Unknown Vocabulary Items and Reading Comprehension Tests: Comparing With-assistance and Without-assistance Performance of Iranian Students

Farhad Mazlum
Maragheh University, Iran

Fatemeh Poorebrahim
Maragheh University, Iran

Sarvar Chekani Azaran
Fatima al-Zahra Technical & Vocational Higher Education Center, Maragheh, Iran

Abstract—One common concern of Iranian students in taking final English exams is the existence of several unknown vocabulary items in reading comprehension section. Students often argue that not knowing the meanings of such items negatively affects their performance. The purpose of this study was to see if providing test takers with L1 equivalents of the unknown vocabulary items would affect/enhance their reading comprehension level. Two passages were selected, each containing six multiple-choice items. Following Day and Park's (2005) categorization, the first two items aimed at literal, the second two involved reinterpretation, and the last two were inferencing type of comprehension items. Forty nine students took the test twice. The first time they answered the questions without asking for the meaning of the unknown word. During the second administration, they were allowed to ask for the meanings of the unknown vocabulary items. Statistical analyses of data showed that 'telling' L1 equivalents of the unknown items led to a statistically significant difference. Further analyses, however, revealed that teacher assistance had significant effects on students' performance on inference questions but not on their performance on literal and reinterpretation items. The potential reasons for the findings are discussed first. The findings, then, are used to argue that the commonly-held view by the students is only partially valid.

Index Terms—reading comprehension, reading assessment, comprehension questions

I. INTRODUCTION

Reading is believed to be one of the essential skills students acquire or learn. Whether learning to read in their first (L1) or second (L2) language, students go through a host of complicated processes in order to gain literacy in that language. Such processes are complicated simply because reading is a dynamic interaction between the reader and the text. According to Aebersold and Field (1997), in an attempt to understand a text, learners turn to a wide range of skills, strategies, first language knowledge as well as world knowledge, etc. In a similar vein, Egbert (2005) lists the main variables that come to affect students' reading comprehension in L2 or foreign language (FL). In the list, vocabulary knowledge, first language, background and world knowledge, skills (i.e. top-down and bottom-up) and strategies are highlighted. Although these variables influence L2 reading comprehension collaboratively and interactively, this study deals largely with the role that vocabulary knowledge plays.

Vocabulary Knowledge and Reading Comprehension: An Overview

The contribution of vocabulary to reading comprehension—whether in L1 or L2—has been one of the key issues in several outstanding studies. Grabe (1991), for instance, considers vocabulary knowledge as the prime predictor of reading ability. For similar reasons, Nation (1990) lays emphasis on vocabulary instruction in L2 reading classes. Similar arguments have been raised by Chanier and Selva (1998) as well as Groot (2000). There are also numerous studies that provide empirical estimation of the number of words learners need to know in order to effectively handle the text and comprehend it. For example, Grabe (1991, as cited in Butler-Pascoe & Wiburg, 2003) argues that, "...fluent L2/FL readers need to know about 2,000 to 7,000 words and sometimes even more if they want to reach native-like fluency". For Groot (2000), understanding academic texts requires mastery of at least 7,000 words. Constantinescu (2007, p.2) holds that, "L2/FL readers need to recognize approximately 95 per cent of the words in a given text in order to comprehend its meaning and they need to know the different meanings of words according to context, as well as words' grammatical properties".

The inter-relationship between students' vocabulary knowledge and their reading comprehension has been demonstrated in a good number of studies (e.g. Baumann, Kame'enui & Ash, 2003; Becker, 1977; Davis, 1942; Whipple, 1925). The interconnectedness of these two seems axiomatic since knowing more words in a text will naturally enhance one's comprehension of that text. Of course, it should be noted again that a set of equally important factors are at play when a reader struggles to arrive an understanding of a text. Vocabulary knowledge, however, is one of these important factors. Researchers (e.g. Hart & Risley, 2003; Snow, Barnes, Chandler, Goodman, & Hemphill, 2000; White, Graves, & Slater, 1990) believe that without an acceptable vocabulary proficiency students are more likely to feel frustrated during the reading experience. Such students are also expected to avoid reading altogether. This, in turn, means less involvement with texts and consequently an underdeveloped vocabulary repertoire.

In a nutshell, the number of words a student knows directly affects his reading comprehension proficiency. Good readers with richer vocabulary repertoires are more successful, efficient, and functional and vice versa.

There are two important questions when the relationship between vocabulary knowledge and reading comprehension is examined: 1. What does it mean to *know a word*? 2. What level of reading comprehension are we concerned with? (Is it literal, reinterpretation, or inference?)

