



Research Paper

Assessing the Dimensions of Vocabulary Knowledge in ESL Context: A Quantitative Study

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ABSTRACT: Research on vocabulary acquisition is a topic currently drawing attention of the researchers. The present study investigated the vocabulary knowledge in English as a Second Language (ESL) context. Specifically using the quantitative analysis, the study assessed the dimensions of vocabulary knowledge of ninety-eight Second Language learners in English. For this purpose, three vocabulary knowledge tests were used as the main means of data collection. The results indicated a statistically significant difference in the breadth and depth vocabulary knowledge of the subjects.

KEY WORDS: English as a Second Language Context, Second Language Acquisition, Vocabulary Levels Test, Productive Vocabulary Levels Test, Word Associate Test.

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I. INTRODUCTION

Language learners, teachers and researchers agree that vocabulary acquisition is central to the Second Language Acquisition (SLA) since words are the primary carriers of meaning (Vermeer 217). As Wilkins states, “without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (111). Therefore, the essential component of language proficiency is vocabulary, which forms the foundation for how language learners listen, speak, read, and write. Considering the central role of vocabulary knowledge in Second Language Acquisition (hereafter SLA), it is necessary for the second language (L2) learners to master an adequate number of words to develop their lexical competence. For a long period of time, vocabulary teaching and learning was relegated to a secondary status as mastery of grammatical structures took the centre stage. Various research on vocabulary has demonstrated that it is necessary to include the vocabulary instruction in English Language Teaching (ELT) programmes. The challenge of learning a second or foreign language, according to language scholars and practitioners, resides in comprehending its vocabulary. However, little is known about how and what aspects of vocabulary knowledge contribute to the vocabulary knowledge of L2 learners, despite the importance of vocabulary knowledge. Unlike grammar, which is a set of rules with a finite number of variations, vocabulary is made up of a large number of terms with varying degrees of usefulness. As a result, one of the reasons for the enormity of vocabulary learning is its quantity. Furthermore, mastery of multiple properties of the word, as well as patterns it might make with other words, is also required for word knowledge. Therefore, the second intrinsic difficulty of vocabulary learning lies in quality. The present study investigated the vocabulary knowledge of some of the L2 learners in the *English as a Second Language (ESL)* context. The study specifically assessed the dimensions of vocabulary knowledge in the L2 acquisition of Post-intermediate and Advanced students in Assam University.

1.1 Vocabulary teaching in the Indian Context

Vocabulary teaching in the Indian context has always been discussed with the kind of strategies and techniques the teachers and learners use to develop their vocabulary knowledge. The researcher had an informal discussion with five teachers working in schools from five different states in India i.e., Assam, Manipur, Kerala, Karnataka and Tamilnadu. They all stated that the oral work was totally ignored in their class rooms and the translation method was used as a technique to impart the lessons in the class rooms. It aids comprehension of the text's content but prevents learning the vocabulary of the language and other skills. As a result, the primary goal of teaching language is set aside, and the teaching of content and theme was prioritised. That is to say, the

attention has been always given on the conceptual content rather than the stylistic contents. Further, most of these teachers usually suggest a bilingual dictionary as a strategy to develop the vocabulary knowledge of their students. Moreover, from the researcher's own personal experience as a L2 learner, the methodology used to expand the vocabulary knowledge was either by L1 translation or by remembering a long list of L2 words.

1.2 Statement of problem

In the Indian context, there has scarcely been any significant and path-breaking research on the process of vocabulary acquisition. A drawback is that our methodologists, curriculum designers, language teachers and learners are not that well informed about the role that vocabulary plays in the language. Possibly, our ideas about vocabulary knowledge and the ways of developing it is not based on firm foundations. Many L2 learners consider vocabulary acquisition to be a matter of memorising a large number of words. As a result, they devote a significant amount of time to memorizing a long list of L2 words or rely on a bilingual dictionary as the primary method of acquiring word knowledge. For native speakers, vocabulary knowledge develops naturally as a result of social trends and learning opportunities. Vocabulary acquisition, on the other hand, is a more conscious and gradual process for L2 learners. Thus, from various perspectives, vocabulary knowledge could be regarded as a priority area in L2 instruction. Hence the current study attempted to assess the current level of vocabulary knowledge of some L2 learners in English as a Second Language (ESL) context.

1.3 Research Questions

- a) Is there any difference in the breadth and depth of vocabulary knowledge of Advanced level students and Post-intermediate students?
- b) Is there any relationship between the academic performance and the dimensions of vocabulary knowledge of Advanced level students and Post-intermediate students?

