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Correlation between Vocabulary Knowledge and Reading Comprehension

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Abstract

Vocabulary knowledge plays a vital role in reading comprehension. Qian (2002) stated that “the more vocabulary a reader knows, the better he or she will be at decoding and guessing the meaning of the texts”. Therefore, this research aims to investigate the correlation between vocabulary knowledge and reading comprehension of post-graduate students in the context of Myanmar. The objectives of this research are to examine the breadth and depth of learners' vocabulary knowledge and to explore their ability to handle reading comprehension. The “Background Questionnaire” and the three language tests such as “Nation’s Vocabulary Levels Test (1990)”, “Read’s Word Associates Test (Version 4.0)” and “TOEFL Reading Comprehension Test (August, 2001)” were used as the research instruments to collect the data. The participants of the research are 89 post-graduate students from different specializations, studying English for PhD preliminary course. The analyzed data reveal that there is a strong and positive correlation between vocabulary knowledge and reading comprehension of the participants and that learners' vocabulary knowledge clearly predicts their L2 reading comprehension performance.

1. Introduction

Reading comprehension has been used to measure learners' language competence in receptive skills in the field of language teaching. Researchers and academicians have had consensus on the fact that reading is a language-based skill since the late 1970s. Accordingly, reading ability is determined by a variety of factors related to language skills. In first language (L1) research, there is ample evidence that vocabulary knowledge accounts for the largest percentage of variance in reading comprehension. Similarly, second language (L2) research has highlighted the importance of vocabulary knowledge.

Researchers have suggested several models to describe the relationship between vocabulary knowledge and reading comprehension. According to Hu and Nation (2001), the factors involved in these models include language knowledge, knowledge of the world and

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skill in language use. Anderson and Freebody (1981) presented a model for an initial understanding of the strong relationship between vocabulary knowledge and comprehension in the form of three hypotheses: the instrumentalist hypothesis, the aptitude hypothesis and the knowledge hypothesis. A number of studies in both L1 and L2 have demonstrated that vocabulary knowledge is one of the best predictors of reading ability and the ability to acquire new information from texts (Anderson, 2000; Nation, 2001; Qian, 2002; Read, 2000).

Many researchers believe that vocabulary learning is the most important facet of second-language (L2) learning and “an essential part of mastering a second language” (Schmitt, 2008). Vocabulary knowledge is indispensable for reading comprehension as well. This relationship between vocabulary knowledge and reading comprehension caused a good number of researchers to believe that a reader’s vocabulary knowledge can be the best predictor of his understanding of text (Anderson & Freebody, 1981).

With the aim of investigating the correlation between vocabulary knowledge and reading comprehension of post-graduate students in the context of Myanmar, the objectives of this research are set as follows:

- (i) to examine breadth of learners' vocabulary knowledge and depth of their vocabulary knowledge
- (ii) to explore learners' reading comprehension skills

In the past decades, second language (L2) vocabulary researchers have proposed various frameworks in order to define what is meant by “knowing a word”. Cronbach (1942) classifies vocabulary knowledge into five categories, focusing on word meaning (generalization, breadth of meaning and precision of meaning) and use (application and availability). However, Cronbach's (1942) framework relied totally on word meaning and little on word use. Therefore, Richard (1976) presented a set of principles into Cronbach's framework regarding lexical competence. The principles on what is meant by knowing a word classified by Richard (1976) are as follows:

- (1) Knowing a word means knowing a degree of probability of encountering that word in speech or print. For many words, the sort of words most likely to be found associated with the word is also known.
- (2) Knowing a word implies knowing the limitations imposed on the use of the word according to variations of function and situation.
- (3) Knowing a word means knowing the syntactic behaviour associated with the word.
- (4) Knowing a word entails knowledge of the underlying form of a word and the derivations that can be made from it.
- (5) Knowing a word entails knowledge of the network of associations between that word and other words in the language.
- (6) Knowing a word means knowing the semantic value of a word.

- (7) Knowing a word means knowing many of the different meanings associated with a word.

Therefore, according to Richard (1976), lexical knowledge is not an all-or-nothing phenomenon, but involves degrees of knowledge. He suggests it should be constructed as a continuum, consisting of several levels and dimensions of knowledge.