What does it mean to *know* a word?

There is no consensus over the definition of 'word', nor is there an agreement over what 'knowing' a word. Opinions vary considerably; however, it is generally accepted that knowing a word is not limited to its dictionary definition or what it looks or sounds like. According to Miller and Gildea (1987), to know a word one needs to go beyond knowing it by sight and sound or its dictionary definition; it also entails the correct use and comprehension of it when encountered in different contexts and modes.

For Nagy and Scott (2000), knowing a word is a multi-faceted process. First of all, it is incremental, which means frequent exposures to a word and in different contexts are needed so that L2 learners learn it. Second, since a good number of words have different meanings (e.g. bank) in different contexts, word knowledge is multidimensional. Finally, due to the fact that the knowledge of a given word is related to other words, word knowledge is interrelated. All this led scholars such as Beck and McKeown (1991) and Nagy and Scott (2000) to argue that to know a word is a matter of degrees and not an all-or-nothing question. The precision and speed with which one uses and understands a word in different modes and for different purposes are reflections of his knowledge of that word.

Word schema is also considered as yet another element of word knowledge. Word schema is defined as a network of knowledge related to a given word (Nagy & Scott, 1990). It consists of both linguistic (e.g. knowledge of roots) and semantic knowledge. Finally, Johnson, Johnson, and Schlicting (2004) argue that knowing a word requires the ability on the part of L2 students to appreciate its connotations. Word knowledge at this level enables students to use and understand slangs and jokes.

Levels of reading comprehension ability

There have been fundamental changes in theories and models of reading ability and process. No longer is reading seen as a receptive, passive process of 'from text to reader'. Rather, it is nowadays viewed as an interactive and dynamic process between the text and the reader (Adams, 1990; Stanovich, 1992). Such a change in reading theories and models came to affect classroom practices too.

Reading comprehension proficiency is evaluated through different measures and tests. L2 students are generally required to read a text and answer its comprehension questions. Day and Park (2005) introduce six types of comprehension questions and refer to five forms of questions used to engage students in these six types of comprehension questions. The six types of comprehension are *literal comprehension*, *reorganization (reinterpretation)*, *inference, prediction, evaluation,* and *personal response*.

Literal comprehension questions ask for a simple mapping of the item with the text since they target understanding of the straightforward meaning of the text, such as facts, dates, times, and locations. In the second category, the understanding of the whole passage is evaluated. In other words, students need to be able to put sporadic pieces of information in the text together and answer the comprehension question. Questions asking for inference are usually more challenging—intellectually rather than linguistically—since the answers cannot be found somewhere in the text. Not only students need to combine the information scattered throughout the text, but they also need to turn to their common sense and intuitions. In many cases, students need to work out the implications of the text which is a much more demanding task compared to the first two. As for prediction, readers need to combine their understanding of the passage, their own knowledge and experiences to predict what will happen next or at the end. When readers are required to evaluate a text, they make judgments based on their global understanding of the text and their own knowledge. Finally, when readers provide their personal responses to a text, they express their feelings (e.g. likes and dislikes) and reactions to the content of it.

Day and Park (2005) also mention five forms of comprehension questions. All five forms can be applied to all six types (or levels) of reading comprehension to some extent. Their questions forms include: *yes/no questions, alternative questions, true/false items, Wh-questions, and multiple-choice questions*. There are, of course, other possible question forms as well; e.g. fill-in-the-blanks or cloze. Day and Park (2005); however, believe that they are suitable for 'assessing' and not 'comprehending' purposes.

II. THE PRESENT STUDY

A. Aims

The purpose of the study was to investigate if providing L1 equivalents of unknown vocabulary items affects or enhances Iranian EFL students' performance on different reading comprehension questions. This purpose was followed with two important points in mind: (1)Throughout this study, unknown vocabulary items mean 'the words for which a student asks for meanings in her L1 just because she does not know their meanings or the meanings appropriate in the texts'. (2) It was intended to see if providing L1 equivalents of unknown vocabulary items would affect/enhance Iranian EFL students' performance on different reading comprehension questions. Additionally, the aim was to see which level of comprehension (literal, reinterpretation, inference) is affected significantly by providing the readers with L1 equivalents.

Bearing these points in mind, the following null hypotheses were formulated:

1. There is no relationship between giving L1 equivalents of the unknown vocabulary items and Iranian EFL students' reading comprehension ability.

2. There is no relationship between giving L1 equivalents of the unknown vocabulary items and Iranian EFL students' performance on literal, reinterpretation, and inference reading comprehension questions.