II. REVIEW OF LITERATURE

Over the years, it has been realized that mastery of a language encompasses much more than the grammatical proficiency. There has been a great number of research in the area of syntactic structures and development. Less attention has been given to vocabulary, though it was extensively studied up to seventies. Recently, there has been an increasing awareness that 'knowing a word' involves more than just knowing the meaning and form of a word. What it means to "know a word" is one aspect that contributes to a better understanding of the nature of vocabulary. Richards proposed a well-known vocabulary knowledge framework on what is involved in 'knowing a word' (83). He proposed seven assumptions on the types of knowledge that are required in the acquisition of vocabulary knowledge such as the frequency of occurrence of a word, the use of a word in a variety of contexts, the semantic features of a word and the different meanings associated with a word.

Nation (31) expanded on Richards' (83) definition of knowing a word by including pronunciation and collocations as important components to make the framework more inclusive. According to Nation's (32) classification system, the ability to use a word (i.e. production) demands more knowledge than the ability to understand (i.e. reception). In this sense, productive knowledge necessitates a higher level of understanding than receptive knowledge. Laufer, later summarised a list of word features involved in 'knowing a word,' which included pronunciation and spelling, word structure (roots), derivations, and inflections, syntactic patterns, multiple meanings, metaphorical, affective, and pragmatic meanings, relationship with other words, and common collocations (150).

The different types of word knowledge discussed above demonstrate that defining a word is a contentious issue in L2 vocabulary research because a word can be thought of in various ways, such as lexical words, word types, and collocations.

III. RESEARCH METHODOLOGY

3.1 Subjects

The subjects in the present study were ninety-eight Post-intermediate and Advanced students from various departments of Assam University, Silchar. From these ninety-eight participants, fifty-seven subjects belonged to the post-intermediate level and forty-one belonged to the Advanced level. They were from five different academic fields that included Social Work, Visual Arts, Computer Science, Linguistics and Literature. The subjects came from multi-L1 backgrounds. Of the total ninety-eight participants, thirty-seven were males and sixty-one were females. The participants ranged in age from approximately seventeen to twenty-eight years. The researcher included only those subjects who had school English medium school education for the relative homogeneity of the study. All the subjects had studied English for a minimum of fifteen years.

The Post-intermediate students in the present study had studied English Language as a part of their curriculum. They received approximately five hours of ESL instruction per week and their syllabus included

English grammar, Phonetics, English language and literature. In addition, they had paragraph writing, reading comprehension, error correction and report writing to improve their writing ability in English. The advanced level students were chosen English Language and Literature or Linguistics as their course of study. Their amount of English exposure appeared an average of sixteen hours of academic English per week.

Moreover, the subject's final marks in the corresponding English course were taken as a meter gauge for their academic performance in English. For the Post-intermediate level students, the grade points of the English Language course in the first semester were taken and for the advanced level students, the General Point Average (GPA) of all the English/Linguistics major courses from the previous semester was chosen.

3.2 Research Instruments

The instruments used in the present study were the Vocabulary Levels Test (VLT), the Productive Vocabulary Levels Test (PVLTL), and the Word Associates Test (WAT).

3.2.1 Vocabulary Levels Test (VLT)

The Vocabulary Levels Test (VLT) designed by Paul Nation was used to measure the receptive breadth of the subjects (12-25, 79). This test has five levels each corresponding to the five different levels in English: 2000-word level, 3000-word level, 5000-word level, 10,000-word levels and Academic vocabulary. According to Nation (79), the words in the 2,000- and 3,000-word levels include exclusively high-frequency words in English; the 5,000-word level contain words in between the high frequency and low frequency, and the 10,000-word level includes low frequency words. Academic vocabulary contains specialized vocabulary items required for university studies. The words contained in the 2,000 to 10,000-word levels are based on the word frequency list of Thorndike and Lorge (1944), cross referenced with the frequency data from Kucera and Francis (1967) and the General Service List (West, 1953). The words in the University Word Level were sampled from the University Word List (UWL) by Xue and Nation (93-242). Thus, the Vocabulary Levels Test (VLT) provides an assessment of the learners' vocabulary size at each of the above mentioned frequency levels.

