance. Then, when WAT was entered at the second step, the magnitude of R^2 changed to .625, yielding a statistically significant increase of 0.04 (F change = 10.040, $p < 0.05$). In other words, WAT explained an additional 4% of the RC variance, which was not accounted for by VLT.

A new model was then established, in which WAT was entered at the first step and VLT at the second. The result is summarized in Table 9.

Table 9. Forced-entry Regression Analysis with WAT and VLT as Independent Variables

Model	Variables entered	R	R^2	Adjusted R^2	Std. Error of the estimate	Changes statistics		
						R^2 Change	F Change	Sig. F Change
3	WAT	.712	.506	.501	2.099	.506	98.466	.000
4	WAT& VLT	.790	.625	.617	1.840	.118	29.897	.000

As the reversed order of forced-entry regression demonstrates, WAT, entered at the first step, produced a statistically significant R^2 of .506. This suggests that WAT alone can account for 50.6% of the RC variance. Then, when VLT was entered at the second step, it produced a significant R^2 of .625. The R^2 change was .118 (F = 29.897, $p < 0.05$), indicating that VLT explained an additional 11.8% of the RC variance over and above WAT.

A comparison of the two forced-entry analyses with a reversed order revealed that VLT (11.8%) provided more additional explanation of the RC variance than WAT (4%) did. In other words, the vocabulary size had more prediction capability than the vocabulary depth in explaining the reading comprehension outcome.

Another set of forced-entry regression analyses was conducted, as shown in Tables 10 and 11, to examine whether the substitution of WAT+VKS for WAT would make any difference in the magnitude of R^2 changes. Table 10 provides the results from the stepwise procedure, in which VLT was entered at the first step, followed by WAT+VKS.

The results indicate that, with VLT entered at the first step, it produced a significant R^2 of .585, signifying that VLT alone accounted for 58.5% of the variance in RC (F change = 135.228, $p < 0.05$). When WAT+VKS was put into the equation at the second step, it produced a significant R^2 of .669. The R^2 change was .085, indicating that WAT+VKS explained an additional 8.5% of the RC variance not explained by VLT (F change = 24.329, $p < 0.05$).

Table 10. Forced-entry Regression Analysis with VLT and WAT+VKS as Independent Variables

Model	Variables entered	R	R^2	Adjusted R^2	Std. Error of the estimate	Changes statistics		
						R^2 Change	F Change	Sig. F Change
5	VLT	.765	.585	.581	1.925	.585	135.228	.000
6	VLT& WAT+VKS	.818	.669	.663	1.727	.085	24.329	.000

Then, a fresh model was built with WAT+VKS entered at the first and VLT at the second step, as shown by Table 11. When WAT+VKS was first entered into the equation, an R^2 of .624 was produced. When VLT was entered at the second step, the magnitude of R^2 changed to .669, resulting in a statistically significant increase of 0.046 in the R^2 change (F change = 13.136, $p < 0.05$). This reveals that VLT explains an additional 4.6% of the RC variance not accounted for by WAT+VKS.

Table 11. Forced-entry Regression Analysis with WAT+VKS and VLT as Independent Variables

Model	Variables entered	R	R^2	Adjusted R^2	Std. Error of the estimate	Changes statistics		
						R^2 Change	F Change	Sig. F Change
7	WAT+VKS	.790	.624	.620	1.833	.624	159.162	.000
8	WAT+VKS& VLT	.818	.669	.663	1.727	.046	13.136	.000

The second set of analyses shows that WAT+VKS (8.5%) provided more explanatory power for the RC variance than VLT (4.6%) did. This result endorses the findings from Qian (1999, 2000) in which the depth of vocabulary knowledge measure had more predictive power than the vocabulary size measure. The result of the second set, however, diverges from that of the first set of stepwise procedures (see Tables 8 and 9), in which the vocabulary size measure (VLT) explained an additional variance in RC more than the depth measure (WAT). Given that the only difference between the two sets was the use of WAT+VKS in the second set, it seems that the additional contribution of the depth measure increased, from 4% (WAT) to 8.5% (WAT+VKS), even exceeding that of the size measure (VLT) by employing the adjusted score (WAT+VKS).