B. Instruments

Two reading comprehension passages were selected. Six multiple-choice items followed each passage. The first two items aimed at literal comprehension, the second two involved reorganization/reinterpretation comprehension, and the last two were inferencing type of comprehension items (Appendix 1). This order was carefully taken into account in both texts.

To determine the appropriate level of the texts, the passages were sent to fifteen English teachers in Maragheh. Based on their feedback and evaluation, it was decided that the passages matched high school second graders in Iranian education system. It should be noted that the tests were piloted first and the basic assumptions of the instrument were taken care of.

C. Participants

Forty nine high school students took the test in two high schools. They have been studying English for three years before for four or three hours a week. These second graders know Azerbaijani Turkish and Farsi well. Seven students' data were not taken into data analyses due to incompleteness and carelessness of their responses.

D. Procedures

As went earlier, the reading comprehension test of the study contained two passages. Each passage had six multiple-choice items. The students took the test twice. At the first stage, the students read the passages, chose the best option, and marked it on their first answer sheets. The teachers were sure that there were some unknown words in each passage. They, however, wanted the students not to ask for the meaning of unknown words and, instead, try to go on with their own English knowledge repertoire. The students were not informed that there was a second—yet different administration— of the same test. The students' first answer sheets were gathered at the end of the first stage.

During the second stage, the students were given the second answer sheet and they were required to answer the same questions. The students were informed that they were free to ask for the meanings of the words they did not know. The teachers walked around and provided the students with the meanings or L1 equivalents of the words students did not know. The second stage took a shorter time since the readers were all familiar with both texts in general. The Farsi or Turkish equivalents given suited the contexts of the passages. The respondents' second answer sheets were collected at the end of the second stage.

III. DATA ANALYSES

Paired t-test was applied to compare the means of the students on the same test. The first null hypothesis was rejected. In other words, the comparison of students' means seems to suggest that there is a relationship between 'giving L1 equivalents' of unknown vocabulary items in a passage and students' reading comprehension ability. Briefly then, the difference between two means (mean 1 = 9.68; mean 2 = 11.06) is statistically significant at .05 level. Table 1 below shows the results of paired t-test analysis.

TABLE 1:
PAIRED SAMPLE TESTS

	Paired Differences							
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 VAR00001 - VAR00002	-1.37500	2.61201	.46174	-2.31673	-.43327	-2.978	31	**.006**

To answer the second research question, three sets of paired t-tests were conducted. It was intended to find out which level of reading comprehension was affected most or least. In other words, students' means on literal, reinterpretation, and inference items on two administrations were compared to see which levels of reading comprehension were affected more. Table 2 gives a summary of students' means on different comprehension questions in two administrations. It should be noted that the mean differences for literal and reinterpretation item types were statistically insignificant while it was the opposite for inference items.

TABLE 2:
STUDENTS' MEANS ON DIFFERENT READING COMPREHENSION QUESTIONS IN TWO ADMINISTRATIONS

	Literal	Reinterpretation	Inference
Students' mean in administration 1	5.62	2.75	1.31
Students' mean in administration 2	5.5	3.25	2.25

IV. RESULTS AND DISCUSSION

Findings suggest that providing test takers with L1 equivalents of unknown vocabulary items helps them in their second taking of the same tests. As a result, students' concerns and complaints need to be addressed in one way or another during test construction. Several points need to be made, however.

First and foremost, a cursory look at table two shows that teacher assistance has had different effects on different levels of reading comprehension ability. Students' means on literal comprehension items showed a decrease, though quite slight. This was surprising since it was expected to observe an increase in students' means and not the opposite. Was it due to the test takers' tardiness and carelessness when they--for the second time--got engaged in 'mapping' the test items with the text (which Day and Park claim to be less demanding cognitively and intellectually)? Did they encounter fewer 'new words' pertaining to literal comprehension questions and subsequently not benefited the opportunity they had while taking the test again? What is of no doubt is the fact that questions aiming at literal comprehension of texts were less subject to the effects of teacher assistance during the second administration.

Second, students' means on reinterpretation items showed an increase during the second administration. The increase, however, is less than that of inference category. More specifically, it is 0.5 for the first whereas 0.94 for the latter. This seems to indicate that teacher assistance—as defined in this study—is more helpful with comprehension questions asking for inference that are more challenging cognitively (Day & Park, 2005). It might be argued that unknown words contribute more to the complexities and difficulties of going beyond text and working out intended meanings. This seems to stand to reason since English learners with limited capacities tend to rely heavily on linguistic features in general and hardly exploit contextual and co-textual clues and information when encountered with a task (Jenkins, 2006). Participants of this study were beginning English learners and were more likely to lack the capacity to make use of contextual and co-textual information and infer intended meanings. Thus, providing L1 equivalents of unknown words led to more increase in students' means on inference questions compared to reinterpretation (reorganization) items simply because teacher assistance meant easing co-textual challenges inherent in inference questions. Teacher assistance for reinterpretation items, nonetheless, meant further support with an area they were already good at, i.e. exploiting linguistic knowledge.

