The Relationship between L2 Learner's Breadth of Vocabulary Knowledge, Lexical Inferencing Strategy Use and Their Success in Reading Comprehension

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Abstract
The present study aims to investigate the relationship between breadth of vocabulary knowledge, lexical inferencing strategy use and success in reading comprehension. The participants of this study were fifty graduate students, majoring in teaching English at the universities of Najaf Abad and Khorasgan who had reached the lexical threshold level for reading comprehension, i.e., 3,000 word families or better as was measured by Schmitt

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(2001) Vocabulary Level Test. To collect the relevant data, participants were asked to take part in two language tests, Schmitt's (2001) Vocabulary Level Test, and a test of reading comprehension and one session interview for knowing what types of lexical inferencing strategies were commonly used by learners. Using multivariate analyses, the study examined the relationship between breadth of vocabulary knowledge, lexical inferencing strategy use and reading comprehension success. The results indicated that (1) there were a significant relationship between the scores of reading comprehension and breadth of vocabulary knowledge and (2) breadth of vocabulary knowledge and lexical inferencing strategies were correlated (3) encountering unknown words many of the learners use different types of strategies to find the meaning. The results from this study call for a recognition of the importance of improving vocabulary knowledge for EFL learners, teachers, test designers and material developers. 

**Key words**: Breadth of Vocabulary Knowledge, Lexical Inferencing Strategies, Reading Comprehension.

1. Introduction

It would be impossible to learn a language without vocabulary, without words. Language learners, teachers, and researchers agree upon this that vocabulary is an essential element in the process of language learning. Words are the primary carriers of meaning and thus they carry the main information load in communication. so learning vocabulary is an important part of language learning process and lexical errors impede communication more seriously than grammatical ones (Ellis, 1994).

Vocabulary is part of every language skill and therefore improving vocabulary learning can help to reach the goal of communicative competence. Considering the centrality of vocabulary knowledge and its development, it is necessary for EFL learners who wish to function at a high level in English to learn many thousands of
word families. Breadth of vocabulary knowledge has been taken to refer to the quantity or the number of words learner know at a particular level of proficiency (Qian, 2002). Nation and Waring (1997), in their studies on vocabulary size found that the vocabulary size of an educated adult native speaker of English was around 20,000 word families.

Vocabulary knowledge is one of the best predictors of reading ability and the ability to acquire new information from the text. Vocabulary knowledge is also known to be crucial for reading comprehension and in dealing with academic context in a second language. The superabundance of different textbook materials and other reading sources like magazines, journals, newspapers, etc…and the amount of time devoted to going through all these written sources of information denote the fact that reading is more significant than the other three language skills. In fact, the other three language skills can be fostered by positive achievement in the reading skill. Failure to the reading skill prevents access to future educational opportunities and academic setting. Furthermore, Reading comprehension is the most important source for L2 learners in EFL academic setting. Since in our country language learners receive little natural exposure to the target language outside their course materials and there may be very limited opportunities for conversing with native and highly fluent speakers, their reading may assume high importance. However, in L2 research, a small number of studies (e.g., Laufer, 1996) have investigated the relationship between vocabulary size and academic reading comprehension.

Many readers have claimed that they would like to read more, but when they encounter unknown lexis they lose their interest. A good reader can guess the meanings of some unfamiliar words in a text but must also know most words in the text to be able to understand it well enough. Therefore, the strong relationship between vocabulary and reading comprehension ability holds at all levels. The main strategy that learner uses in the initial comprehension of
unfamiliar words is lexical inferencing which involves guessing the meaning of unfamiliar word using available linguistic cues (including knowledge of discourse, sentence-level grammar, word morphology, word association, cognates, homonyms, and punctuation) and non-linguistic cues including topic and word knowledge (Paribakht & Wesch; 1999). Studies indicate that learners use three different strategies when they seek the meaning of unknown words 1) retrieval 2) appeal for assistance, and 3) lexical inferencing. Inferencing occurs at all levels of the reading comprehension process ranging from integrating the text with background knowledge, to connecting different parts of the text together, to linking known to unknown elements in the text in order to arrive at a coherent structure of the information in text. Research has revealed that many different mediating variable that may influence learners’ inferencing behaviors, in guessing an appropriate meaning for unknown word. These factors can be divided into contextual factors and reader-based factors. Contextual factors include the importance of the unknown word and the text containing the word, as well as the nature of the comprehension task (Paribakht & Wesch, 1999); the length of the text and the availability of clear contextual cues.