Nation's (12-25, 79) Vocabulary Levels Test (VLT) has been widely used as a diagnostic tool for measuring the receptive vocabulary size of the learners. The present study adopted a recently updated and validated version of the Vocabulary Levels Test (VLT) designed by Schmitt, Schmitt and Calpham (55-88). The format of the Vocabulary Levels Test (VLT) consists of ten clusters of words from each frequency level, each cluster consisting of six words and three definitions. An example of the test format is given below:

- | | | |
|----|----------|----------------------------------|
| 1. | business | |
| 2. | clock | _____ part of a house |
| 3. | horse | _____ animal with four legs |
| 4. | pencil | _____ something used for writing |
| 5. | shoe | |
| 6. | wall | |

Ans:

- | | | |
|----|----------|--|
| 1. | business | |
| 2. | clock | _____6_____ part of a house |
| 3. | horse | _____3_____ animal with four legs |
| 4. | pencil | _____4_____ something used for writing |
| 5. | shoe | |
| 6. | wall | |

Thus, the learner's task was to choose three items from a group of six words that pertained to the corresponding definition. At each level, test takers were required to match sixty words with thirty definitions. Therefore, three hundred items were tested against one hundred and fifty short definitions to make the correct matches. Thus, the maximum score was one hundred and fifty points (three definitions in each cluster X 10 clusters, each frequency level x 5 frequency levels). The time allotted for the test was 30 minutes.

3.2.2 Productive Vocabulary Levels Test (PVLTL)

The Productive Vocabulary Levels Test (PVLTL) designed by Laufer and Nation was used to measure the productive breadth of the subjects (33-51). The structure of the test was a further development of Vocabulary Levels Test (VLT). Each level consists of eighteen items at each of the 2,000, 3,000, 5,000, University Word Level (UWL) and 10,000-word levels. Each item was given a meaningful sentence context, and the missing target word was to be supplied. To restrict the test-takers from filling in another word, the first letters of the target word (ranging from one to five) were provided. An example is quoted below:

The differences were so sl_____ that they went unnoticed.

Ans:

The differences were so slight that they went unnoticed.

The time allotted for the test was 30 minutes. In terms of scoring, one point was given for each correct answer. The answers filled in with the expected answers were considered as correct and those contained in any kind of mistakes were considered as wrong. Thus, the maximum possible score was ninety (18 questions x 5 levels).

3.2.3 Word Associates Test (WAT)

Finally, Read's Word Associates Test (WAT) was used to assess the depth of vocabulary knowledge of the subjects (355-71; 41-60). This test was designed to assess the quality of vocabulary knowledge of L2 learners in English. The format of the test was based on the concept of word association. The associates were related to the stimulus word in three ways: (1) paradigmatic, i.e. the words are synonyms or at least similar in meaning, (2) syntagmatic, i.e. collocations or the two words frequently occur together in a sentence, and (3) analytic, i.e. the associate represents one aspect or one component of the stimulus word.

The present study adopted a more recent version of the Word Associates Test (WAT) published by Read in 1998. The WAT consists of 40 adjectives as target words, and two boxes, each containing four words. The box on the left contains words that have a paradigmatic relation with the target word or they represent one aspect of its meaning (synonymy or polysemy). The box on the right contains words that have a syntagmatic relation with the target word, i.e., it's possible collocations. An example is given below:

calm

open	quiet	smooth	tired	cloth	day	light	person

Ans:

calm

	X	X			X		X
open	quiet	smooth	tired	cloth	day	light	person

The time allotted for the test was 20 minutes. Thus, the subjects had to select the words in terms of its synonyms and collocations. Each item always had four correct choices. However, these choices were unevenly distributed in the two boxes. There were three possible choices: (1) one answer from the left and three words from the right; (2) two answers from the left and two from the right; (3) three answers from the left and one from the right. "This arrangement was designed to reduce the chances of guessing" says Read (46). Each correctly chosen word was awarded one point. Therefore, the maximum score was one hundred and sixty for forty items (4 words x 40 adjectives).

3.3 Procedures for Data Collection

The tests were given based on the availability of the subjects. The two tests, the Vocabulary Levels Test (VLT) and the Word Associates Test (WAT), as well as the background questionnaire, were given to each subject in a single session. The Productive Vocabulary Levels Test (PVL) was administered approximately a week after the Vocabulary Levels Test (VLT) or, in some cases, a week after the Productive Vocabulary Levels Test (PVL). Extra sessions had to be held in several cases for subjects who had not attended any of the previous sessions. Furthermore, the subjects were given verbal and written instructions and explanations for all three tests. The subjects were asked to attend all the questions compulsorily. However, the sessions for all the testing were conducted within the same time frame, and the amount of time allotted for each test was strictly controlled.

IV. DATA ANALYSIS AND FINDINGS

The data for the study was quantitatively analysed. In order to validate the study, a statistical analysis was also performed. Statistical Package for Social Science (SPSS) version 16.0 for Windows 7 was used to carry out the data analysis. The t-test and Pearson correlation were the most commonly used statistical techniques. The t-test was used to ensure the statistical significance of the three tests and Pearson correlation was used to measure the strength of association between the breadth and depth test and the marks for English.