Third, and as went above, despite an overall statistically significant increase in students' mean in second administration, mean increases were not significant for the first two categories (literal, reinterpretation) but it was significant for the last. In other words, the mean difference on reinterpretation questions was not statistically significant (Sig.: 0.08), though there was an increase between two administration. This is a further support of the above argument that teacher assistance and providing L1 equivalents of unknown words during the second administration benefitted students in tackling inference items more than the other two. The mean difference pertaining to inference items appeared to be statistically significant (Sig.: 0.005). Hence, this last significant difference is the major predictor of the overall results of this study indicating that teacher assistance with inference items contributed more to the overall findings of the study.

Fourth, table two is revealing in another important respect. The sharp and remarkable decline in students' means as the comprehension items move up in terms of cognitive demand and intellectual sophistication provide some support for both Day and Park's (2005) and Nuttall's (1996) arguments that type 3 items are more difficult (intellectually rather than linguistically) than types 1 and 2. As comprehension items get more and more challenging and demanding, students' means get lower and lower. This holds true in both administrations.

Iranian high school students often complain about unseen reading comprehension passages that contain some unknown words. They also tend to attribute their inefficiency or lackluster performance to the existence of these unseen words. It is a common practice among these students to raise their hands and ask for the meaning of the words they call 'unseen' and complain about since they believe that the unknown words impede their comprehension. The findings of this study appear to suggest that such an argument is only partially valid. It seems that unknown vocabulary items do not bring about comprehension problems when students' comprehension of a given test is measured by literal and reinterpretation (reorganization) questions. This is so because teacher assistance did not result in statistically significant differences in two administrations.

Teacher assistance during the second administration helped with significant improvements of students' performances on inference questions. As a result, students' arguments and concerns about the negative role of unknown words in their performances on reading comprehension tests are justified and well-grounded. More important is the following key question: Why teacher assistance helps less with the first two comprehension items but (significantly) more with the last one? The potential reasons were discussed above.

V. CONCLUDING REMARKS

A common belief among some students is that when they are given unseen reading comprehension tests that contain unknown vocabulary items, their comprehension ability is affected negatively yielding to a lower score. The results of this study seem to suggest that such an argument should be viewed vis-à-vis comprehension levels that different questions target. When students' comprehension of a text is measured with questions asking for inference-making, unknown words and vocabulary items seem to play a role. But if comprehension questions tap literal and reinterpretation levels, the existence of unknown words seem not to exert the negative effects students assume they do.

More importantly, since Iranian high school students in general are beginning English learners, they tend to process text information in a bottom-up manner (Jenkins, 2006). Accordingly, they are dependent on linguistic information and are less likely to exploit co-textual and contextual information. Therefore, lower level comprehension questions (e.g. literal and reinterpretation) favor their information processing style and better results emerge whether teacher assistance is there or not. Higher level comprehension questions which ask for making inference prove more demanding since bottom-up processing does not help. This time teacher assistance seems to play a more helpful role when students lack sufficient means to overcome difficulties.

Drawing hasty conclusions about a highly illusive, complex, and inaccessible process such as reading comprehension is not sensible. There are many variables affecting the so-called 'psycholinguistic guessing game' simultaneously and in complex ways. The readers' background and subject/topic knowledge, their cultural knowledge and their knowledge of the language (including phonological, orthographic, morphological, syntactic and semantic, discourse-level knowledge), L1 knowledge, the relationship between the first and target languages at all linguistic levels, text type, organization, genre, vocabulary repertoire, motivation… are among the factors that have been shown to play roles in reading process (Alderson, 2000).

The results of this study, therefore, need to be interpreted cautiously and quite carefully. All test takers were female, sharing the same L1, i.e. Azerbaijani Turkish, and knowing a second language (Farsi). They were not randomly selected. As far as the comprehension items are concerned, they were all multiple-choice items. To get a better indication of reading comprehension ability of the students, Alderson (2000) argues that using different techniques and methods of assessment is necessary. All this calls for caution in terms of how much generalizable the research findings are.

APPENDIX

Read the passages and mark the right answer on your answer sheet.

Last week, Rahman's wife Leila had an accident. Rahman's youngest child, Yusof, was at home when it happened. He was playing with his new car. His father had given it to him for his third birthday the week before.