As revealed by the results from the two sets of forced-entry multiple regression analyses (VLT & WAT and VLT & WAT+VKS), both vocabulary size and depth provided additional explanation for test-takers' reading comprehension outcomes, even after the contribution of the other measure was taken into account. The total predictive power increased as a result of the extra contribution of each measure, as demonstrated by the greater contribution produced with the insertion of the second predictor variable. Moreover, a greater additional explanation for the RC variance was offered by WAT+VKS than by WAT alone. The increase, in turn, enabled the depth to better predict the reading comprehension outcome than the breadth.

5. Conclusion and Implications

Understanding the complex relationship between vocabulary learning and reading comprehension is certainly no easy task. This research has aimed to reveal a few more layers and, in the process, has discovered that vocabulary depth not only plays a vital role in reading comprehension performance, but also has a greater impact on the reading comprehension performance than vocabulary size. It was also confirmed from this analysis that both size and depth of word knowledge are essential in predicting the reading performance, and that the combination of two dimensions produced a greater predictive power compared with individual dimension alone.

The present study suggests two important implications for the instruction and assessment of L2 vocabulary. Firstly, although both breadth and depth dimensions individually rendered predictive power for the reading comprehension performance, it was the combination of the two variables that yielded a greater magnitude of contribution. Moreover, vocabulary depth provided greater explanatory power over and above vocabulary size. These findings may imply that L2 learners will benefit more in L2 reading when they are equipped with both a large size of vocabulary and a deep knowledge of words.

Vocabulary instructions have placed a great deal of attention to ways of maximizing learners' vocabulary size. Consequently, learners have been commonly offered a long list of vocabulary items to be mastered, which often includes only simple dictionary meanings. This practice can be misleading, in that providing only a restricted definition of a word may prevent learners from building their deeper knowledge about the word, which may eventually hinder their reading performance. Therefore, vocabulary instruction needs to focus more on the complex nature of word knowledge. It should encompass in-depth understanding about words, including multiple meanings, morphological/syntactical awareness, and semantic relations.

Secondly, the fact that the combined effects of vocabulary size and depth on reading performances were significant may offer further implications for vocabulary assessment. Traditionally, vocabulary assessments have prioritized the breadth over depth, possibly due to researchers' insufficient awareness of the significance of the depth dimension for developing word knowledge and a lack of valid and reliable measurement instruments for the depth dimension. To gain a better understanding of the complex nature of vocabulary knowledge and vocabulary acquisition, it is necessary to strike a better balance between the size and depth. Moreover, in order to devise a more valid measurement instrument for vocabulary knowledge, it is suggested that vocabulary size and depth tests be combined (Ishii & Schmitt 2009).

As a further step to improving existing measures for vocabulary depth (e.g., WAT), this study proposed using a yes/no format test (VKS) as an aid to reducing the guesswork effects on WAT. This complementary measure was shown to contribute to enhancing the predictive power of the depth measure (WAT+VKS). Specifically, this study, through this adjustment, gained a better understanding of the

role of vocabulary knowledge in reading comprehension by EFL Korean high school learners. It is hoped that other informative approaches to improving such test batteries will be developed by researchers and practitioners.

6. Limitations and Suggestions for Future Research

There are several limitations to the current research that raise questions to be addressed in future studies. First is the small sample size of only 98 Korean high school students, making it impossible to generalize the reported findings to larger populations. It is recommended, in future research, to investigate far greater numbers of students, preferable randomly sampled, in order to confirm these findings. Such research should also attempt to include students of different ages and a wider range of English proficiency levels. Since vocabulary knowledge becomes increasingly complex in the course of learning English, longitudinal studies can also better explore how certain aspects of vocabulary knowledge develop over time.