4.1 Test results and discussion

Table 1, 2, and 3 presents the results of the three language tests, namely, Receptive and Productive breadth test and the Depth tests per level and the subject's performance on each word frequency level.

Table 1. Receptive breadth test (VLT) results per level

Level	Marks	2000 level	3000 level	5000 level	AWL	10000 level	Average
Post- intermediate	5.78	91.99%	83.16%	67.08%	79.82%	35.67%	71.54%
Advanced	5.33	97.24%	91.63%	82.03%	86.59%	44.31%	78.73%

Table 1 shows the average percentage of the correct responses of the Receptive breadth test at post-intermediate and advanced level. As shown in table 1 the post-intermediate subjects accomplished 91.99% at the 2,000-word level, 83.16% at the 3000-word level, 67.08% at the 5,000-word level, 79.82% at the Academic Word Level and 35.67% at the 10,000-word level. Similarly, the advanced level subjects scored 97.24% at the 2,000-word level, 91.63% at the 3,000-word level, 82.03% at the 5,000-word level, 86.59% of the Academic Word Level and 44.31% at the 10,000-word level. On an average, the advanced level subjects (78.73%) scored higher percentages than the post-intermediate level (71.54%). To put it another way, the number of correct responses among advanced-level subjects has increased. The average result of the Receptive breadth test is shown in Figure 1.

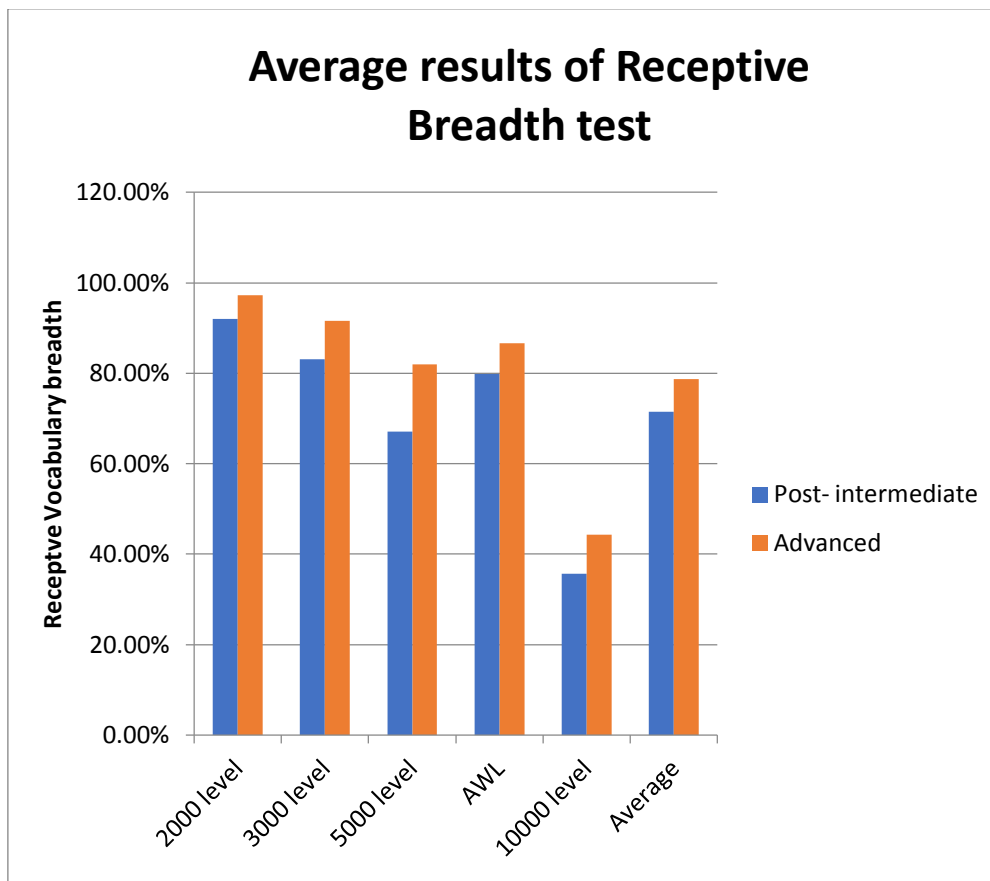


Figure 1

Table 2. Productive breadth test (PVLТ) results per level

Level	Marks	2000 level	3000 level	5000 level	AWL	10000 level	Average
Post-intermediate	5.78	71.25%	36.74%	34.41%	44.15%	16.67%	40.64%
Advanced	5.33	80.49%	54.07%	47.97%	61.11%	28.73%	54.47%

