



The Relation of Breadth and Depth of Vocabulary Knowledge and Topic Familiarity to EFL Learners' Lexical Inferencing Success

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ABSTRACT

This study investigates the relation of breadth and depth of vocabulary knowledge and topic familiarity to EFL learners' success in deriving meaning from context. It intends to determine whether (breadth and depth of) vocabulary knowledge and topic familiarity are related to the learners' lexical inferencing success, and to investigate which of these variables makes an important contribution to L2 lexical inferencing success. The participants of the study were sixty-five pre-university students in Esfahan, Iran. In two consecutive weeks, version 2 of the Vocabulary Levels Test and the Word-Associate Test were used to measure participants' breadth and depth of vocabulary knowledge, respectively. One week later, the participants received a reading text and attempted to derive the meanings of 10 unknown words from context. After inferencing task, they rated the degree of their familiarity to the text on a Likert-scale questionnaire. Result indicate a significant relationship between vocabulary knowledge and learners' lexical inferencing as well as a significant relationship between learners' topic familiarity and their lexical inferencing success. The results further revealed that depth of vocabulary knowledge made a significant contribution to inferential success over and above the contribution made by the learners' breadth of vocabulary knowledge and their topic familiarity.

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Introduction

Since the ability to read is considered as one of the most important goals of EFL learners, in most second or foreign language teaching contexts there is a special focus on it. An EFL learner has a variety of reasons for reading: s/he might read for pleasure, for example, a novel, magazine article, or website; s/he might read something as part of communication with someone else, for example, an e-mail, a text message, or a letter; s/he might read to learn about something, for example, a geography, history, or science textbook; s/he might read for information, for example, when a bus arrives or what time a movie starts; s/he might read to find out how to do something, for example, an instruction manual for a computer; s/he might read something for her/his job; and s/he might read to access new language and practice language. However, her/his purpose might be a combination of some or all of these factors.

For any of the above reasons a learner reads, s/he should be able to comprehend the text, i.e. to construct meaning. To achieve this goal, the learner should develop her/his vocabulary threshold, because vocabularies are the primary carriers of meaning (Vermeer, 2001). That is vocabularies are core components of language proficiency and provide much of the basis for how well learners speak, listen, read, and write. Without adequate vocabulary and strategies, learners may achieve less than their potential and as a result, may be discouraged to use language learning opportunities such as listening to the radio, reading different texts, or watching television around them. Recent research on vocabulary tries to clarify the levels of vocabulary learning learners need to achieve in order to read both simplified and un-simplified materials and to process different kinds of oral and written texts, as well as the

kinds of strategies learners use in understanding, using, and remembering words (Richards & Renandya, 2002).

In order to comprehend a written text, Laufer (1997), for instance, has shown that a learner needs to know about 5,000 individual word forms or about 3,000 word families. This is regarded as a threshold for minimum comprehension, i.e. to comprehend 95 percent of an academic text. Recent research, however, shows that a learner must know about 8,000 to 9,000 word families (Nation, 2006) or about 98-99 percent of words in a text to comprehend it sufficiently (Hu & Nation, 2000). But not all learners are able to obtain this threshold; therefore, in order to comprehend a written text learners use different reading strategies. Reading strategies are "plans for solving problems encountered in constructing meaning" (Duffy, 1993: 232). These strategies range from bottom-up vocabulary strategies, such as looking up an unknown word in the dictionary, to more comprehensive actions, such as connecting what is being read to the reader's background knowledge (Richards & Renandya, 2002).

According to Sternberg (1987), learners are active processors of information and they use a range of strategies to infer the meaning of a word, usually with reference to its context. Therefore, in encountering an unknown word in a written text, learners may use different strategies to find the meaning of the word: they may repeat the target word or reread it to retrieve it from phonetic or graphic cues (retrieval), they may use dictionaries or ask help from teacher or a peer (appeal for assistance), or they may guess the meaning of an unknown word by using available linguistic and other cues (lexical inferencing) (Harley & Hart, 2000; Paribakht & Wesche, 1999). The third strategy, i.e. guessing from context or lexical

inferencing, has been reported as the most important and frequently used one. Paribakht and Wesche (1999) report that their university ESL students use inferencing in about 78 percent of all cases where they try to identify the meaning of unfamiliar words.