2. Research questions
The present study aims at finding the relationship among the EFL student's, breadth of vocabulary, lexical inferencing strategy use and reading comprehension. More specifically the following questions are to be answered:
1) Is there any significant relationship between breadth of vocabulary knowledge, lexical inferencing strategy use and reading comprehension?
2) What inferencing strategies do EFL learners use to comprehend lexical meaning?

3. Method, Material and Procedure
The population from which the participants were selected for the present study was selected among junior and senior students; all of them were majoring in teaching English at the faculty of humanities and literature of Najaf Abad and khorasgan Universities, who had reached the lexical threshold level for reading comprehension.

Data for this study were collected in three phases: two sessions of paper-and-pencil testing and the other was a think-aloud protocol which was recorded by a set of MP3 player. A number of instruments were utilized as delineated below:

3.1. The Vocabulary Level Test

The Vocabulary Level Test (‘Levels Test’ for short) which was a test of receptive knowledge of English Vocabulary was originally designed by Paul Nation (1983) as a diagnostic vocabulary test for use by teachers. This test was used in the present study, to measure learners’ size of vocabulary. It first appeared in 1983 and was later republished in his 1990 book. Read (1988) did some initial validation work on the test, finding it to be reliable. The VLT has been accepted by a number of researchers as an appropriate measure of vocabulary size (Laufer & Paribakht, 1998). The level test derives its name from the fact that separate sections measure learner’s knowledge of the words from a number of distinct frequency levels. So it can provide a profile of a learners’ vocabulary, rather than just a single – figure estimate of overall vocabulary size. The levels addressed are the 2,000, 3,000, 5,000, and 10,000 frequency levels. In addition, there is a section for academic vocabulary.

Each level contains 30 correct choices. The words at each level were selected so that they would be representative of all the words at that level (Nation, 1983, P.14). Because of the way the test was constructed, the chance of guessing correctly is low, and the testees’ scores can be regarded as a close approximation to the proportion of words in the test that they know (Nation, 1990, P.262). The 2,000 and 3,000 word-family levels of the VS include only high-frequency
words in English; the 5,000 word-family level is a boundary level
between the high-frequency and low-frequency levels; and the
10,000 word family level includes low-frequency words. The
university word list level contains specialized vocabulary needed for
the university word list level represent words frequently appearing in
university textbooks.

At each vocabulary size level are six words provided by writing
the corresponding number of the word besides its definition, as in the
example below:
1. ceiling                  2. office
3. something that tells time 3. watch
5. main body of a tree      4. vehicle
6. a tool used for writing  5. trunk       6. pen

Participants were informed to choose the correct choice and
write the number of the correct choice next to their meaning. In
scoring, each word correctly chosen is awarded one point.

3.2. Reading Comprehension (RC)
This test was a standardized multiple-choice reading comprehension test,
taken from a form of the (TOEFL Arco p.289-300). The format of the
test was paper and pencil. The test was composed of three reading
passages and 30 multiple-choice questions to measure comprehension. In
scoring, each correct answer to reading comprehension question was
awarded one point. The maximum possible score is, therefore, 30.

3.3. Think-aloud
Think-aloud protocols, a version of verbal report in which participants
state their thoughts and behaviors while performing a given task, have
been useful in exploring the relationship between working memory
and inferences.

The main purpose of think aloud was to gain a better
understanding of the process of L2 vocabulary acquisition through
reading by asking learners think aloud as they carried out reading
comprehension activity. The kind of strategies they use in dealing with unfamiliar words; they encounter in written texts and the type of cues and knowledge sources they used in their attempts to infer their meaning. Think-aloud study provides rich data on the learners' report of their attempts to infer meaning and other features of unknown words and on the knowledge sources and cues used in inferring lexical features. The reading passage selected for use in this study was the one developed by Haasstrup (1991) in a study on lexical inferencing with Danish learners of English. The passage contained 374 words, with 10 target word underlined and highlighted.