Suddenly the little boy heard his mother calling 'Help! Help'. He left his toy and ran to the kitchen. The poor woman had burned herself with some hot cooking oil. She was crying with pain and the pan was on the fire.

Rahman had gone to his office. Both the other children were at school. The youngster was too small to help his mother and she was too frightened to speak sensibly to her son, but he ran to a neighbour's house and asked her to come and help his mother. Soon she put out the fire and took the victim to the clinic.

When her husband came home, Leila told him what had happened. Of course Rahman was very concerned about his wife, but was also very proud of his sensible son. 'When you are a man, you will be just like your father,' he said.

1. What was Yusof doing? He was ….
a. eating   b. playing
c. helping his mother   d. calling the neighbour

2. What did the neighbour do? She …. .
a. asked Yusof to speak sensibly in clinic   b. made a fire and took Leila to the kitchen
c. took Leila to the clinic   d. was too frightened to help Yusof and Leila

3. How old was Yusof?
a. 6   b. 5   c. 4   d. 3

4. How many children had Rahman?
a. 1   b. 2   c.3   d.4

5. Why was Rahman proud of his son? Because …. .
a. his son could have helped his mother sensibly
b. Rahman was very concerned about his wife
c. Rahman's son was just like Rahman
d. his son had helped the neighbour quickly

6. Which people were in Rahman's house when the accident happened?
  a. Leila, Rahman and Yusof   b. Yusof, his mother, and the neighbour
  c. Leila and Yusof   d. Leila and her children

I am Bob. This week I tried two new restaurants. They are both downtown. Rama is a small place with about twenty tables. I just waited three minutes for my table. The waiters and waitresses are very friendly and its service is excellent. I ordered chicken with orange sauce with rice and a salad. Then I had chocolate cake and coffee. The chicken was delicious, but the cake was too dry. The meal cost about twenty-two dollars.

Alfa is a much bigger restaurant, and it was very crowded on that night. I waited twenty minutes for a table. Alfa is noisier than Rama, and the waiter was very slow with my meal. I ordered soup and a steak with fried potatoes and vegetables. The soup wasn't very hot. The steak was ok, but the vegetables weren't very good. For dessert, I had ice-cream. The meal was really expensive, about forty-five dollars.

1. What did I have in Rama?
  a. soup and rice   b. a salad and fried potatoes
  c, chicken, rice, and a salad   d. steak and ice-cream

2. How long did I wait for the table in Alfa? …… minutes.
  a. twenty   b. three   c. twenty-two   d. forty-five

3. Which restaurant's waiters does Bob like? Why?
  a. Rama's , because they make delicious food
  b. Alfa's, because they are slow and careful
  c. Rama's, because they are kind and friendly
  d. Alfa's, because they are not noisy

4. Which one is wrong?
  a. Rama is smaller than Alfa
  b. The food in Rama was more delicious than the food in Alfa
  c. The food in Alfa was cheaper than the food in Rama
  d. Bob waited for a table longer in Alfa

5. From the passage we understand that:
  a. Bob had not eaten in Rama and Alfa before
  b. Alfa and Rama are the same in their prices
  c. Bob does not like to make food himself
  d. The waiters in both restaurants know what Bob orders for food

6. Bob would go to …….. next time because ……….
  a. Rama, the food is delicious and cheap and the waiters are kind
  b. Rama, it is not necessary to wait for long tables
  c. Alfa, it is ok, large, and has slow and careful waiters
  d. Alfa, the food is not expensive, and he doesn't have to wait for a table a long time

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Farhad Mazlum was born in Maragheh, E. Azerbaijan, Iran in 1975. He has done his BA, MA and PhD programs in TEFL/TESOL in Teacher Training University, Tehran. He is currently the Head of English Department and has been teaching different courses at MA level in Maragheh University. He has published papers in 'the Curriculum Journal', Iranian Journal of Applied Linguistics', 'Journal of Teaching English Language and Literature Society of Iran', and 'Taiwan International ESP Journal'.

Fatemeh Poorebrahim was born in Maragheh, E. Azerbaijan, Iran. She is a faculty of English Department in Maragheh University. She has been teaching different courses at BA level in Maragheh and Shahid Madanie Azerbaijan Universities. She has published papers in 'Iranian EFL Journal' and 'Taiwan International ESP Journal'.

Sarvar Chekani Azaran was born in Maragheh, E. Azerbaijan, Iran. She teaches general and ESP courses in Fatima al-Zahra Technical & Vocational Higher Education Center and Payame-Noor University of Maragheh.