

## An Investigation of the Relationship between Reading Comprehension, Vocabulary Knowledge, and English Language Proficiency Level of Saudi EFL Learners

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### ABSTRACT

The present study is an attempt to explore the relationship between the breadth (the number of words known) and the depth of vocabulary knowledge (the richness of word knowledge) (the richness of word knowledge), and reading comprehension of EFL learners in an English as a foreign language (EFL) context. Furthermore, it tries to find the effect of language proficiency level of learners on the breadth and the depth of lexical vocabulary and reading comprehension of Saudi EFL learners. The participants of the study were seventy-five intermediate and advanced level majoring in English Translation at Qassim University in KSA. The level of language proficiency of participants had been checked through an OPT by the department in advance. To collect the relevant data, two tests measuring breadth and depth of vocabulary knowledge were administered to all participants. They also received a reading comprehension test in which they were asked to read the passages and answer some multiple-choice questions. The findings obtained from the analysis of the data indicated that there is a significant relationship between breadth and depth of vocabulary knowledge and Saudi advanced/intermediate EFL learner's reading comprehension performance totally. The results further revealed that both dimensions of vocabulary knowledge are positively correlated, that is, those learners who had large vocabulary size had a deeper knowledge of the words, too. The results further showed that language proficiency level of learners have an effect on Saudi EFL learners' reading performance and vocabulary knowledge. These results confirm the importance and the value of developing students' breadth and depth of vocabulary knowledge in EFL classrooms.

### INTRODUCTION

It is irrefutable fact that vocabulary plays a crucial role in the process of language learning (Afshari and Tavakoli, 2016). Vocabulary knowledge is the building block of learning a second language and the degree of success for learning any language depends on the amount of vocabulary a learner possesses. vocabulary is one of the most fundamental and significant components for foreign and second language comprehensibility. It is necessary in the sense that words are the basic building blocks of language, the unit of meaning from which larger structures such as sentences, paragraphs and whole texts are formed (Goossens et al., 2012). As Wilkins (1972) states, "without grammar very little can be conveyed, without vocabulary nothing can be conveyed" (p. 111). However, learning a new language simply cannot be done without absorbing vocabulary. 'Vocabulary learning is not a goal in itself; it is done to help learners listen, speak, read or write more effectively (Altalhab, 2019). This suggests that vocabulary is an essential element in developing language skills.

Although vocabulary is one of the most important components of language learning, many students see vocabulary

as one of the most difficult aspects of learning a foreign language. They see vocabulary learning as boring, as they have to memorize unfamiliar words (Stoltzfus & Sukseemuang, 2018). Learners often detect that their problem in receiving language and producing language is due to insufficient vocabulary (Alfatle, 2016). In other words, a language learner has to know words to receive information in a language by reading texts and listening to others and also need to have knowledge of words in order to produce intended message and communicate effectively through writing and speaking (Gu, 2017). Therefore, a learner's vocabulary knowledge will affect one's overall performance and proficiency in that language and in turn affect one's academic skills and educational success at schools and general intelligence as well (Santos, 2010; Vermeer, 2001).

The role of vocabulary knowledge has also been established as an important factor affecting reading ability of language learners (Qian, 2002). Many researchers believe that reading improves language development, i.e., the more a learner reads different texts, the better his vocabulary knowledge and reading ability will be. It also helps them to improve their spelling and writing skills (Harmer, 2007).

Most of the researchers accept that vocabulary learning is a very important aspect of L2 learning (Abedi, 2017) and according to Alfátle (2016) vocabulary learning is an inseparable part of mastering an L2. According to Stahl (1983), the relationship between word knowledge and reading ability is one of the best documented relationships in this area of research.

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 (Lee and Rethinasamy, 2017; Nation, 2001; Qian, 2002; Read, 2000). Grabe and Stoller (2001) emphasize the role of large vocabulary knowledge in reading comprehension. Similarly, Al-Khasawneh (2019) says that the relationship between vocabulary and reading comprehension is a “robust” one and that vocabulary knowledge has consistently been the “foremost predictor of a text’s difficulty” (p.241). Furthermore, vocabulary knowledge is a major prerequisite and causal factor in reading comprehension because the reader has to know the actual words in the text to be able to comprehend it (Tavanpour and Biria, 2017).

There are some researchers who have a very similar view regarding vocabulary knowledge. For example, Qian (2002) proposed that word knowledge includes two aspects of breadth and depth of vocabulary knowledge. Breadth of vocabulary knowledge is defined as “the number of words for which a learner has at least some minimum knowledge of meaning” (Abedi, 2017) or how many words a learners know while depth of vocabulary knowledge or quality of vocabulary knowledge is about “how well the learner knows the word” (Afshari & Tavakoli, 2016) which is one’s knowledge of the various aspects associated with a word such as pronunciation, spelling, multiple meanings, register, frequency, connotations, morphology, syntax or grammar, stylistic possibilities, appropriate uses, collocations, semantic associations and idioms containing the target words (Lee & Rethinasamy, 2017).