Secondly, in administering the Vocabulary Levels Test in this study, only a high-frequency word level was considered excluding low-frequency and University word levels. For a comprehensive picture of learners' vocabulary size, the VLT at all levels would help improve further studies and substantiate the findings from the current study as well.

As with most of the previous studies reviewed, the current study used VLT and WAT as vocabulary measures. As a reading comprehension measure, however, it employed *2010 Nationwide Unified Academic Ability Evaluation* unlike other studies. In fact, reading measures in previous research have not been confined to a certain type of test. Instead, various types of tests such as TOEFL and the Woodcock Reading Mastery Test were employed. Thus, further studies may explore which reading test serves as a more effective reading comprehension measure when examining its relationship with vocabulary knolwedge, and compare the findings with those of the present research.

Given that the depth dimension includes multiple components, such as phonemic, graphemic, morphemic, syntactic, semantic, collocational, and phraseological properties, further investigation can also ex-

plore how various components of depth of vocabulary knowledge interact with each other in the process of reading comprehension.

Finally, future research into the instructional effects of vocabulary is greatly needed. By employing a range of vocabulary outcome measures, intervention studies will help better determine whether instruction involving the depth dimension will have a positive impact on vocabulary knowledge in general and depth of word knowledge in particular.

These limitations notwithstanding, the findings from the present study offer unique insights into the relationship between the size and depth of vocabulary knowledge that brings us one step closer to understanding how English vocabulary knowledge affects learners' success in reading comprehension.

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Appendix 1. Reading Comprehension Test

영어 읽기 평가 (1-14번) [ ] 학년 [ ] 반 [ ] 번 성명 [ ]

1. 밑줄 친 he[him]가 가리키는 대상이 나머지 셋과 다른 것은?

John was driving home late one night when he picked up a hitchhiker. As they drove along, ①he became suspicious of his passenger. So John checked to see if his wallet was safe in his coat that was on the seat between them, but it wasn't there! Immediately, ②he stepped on the brakes, ordered the hitchhiker out, and said, "Hand over the wallet right now!" Frightened, ③he handed over a wallet and got out of the car. When he arrived home, ④he started to tell his wife about the experience. She interrupted ⑤him, saying "Before I forget, John, do you know that you left your wallet at home this morning?

2. 다음 글의 목적으로 가장 적절한 것은?

As you know, I have been satisfied with your medical service for the past six years. You have been so kind to me and all the medications you prescribed have always been effective. However, are you aware that the condition of your waiting room is very disappointing? The carpet is rarely vacuumed, the plastic plants are thick with dust, and the magazines and children's playthings are disorganized. A clean environment seems particularly important in a clinic and although I know what an excellent physician you are, I can't help worrying about how clean everything else is. I hope you find this letter helpful rather than unpleasant–it was written with the best of intentions.

① 감호사들의 불친절에 대해 항의하려고
② 다양한 최신 장치의 구입을 촉구하려고
③ 병원의 낡은 진료 장비의 교체를 건의하려고
④ 환자 대기실의 청결 상태 개선을 요청하려고
⑤ 친절한 진료와 적절한 처방에 대해 감사하려고

3. 다음 글에서 전체 흐름과 관계 없는 문장은?

Using heroes in the classroom is becoming more and more popular, but careful thought should be given to lesson planning. ①The instructor who wants to ensure the effectiveness of the method needs to first find a suitable hero. ②For instance, it may be more appropriate to use Michael Jordan as a role model when teaching sports rather than using Beethoven. ③It is also important that the instructor does not take away the human elements in heroes and helps students understand they are ordinary people like us. ④People who become heroes have great talents or exceptional skills, so we can't easily follow them. ⑤That's because ordinary people who accomplish something extraordinary can inspire students more than special people can.

4. 다음 글의 빈칸에 들어갈 말로 가장 적절한 것은?

