

A study on the correlation between vocabulary breadth and depth and English majors' writing proficiency

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Abstract: Writing has been the weakest aspect of basic skills for Chinese learners. Some studies have shown that the lack of vocabulary knowledge is the biggest difficulty in Chinese students' writing. And the current field of research on vocabulary tends to focus on the quality and quantity of vocabulary, that is, the depth and breadth of vocabulary. This study tested the vocabulary breadth and depth of 80 English majors through an online questionnaire, aiming to investigate the correlation between vocabulary breadth and depth and students' writing proficiency. The findings showed that there was a high positive correlation between vocabulary breadth and writing, and that vocabulary breadth was an effective predictor of writing proficiency. There was a low positive correlation between vocabulary depth and writing, and vocabulary depth was a low predictor of writing proficiency; there was no significant relationship between vocabulary breadth and depth.

Keywords: vocabulary breadth; vocabulary depth; English major students

1. Introduction

Writing is an important part of English learning. The new curriculum reform stipulates that the requirements for students' English writing are: the ability to complete general writing tasks in common application styles and the ability to use literature initially. It is evident that this places high demands on students' English writing skills. However, English writing has always been the weaker part of teaching in China, and students' English writing skills consistently hover at a low level. Research shows that students' written expressions are generally characterized by poor writing content, use of the Chinese way of thinking to compose words and sentences, grammatical errors, and uncultural habits. Vocabulary is the foundation of English writing, and it is the necessary material for English writing. Without an adequate vocabulary, learners will find it extremely difficult to express their ideas. It was only in the 1980s that vocabulary breadth began to receive attention abroad, and it was only around 1995 that experimental studies on vocabulary depth in the Vocabulary Knowledge Framework proposed by Nation and Richard emerged. According to related studies at home and abroad, most of them focus on the relationship between vocabulary and reading, and even if there are a few studies related to vocabulary and writing, most of them focus on the breadth rather than the depth of vocabulary.

1.1. Vocabulary breadth and depth

Researchers and scholars have assessed and described the quality and quantity of lexical knowledge in different ways and from different aspects. Nation (1990) noted that this is an ongoing process of learning vocabulary.^[10] Therefore, in studying vocabulary knowledge, researchers and scholars are concerned with estimating the number of words that learners know and measuring the extent to which learners know words. And based on previous studies of vocabulary knowledge, there is a new trend to analyze vocabulary in two ways: breadth of vocabulary knowledge (BVK) and depth of vocabulary knowledge (DVK).

The study of vocabulary breadth has been the focus of educational researchers. Foreign researchers have conducted numerous studies on the breadth of vocabulary. Goulden, Nation (1990) conducted a study on the measurement of the vocabulary of general learners of native languages, and Hzaenberg, Hulstinjin (2001)^[6] and Laufer (2001)^[8] studied the foreign language vocabulary of foreign language learners.^[10]

Broadly speaking, their studies had three purposes: 1) to measure the amount of vocabulary of native or non-native speaking learners for different purposes; 2) to measure the amount of increase in the vocabulary of learners with different teaching tools or strategies; 3) to explore the correlation between vocabulary breadth and other aspects of second language acquisition.

Nation (1990) first proposed a qualitative framework of lexical knowledge at the theoretical level, that is, a framework of the depth of lexical knowledge.^[10] Coady (2001) argued that knowing a word should include its habitual collocation, the stylistic style of the word, its grammatical features, and the meaning and significance associated with its lexical features.^[11] Read (1993) has pointed out that the depth of vocabulary can refer to several aspects: the precision of the knowledge, the scope of knowledge, or the density of knowledge networks.^[12] Hulstijn (2001) measured lexical knowledge depth in terms of familiarity with lexical knowledge. Zhang Wenzhong and Wu Xudong (2000) defined lexical knowledge depth in terms of the richness of lexical information connections.^[14]

While Qian (1999) argued that vocabulary breadth refers to the number of words for which learners know the most basic meaning; vocabulary depth refers to learners' knowledge of the various meanings of a given word or the extent to which learners know the target word or phrase. Vocabulary depth describes the quality rather than the quantity of a learner's vocabulary.^[11]