The significant role of vocabulary knowledge in reading comprehension has been well recognized in first language (L1) studies and this has appeared to be the case in second and foreign language settings as well (Mehrpour, Razmjoo and Parvaneh, 2011). Vocabulary knowledge and reading comprehension are highly related since lexical knowledge can assist foreign language learners in grasping the meaning of written texts. In addition, the role of vocabulary knowledge has been found to be important in second language proficiency in general (Nouri & Zerhouni, 2016; Schmitt, 2010) and in reading competence in particular (Tran, Tremblay, & Binder, 2020; Laufer & Ravenhorst-Kavlovski, 2010). Moghadam (2012) highlights the part of extensive vocabulary knowledge in reading comprehension; he thinks that students need to recognize a wide number of words to be able to read effortlessly. In teaching reading, for instance, a teacher may need to scaffold students’ knowledge on difficult vocabulary found in the text. This process is considered important for students to comprehend the text. Furthermore, in selecting text for teaching reading, a teacher may need to

be aware of the number of difficult words found in the text. A text with no difficult words may not be challenging for the students, while a text with too many difficult words may be demotivating for them. This suggests that fluent reading is closely related to the vocabulary knowledge of the students.

According to Binder, Cote, Lee, Bessette, and Vu (2018), reading comprehension involves understanding the vocabulary, seeing relationship among words and concepts, organizing ideas, recognizing the author’s purpose and intention, evaluating the context, and making judgments. Because of this complexity, researchers have studied reading comprehension from many different perspectives. Some of them have looked at the influence of vocabulary knowledge on reading comprehension (Tavanpour and Biria, 2017; Schmitt, 2010).

Lee and Rethinasamy (2017) noted that vocabulary knowledge was an effective and strong predictor of reading comprehension. Martin-Chang and Gould (2008) found that a relationship between vocabulary and reading comprehension. Vocabulary knowledge is necessary in reading comprehension. According to Qian (2002) vocabulary knowledge helps learners to decode the input (written form) which is an essential part of reading skill. Lack of sufficient word knowledge will be a hindrance for individuals in comprehending the meaning of the text. Al-Khasawneh (2019) points out that “no text comprehension is possible, either in one’s native language or in a foreign language, without understanding the text’s vocabulary”. He also indicates that the low possibility of comprehending a text relates heavily to the high percentage of obscure vocabulary. Qian (2002) surveyed language learners regarding the main barriers to reading comprehension. The students stated that insufficient vocabulary was the main obstacle they faced in reading comprehension. In the same vein, Abedi (2017) found that lack of familiarity with vocabulary knowledge in test passages was an important element affecting EFL learners on a reading comprehension test. Al-Khasawneh (2019) and Altalhab (2019) found that the strength of the relationship between word knowledge and reading ability of EFL students increased as their grade level progressed.

Surveying the literature review indicates that vocabulary knowledge is the important factor in language proficiency and success in school due to its strong relation with text comprehension (Tavanpour and Biria, 2017). Such findings motivate many researchers to delve into the relationship between vocabulary knowledge and reading comprehension (Moghadam, 2012; Gu, 2016; Abedi, 2017; Jafaripour, Ghavami and Sepahvand, 2018).

Although the relationship between vocabulary knowledge and reading comprehension has been a focus of many studies in many Ls and EFL contexts, few of them have aimed to examine the relationship between vocabulary knowledge and reading comprehension in Saudi universities. In current study, the researcher attempts to investigate the relationship between these two aspects of vocabulary knowledge, namely depth and breadth, and reading comprehension in Saudi EFL context. Furthermore, this study aims to investigate the relationship between these two aspects of vocabulary knowledge with English language proficiency.

### **Statement of the Problem**

Over the last ten to fifteen years, vocabulary has been considered as a component of language proficiency, both in L1 and L2 language acquisition. Knowledge of words is now considered the most important factor in language proficiency and school success, partly because of its close relation with text comprehension (Qian and Lin, 2019). Without knowledge of words, understanding sentences or texts is not possible. Based on several researches, it has been realized that knowledge of words is multidimensional and includes various types of knowledge. Thus, researchers such as Moghadam (2012), Al-Khasawneh (2019), Tavanpour and Biria (2017) and Binder et al., (2018) have tended to view vocabulary knowledge as consisting of two dimensions of breadth (how many words are known) and depth (how well is a word known).

The breadth of a learner's word knowledge (also referred to as vocabulary size) is the number of words with which the individual is familiar to some extent (Nouri & Zerhouni, 2016). According to Mehrpour, Razmjoo, and Parvaneh, (2011), depth of vocabulary refers to how much learners know about the meanings of the words they are familiar with, along with the connections that exist among the word meanings they know. Qian (2002) proposed that the dimension of depth of vocabulary knowledge could contain such components as pronunciation, spelling, meaning, register, frequency, and morphological, syntactic, and collocational properties.

Some researchers (Afshari and Tavakoli, 2017; Alsager and Milton, 2016) considered measuring breadth to have a limited value because it ignores the fact that words can be known to a greater or lesser extent. However, too little is known about the relationship between these various aspects of word knowledge to justify such a qualification. In the above-mentioned researchers' view, there is much overlap between breadth and depth of word knowledge, and thus there should be a strong relationship between breadth and depth measures. Both are strongly related because vocabulary growth shows a strong developmental stability, as it is related to text comprehension.

The significant role of vocabulary knowledge in reading comprehension has been well recognized in second and foreign language settings. The more students have words, the more they will be able to comprehend a text. This means that English language learners will achieve better proficiency and perform better in reading comprehension if they possess a large size of vocabulary and also a deep knowledge of vocabulary.