Table 2 presents the average percentage of the correct responses of the Productive breadth test at post-intermediate and advanced level. As shown in table 2 the post-intermediate subjects accomplished 71.25% at the 2,000-word level, 36.74% at the 3,000-word level, 34.41% at the 5,000-word level, 44.41% at the Academic Level and 16.67% at the 10,000-word level. On the other hand, the advanced level subjects scored 80.49% at the 2,000-word level, 54.07% at the 3,000-word level, 47.97% at the 5,000-word level, 61.11% of Academic Word Level and 44.31% at the 10,000-word level. On an average, the advanced level subjects (54.47%) scored higher percentages than the post-intermediate level (40.64%). In other words, the advanced level subjects scored higher scores in the receptive breadth test than the post-intermediate level subjects. The final score for Productive tests, on the other hand, is lower than the final score for Receptive breadth tests. Figure 2 shows the average result of the Productive breadth test.

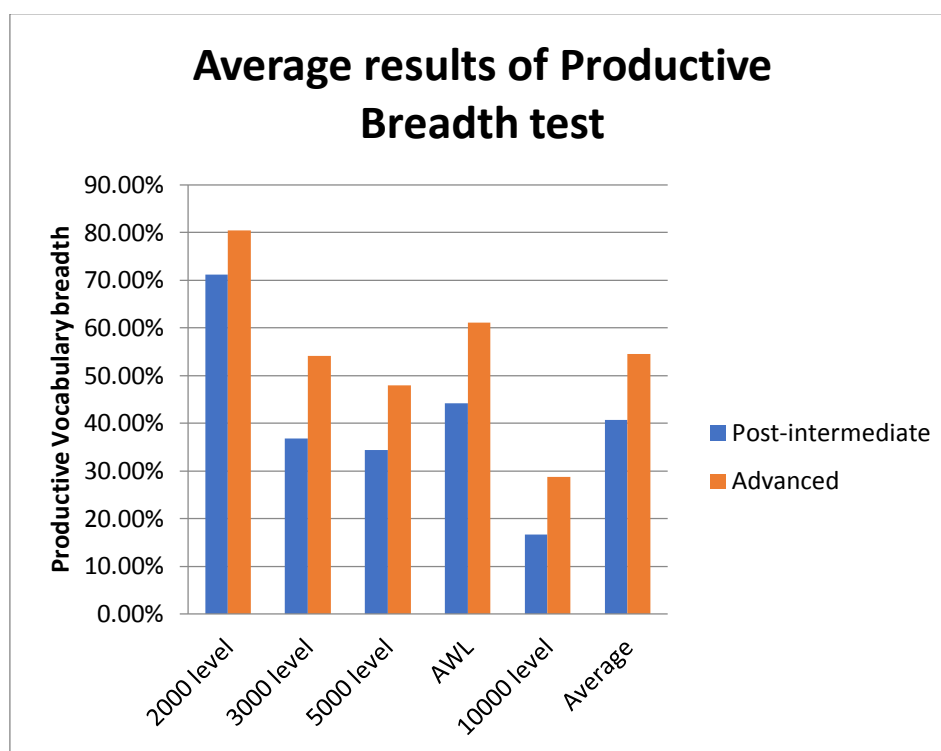


Figure 2

Table 3. Depth Test (WAT) results per level

Level	Marks	%
Post- intermediate	5.78	69.25%
Advanced	5.33	73.49%

Table 3 shows the performance of depth test at post-intermediate and advanced level. As demonstrated in the above table the advanced level subjects (73.49%) gave a greater number of correct depth responses than the post-intermediate level subjects (69.25%). These results indicated that the advanced level subjects achieved a higher depth of vocabulary knowledge than the post-intermediate level subjects or as the subjects reaches the higher levels, the depth of vocabulary knowledge also deepens. Figure 3 shows the performance of depth test at two levels of competence.