In China, Gui Shichun (1983) first investigated the vocabulary of English majors and non-English majors.^[15] Later, Xi Zhongen (1998), Zhou Dajun (2000)^[17] and Ma Guanghui (2001)^[9] studied the amount of vocabulary breadth knowledge and its growth rate.^[16] In addition, researchers such as Liu Si (1995), Ma Guanghui (2001), Shao Hua (2002), and Wen Qiufang (2006) investigated the vocabulary of English learners from different disciplines and schools.^[15] Xi Zhongen (1998), Zhang Ping (2001), and Ma Guanghui (2006), on the other hand, discussed the relationship between gender and vocabulary.^[18] Chen Yanyan (2011) explored the relationship between vocabulary breadth knowledge and vocabulary depth knowledge and their effects on reading comprehension, and their results showed that vocabulary breadth knowledge and depth knowledge were highly correlated, but vocabulary depth knowledge lagged behind breadth knowledge, and vocabulary breadth knowledge was a significant predictor of reading comprehension, while vocabulary depth knowledge was not a significant predictor. He Xueqin (2007) examined the correlation between vocabulary knowledge and language proficiency. The results showed that the correlation between vocabulary depth knowledge and language proficiency was higher than the correlation between vocabulary breadth knowledge and language proficiency; vocabulary depth knowledge was a better predictor of language proficiency than vocabulary breadth knowledge.^[7]

In a word, vocabulary breadth refers to the size of the vocabulary acquired by learners. English vocabulary research is an important part of teaching research. It guides the establishment of teaching objectives, the development of teaching materials, and the organization of teaching and examinations. It is also an important criterion for second or foreign language learners to measure their learning progress. Vocabulary depth, on the other hand, means knowing and applying a word in depth, that is, knowing all aspects of a word, such as synonyms, near synonyms, multiple meanings of a word, and fixed word combinations. This is one of the most important things for English learners to do, which is to focus not only on the breadth of vocabulary but on the depth of vocabulary as well.

1.2. The relationship between breadth and depth of vocabulary

Lou Jun and Han Yiping mentioned that not much research has been done on the relationship between lexical depth and breadth.^[2] Because the methodological issues of studying lexical depth are less mature than lexical breadth studies. Nurweni and Read used a vocabulary size and depth test containing 200 individual words and found a high association between the scores of the two tests when the sample was divided into three groups according to a degree ($r=.62, n=324$). Meara and Schmitt studied the English vocabulary knowledge of 88 Japanese young adults and found that although learners' vocabulary and suffixes and word associations interacted to varying degrees, vocabulary and word associations were highly correlated. ($r=.62, r=.60$) From the above studies, it can be found that the depth and breadth of vocabulary are related, but the development of both is independent of each other. In contrast to vocabulary breadth and depth, empirical studies and surveys on vocabulary breadth have been the first to be conducted abroad and have yielded fruitful results, with some studies concluding that vocabulary is significantly and positively related to reading and language skills (Koda, 1989; Laufer, 1989, 1992). Schmitt & Meara (1997) found that vocabulary quantity was closely related to word form knowledge and associative knowledge.^[13] And in the mid to late 1990s, vocabulary researchers at home and abroad realized that vocabulary learning is not just about quantity and subsequently introduced the

concept of vocabulary depth. The most influential studies about vocabulary depth acquisition are Richards (1976) and Nation (1990), for their lexical knowledge framework theory and level analysis method.^[10]

1.3. The relationship between vocabulary and English writing

Writing itself is difficult, and writing is an output activity, a creative skill, so written expression is a result of creative learning. Students' poor vocabulary, inaccurate word choice, and inability to use known vocabulary correctly led to the writing process where many ideas with some content and depth were often abandoned because they could not find the right words to express their ideas. In addition, there are problems such as improper collocation, grammatical confusion and spelling errors, narrow knowledge, and limited sentence types, which ultimately prevent the unification of ideas to make the essay become one, and the essay appears pale and empty. Writing and conversation are different from tests such as reading and sentence patterns, and there are not many "rules" to follow, and having a rich vocabulary and its usage is a basic prerequisite for communication and an even more essential requirement for writing. Krashen's theory of the comprehensible input hypothesis suggests that the key to determining second language acquisition is exposure to a large amount of comprehensible information at a slightly higher level than the learner's own. There is only one way for humans to acquire language, and that is by receiving a lot of language input. Correct and authentic language output depends on sufficient and high-quality language input.

For native English learners, reading undoubtedly contributes most to the improvement of writing skills. However, for students who speak English as a second language, the process of reading in English is often done with the purpose of acquiring information and with less attention to the skills that writing uses in terms of language. This difference in reading is the same in all language families. Therefore, the best place to start improving writing skills is with the basic elements of language, namely vocabulary.