4. Procedure
Data collection and analysis included the following procedures. It was carried out in two sessions. In the first session, the test measuring breadth of vocabulary knowledge, that is, the Vocabulary Level Test and Reading Comprehension Test were administered. In the second session, prior to the interview, and after an introductory explanation, each subject was presented with a colored picture, and was asked to talk about what they thought was happening in the picture, while looking at the picture, they expressed whatever they thought about the picture, in this way they were trained in think-aloud procedures. Then, they were presented with an English text and were asked to verbalizing their thinking while trying to infer the meaning of unfamiliar words they encountered. Of particular interest were the kinds of strategies they used in dealing with unfamiliar words they encountered in written texts and the types of knowledge sources and cues they used in attempts to infer their meanings.

5. Analysis and results
This study examined the relationship between EFL learners' breadth of vocabulary knowledge, lexical inferencing strategy and their success in reading comprehension.

The first question of this study was:
**Q1**: Is there any significant relationship between EFL learners' breadth of vocabulary knowledge and their reading comprehension? 

As can be seen in Table 5.1., the correlation between breadth of vocabulary knowledge and reading comprehension was significant at the level of \( p \leq 0.05 \), so we can conclude that breadth of vocabulary knowledge and reading comprehension are correlated, with confidence level of 95%.

**Table 5.1: Descriptive statistics of vocabulary level test (VLT) and Reading Comprehension**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>P</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation (Two-tailed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading comprehension</td>
<td>50</td>
<td>0.018</td>
<td>0.334*</td>
</tr>
</tbody>
</table>

As shown in Table 5.2., there is a significant relationship between reading comprehension, lexical inferencing strategy use, and breadth of vocabulary. Overall, these two variables, that were reading comprehension and lexical inferencing strategies can account for 43.4% of variable in breadth of vocabulary knowledge. F value found in this study was significant and therefore this regression can be extended to the population of this study.

**Table 5.2: Multiple Regression between Breadth of Vocabulary, Lexical Inferencing Strategy Use and Reading Comprehension**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Multiple regression</th>
<th>R2</th>
<th>Adjusted R2</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Comprehension</td>
<td>0.434</td>
<td>0.188</td>
<td>0.154</td>
<td>5.453</td>
<td>0.007</td>
</tr>
</tbody>
</table>
Findings in Table (5.2.1.) show that, if Beta's R increases one unit in reading comprehension, it can add 0.329 units to the breadth of vocabulary, and if strategies increase one unit, breadth of vocabulary will be developed to 0.188.

The regression Equation of the above data is stated as:

\[
\text{Breadth of vocabulary} = \text{stable R (113.474)} + \text{Reading comprehension (1.489)} + \text{strategies (1.327)}
\]

**Table 5.2.1: Multiple Regression between Breadth of vocabulary, Lexical Inferencing Strategy Use, and Reading Comprehension**

<table>
<thead>
<tr>
<th>Statistical index predictor variable</th>
<th>Unstandardized Beta R</th>
<th>Beta Error</th>
<th>Standardized Beta Coefficient</th>
<th>T</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Comprehension</td>
<td>1.489</td>
<td>0.639</td>
<td>0.329</td>
<td>2.239</td>
<td>0.024</td>
</tr>
<tr>
<td>Strategies</td>
<td>1.327</td>
<td>0.992</td>
<td>0.188</td>
<td>1.328</td>
<td>0.041</td>
</tr>
</tbody>
</table>

P < 0.01

As the Table shows, the relationship between breadth of vocabulary and lexical inferencing strategies is shown in the following Table (5.3.). The correlation was significant at the level of (p ≤ 0.05); we can say that, there is a significant relationship between these two variables with a confidence level of 99%. Qian’s (2004) 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. Meara
(1996) calls VLT the “nearest thing we have to a standard test in vocabulary”. In the recent research about the relation between the breadth of vocabulary knowledge and reading comprehension in Chinese situation the correlation ranges widely. In Yang and Deng’s (1996) research, the correlation was very high (r=0.89 P<0.01). In Li’s (2003) research, it was moderate (r=0.69 P<0.01). But Lu (2004) found a low correlation between the two factors (r=0.321 p<0.01).