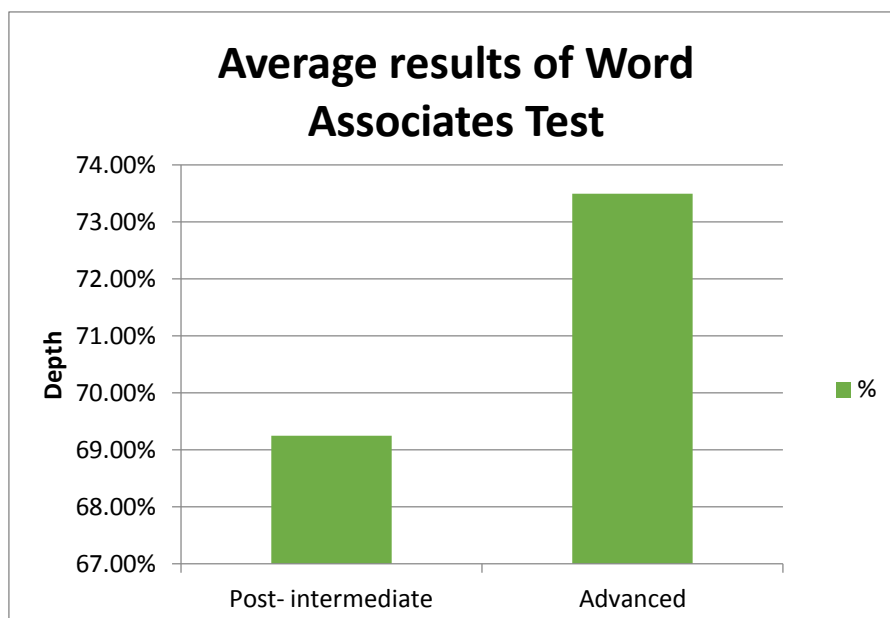


Figure 3

4.2 Statistical Results and Appendixes

An independent samples t-test was used to determine whether there was a statistically significant difference between the means of two levels of subjects. The statistical significance determines whether the difference between sample averages is likely to represent a true difference between the populations. For the t – test to be considered significant, the p value had to be less than 0.05. According to the findings, the mean difference between the two levels is both positive and statistically significant. The 'effect size,' or the magnitude of mean differences, was measured using Cohen's d. The strength of the relationship is classified as small (.20), medium (.50), or large (.100) according to Cohen's (1992) rule of thumb (. 80) which is shown in Table 4.

Table 4. Cohen's criteria for interpreting the values of d

0.00 – 0.20	Small effect
0.21- 0.79	Medium effect
0.80 - ∞	Large effect

Table 5. Descriptive statistics associated with Receptive breadth tests

Group Statistics				
Levels		N	Mean	Std. Deviation
Total Receptive breadth tests	Post-Intermediates	57	110.12	21.362
	Advanced	41	120.54	18.603

As shown in Table 5, the post-intermediate level's mean was associated with a receptive breadth M=110.12 (SD=21.362) from a maximum possible score of 150 correct responses. Advanced level subjects, on the other hand, had a numerically greater receptive breadth of vocabulary knowledge M=120.54 (SD=18.603). An independent t-test was used to determine whether the receptive breadth of vocabulary knowledge increases with higher levels of competence. Furthermore, the assumption of variance homogeneity was tested and satisfied using Leven's F test, F (1.259), p=. 265. The statistics revealed that the independent t –test had a statistically significant effect, t (96) = -2.51, p =.014. In other words, advanced level subjects had a statistically significant higher receptive breadth mean than post-intermediate level subjects. Furthermore, Cohen's d was

estimated at $d > .62$, indicating a medium to high effect based on Cohen's (1992) guidelines (see Table 4). This demonstrates that the mean differences in the Receptive Breadth Test between the two levels provide a practically meaningful measure of the quantitative characteristics of Vocabulary knowledge.

Table 6. Descriptive statistics associated with Productive breadth test

Levels		N	Mean	Std. Deviation
Total Productive breadth tests	Post-Intermediate	57	36.58	14.191
	Advanced	41	49.27	15.227

As shown in Table 6, from the maximum possible score of 90 correct responses, the post-intermediate level's mean was associated with a receptive breadth $M=36.58$ ($SD=14.191$). By comparison, the advanced level subjects were associated with a numerically greater receptive breadth of vocabulary knowledge $M=49.27$ ($SD=15.227$). Additionally, the assumption of homogeneity of variance was tested and satisfied via Leven's F test, $F(1.259)$, $p=.265$. The statistics revealed that the independent t-test was associated with a statistically significant effect $t(96) = -4.23$, $p = .000$. In other words, the advanced level subjects were associated with a statistically significant larger productive breadth mean than the post-intermediate levels. The decision was taken by considering the alpha value as 0.05. Additionally, Cohen's d was estimated at $d > .86$, which indicated a large effect based on Cohen's (1992) guidelines (see Table 4).

Table 7. Statistics associated with the Depth test results

Levels		N	Mean	Std. Deviation
Total Depth tests	Post-Intermediate	57	110.81	16.263
	Advanced	41	117.59	15.997

As shown in Table 7, from the maximum possible score of 160 correct responses, the post-intermediate level's mean was associated with a receptive breadth $M=110.81$ ($SD=16.263$). By comparison, the advanced level subjects were associated with a numerically greater receptive breadth of vocabulary knowledge $M=117.59$ ($SD=15.997$). Moreover, the assumption of homogeneity of variance was tested and satisfied via Leven's F test, $F(1.259)$, $p=.265$. The statistics revealed that the independent t-test was associated with a statistically significant effect $t(96) = -2.049$, $p = .043$. In other words, the advanced level subjects had a statistically significant larger depth mean than the post-intermediate levels as the alpha value was 0.05. Additionally, Cohen's d was estimated at $d > .21$ indicating a lesser effect based on Cohen's (1992) guidelines see (Table 4).