Guessing from context is a complex and mostly difficult strategy to carry out successfully. To guess successfully from context, learners need to know about 19 out of 20 words (95 percent) of a text (Hunt & Beglar, 1998), which requires knowing the 3,000 most common words (Liu & Nation, 1985; Nation, 1990). However, knowing a word involves knowing: its spoken and written contexts of use; its patterns with words of related meaning as well as with its collocational patterns; its syntactic, pragmatic and discoursal patterns. It means knowing it actively and productively as well as receptively (Carter, 1998). In other words, guessing from context strategy or lexical inferencing is affected by different factors (these factors will be discussed in literature review section). From these factors, breadths of vocabulary knowledge, depth of vocabulary knowledge, and topic familiarity are the focus of the present study.

As a result, the purpose of the present study is to assess lexical inferencing as a learning strategy and its relationship to breadth and depth of vocabulary knowledge as well as topic familiarity among Iranian EFL learners.

Literature Review

When encountering an unknown word in a written text, and in the absence of dictionaries or human assistance, the readers should try to guess the meaning using context cues and linguistic and extra-linguistic knowledge (Faerch et al., 1984). The readers must also attend to the connection between the new lexical form and its meaning and integrate this new information into their developing language system (Pulido, 2007). That is the readers should form connections between the new lexical form and meaning and associating these with previous knowledge (Baddeley, 1998).

Research has shown that lexical inferencing is one of the most important strategy used by learners in order to comprehend unfamiliar words in a written text (Paribakht & Wesche, 1997, 1999; Nassaji, 2006). Lexical inferencing "involves making informed guesses as to the meaning of a word in light of all available linguistic cues in combinations with the learner's general knowledge of the world, her awareness of context and her relevant linguistic knowledge" (Haastrup, 1991: 40). That is in order to guess the meaning of an unknown word in a text, the learner uses available linguistic cues (knowledge of discourse, sentence-level grammar, morphology, cognates, word associations, homonyms, and punctuation) as well as non-linguistic cues (world knowledge and topic) (Fraser, 1999; Paribakht & Wesche, 1997, 1999).

Research has shown that many different factors may have an impact on success in lexical inferencing. These factors can be divided into contextual factors and reader-based factors. Contextual factors are: the semantic richness of the text (Li, 1988; Mondria & Wit-de Boer, 1991); the importance of the unknown word for comprehending the written text (Brown, 1993); the degree of textual information available in the surrounding context (Dubin & Olshtain, 1993); the length of the text (Haynes, 1993); and the characteristics of the unknown word and the nature of the word and the text that contains the word (Parry, 1993; Paribakht & Wesche, 1999). On the other hand, reader-based factors are: the learner's ability to use extra-

textual cues (Haastrup, 1991; de Bot et al., 1997); the learner's procedural knowledge (Ellis, 1994); the learner's breadth of vocabulary knowledge (Laufer, 1997); the learner's pre-existing knowledge (Nagy, 1997); the degree of cognitive and mental effort involved in doing the task (Joe, 1995; Fraser, 1999); the learner's previous L2 learning experience (Paribakht & Wesche, 1999); the learner's attention to the details in the text (Frantzen, 2003; Nassaji, 2003); the learner's pre-conceptions about the possible meaning of the word (Frantzen, 2003); the learner's depth of vocabulary knowledge (Nassaji, 2004); L2 proficiency (Pulido, 2003, 2004); the learner's native language (Paribakht, 2005); and passage sight vocabulary and topic familiarity (Pulido, 2007).