**Table 5.3: The relationship between Breadth of Vocabulary knowledge and Lexical Inferencing Strategies**

<table>
<thead>
<tr>
<th>Breath of vocabulary</th>
<th>Spearmann</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexical inferencing strategies</td>
<td>0.528*</td>
</tr>
</tbody>
</table>

The second question of this study was **Q2**: What inferencing strategies do EFL learners use to comprehend lexical meaning? Think-aloud protocol showed that learners used various kinds of strategies to comprehend a text. As the following Table displays, strategies 2, 3, 4, 9, 10, 11 with the highest frequencies, were used by 98% of the whole sample, while strategies number 13, 14, and 15 has the lowest frequency, with 24% use. In the following presented Table, it was shown that, among all these fifteen strategies, 6 were more preferred. Therefore, we can conclude that the selected strategies had a close and significant relationship with the two tests.
Table 2. 11: Inferencing Strategies EFL Learners use for Comprehension

<table>
<thead>
<tr>
<th>Number</th>
<th>priority</th>
<th>strategy</th>
<th>freq.</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>Using context in preceding and succeeding sentences</td>
<td>49</td>
<td>98</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>Morphological knowledge</td>
<td>49</td>
<td>98</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Identifying grammatical categories of words</td>
<td>46</td>
<td>92</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Using knowledge of world</td>
<td>34</td>
<td>68</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
<td>Repeating</td>
<td>33</td>
<td>66</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>Discourse knowledge</td>
<td>23</td>
<td>46</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>Translation</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Analyzing</td>
<td>21</td>
<td>42</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>Verifying</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
<td>Monitoring</td>
<td>19</td>
<td>38</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>Using resources</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
<td>12</td>
<td>13</td>
<td>Reasoning deductively</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>13</td>
<td>14</td>
<td>Read to identify meaning rather than words</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>14</td>
<td>6</td>
<td>Read title (inference)</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>15</td>
<td>8</td>
<td>Asking for clarification or verification</td>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>

6. Conclusions
The analyses of data revealed that the breadth of vocabulary knowledge and lexical inferencing strategies contributed significantly to the reading comprehension performance of the test takers. Results indicated a significant link between these two variables. These findings confirmed the literature in both L1 and L2 learning concerning the central role of L2 vocabulary in lexical inferencing. They were consistent with theoretical view that the ability to make use of contextual clues in inferencing depends to a large extent to vocabulary knowledge. It is usually assumed that a major factor
affecting lexical inferencing is the ability to make effective use of contextual clues (Haastrup, 1991). The findings of this study added to and confirmed literature concerning the central role of vocabulary in reading comprehension; it also provided new insights into the nature of this process.

The analysis of Iranian EFL learners, vocabulary knowledge in relation to their reading comprehension provides the following results: 1. The result of this study indicated with empirical evidence that breadth of vocabulary knowledge and reading comprehension were correlated. 2. The results also showed a significant link between breadth of vocabulary knowledge and lexical inferencing strategies. 3. The analysis also showed that EFL learners use different type of strategies to comprehend lexical meaning, the most frequent ones were using context in the preceding and succeeding sentences and using the knowledge of morphology, and the least frequent ones were reading to identify meaning than words, reading title, and asking for clarification or verification.

7. Implication of the Study
The importance of breadth of vocabulary has been established in the present study. Now it is up to educators, curriculum designers and teachers to incorporate this factor into their EFL syllabi and materials.

It is also hoped that the findings of the present study can be useful in teaching English as a foreign language. The major trust of this finding is to make the teachers create an awareness of the importance of vocabulary knowledge in reading comprehension. Since language is vast and teachers can not teach all words, learners actually need when they use language, it will be highly desirable to teach them the most practical strategies that are quite practical and useful dealing with unknown words.
References