On the other hand, insufficient vocabulary was the main obstacle students faced in reading comprehension. This is confirmed by Altalhab (2019) and Al fatle (2017) who argue that lack of vocabulary might lead students to difficulty in understanding reading passages because vocabulary plays an important role in order to comprehend reading texts. Vocabulary is the most important part in language learning and language use (Gu, 2017). It is a central aspect of language learning in general, and reading comprehension in particular. Moreover, vocabulary is the strongest component of proper

reading comprehension and studies have shown that students who have a large working vocabulary receive better grades than students who do not (Qian and Lin, 2019).

Due to the significance of both breadth and depth of vocabulary knowledge in reading comprehension, many researchers have explored and investigated the relationship between breadth and depth of vocabulary knowledge and reading comprehension LS and EFL settings (Lee and Rethinasamy, 2017; Binder, 2018; Nouri & Zerhouni, 2016; Qian 2002). However, there has been minor understanding of the role of vocabulary knowledge in Saudi universities up to now, and few studies have been reported on the relationship between the breadth and depth of vocabulary knowledge and reading comprehension (Al-Khasawneh, 2019; Alfatle, 2017). Hence, the role of vocabulary breadth and depth in vocabulary acquisition needs more attention especially because breadth and depth of vocabulary knowledge is an indicator of learners' language proficiency. Therefore, the present study attempts to explore the relationship between breadth and depth of vocabulary knowledge and reading comprehension of Saudi EFL learners. It also investigates the effect of language proficiency level of learners on vocabulary knowledge and reading comprehension of Saudi EFL learners.

### **PURPOSE OF THE STUDY**

Having established the background and problems of the study, it is deemed important that an investigation into vocabulary knowledge area is called for.

Therefore, the main purposes of this study are as follows: to investigate

1. To investigate the relationship between breadth and depth of vocabulary and Saudi advanced/intermediate EFL learners' reading comprehension performance.
2. To explore the effect of language proficiency level on Saudi advanced/intermediate EFL learners' reading performance and vocabulary knowledge.

### **Study Questions**

Based on the objectives of the study, two research questions are addressed:

1. What is the relationship between the breadth and depth of vocabulary knowledge and reading comprehension?
2. What is the effect of English language proficiency level on vocabulary knowledge and reading comprehension of Saudi EFL students?

### **Study Hypotheses**

Hypothesis 1: There is no relationship between breadth of vocabulary knowledge and Saudi advanced/intermediate EFL learner's reading comprehension performance.

Hypothesis 2: There is no relationship between depth of vocabulary knowledge and Saudi advanced/intermediate EFL learner's reading comprehension performance.

Hypothesis 3: There is no relationship between breadth of vocabulary knowledge and depth of vocabulary knowledge.



Hypothesis 4: The proficiency level does not have any effect on Saudi advanced/intermediate EFL learners' reading performance and vocabulary knowledge.

### Significance of the Study

Reading comprehension and vocabulary development seem to be the most important and useful activities in any language class, especially for the students of English as a foreign language (EFL) in Saudi Arabia. In fact, most students learning English in poor-input contexts compensate their lack of exposure to spoken English by engaging in reading comprehension activities. Studies on these two aspects can be of great value for Education administration and even for universities. As recommended by several researchers (Cameron 2002; Nation, 2001), measuring students' vocabulary knowledge allows teachers to set the language goals for the course within communicative language teaching. It is also helpful because of the insights it offers for the cognitive processes involved in reading and vocabulary acquisition. Therefore, any research in line with these points may broaden our understanding of the nature of vocabulary knowledge and its relation to reading comprehension. With regard to the crucial role of vocabulary knowledge, little is known about how and what aspect of vocabulary knowledge can affect reading comprehension more effectively in Saudi Arabia as an EFL context.

### Definition of Terms

The following are the definitions of terms, which are used in this research and are defined according to the purpose of this research in order to assist better comprehension of the readers. The extended definitions are taken from the linguists' points of view as follows:

**Foreign language** in this study refers to English, which one has learnt after learning the mother tongue; however, it plays no major role in the community and is primarily learnt only in the classroom (Ellis, 1994).

- **Vocabulary knowledge** constitutes knowing a word in terms of forms (spelling, pronunciation), meanings (translation, synonyms), function (morphological patterns, multiword units) and relation with other words (Nation, 2001).
- **Breadth of vocabulary knowledge** (vocabulary size) is the number of words the learners know in the target language (Nation, 2001).
- **Depth of vocabulary knowledge** is what learners know about a target word, e.g. meaning, register, and morphological, syntactic, and collocational properties (Nation, 2001).
- **Word associates test** is generally used in second language vocabulary acquisition research studies to measure the learner's depth of vocabulary knowledge (Read, 1993) and to investigate the connections L2 learners hold in their developing mental lexicons (Wharton, 2011).
- **Reading comprehension** is the understanding of the contents of a written text after perceiving it.

## METHODOLOGY

### Research Design

This study employed quantitative method which included language tests and the data were analyzed by conducting statistical analysis using the Statistical Package for Social Science (SPSS) Version 20. The language tests used in this study were the Vocabulary Levels Test (VLT), the Depth of Vocabulary Knowledge (DVK) Test, a Reading Comprehension (RC) test.