However, one of the best predictors of learner's ability in reading comprehension and therefore in lexical inferencing is considered to be vocabulary knowledge (Sternberg, 1987; Qian, 1999; Read, 2000; Nation, 2001). Knowledge of vocabulary consists of two dimensions: breadth and depth. Breadth of vocabulary knowledge refers to the quantity or number of words learners know at a particular level of language proficiency (Nation, 2001). Different types of assessment tools with different formats are used to measure breadth of vocabulary knowledge including tests which require the learner to identify a synonym for a word in a multiple-choice format, match words with definitions, translate words into L1, or use checklists. One test used to assess size (breadth) of vocabulary knowledge is Nation's Vocabulary Levels Test which has a word-meaning matching format and is composed of words representing different word frequency levels, ranging from high frequency (2,000 word level) to low frequency (10,000 word level) words (Nassaji, 2004).

Depth of vocabulary knowledge, on the other hand, refers to the quality of lexical knowledge, or how well the learner knows a word (Meara, 1996; Read, 1993, 2000). Depth of vocabulary knowledge has many components ranging from knowledge related to its pronunciation, spelling, register, stylistic, and morphological features (Richards, 1976; Nation, 1990; Meara, 1996; Haastrup & Henriksen, 2000) to knowledge of the word's syntactic and semantic relationship with other words in the language including collocational meanings and knowledge of antonymy, synonymy, and hyponymy (Chapelle, 1994; Henriksen, 1999; Read, 2000). As a result it is very difficult to assess all different components of it. One test which is used to measure depth of vocabulary knowledge is called the Vocabulary Knowledge Scale (VKS) developed by Paribakht and Wesche (1993). This test involves a self-report format in which learners are presented with individual words and are asked to indicate their degree of knowledge on a scale of 1 to 5, ranging from no familiarity to the target word to the ability to use it accurately in a sentence (Nassaji, 2004). Since the test does not assess the meaning relationships a word has with other words, Word-Associates Test (WAT) is developed by Read (1993) which measures the learner's depth of vocabulary knowledge through word association.

Research investigates the role of vocabulary knowledge in reading comprehension. The results indicate that while size of vocabulary knowledge is strongly related to the readers' understanding of the text and as a result their lexical inferencing success (Laufer, 1997; Qian, 1998, 1999), depth of vocabulary knowledge make a stronger contribution to reading performance (Qian, 1999) and lexical inferencing (Nassaji, 2006).

Table 1. Correlation between breadth of vocabulary knowledge and lexical inferencing

		Breadth of Vocabulary Knowledge	Lexical Inferencing
Breadth of Vocabulary Knowledge	Pearson Correlation	1	.820**
	Sig. (2-tailed)		.000
	N	65	65
Lexical Inferencing	Pearson Correlation	.820**	1
	Sig. (2-tailed)	.000	
	N	65	65

** . Correlation is significant at the 0.05 level (2-tailed)

Table 2. Correlation between depth of vocabulary knowledge and lexical inferencing

		Depth of Vocabulary Knowledge	Lexical Inferencing
Depth of Vocabulary Knowledge	Pearson Correlation	1	.834**
	Sig. (2-tailed)		.000
	N	65	65
Lexical Inferencing	Pearson Correlation	.834**	1
	Sig. (2-tailed)	.000	
	N	65	65

** . Correlation is significant at the 0.05 level (2-tailed)

Table 3. Correlation between topic familiarity and lexical inferencing

		Topic Familiarity	Lexical Inferencing
Topic Familiarity	Pearson Correlation	1	.715**
	Sig. (2-tailed)		.000
	N	65	65
Lexical Inferencing	Pearson Correlation	.715**	1
	Sig. (2-tailed)	.000	
	N	65	65

** . Correlation is significant at the 0.05 level (2-tailed)

Table 4. Multiple regression coefficients

Model	Standardized Coefficient	t	Sig.
	Beta		
Breadth of Vocabulary Knowledge	.287	1.014	.302
Depth of Vocabulary Knowledge	.666	2.498	.015
Topic Familiarity	-.124	-.806	.423

Dependent Variable: Lexical Inferencing

Qian (1999) has found that depth of vocabulary knowledge is not only a better predictor of L2 reading comprehension, but also makes a unique contribution to L2 reading comprehension over and above the contribution made by size of vocabulary knowledge. Nassaji (2006), as another instance, states that there is a significant relationship between depth of vocabulary knowledge and degree and type of strategy use and success. He also shows that depth of vocabulary knowledge makes a significant contribution to inferential success over and above the contribution made by learners' degree of strategy use.