Breadth of Vocabulary Knowledge

Researchers in L2 research have defined breadth as the vocabulary size (Qian, 1998). Breadth of vocabulary knowledge has been taken to refer to the number of the words that the learners know at a particular level of proficiency (Nation, 2001; Qian, 2002). It focuses on the knowledge of the multiple meaning of words, but not how well each of these words is known to an individual.

Depth of Vocabulary Knowledge

Depth of vocabulary knowledge has been used to refer to the quality of vocabulary knowledge, that is, how well one knows a word (Read, 2000). According to Read (2000), depth of knowledge focuses on the idea that for useful higher-frequency words learners need to have more than a superficial understanding of the meaning representation as well as knowledge of the word's formal features, syntactic functioning, collocational possibilities, register and characteristics. The depth dimension is made up of many parts such as the knowledge of polysemy, synonymy and collocation. Nation (1990) proposed that word meaning, register, frequency, pronunciation, spelling, syntactic and morphological properties should be considered as primary aspects of depth of vocabulary for English language learners.

Breadth of Vocabulary Knowledge and Reading Comprehension

A number of studies have investigated the relationship between vocabulary size and academic reading comprehension. Qian's (2002) research on the relationship between the breadth of vocabulary knowledge and reading comprehension has produced results indicating relatively high correlation, ranging from 0.50 to 0.78, between the two factors.

Depth of Vocabulary Knowledge and Reading Comprehension

Depth of knowledge focuses on the idea that for useful higher-frequency words learners need to have more than just a superficial understanding of the meaning. According to Qian (2002), the depth dimension should cover such components as pronunciation, spelling,

meaning, register, frequency, and morphological, syntactic, and collocational properties. Qian (2002) used the depth-of-vocabulary-knowledge (DVK) measure in his investigation of the relationship between L2 vocabulary knowledge and reading comprehension ability. DVK measure was intended to contribute to inferences about the test-takers' depth of receptive English vocabulary knowledge by measuring three vocabulary elements: synonymy, polysemy and collocation. He showed that this DVK measure accounted for a significant amount of the variance in the reading scores beyond what was predicted by a vocabulary breadth test.

2. Materials and Methods

The participants in this research were post-graduate students, pursuing the PhD degree in Mandalay University. As research tools, Nation's Vocabulary Levels Test (1990) (VLT) is used to examine the breadth of learners' vocabulary knowledge, Read's Word Associates Test (Version 4.0) (WAT) for the depth of their vocabulary knowledge and TOEFL reading comprehension test (August, 2001) (RCT) for exploring the learners' reading comprehension. Nation's Vocabulary Levels Test (1990) has five levels. The five levels represent five different word frequency levels-the 2,000-word level, the 3,000-word level, the 5,000-word level, the University Word List level and the 10,000-word level. The maximum possible score for the test was 90 as one point was given for each correct answer. Read's Word Associates Test (Version 4.0) is composed of 40 test items. The total score that can be achieved by a participant is 160 points for the whole test. TOEFL Reading Comprehension Test (August, 2001) in total consists of five reading comprehension passages and fifty multiple-choice questions. The highest possible score for the test was 50 since each correct answer to a comprehension question was given one point. The background information of the participants was explored through a background questionnaire. The participants are from 14 different specializations, namely Myanmar, Geography, History, Philosophy, Psychology, Law, Oriental Studies, International Relations, Chemistry, Physics, Mathematics, Zoology, Botany and Geology. Since the three language tests- the VLT, the WAT and the RCT were administered in three sessions, there were some participants who did not complete all of the three tests. So, they were excluded from the research and the total number of participants is 89.

2.1 Data Collection

The three language tests namely the VLT, WAT and RCT were administered in three sessions. Before participating in this research, the participants were asked to complete a background questionnaire. The aim of the research was explained and the participants were informed that their performance on the tests would not affect their course outcome after they had taken the tests. In the first session, VLT was given to the participants and WAT was conducted to them in the second session. Finally, the RCT was administered. The participants were given complete instructions and explanations by the class teachers before they tried the

tests. For the VLT, they were asked to match the definition with the corresponding words. For the WAT, they were instructed to read each of the target words and circle the words related to the target word. For the RCT, they were told to read the passages carefully and tick the best answers.