### Participants

The participants of this study included 64 male students who studied at the fifth level in the academic year 2018 2019 at Qassimid University Kingdom of Saudi Arabia. The participants of the study were 75 male university students who studied at the first level in the academic year 2018 2019 at Qassimid University. Their age ranges between 21 and 22, majoring in English language Translation at Qassim University. They were the students of two classes (advanced and intermediate). All of them had the same language background, Arabic. Their proficiency level had been checked through a standardized proficiency test (Objective Placement Test, Lesley, Hanson, & Zukowski-Faust, 2005) by the department in advance, and they were grouped in advanced, intermediate, and lower level learners in three classes in advance by the department. Consequently, for the purpose of this study, only advanced and intermediate level learners were chosen. Thus, in the advanced class, there were 30 learners. In the intermediate class, there were 45 learners. The participant was studying the academic reading course offered by the English department. This course was chosen since it was a course that aimed to develop students' ability in reading for academic purposes.

### Instruments

For the purpose of data collection, four tests were used in this study including: Objective Placement Test, Vocabulary Level Test, Word Associate Test, and a reading comprehension test.

### Objective Placement Test

The proficiency level of participants had been checked through an Objective Placement Test by the department in advance, and they were grouped in advanced, intermediate, and lower level learners in three classes in advance by the department.

For the purpose of the research, only advanced and the intermediate groups participated in the current study.

### Vocabulary Levels Test (VLT)

Vocabulary Levels Test was the second instrument used in the present study. The aim of the test was to measure the breadth of EFL learners' vocabulary knowledge. It was

devised by Nation (1990). Later, it was modified and revised by Schmitt, Schmitt and Clapham (2001) for two reasons: to present validity evidence and to provide a better reliability of the test items. Their revision of the VLT proved that 30 items per level was more reliable than 18 items in Nation's original Levels test. It was accepted by some L2 lexical scholars (e.g. Laufer & Paribakht 1998; Qian 2002, Nation & Beglar, 2007). Therefore, the test adopted in the current study was the modified VLT (version 2) as a breadth of vocabulary knowledge test.

In the present study, Version 2 of the test was administered (see Schmitt et al. for the test), which had four-word frequency levels: the 2,000-word level, the 3,000-word level, the 5,000-word level, and the 10,000-word level. The test reached a reliability of .92, as stated by Schmitt et al. (2001). Each section showed a different vocabulary level in English ranging from high-frequency to low-frequency words.

Each level in the VLT had 60 words and 30 definitions. In groups of six words and three synonyms or definitions, testees are required to match three words to three definitions. Below is an example taken from the 2000-word level:

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

Unlike a standard multiple-choice test, the VS reduces the chances of guessing to one response in six distractors. It covers all the words in each group that represents the same type of word, so as not to provide any syntactic clues for the accurate matches. In addition, it requires the test-takers not to differentiate between words that are related in meaning as it measures knowledge of word. Since the VLT in this study comprised four levels, the highest score was 120 (1-point x 30 items x 4 levels).

### Word Associates Test (WAT)

The third instrument in the present study was Word Associates Test (WAT) which was used to measure depth of vocabulary knowledge. This test (WAT) was developed by Read (2000) who carried out validation on it. Later, Schmitt, Ng and Garras (2011) have presented the validation evidence of the WAT. The reliability indices (Cronbach's alpha) for this test was high (i.e., 0.92) as reported by Read (2000).

The WAT tried to measure the learner's depth of vocabulary knowledge through word associations, that is, the different semantic and collocational relationships that a word had with other words in the language. The test consisted of 40 items. Each item consisted of one word, which was an adjective and two boxes, each containing four words which were mostly nouns. Among the four words in the left box, one to three words could be synonymous to one aspect of, or the whole meaning of the stimulus word, but among the four words in the right box, there could be one to three

words that collocate with the stimulus word. The instruction sheet for the test taken was explained that there were four correct answers in each item. Three situations were possible:

- 1) The left and right boxes both contained two correct answers;
- 2) The left box consisted of one correct answer and the right box contained three correct answers;
- 3) The left box contained three correct answers and the right box consisted of only one correct answer.

For example, for the word **Sound**, the following options were given: **Sound**:

A) Logical, B) healthy, C) bold, D) solid, E) snow, F) temperature, G) sleep, H) dance.

In this item, sound was synonymous with logical, healthy and solid. Furthermore, it collocated with sleep, consequently, the correct choices were A, B, D, and G. Participants received a point for each correctly answered item. In scoring, each option chosen correctly was awarded one point. The maximum possible score, therefore, was 160 for the 40 items. The WAT had been administered in a number of lexical studies to measure depth of vocabulary knowledge (Qian, 2002; Tavanpour and Biria, 2017).

### Reading Comprehension Test (RC)

The last instrument in the present study was a Reading Comprehension test (RC) which was administered to measure the participants' reading comprehension. The RC test used in this study was an adapted International English Language Testing System (IELTS) reading test which originally consisted of 25 questions. The IELTS academic test included three long texts taken from books, journals, magazines and newspapers which range from the genre of descriptive and factual to the genre of discursive and analytical. In the present study, a sample IELTS academic reading test was taken from the British Council website. The types of tasks participants needed to do include true or false questions, multiple choice questions (MCQ). As for scoring, one point was given to every correct answer and thus the maximum score was 25marks. Participants had 60 minutes to complete the test. The test-retest reliability index was 0.88.