2. Method

This study explores how the depth and breadth of vocabulary affect the quality of English majors' writing by correlating vocabulary breadth and depth with students' writing proficiency.

2.1. Research Questions

- (1) Is there a relationship between breadth and depth of vocabulary and the quality of writing?
- (2) Is there a correlation between breadth and depth of vocabulary?

2.2. Research Subjects

The subjects of this study were 80 English majors who were between the ages of 20 and 23 and had studied English for at least 10 years.

2.3. Research tools

The instruments used in this study were the final writing test score, the vocabulary breadth test, and the vocabulary depth test. The final writing test was "The advantages and disadvantages of the rapid development of the Internet" and was to be completed in 45 minutes with a word count of 350 words or less, the test is scored in four areas: logic, opinion, examples, and language, and is worth 50 points. The vocabulary breadth test uses a new version of the vocabulary level test developed by Nation, which includes 150 target words and is scored out of 150 points for a 45-minute test. The vocabulary depth test was based on the Word Associate Format, which was designed by Bai Limei and consisted of 40 target words. The test took 35 minutes to complete and scored 120 points. The target words for both vocabulary tests were selected from a special dictionary for English students.

The purpose of the interviews was to obtain more information to fill in the gaps in the study. Questions for the interview: (1) Are you satisfied with your writing performance? (2) Have you made efforts to discover ways to improve your writing? (3) Have you tried to expand your vocabulary to improve your writing? (4) Have you tried to strengthen the depth of vocabulary to improve your writing? Interviews were conducted with two male and two female students, two of whom were strong writers and two of whom were weak writers.

2.4. Data Analysis

Eighty subjects participated in this study. No data were collected by omission, so all data collected were valid. This study attempted to reveal the correlation between BVK, DVK, and writing performance. Therefore, the data collected in this study were analyzed, organized, and calculated using SPSS 26.0. First, descriptive statistics were conducted for the breadth of vocabulary knowledge, depth of vocabulary knowledge, and writing scores. Second, statistical instruments such as regression analysis and correlation analysis were used to perform statistical analysis of differences and correlations for the variables of interest.

Table 1: Descriptive statistics of BVK and DVK

	N	Minimum	Maximum	Mean	Std.Deviation
BVK	80	50	145	109.00	18.528
DVK	80	75	115	98.60	10.273
Writing	80	10	40	28.69	7.663
Valid N(listwise)	80				

BVK= Breadth of Vocabulary Knowledge

DVK= Depth of Vocabulary Knowledge

From Table 1, the mean values of the vocabulary knowledge breadth and depth tests were 109 and 98.6, respectively. The mean of the Vocabulary Knowledge Breadth Test indicated that 83% of the subjects scored above average. In other words, the vast majority of subjects achieved the average level of the Vocabulary Knowledge Breadth Test. In contrast, only 55% of the subjects scored above average on the Vocabulary Depth Test, indicating that almost half of the subjects scored below average. The mean writing score of 28.69, on the other hand, indicates that 52% of the subjects obtained above average scores, in other words, almost half of the subjects did not reach the average level of the writing test.

It can be concluded that the majority of the subjects performed relatively well on the vocabulary breadth knowledge test and not well on the vocabulary depth test. This means that they do not have a comprehensive grasp of the vocabulary and only remember the surface meaning of the vocabulary while lacking a deep understanding of the vocabulary. A comparison of the mean values of BVK and DVK shows that the test scores of the depth of vocabulary knowledge are not as high as those of the test of breadth of vocabulary knowledge.

Table 2: Correlation between vocabulary breadth, vocabulary depth, and writing performance

	Correlation	Significance
Vocabulary Breadth - Vocabulary Depth	.307	.148
Writing - Vocabulary Breadth	.759	.000
Writing - Vocabulary Depth	.247	.035

As can be seen from Table 2, there was no correlation between vocabulary breadth and vocabulary depth ($r=0.307, p=0.148$). The correlation between vocabulary breadth and English writing scores was high ($r=.759, p=0.000$) and there was a correlation between vocabulary depth and English writing scores ($r=0.247, p=0.035$). From the vocabulary test scores of both groups, students who scored high on the vocabulary breadth test did not mean that they could score equally high on the vocabulary depth test, and students who scored high on the vocabulary depth test did not necessarily have a large vocabulary. From the final writing scores, the high-scoring students generally showed an accurate grasp of vocabulary, could use vocabulary proficiently and had a relatively large vocabulary.