Research has also illustrated that L2 learners of all levels rely on background knowledge to guess the meaning of an unknown word during think-aloud protocols (Haastrup, 1989; Chern, 1993; Nassaji, 2003). Lee and Wolf (1997) observe that native Spanish speakers use their background knowledge the most to infer meaning, followed by the advanced, intermediate, and then the beginning learners of Spanish during a retrospective think-aloud task. Similarly, Parry's (1993, 1997) longitudinal case studies reveal that advanced ESL learners use their knowledge about anthropology to guess the meaning of unknown words in their anthropology texts. Finally, Pulido

(2007) examines the impact of topic familiarity and passage sight vocabulary on lexical inferencing. The analyses reveal robust effects of topic familiarity and passage sight vocabulary on lexical inferencing.

Haastrup (1991) remarks "while in production learners use communication strategies to compensate for the absence of words for which they have meanings, in comprehension inferencing strategies are needed to compensate for the absence of meanings attached to unknown word" (p. 121), showing the important role of lexical inferencing in TEFL and SLA research. The present study, therefore, focused on determining whether three learner-related factors, i.e. breadth of vocabulary knowledge, depth of vocabulary knowledge, and topic familiarity are related to EFL learners' lexical inferencing success. The study also aimed at investigating which of these variables makes a more important contribution to L2 lexical inferencing. That is which one can be considered a better predictor of inferential success. Accordingly, the study intends to seek answers to the following questions:

1. Is there a relationship between EFL learners' breadth of vocabulary knowledge and their L2 lexical inferencing success?
2. Is there a relationship between EFL learners' depth of vocabulary knowledge and their L2 lexical inferencing success?
3. Is there a relationship between EFL learners' topic familiarity and their L2 lexical inferencing success?
4. Do breadth of vocabulary knowledge, depth of vocabulary knowledge, and topic familiarity differ in their contribution to L2 lexical inferencing success?

Method

Participants

The population from which the participants were selected for the current study included 78 pre-university students, between the ages of 17 and 18. 65 of the participants were selected randomly from two different pre-university centers in Esfahan (Iran) using the table of random numbers. The participants' L1 background, i.e. Persian, remained constant and so the effects of L1 on the outcome of the study were controlled.

Instrumentation

In order to collect the required data, the following instruments were used:

Vocabulary Levels Test (VLT)

This is a test of receptive knowledge of English vocabulary developed by Nation (1983) and updated and validated by Schmitt (2000), and Schmitt, Schmitt, and Claphan (2001) which is used to measure learners' size (breadth) of vocabulary knowledge. The VLT only tests content words and not function words. It is composed of five parts representing different five vocabulary size levels: the 2,000 word-family level, the 3,000 word-family level; the 5,000 word-family level, the University Word List level; and the 10,000 word-family level. Each level contains 30 correct choices; therefore, the maximum possible score is 150.

The second version of this test was used to measure learners' breadth of vocabulary knowledge. The Cronbach alpha coefficient of this version of the VLT in the current study was .90.

Word-Associates Test (WAT)

This is a test to measure learners' depth of vocabulary knowledge in English developed by Read (1993). The test consists of 40 target words, each of them is followed by eight words, and four of them are related to the target word while the

other four are not. Since there are four correct responses for each word, the maximum possible score is 160.

The WAT was used to measure learners' depth of vocabulary knowledge. In the present study, the Cronbach alpha coefficient of the WAT was .88.

Text

To gather data on learners' lexical inferencing success, students were presented with a reading passage and were asked to read the text for comprehension and try to guess the meanings of target words in L1 or L2 or both. The reading passage used in this study was developed by Haastrup (1991) in a study on lexical inferencing with Danish learners of English. The passage contains 374 words, with 10 target words underlined. Lexical inferencing success was scored as follow: 0 = unsuccessful, 0.5 = partially successful and 1 = successful. Therefore, the maximum possible score was 10.