### Data Collection Procedure

The tests were administered during a class period. The data collection procedure was carried out in two sessions during a class period. In the first session, the two vocabulary knowledge tests, namely, vocabulary level test and word associate test were given to the students. For the WAT test, they were instructed to read each of the target words and then circle the four words closely related to the target word. The time allocated to the test was 30 minutes. The total score for this test was 160. For the VLT test, the testees were asked to match the definitions on the right in each cluster with the corresponding words on the left. The total score for this test was 120. In the next session, the reading comprehension test was administered. The participants were told to mark the answers

on the answer sheet and they were not penalized for the wrong answers. The time allocated for the reading comprehension test was 45 minutes. The total score for this test was 25. Before taking the tests, the participants were informed about the purpose of the study and were instructed on how to take the VLT and WAT tests. They were also assured of the confidentiality of the results.

### Data Analysis

To carry out the statistical analysis, Statistical Package for Social Sciences (SPSS) for Windows Vista Home Premium was used to run statistical analysis of the instruments. Pearson Product-Moment correlation and independent Sample t-test were the main statistical techniques chosen to meet the research purpose of the current study. Considering the first research questions, Pearson Product-Moment correlation was run to measure the breadth and depth of lexical knowledge and their relationships on reading comprehension of Saudi EFL learners. Regarding the second research question, three separate independent Sample t-tests were run to determine whether the differences between the vocabulary knowledge (breadth and depth) and reading comprehension of the two proficiency levels of the participants (advanced and intermediate) were statistically significant or not.

## RESULTS AND DISCUSSION

In this section the results of the present study presented.

### Descriptive Statistics of Participants' Performance on the Instruments

After the collection of the data through the instruments described above, the data were analyzed. Table 1 presents the descriptive statistics of the participants' performance on the instruments.

In Table 1 above, the mean of reading comprehension test is 15.71 which is relatively high given the maximum possible score was 24. The mean of breadth vocabulary test, on the other hand, is 96.67 which is given the maximum possible score is 119. Lastly, the mean of depth vocabulary is 129.43 with the maximum possible score 151 marks.

### Correlation between Breadth and Depth of Vocabulary Knowledge with Reading Comprehension

This section discusses the results of the Pearson two-tailed correlation analysis. The results obtained from the analysis had answered the first research question which was to identify the correlation between breadth and depth of academic vocabulary knowledge with academic reading comprehension.

### The Relationship between Breadth and Reading Comprehension

**Hypothesis 1:** There is no relationship between breadth of vocabulary knowledge and Saudi advanced/intermediate EFL learner's reading comprehension performance.

In terms of the relationship between the independent variable (breadth of vocabulary knowledge) and the dependent variable (reading comprehension), Pearson correlation coefficients were calculated at .01 level of significance, and the correlation coefficient is shown in Table 2. The participants' scores on the breadth of vocabulary knowledge were all correlated significantly with their reading comprehension scores. The results obtained from these computations are presented in Table 2.

Table 2 shows the correlations between the vocabulary breadth, and reading comprehension scores to reveal the strength of association between them. Therefore, one can see that the learners' reading comprehension performance was considerably correlated with their breadth of vocabulary that was observed at the level of one percent error ( $r = .64, p < .01$ ), indicating that a larger vocabulary enabled students to remember more information from the text they read. So, there is a direct and significant relationship between breadth test scores and reading test scores of students, and by increasing breadth test scores, reading test scores had been increased and vice versa. So, the first hypothesis was rejected and can be claimed that there is relationship between breadth of vocabulary knowledge and Saudi advanced/intermediate EFL learner's reading comprehension performance.

### The Relationship between Depth and Reading Comprehension

**Hypothesis 2:** There is no relationship between depth of vocabulary knowledge and Iranian advanced/intermediate EFL learner's reading comprehension performance.

In order to determine the relationship between the independent variable (depth of vocabulary knowledge) and the dependent variable (reading comprehension), correlation

**Table 1.** Descriptive statistics of vocabulary depth, breadth and reading comprehension

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Reading	75	8	24	15.71	4.753
Breadth	75	70	119	96.67	14.368
Depth	75	99	151	129.43	12.756

\*\* . Correlation is significant at the 0.01 level (2-tailed)

**Table 2.** Pearson correlations between the vocabulary breadth, and reading comprehension

		Correlation	
		Reading	Breadth
Reading	Pearson Correlation	1	0.869
	Sig. (2-tailed)		0.000
Breadth	N	75	75
	Pearson Correlation	0.869	1
	Sig. (2-tailed)	0.000	
	N	75	75

\*\* . Correlation is significant at the 0.01 level (2-tailed)

coefficient between these two variables calculated at .01 level of significance. The results obtained from these computations are presented in Table 3.

Table 3 shows the correlations between the vocabulary depth, and reading comprehension scores. With regard to the depth of vocabulary knowledge as another variable of the study, as far as the results of the above statistical analysis reveal, there was a high and significant correlation between this variable and reading comprehension ( $r = .737, p < .01$ ) which suggests that deeper knowledge of words help learners comprehend the text better. Furthermore, there is a direct and significant relationship between depth test scores and reading test scores of students, and by increasing depth test scores, reading test scores had been increased and vice versa. So, the second hypothesis was rejected and can be claimed that there is relationship between depth of vocabulary knowledge and Saudi advanced/intermediate EFL learner's reading comprehension performance.