There is one magical price that we don't evaluate in the same way as other prices. That price is "free." Sometimes it leads you to _____. Imagine you are shopping for a gift certificate. Consider which of these two offers you would choose: a $10 gift certificate for free and a $20 gift certificate costing $7. If your first instinct is the same as everyone else's, you'll take the first option, the free option. Economically, though, this doesn't make any sense. When you look at it again, you can see that the $20 gift certificate is actually a better value: you get a $13 gift certificate for free, but this is hidden by the word "free." It prevents you from thinking clearly.

① poor decisions ② wise shopping
③ quick calculation ④ full satisfaction
⑤ unnecessary purchases

5. 다음 글의 주제로 가장 적절한 것은?

Airline reservation agents are nearly helpless when their reservation system breaks down. Customers can go to another airline that can immediately reserve a seat on a competitive flight. In case the reservation system breaks down, various techniques are used to reduce recovery time to the shortest possible interval. One technique includes frequently saving database copies to reduce the processing time necessary to restore the database. When it is economically possible, the entire system is duplicated on a standby computer, complete with separate copies of the database. It will take over system processing if anything goes wrong on the primary computer.

*duplicate: 복사하다

① 전산 예약 시스템 운용의 경험
② 항공사들 간의 치열한 서비스 경쟁
③ 항공사의 예약 시스템 장애에 대한 대비책
④ 최신 기술을 이용한 항공 좌석 검색 방법
⑤ 컴퓨터 해킹을 방지하기 위한 보안 시스템

1

Appendix 2. Vocabulary Knowledge in a Yes/No Format

영어 단어 평가 ( )학년 ( )반 ( )번 이름 ( )

※ 주어진 단어의 뜻을 모르는 경우에는 ①에, 알 경우에는 ②에 V표시를 하시오.
단, ② 에 V표시를 한 경우, 반드시 빈 칸에 단어의 뜻을 적어야 합니다.
※ 단어의 뜻을 여러 개 알 경우, 아는 대로 모두 쓰시오.

[문제 1 ~ 31 번]

1. beautiful
① 이 단어의 뜻을 모른다.
② 이 단어의 뜻을 알고 있다.
그리고 그 뜻은 _____이다.

2. bright
① 이 단어의 뜻을 모른다.
② 이 단어의 뜻을 알고 있다.
그리고 그 뜻은 _____이다.

3. calm
① 이 단어의 뜻을 모른다.
② 이 단어의 뜻을 알고 있다.
그리고 그 뜻은 _____이다.

4. natural
① 이 단어의 뜻을 모른다.
② 이 단어의 뜻을 알고 있다.
그리고 그 뜻은 _____이다.

5. fresh
① 이 단어의 뜻을 모른다.
② 이 단어의 뜻을 알고 있다.
그리고 그 뜻은 _____이다.

6. general
① 이 단어의 뜻을 모른다.
② 이 단어의 뜻을 알고 있다.
그리고 그 뜻은 _____이다.

7. bare
① 이 단어의 뜻을 모른다.
② 이 단어의 뜻을 알고 있다.
그리고 그 뜻은 _____이다.

1

Appendix 3. Word Associates Test

영어 단어 평가 ( )학년 ( )반 ( )번 이름 ( )

※ 상자 안의 8개 단어 중에서 주어진 단어와 관련이 있는 단어를 4개 고르시오.
왼쪽 상자에서는 제시된 단어의 뜻을 나타내는 단어나 제시된 단어의 동의어를 고르시오.
오른쪽 상자에서는 주어진 단어와 흔히 함께 쓰이는 단어를 고르시오.
양쪽 상자를 합해 총 4개의 단어에 V 표시를 하시오.

(예시)

sudden

☐ beautiful	☑ quick	☑ surprising	☐ thirsty	☑ change	☐ doctor	☑ noise	☐ school

(비실)

왼쪽 상자	오른쪽 상자
"Sudden"은 "갑작스러운, 급작스러운"이라는 뜻입니다. 따라서, 정답은 "sudden"이 가진 뜻을 나타내는 "quick" 과 "surprising"입니다.	보통 "a sudden doctor" 나 "a sudden school"이라는 말은 쓰이지 않습니다. 반면, "a sudden change"나 "a sudden noise"는 자주 쓰입니다. 따라서, 정답은 "sudden"과 흔히 함께 쓰이는 "change"와 "noise"입니다.