Topic Familiarity Questionnaire

A Likert-scale questionnaire of 1-5 was developed to determine the degree of participants' familiarity to the topic of the text. The following scale was used: 1 = none, 2 = very little, 3 = some, 4 = quite a bit, and 5 = a lot. Participants were asked to mark on the scale the level of their familiarity to the topic of the text. Since there were 10 questions in the Likert-scale questionnaire, the maximum possible score on this scale was 50.

Procedure

Data collection was carried out in three sessions. In session one the Vocabulary Levels Test was administered to all the participants to measure their size or breadth of vocabulary knowledge. Before taking the test, the purpose of the study was explained to the participants. They were given instructions on how to take the test, and were assured of the confidentiality of results.

Session two was conducted one week later, during which the Word-Associates Test was given to all the participants in order to measure their depth of vocabulary knowledge. Before taking the test, they were given instructions on how to take the test.

Session three was conducted two weeks later. In order to measure students' lexical inferencing success, the text was given to them. Participants were asked to read the text quickly for main comprehension and then to read it again and guess the meaning of the underlined words in L1 or L2 or both. After inferring the meanings of the underlined words, the Likert-scale questionnaire was given to them wanting them to rate their level of familiarity to the text.

Results

As was mentioned the main aim of the present study was to investigate the relation of breadth and depth of vocabulary knowledge and topic familiarity to L2 lexical inferencing success.

In order to answer the first research question, i.e. to examine the relationship between learners' breadth of vocabulary knowledge (as measured by the VLT) and their lexical inferencing success (as measured by the lexical inferencing text), a Pearson product-moment correlation coefficient was conducted. There was a strong, positive correlation between the two variables ($r = .820$, $p < .05$) (see Table 1), with high levels of breadth of vocabulary knowledge associated with higher levels of lexical inferencing success.

In order to investigate the relationship between learners' depth of vocabulary knowledge (as measured by the WAT) and their lexical inferencing success (as measured by the lexical

inferencing text), i.e. the second research question, another Pearson product-moment correlation coefficient was conducted. The results showed that there was a strong, positive correlation between these two variables ($r = .834, p < .05$) (see Table 2), with high levels of depth of vocabulary knowledge associated with higher levels of lexical inferencing success.

In order to answer the third research question, i.e. to investigate the relationship between learners' topic familiarity (as measured by the topic familiarity questionnaire) and their lexical inferencing success (as measured by the lexical inferencing text), another Pearson product-moment correlation coefficient was conducted. There was a strong, positive correlation between the two variables ($r = .715, p < .05$) (see Table 3), with high levels of topic familiarity associated with higher levels of lexical inferencing success.

In order to determine which variable – breadth of vocabulary knowledge, depth of vocabulary knowledge, and topic familiarity – makes a more contribution to L2 lexical inferencing success, i.e. to answer the fourth question, a standard multiple regression analysis was carried out in which breadth and depth of vocabulary knowledge (as measured by the VLT and the WAT respectively) and topic familiarity (as measured by the topic familiarity questionnaire) were used as independent (predictor) variables, and lexical inferencing success (as measured by the lexical inferencing text) was used as dependent (criteria) variable. The results show that of these three variables, depth of vocabulary knowledge makes the largest unique contribution ($\beta = .666$). Breadth of vocabulary knowledge and topic familiarity, however, made contributions ($\beta = .287, \beta = -.124$ respectively) (see Table 4).

Discussion and Conclusion

The analysis of the data revealed that there is a positive and strong correlation between learners' breadth of vocabulary knowledge and their lexical inferencing success. In other words, EFL learners with different scores on the VLT (breadth of vocabulary knowledge) differ in their L2 lexical inferencing success. Learners with larger size of vocabulary knowledge are more successful in lexical inferencing task than those learners with smaller size of vocabulary knowledge.

The analysis also showed that there is a positive and strong correlation between learners' depth of vocabulary knowledge and their lexical inferencing success. That is, EFL learners with different scores on the WAT (depth of vocabulary knowledge) differ in their lexical inferencing success. Learners with stronger depth of vocabulary knowledge are more successful in lexical inferencing task than those learners with weaker depth of vocabulary knowledge.