### The Relationship between Breadth and Depth of Vocabulary Knowledge

**Hypothesis 3:** There is no relationship between breadth of vocabulary knowledge and depth of vocabulary knowledge.

Table 4 indicates the correlations between breadth and depth of vocabulary knowledge. The results of the statistical analysis reveal that there was a high and significant correlation between breadth and depth of vocabulary knowledge. The very close correlation between depth and breadth of word knowledge can also be attributed to the fact that practically depth and breadth of word knowledge cannot be considered separable. It seems reasonable that students with deeper word knowledge would learn more words through linkages between lexical items and that as they expand the number of words known, they are more likely to develop more extensive lexical networks to increase their vocabulary depth. For example, students who know the word design will increase the depth of that knowledge by recognizing the morpheme sign, but that depth will help them see the relationship with words such as signature and assign, and help them learn the meanings of those words. Breadth could lead to depth if words such as graph, graphic, and photograph are known and students recognize the common morpheme graph. So the third hypothesis was rejected and can be claimed that there is no relationship between breadth of vocabulary knowledge and depth of vocabulary knowledge.

### The Effect of Proficiency Level on Vocabulary Knowledge and Reading Comprehension

**Hypothesis 4:** The proficiency level does not have any effect on Saudi advanced/intermediate EFL learners' reading performance and vocabulary knowledge.

In order to determine whether the variable proficiency level can have an effect on reading comprehension, and

**Table 3.** Pearson correlations between the vocabulary depth, and reading comprehension

		Correlation	
		Reading	Depth
Reading	Pearson Correlation	1	0.737
	Sig. (2-tailed)		0.000
	N	75	75
Depth	Pearson Correlation	0.737	1
	Sig. (2-tailed)	0.000	
	N	75	75

\*\* . Correlation is significant at the 0.01 level (2-tailed)

**Table 4.** Pearson Correlations between breadth and depth of vocabulary knowledge

		Correlation	
		Breadth	Depth
Breadth	Pearson Correlation	1	0.885
	Sig. (2-tailed)		0.000
	N	75	75
Depth	Pearson Correlation	0.885	1
	Sig. (2-tailed)	0.000	
	N	75	75

\*\* . Correlation is significant at the 0.01 level (2-tailed)

vocabulary knowledge, some further analyses of the data were performed. To make sure whether the variable proficiency level can have an effect on the other variables of the study, three independent Samples t-tests were performed. The result obtained from this analysis is depicted in the following tables. Table 5 summarizes the results of the t-test for proficiency level and the vocabulary breadth test.

Table 5 Independent Sample t-test for Proficiency Level and Vocabulary Breadth Independent Sample t-test for Proficiency Level and Vocabulary Breadth

As shown in Table 5, there is statistically significant difference between intermediate and advanced proficiency levels on the vocabulary breadth test either ( $p < 0.05$ ). In other words, proficiency level had effect on learners' vocabulary breadth. To compare the test scores between the two groups, intermediate and advanced, independent t-test of equal variances was used. Table 6 summarizes the results of the t-test for proficiency level and the vocabulary depth test.

Table 6 above shows that there is statistically significant difference between intermediate and advanced proficiency levels on the vocabulary depth test either ( $p < 0.05$ ). In other words, proficiency level had effect on learners' vocabulary depth. To compare the test scores between the two groups, intermediate and advanced, independent t-test of equal variances was used. Table 7 summarizes the results of the t-test for proficiency level on reading comprehension test.

As the table shows, there is statistically significant difference between intermediate and advanced proficiency levels on reading comprehension test either ( $p < 0.05$ ). In



other words, proficiency level had an effect on reading comprehension. To compare the test scores between the two groups, the intermediate and advanced, independent t-test of equal variances was used. With regard to the results of the above analyses, the variable proficiency level has statistically significant effect on the performance of the participants either on the breadth and depth of vocabulary knowledge of the study or on the reading comprehension. Such being the case, it can be claimed that the variable proficiency level has an effect on participants' performance on reading comprehension or on the two aspects of vocabulary knowledge. So, the fourth null hypothesis was rejected.

## DISCUSSION

The study intended to investigate the relationship between breadth and depth of academic vocabulary knowledge with reading comprehension. As seen above, the results obtained from the analysis of the data reveal that there is a strong and positive relationship between vocabulary breadth and reading comprehension. Therefore, learners with large vocabularies are more proficient language users than learners with smaller vocabularies. The results have some similarities with other studies in both ESL and EFL contexts such as those by Anjomshoa and Zamanian (2014), Qian (2002) Nelson & Stage, (2007), Ouellette, (2006), and Verhoeven & Van Leeuwe, (2008) who found that vocabulary breadth explains variance in reading comprehension for college-aged readers. This finding of the present study is consistent with Miralpeix and Munoz (2018) and Henriksen, Albrechtsen and Haastrop (2004) who confirmed the direct relationship between vocabulary breadth and reading comprehension scores. These researchers note that students with low vocabulary scores performed poorly on the reading comprehension test, since "a certain level of L2 linguistic knowledge, especially