4.3 Determining the relationship between their academic performance and test results

To determine the relationship between their academic performance in English and the performance on vocabulary knowledge tests, Pearson correlation was calculated at .01 level of significance. The results obtained from these computations are presented in Table 8.

Table 8. Mean and standard deviation of the marks of English and vocabulary test correct responses.

	Mean	Std. Deviation	N
Marks for English (GP/GPA)	5.58	0.799	98
Total Receptive breadth tests	114.48	20.804	98
Total Productive breadth tests	41.89	15.858	98
Total Depth tests	113.64	16.417	98

Table 8 shows the mean score of the final marks of English, Receptive breadth, Productive breadth, and the depth of vocabulary knowledge tests respectively. As shown in Table 8, all the subjects were included in the statistical analysis.

Table 9. Correlation between academic performance and the breadth and depth of vocabulary knowledge.

		Correlations			
		Marks for English (GP/GPA)	Total Receptive breadth tests	Total Productive breadth tests	Total Depth tests
Marks for English (GP/GPA)	Pearson Correlation	1	.559**	.443**	.434**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	98	98	98	98
Total Receptive breadth tests	Pearson Correlation	.559**	1	.791**	.842**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	98	98	98	98
Total Productive breadth tests	Pearson Correlation	.443**	.791**	1	.784**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	98	98	98	98
Total Depth tests	Pearson Correlation	.434**	.842**	.784**	1
	Sig. (2-tailed)	.000	.000	.000	.000
	N	98	98	98	98

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

Table 9 shows the correlation between the final marks of English and the total breadth and depth of vocabulary knowledge. As seen in the table, with regard to the receptive breadth of vocabulary knowledge, there was a high and significant correlation between this variable and the final marks of English ($r = .55, p > .01$). Two asterisks (**) revealed that there is a significant correlation at .01 levels. Similarly, we can see that the final marks of English were significantly correlated with their productive breadth of vocabulary knowledge ($r = .449, p > .01$) and the depth of vocabulary knowledge (.43, $p > .01$). These results suggest that the acquisition of vocabulary knowledge is an incremental process or they represent a continuum. When the three test results were compared, the Receptive-Depth tests revealed a positive and statistically significant correlation (.842, $p > .01$), indicating that these two aspects of vocabulary knowledge are associated each other, i.e., learners with a high vocabulary size also had a deeper understanding of words. This relation is followed by the Productive – Receptive tests, correlation co-efficient ($r = .791, p > .01$) and finally, the Depth-Productive tests (.784, $p > .01$). As compared to the Receptive-Depth test correlation, the inter correlation between the Productive-Receptive tests and the Depth-productive tests were lower because the subjects had to produce the target words in the Productive breadth test format.

V. CONCLUSION

Overall, the findings of the study discussed above revealed a statistically significant difference in the breadth and depth vocabulary knowledge of the students at the Post-intermediate and Advanced level. It could be assumed that these differences were largely due to different learning environments. Further, the Advanced level students were from Linguistics and English. Therefore, they got more exposure to the L2 language than the Post-intermediate level students. Further, it should be noted that the Advanced level students in the present study received an average of sixteen hours of L2 instruction per week while the Post-intermediate level students received only an average of five hours of L2 instruction per week. Therefore, students at the Advanced level of communicative competence get many opportunities to learn and use the L2 language in many situations that have a communicative function.

Further, the correlation results indicated that the students' L2 proficiency was closely associated with the breadth and depth of vocabulary knowledge. A close interconnection between the three dimensions of vocabulary knowledge was observed in the data. In connection with the relationship between the Receptive and Productive breadth test ($r = .82, p < .01$), the results indicated a very high interrelation between these two tests. This further emphasized the strong relationship between the receptive and productive dimensions of vocabulary