※ 주의: 모든 문제가 왼쪽 상자에서 2개, 오른쪽 상자에서 2개를 골라야하는 것은 아닙니다.
왼쪽과 오른쪽을 합해서 4개를 고르는 것입니다. 단, 어느 한쪽이 0개고, 다른 한쪽이 4개인 경우는 없습니다.
즉, 한 쪽 상자에서 반드시 1개는 관련된 단어가 있습니다. 다음과 같이 3가지 가능한 경우의 수가 있습니다.

가능한 경우의 수

1. 왼쪽 1개 : 오른쪽 3개

☐	☐	☐	☑	☐	☑	☑	☑

2. 왼쪽 2개 : 오른쪽 2개

☐	☐	☑	☑	☐	☑	☑	☐

3. 왼쪽 3개 : 오른쪽 1개

☐	☑	☑	☑	☐	☑	☐	☐

※ 실전 문제: 1~31 번까지 주어진 단어와 관계있는 단어를 4개 골라, V 표시 하시오.

1. beautiful

제시된 단어의 뜻을 나타내는 단어, 혹은 동의어				제시된 단어와 흔히 함께 쓰이는 단어			
☐ enjoyable	☐ expensive	☐ free	☐ loud	☐ education	☐ face	☐ music	☐ weather

2. bright

제시된 단어의 뜻을 나타내는 단어, 혹은 동의어				제시된 단어와 흔히 함께 쓰이는 단어			
☐ clever	☐ famous	☐ happy	☐ shining	☐ colour	☐ hand	☐ poem	☐ taste

3. calm

제시된 단어의 뜻을 나타내는 단어, 혹은 동의어				제시된 단어와 흔히 함께 쓰이는 단어			
☐ open	☐ quiet	☐ smooth	☐ tired	☐ cloth	☐ day	☐ light	☐ person

Appendix 4. Vocabulary Levels Test

영어 단어 평가 ( ) 학년 ( )반 ( ) 번 이름 ( )

◆ 오른쪽에 주어진 설명에 해당되는 단어를 왼쪽에서 찾아, 그 번호를 쓰시오.

(예시)

1 business	
2 clock	
3 horse	_6_ part of a house
4 pencil	_3_ animal with four legs
5 shoe	_4_ something used for writing
6 wall	

◆ 주의: 단어 뜻을 전혀 모르는 경우, 추측하지 말고 빈 칸으로 남겨두시오.
만약, 의미를 알 것 같다면, 답을 찾아 써보시오.

(1)

1 copy	
2 event	_____ end or highest point
3 motor	_____ this moves a car
4 pity	_____ thing made to be like another
5 profit	
6 tip	

(2)

1 accident	
2 debt	_____ loud deep sound
3 fortune	_____ something you must pay
4 pride	_____ having a high opinion of yourself
5 roar	
6 thread	

(3)

1 coffee	
2 disease	_____ money for work
3 justice	_____ a piece of clothing
4 skirt	_____ using the law in the right way
5 stage	
6 wage	

(4)

1 clerk	
2 frame	_____ a drink
3 noise	_____ office worker
4 respect	_____ unwanted sound
5 theater	
6 wine	

(5)

1 dozen	
2 empire	_____ chance
3 gift	_____ twelve
4 opportunity	_____ money paid to the government
5 relief	
6 tax	

(6)

1 admire	
2 complain	_____ make wider or longer
3 fix	_____ bring in for the first time
4 hire	_____ have a high opinion of someone
5 introduce	
6 stretch	

(7)

1 arrange	
2 develop	_____ grow
3 lean	_____ put in order
4 owe	_____ like more than something else
5 prefer	
6 seize	

(8)

1 blame	
2 elect	_____ make
3 jump	_____ choose by voting
4 manufacture	_____ become like water
5 melt	
6 threaten	

1