lexical, is needed to ensure good reading comprehension". The results of the present study also support those of studies carried out by Golkar and Yamini (2007), Zhang and Annual (2008), Moghadam (2012) Al-Homoud and Schmitt (2009), Alfatle (2016) and Rouhi et al. (2013), who indicated that there is a positive relationship between the breadth of vocabulary knowledge and reading comprehension performance. They also found an interrelationship between vocabulary and reading, meaning that learners are more likely to understand a text when they recognize the words. In connection with the relationship between breadth of vocabulary knowledge and reading comprehension, the results of VLT revealed that there is a positive interrelation between these two variables. These outcomes support the results of studies carried out by Tran, Tremblay, & Binder (2020), and Sen and Kuleli (2015).

With regard to the relationship between depth of vocabulary knowledge and reading comprehension, the results of WAT, representing the meaning and collocation components of depth of vocabulary knowledge, were highly and positively inter correlated with the learners' reading comprehension test. This meant that depth of vocabulary knowledge has a strong and positive relationship with reading comprehension. Therefore, the deeper the learners' knowledge about the words, the better they will comprehend the texts. As the results show, depth of vocabulary knowledge is a crucial factor regarding reading performance of learners and by implication we can say that those who have a deeper knowledge of words (quality) will outperform those who know more words (quantity). This finding is aligned with the results from previous studies in different contexts such as those by Mehrpour, Razmjoo, and Kian (2011), Rashidi and Khosravi (2010), as well as Şen and Kuleli (2015) which also reported stronger correlation between vocabulary depth and reading

**Table 5.** Independent sample t-test for proficiency level and vocabulary breadth independent sample t-test for proficiency level and vocabulary breadth

Group	Mean	SD	df	T -Test	Sig. (2-tailed)	95% Confidence Interval of the Difference	
						Lower	Upper
Advanced (n=30)	112.63	3.653	73	19.178	0.000	23.846	29.377
Intermediate (n=45)	86.02	6.979		21.534	0.000	24.146	29.076

**Table 6.** Independent sample t-test for proficiency level and vocabulary depth

Group	Mean	SD	df	T -Test	Sig. (2-tailed)	95% Confidence Interval of the Difference	
						Lower	Upper
Advanced (n = 30)	112.63	3.653	73	19.178	0.000	23.846	29.377
Intermediate (n = 45)	86.02	6.979		21.534	0.000	24.146	29.076

**Table 7.** Independent sample t-test for proficiency level and reading comprehension

Group	Mean	SD	df	T -Test	Sig. (2-tailed)	95% Confidence Interval of the Difference	
						Lower	Upper
Advanced (n=30)	20.97	1.712		18.720	0.000	7.833	9.700
Intermediate (n=45)	12.20	2.149	73	19.589	0.000	7.874	9.659



comprehension. This means that while both knowing many words and knowing the meaning of words contribute significantly to performance in reading comprehension, the latter has more influence on reading comprehension. These results are also consistent with the studies done by Qian (2002), Li and Kirby (2015), Binder et al., (2018), Al-Khasawneh (2019) and Masrai (2019) who explored the relation between vocabulary knowledge and reading comprehension among EFL learners of English using different measures of vocabulary knowledge, including breadth and depth vocabulary knowledge. Their findings showed that both the breadth and depth dimensions of vocabulary knowledge correlated significantly with the scores for reading.

The results of the current study contradict with the findings from some other reported studies such as those from Elmasry (2012), Şen and Kuleli (2015) and Lee & Rethinasamy (2017) which found a moderate relationship between vocabulary knowledge and reading comprehension.

With respect to the relationship between breadth and depth of vocabulary knowledge, the positive correlation between them can be attributed to the fact that practically depth and breadth of word knowledge cannot be considered separable. Therefore, depth contributes to breadth and vice versa. Qian (2002) argues that both are acquired by extensive exposure to language. The relationship between breadth and depth of vocabulary may be dependent on how these two constructs are measured. The high correlations are consistent with the view that breadth and depth are two interconnected dimensions of vocabulary knowledge which facilitate each other. The results of this study correspond with the results of the study conducted by Abedi (2017) that there was a strong relationship between word knowledge and reading comprehension.

Tavanpour and Birda (2017) consider the depth and breadth of vocabulary knowledge as a key to comprehending the material. Therefore, the importance of vocabulary knowledge in achieving success in comprehending academic English material is receiving more attention. Instead of being two different entities, Teng (2014) suggests that they are better seen as two dimensions of the same entity. Similar to the findings of this study, Nouri & Zerhouni, (2016), Lee and Rethinasamy (2017), Li and Kirby (2015) reported that breadth and depth of vocabulary were moderately correlated. They both contributed to word reading, but breadth of vocabulary had a stronger effect than depth of vocabulary. Furthermore, Vermeer (2001) reported correlations between breadth and depth of vocabulary in Dutch monolingual kindergarteners and in Dutch bilingual kindergarteners, leading her to argue that there is essentially no difference between breadth and depth of vocabulary. Thus, similar to the findings of Binder et al., (2018), these different aspects of vocabulary play different roles for various reading skills. Having many words in one's lexicon (i.e., vocabulary breadth) aids in the processing efficiency of those words, and this speeds reading rate. However, knowing more about each individual word (i.e., vocabulary depth) also helps one to develop a more coherent representation of the text, thus aiding reading comprehension. As a result, the teaching and learning of the

English language should emphasize in vocabulary building in terms of enriching learners' vocabulary storage as well as improving the usage of vocabulary in context by understanding the meaning.