knowledge. These findings tend to lend support to earlier research conducted by Waring (*A Comparison*), Webb (85) and Laufer (*The Development* 264) that indicated the relationship between the receptive and productive vocabulary knowledge in vocabulary acquisition. With respect to the interrelatedness between the Productive and Depth test ($r = .75, p < .01$), the results revealed a strong and positive interconnection between these two dimensions. Similarly, the correlation results of the receptive and depth tests ($r = .77, p < .01$) revealed that the receptive breadth and depth dimensions of vocabulary knowledge were highly interrelated. These findings contribute to the second language acquisition theories and allow a better understanding of the earlier findings about the strong relationship between the breadth and depth of vocabulary knowledge in lexical acquisition (Qian, *Assessing* 287; Akbarian 16). The correlation results of the three dimensions of vocabulary knowledge supported the proposals of Henriksen that these three dimensions represent a continuum (303-17). However, as compared to the Receptive-Productive dimension ($r = .82, p < .01$), the correlation between the Receptive-Depth dimension ($r = .77, p < .01$) was lower because the breadth dimension measured only the partial knowledge of words, while depth measured the deeper understanding of the word knowledge such as the paradigmatic, syntagmatic and analytic relations of a word.

5.1 Pedagogical implications

The study's findings have pedagogical implications for L2 instruction. This study established the importance of both breadth and depth in vocabulary acquisition. Language teachers and curriculum designers should therefore incorporate these two dimensions into L2 curricula. Secondly, the present study demonstrated that acquiring vocabulary knowledge is a complex process that involves more than just memorizing meaning and spelling of a word. Therefore, ESL/EFL teachers are encouraged to introduce polysemy, synonymy and collocational restrictions of a word in the classrooms besides their primary meaning. Finally, the study found that vocabulary knowledge has two interconnected dimensions: breadth and depth. However, the depth of vocabulary knowledge was lower than the students' receptive and productive breadth. To cope with the language's communicative functions, L2 learners must deepen their vocabulary knowledge. To this end, certain techniques and strategies have been proposed to improve L2 learners' vocabulary.

Extensive reading is the best way to broaden students' vocabulary. It is a good way to learn vocabulary from context because it requires learners to guess new words from context clues. Extensive reading involves students actively searching for meaning of words using textual clues. Therefore, the words learned through extensive reading promote better retention. Moreover, extensive reading can help students of all levels learn vocabulary.

Word frequency lists are another way to increase vocabulary size. A General Service List of English Words (GSL) by West contains around 2,000-word families. Though the list is quite old, this list still contains nearly 80% of all running words in a text. Coxhead's A New Academic Word List (AWL) is a second way to increase vocabulary size for university (213-38). This list of academic words covers at least 8.5 percent of the running words in various academic texts. The AWL contains 570-word families that appear frequently in academic texts. A corpus of 3,600,000 running words from twenty-eight subject areas evenly distributed over four divisions of Commerce, Law, Arts, and Science was used to create this list. These lists help L2 learners expand their vocabulary in L2.

Elaboration could be used as a technique to help learners expand their depth of vocabulary knowledge. In Hunt and Beglar's words, elaboration involves "expanding the connections between what the learners already know and new information" (261). This could be accomplished by selecting L2 terms from the context and then explaining its relationship to the newly learnt ones. In addition to introducing these new words, teachers should provide opportunities for students to apply what they've learned in new circumstances that provide fresh associations and collocations. For this purpose, exercises such as word card games, generating derivations, inflections, synonyms, and antonyms of a word, collocation cross word puzzles, identifying and generating associated words with the help of visual images, sentence completion tasks, and word of the day presentations could be used.

Finally, reference materials, for example, dictionaries could be used to acquire the receptive and productive skills of language learning. Among the three types of dictionaries, the bilingualized dictionaries are more advantageous than the traditional monolingual or bilingual dictionaries. Bilingualized dictionaries include L2 definitions, L2 sentence examples, as well as L1 synonyms rather than just L1 synonyms. Further, electronic dictionaries with multimedia annotations also offer an option for teachers and learners. Another advantage is that the dictionaries could be used by all levels of learners.

5.2 Limitations and future recommendations

Vocabulary acquisition is an on-going process, and this cross-sectional study provides a snapshot of the vocabulary knowledge of the learners only at a single point of time. Conducting longitudinal studies, on the other hand, would be able to provide a more comprehensive view of what is it meant by knowing a word. The

second delimitation concerns the sample representation of the study. The subjects were not representative of the entire population of Assam University. They were from five distinctive academic disciplines who agreed to participate in the study voluntarily. Moreover, the Advanced level students in the study were from either English or Linguistics. Both the factors could have influenced the results. Therefore, future investigations may wish to increase the number of subjects in order to strengthen the possibility of producing a more reliable and generalized result. Regarding the relationship between the language proficiency and the dimensions of vocabulary knowledge, the results of the study strengthened the perception that the learners with a higher degree of vocabulary knowledge were more successful at their academic competence. However, their oral language ability (fluency) was not tested. Future research could be centered on the fluency aspect to examine whether the L2 learners possess an adequate amount of foreign language ability to cope with the communicative functions of the language.

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