2.2 Data Analysis

The collected scores obtained in the three language tests, Nation's Vocabulary Levels Test (1990) which examines the learners' breadth of vocabulary knowledge, Read's Word Associates Test (Version 4.0) that examines the learners' depth of vocabulary knowledge and TOEFL reading comprehension test (August, 2001) which explores the learners' reading comprehension, were analyzed. Data analysis is followed by a record of the average scores obtained in the three language tests by the participants of each specialization (See Table 1).

Table (1): Average scores obtained in Nation's Vocabulary Levels Test (1990), Read's Word Associates Test (Version 4.0) and TOEFL Reading Comprehension Test (August, 2001)

Serial No.	Specializations	Average Scores		
		Nation's Vocabulary Levels Test (1990)	Read's Word Associates Test (Version 4.0)	Reading Comprehension Test (August, 2001)
1	Myanmar	35	55	13
2	Geography	47	79	18
3	History	46	61	16
4	Philosophy	67	76	17
5	Psychology	53	82	14
6	Law	55	81	22
7	Oriental Studies	32	80	17
8	International Relations	56	76	24
9	Chemistry	47	62	15
10	Physics	60	82	18

11	Mathematics	51	68	16
12	Zoology	55	78	17
13	Botany	52	75	16
14	Geology	51	79	17

In order to find the average scores obtained in vocabulary knowledge tests by the participants, the average scores obtained in Nation's Vocabulary Levels Test (1990) and Read's Word Associates Test (Version 4.0) were calculated. The average scores obtained in vocabulary knowledge tests by the participants of each specialization are described in the ascending order. It was found that the participants from seven specializations scored above 65 marks the remaining participants from the other seven specializations scored 65 and below. In order to compare the average scores obtained in vocabulary knowledge tests and reading comprehension test by the participants, the participants are divided into two groups. In Group I, the participants from seven specializations, namely Myanmar, History, Chemistry, Oriental Studies, Mathematics, Geography and Botany who scored above 65 are included. Those from the other seven specializations, namely Geology, International Relations, Zoology, Psychology, Law, Physics and Philosophy who scored 65 and below are included in Group II. Moreover, average scores obtained in vocabulary knowledge tests and reading comprehension test of Group I and II are calculated. The average score obtained in vocabulary knowledge tests by the participants of Group I was 57. Then, the average score of Group II was 68. Group I gained 16 on reading comprehension test while Group II gained 18. After calculating the average scores obtained in vocabulary knowledge tests and reading comprehension test of Group I and II, the average scores of Group I and II are compared in Table (2).

Table (2): Comparison of average scores obtained in vocabulary knowledge tests and reading comprehension test by the participants of Group I and II.

Group	Average scores obtained in vocabulary knowledge tests	Average scores obtained in reading comprehension test
I	57	16
II	68	18

Table 2 shows the average scores obtained in vocabulary knowledge tests of Group I and Group II as 57 and 68 respectively. The average scores obtained in reading comprehension

test of Group I and Group II are 16 and 18 respectively. As shown in the table above, the average scores obtained in vocabulary knowledge tests of Group II were higher than those of Group I. Similarly, the average scores obtained in reading comprehension test of Group II were higher than those of Group I. The participants' vocabulary knowledge makes a difference on their reading performance. The participants of Group II are found to have broader vocabulary knowledge than those of Group I. Therefore, it can be concluded that Group II is better at decoding and guessing the meaning of the texts than Group I.

2.3 Data Interpretation

The analysis of the data revealed that Group I gained an average score of 57 on vocabulary knowledge tests and 16 on reading comprehension test. On the other hand, Group II gained an average score of 68 on vocabulary knowledge tests and 18 on reading comprehension test. The two figures show the average scores obtained in vocabulary knowledge tests and reading comprehension tests of Group I and II. These figures are compared in Figure (1).