With regard to the variable proficiency level, as the results indicate, it has a significant effect on the two dimensions of vocabulary knowledge and reading comprehension of the study. In connection with the effect of proficiency level of participants' reading comprehension performance, and vocabulary knowledge, the results of the present study indicated that there is a significant difference between the intermediate and advanced level learners and reading comprehension performance, and vocabulary knowledge. The results of the present study revealed that advanced level learners are better at reading comprehension test and vocabulary knowledge tests than intermediate level learners. This finding accords with the result reached by Miralpeix and Munoz (2018) who has shown that vocabulary knowledge increases with proficiency. They concluded that quantity and quality of L2 lexical competence developed as L2 proficiency increased. This finding also supports the results reported by Nasir, Manan, and Azizan (2017), and Tavanpour and Biria (2017) who found that there was significant positive relationship between vocabulary knowledge, reading comprehension and general proficiency. Furthermore, the findings of the present study are consistent with Qian and Lin (2019) who have generally found that learners' vocabulary knowledge is by and large associated with their language proficiency. Thus, it can be concluded from the results that more proficient learners have larger vocabulary repertoire. There is also adequate evidence to support that the students' performance on vocabulary breadth test and vocabulary depth test can be used as predictors of Students' general proficiency. The results should therefore be regarded with caution, especially if one agrees that students at the intermediate levels are more likely to have more limited English language ability.

## CONCLUSION

The aim of the study was to investigate the relationship between vocabulary knowledge and reading comprehension performance of the Saudi EFL learners. Moreover, the present study sought to explore the effect of language proficiency level on the learners' reading comprehension test and breadth and depth of vocabulary knowledge tests. The findings of the present study show that there is a strong and positive correlation between breadth and depth of vocabulary knowledge and reading comprehension performance of the learners. Regarding the relationship between breadth of vocabulary knowledge and reading comprehension, a positive correlation was found which indicated that by increasing the number of words that a learner knows, the learner can comprehend the text better. Respecting the relationship between vocabulary depth and reading comprehension, the results indicated that they are correlated which shows that the more a learner knows about the depth of vocabulary knowledge, the better a learner can recall the information from the text. All of the above results imply that English lan-

guage learners will achieve better proficiency and perform better in reading comprehension if they possess a large size of vocabulary and also a deep knowledge of vocabulary.

As for the effect of language proficiency level on the learners' reading comprehension test and breadth and depth of vocabulary knowledge tests, the results revealed that there were important differences between these two levels of language proficiency. Learners with the advanced level of language proficiency were better on vocabulary knowledge tests and reading comprehension test than learners with the intermediate language proficiency. Furthermore, by improving and upgrading the level of language proficiency of learners, vocabulary knowledge and reading comprehension performance will be improved. The more proficient the learners are, the better they can perform on tests. Therefore, according to the results of the current study, proficiency level differences play a key role in the learners' vocabulary knowledge and reading comprehension performance.

### IMPLICATIONS OF THE STUDY

The findings of the present study present some pedagogical implications with regard to EFL learners and teachers and material developers.

-English teachers should encourage their students to read storybooks, magazines, and newspapers in English. Qian (2002) believed that storybooks, magazines and newspapers repeat some common words and technological terms related to a topic. Many repetitions reduce the lexical burden of the readers and actually help them to better extract information from the text they read.

-EFL teachers and material developers should consider vocabulary depth and breadth as two vital components of an EFL syllabus to improve reading comprehension of students. Teachers should also introduce synonymy and polysemy of vocabularies, their primary meaning, and the collocations of words with each other due to the important roles that they play in comprehension of English texts.

-Teachers and material developers should consider the proficiency level of learners, help them to improve their proficiency level, and design activities based on learners' proficiency level.

-The results of the present study also will help learners who intend to increase their vocabulary knowledge and improve their reading comprehension. An important point is that they must know that achieving their objectives depends on their own efforts. Therefore, students must start to develop the habit of independent reading as a source of entertainment and information.

-Moreover, the results will help textbooks writers for developing English textbooks. Textbooks developers can select or write suitable texts and materials. They can also design activities after reading comprehension tests to help readers improve the depth and breadth of their knowledge of vocabulary.

### SUGGESTIONS FOR FURTHER

1. Further research along similar lines should seek to overcome some of the limitations of the present inves-

tigation by enlarging the sample of language learners across proficiency levels and the number of vocabulary dimensions explored, conducting longitudinal studies, or checking whether the same trends would apply in learning other languages.

2. The findings can then be used to draw comparisons between Qassim university students in K.S.A. and those in different parts of the kingdom. More studies should be initiated to examine the relationship between vocabulary breadth and depth.
3. Further research can be done on other dimensions of vocabulary knowledge, e.g. phonological knowledge, and the productive use of words in speech in order to find out more about the similarities and differences between these two modes of communication.
4. Further research can be done on test the senior secondary school students' breadth and depth of high frequency words.

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