Table 3: Regression model of vocabulary breadth, vocabulary depth and writing performance (1)

Model	Variables Entered	Method	R2	R2 Change	Sig.
1	VS	Enter	.214		.000
2	DVK	Enter	.258	.035	.001

Further regression analysis was done on the three variables of vocabulary breadth, vocabulary depth, and writing performance, and the data showed (Table 3) that when only the subjects' vocabulary breadth test scores were included in the equation, the R2 was 0.214, indicating that vocabulary size predicted English writing performance. The vocabulary depth variable was then added to the equation, and the R2 increased to 0.258, indicating that vocabulary depth increased the explained variance in writing scores by 3.5%.

Table 4: Regression models of vocabulary breadth, vocabulary depth and writing performance (2)

Model	Variables Entered	Method	R2	R2 Change	Sig.
1	DVK	Enter	.074		.035
2	VS	Enter	.258	.164	.001

The regression model was reconstructed by first adding vocabulary depth to the equation and then adding vocabulary breadth, and the results showed (Table 4) that when vocabulary depth was added to the equation alone, the R2 for the 80 subjects was 0.074, indicating that vocabulary depth was a weak predictor of essay performance. Next, adding vocabulary breadth to the equation increased the R2 to 0.258, indicating that vocabulary breadth added 16.4% of the explained variance in the prediction of writing outcomes. It follows that using vocabulary breadth to predict English composition scores is more important and unique than vocabulary depth. Students who score high on the Vocabulary Depth test are good at grasping and using vocabulary in-depth and can use known vocabulary correctly and without error to express a certain depth of opinion in their writing. However, the decisive role of vocabulary cannot still be ignored to score high. Students who score higher on the vocabulary breadth test are naturally able to know more vocabulary and most score higher on the final writing exam because entering more vocabulary facilitates them to express their ideas better. Students who scored low on the vocabulary breadth test, on the other hand, scored low on the writing test because their lack of vocabulary prevented them from expressing relatively deep or complex ideas, mostly using only the lowest level of simple vocabulary.

2.5. Analysis of interview results

Of the four questions in the interview, questions (1) and (2) were about students' attitudes toward their writing performance and about improving their writing skills. Question (3) was about students' attitudes toward expanding vocabulary and how to do so. Question (4) was about students' attitudes toward depth of vocabulary and how to increase it.

Regarding question (1), two students with weak writing skills found the process of writing in English torturous, were not satisfied with their writing performance, had difficulty expressing themselves in complete sentences, and wrote very simple sentences with more grammatical errors. Regarding question (2), some students indicated that they had tried to improve their English writing, but it was a long-term process that they eventually gave up due to heavy academic workloads. Regarding question (3), all interviewees agreed that vocabulary was crucial to writing and all wanted to expand their vocabulary, and two of them usually improved their vocabulary based on the alphabetical order of the word list. The other two students used mimeographies to memorize words. Regarding question (4), almost all of the subjects did not pay much attention to the depth of vocabulary, reciting only the Chinese meanings of the words when memorizing them, and their knowledge of the depth of vocabulary came only from the teacher's classroom lectures.

2.6. Teaching Recommendations

Based on the findings of the study, teachers should do the following in teaching writing classes.

First, students are encouraged to memorize words in context and to learn how to use new words, rather than just memorizing the surface meaning of the vocabulary. In addition, software with example sentences and pronunciation can be provided to help students memorize words.

Second, teachers need to make students aware that vocabulary depth is equally necessary for writing. Knowing a word means understanding various aspects of the word, such as multiple meanings of words, word combinations, and synonyms.

Third, language input is a prerequisite for output. Students should try to memorize as many words and sentence patterns as possible in their English studies. In addition, reading English newspapers and watching original movies are also effective ways to accumulate word blocks.

3. Conclusions

The results of the study showed that there was a significant positive correlation between vocabulary depth and breadth and English writing scores. Among them, vocabulary breadth was highly correlated with writing achievement, and vocabulary depth was correlated with writing achievement. There was no correlation between vocabulary breadth and vocabulary depth. While vocabulary breadth was a stronger

predictor of writing performance, both quantity and quality of vocabulary helped students improve the quality of their writing.

To improve students' writing skills, focusing on knowledge of vocabulary and adopting the right approach to vocabulary learning, teachers should properly teach vocabulary and expand students' knowledge of vocabulary, grammar, and various sentence patterns.

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