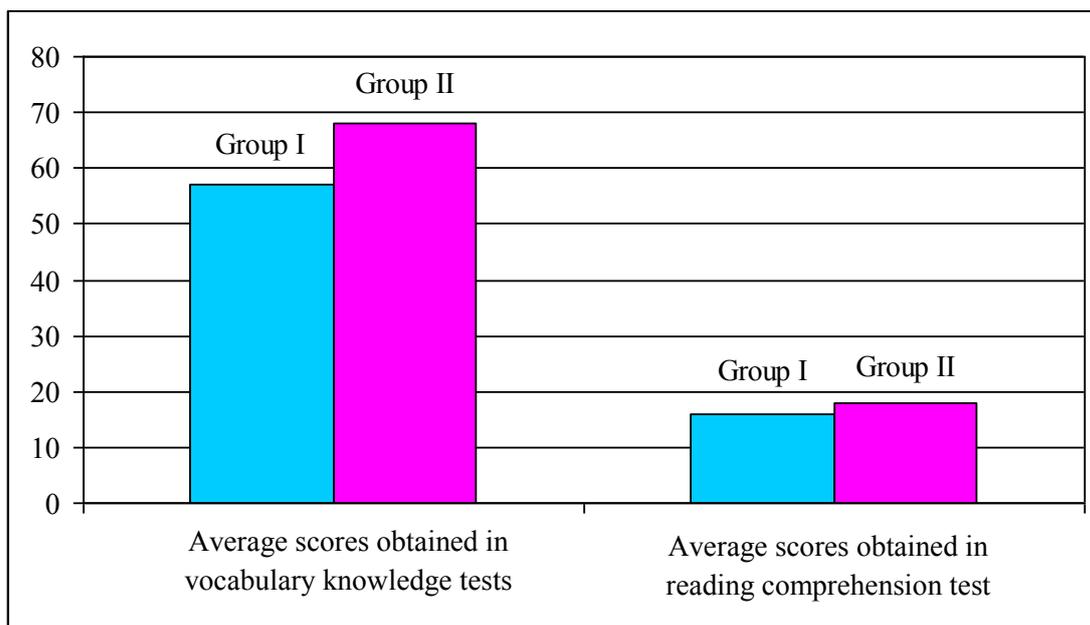


Figure (1): Comparison of average scores obtained in vocabulary knowledge tests and reading comprehension test of Group I and II

As shown in Figure 1, Group II scored higher than Group I on vocabulary knowledge tests. Therefore, Group II gained higher scores than Group I on the reading comprehension test. It can be interpreted that vocabulary knowledge could increase the overall performance of university EFL learners in a reading comprehension test.

3. Findings and Discussion

The data analysis shows a strong and positive correlation between vocabulary knowledge and reading comprehension of the participants and that vocabulary knowledge clearly predicts the learners' L2 reading comprehension performance. It is found that the average scores obtained in reading comprehension test of Group II were higher than those of Group I and, similarly, the average scores obtained in vocabulary knowledge tests of Group II were higher than those of Group I. The findings indicate that the correlation between vocabulary knowledge and reading comprehension scores is directly in line with findings of the studies conducted by Koda (1989), and Gelderen (2004) who showed that there is a positive correlation between vocabulary knowledge and reading comprehension performance. The findings also confirmed that vocabulary knowledge and reading comprehension skill are strongly related, as proved in previous studies (Qian, 2002; Read, 2000).

The findings of the research show that vocabulary knowledge is more important when it comes to helping second language learners improve their reading comprehension as suggested in various other researches (Alderson, 2000; Nagy & Scott, 2000; Pressley, 2000). The research produced empirical evidence that scores obtained in vocabulary knowledge tests and reading comprehension test are positively and closely related.

The findings of this research highlight the importance and necessity of improving vocabulary knowledge in EFL learning. The wider and deeper one's vocabulary knowledge is, the better reading comprehension he or she has. Clearly, language teachers should reinforce vocabulary instruction while they train learners for reading comprehension.

4. Conclusion

The present research has been able to examine the breadth of the participants' vocabulary knowledge and the depth of their vocabulary knowledge, to explore their reading comprehension and to find the correlation between vocabulary knowledge and reading comprehension of the learners. With the participation of post-graduate students from different specializations studying English for PhD preliminary course and application of such research tools as the "Background Questionnaire" and the three language tests such as "Nation's Vocabulary Levels Test (1990)", "Read's Word Associates Test (Version 4.0)" and "TOEFL Reading Comprehension Test (August, 2001)", the study was conducted successfully.

A strong and positive correlation between vocabulary knowledge and reading comprehension of the participants was identified, demonstrating the strong correlation between vocabulary knowledge and reading comprehension of Myanmar EFL students. The larger vocabulary store of a learner, the better he or she can perform on reading comprehension. Consequently, having strong vocabulary knowledge could increase the overall performance in a reading comprehension test by the learners. It is hoped that the findings of this study can be

applied to teaching new vocabulary and developing materials for the students. It is advisable for language teachers to focus on effective vocabulary instruction when they train the students for reading comprehension.

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