These findings are related to strategy use theories (Paribakht & Wesche, 1997, 1999; Nassaji, 2006) and are in line with previous studies showing the important role of vocabulary knowledge in L2 lexical inferencing success (Haynes & Baker, 1993; Laufer, 1997; Nassaji, 2004; Nation, 2001; Pulido, 2007), and reading comprehension (Sternberg, 1987; Qian, 1999; Read, 2000; Nation, 2001). As learners with large vocabularies are considered to be proficient readers (Luppescu & Day, 1993), these findings are in line with previous research showing the prominent role of learners' level of language proficiency in their L2 lexical inferencing ability (Haastrup, 1991; Morrison, 1996). Haastrup (1991) and Morrison (1996) show that less linguistically proficient learners cannot make use of contextual clues, and therefore, they make less correct inferences than more linguistically proficient learners. Therefore, it could be

concluded that learners with greater vocabulary knowledge (larger size and stronger depth of vocabulary knowledge), i.e. more proficient learners are more successful in L2 lexical inferencing than learners with limited vocabulary knowledge. This means that more proficient learners with more vocabulary knowledge are able to use contextual clues available in the text and therefore they are more successful in lexical inferencing and guessing the meanings of unknown words.

The analysis of the data also showed that there is a positive and strong correlation between learners' topic familiarity and their lexical inferencing success. In other words, EFL learners with different scores on the topic familiarity questionnaire differ in their L2 lexical inferencing success. Learners with more familiarity to the topic of the text are more successful in lexical inferencing than those learners with less familiarity to the topic of the text. These findings contribute to previous research showing the relationship between topic familiarity and lexical inferencing success (Haastrup, 1989; Chern, 1993; Parry, 1993, 1997; Nassaji, 2003; Pulido, 2007). That is learners may rely on their background knowledge to guess meanings of unknown words.

Furthermore, the analysis of the data revealed that the set of variables – breadth of vocabulary knowledge, depth of vocabulary knowledge, and topic familiarity – is able to predict L2 lexical inferencing success. In other words, vocabulary knowledge (breadth and depth) and topic familiarity contribute significantly to the prediction of L2 lexical inferencing success. However, depth of vocabulary knowledge explains a unique variance in the dependent variable – lexical inferencing success – over and above the two other independent variables in the set. From the other two variables, i.e. breadth of vocabulary knowledge and topic familiarity, breadth of vocabulary knowledge is a better predictor of L2 lexical inferencing success. In other words, vocabulary knowledge in general and depth of vocabulary knowledge in particular is a better predictor of L2 lexical inferencing. Since lexical inferencing is related to reading comprehension, the results are in line with Qian's (1999) study in which he shows the relative contribution of breadth and depth of vocabulary knowledge to L2 reading comprehension. He finds that depth of vocabulary knowledge is not only a better predictor of L2 reading comprehension, but also makes a unique contribution to L2 reading comprehension over and above the contribution made by size of vocabulary knowledge.

The results of the study have a number of implications for practitioners and teachers in EFL contexts. Since the results showed that both dimensions of vocabulary knowledge contribute to L2 lexical inferencing success, it is recommended to language teachers and curriculum designers as well as material writers to incorporate two aspects of vocabulary knowledge (breadth and depth) into EFL curricula through extensive reading and direct and systematic instruction. The results revealed that depth of vocabulary knowledge is a better predictor of L2 lexical inferencing success, therefore, it is recommended to language teachers to pay more attention to this aspect of vocabulary knowledge in designing class activities. Finally, since topic familiarity also plays an important role in lexical inferencing success, it is recommended to students to try to develop their general knowledge as well as their vocabulary knowledge through extensive reading and as a result to enjoy the task of reading.

Even though, there are some limitations to the present study. First, the sample of the present study was limited to EFL learners with Persian as their L1 which could limit the scope for generalization of the research findings. Second, 65 students participated in the study. Larger samples which are more representative of the larger population may yield more conclusive results. Finally, it is possible that beside vocabulary knowledge and topic familiarity, other variables affected the outcomes.

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