

The Role of Lexical Inferencing and Morphological Instruction on EFL Learners' Reading Comprehension Development

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Abstract

This study investigated whether Lexical Inferencing (LI) and Morphological Instruction (MI) can significantly affect EFL learners' reading comprehension, furthermore, it also examined their effects on the learners' vocabulary retention over time. 60 homogeneous EFL learners were randomly assigned to two experimental and a control groups. After the pre-test, participants of the first experimental group received lexical inferencing strategy training for six 45-minute sessions. The second experimental group was also provided with a morphological instruction for six 45-minute sessions, and as for the control group, the participants followed their regular reading comprehension course. After the treatment, two post-tests with a short time interval were administered to the three groups and the obtained data were fed to different statistical tests to spot the probable differences among the three groups' first post-test performance as a measure of their learning differences and the second post-test performance as a measure of the learners' vocabulary retention differences over time. Results of the paired t-tests showed that lexical inferencing instruction had a statistically significant effect on EFL learners' reading comprehension development. On the other hand, it was found that morphological instruction had no statistically significant effect on EFL learners' reading comprehension development. The ANOVA analyses revealed that there was no statistically significant difference between the effects of lexical inferencing and morphological instruction on EFL learners' reading comprehension development. Furthermore, no significant difference was found between the effects of lexical inferencing and morphological instruction on EFL learners' reading comprehension development over time.

Keywords: Lexical Inferencing, Morphological Instruction, Reading Comprehension

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1. Introduction

Reading as one of the central skills of language can provide an important part of input required for the development of English as a foreign language (EFL) learners' L2 proficiency. Most of the time, the goal of reading is to derive the intended meaning; therefore, the primary goal behind reading different texts is to get some meaning and to comprehend what the text is trying to convey.

Studies show that several factors contribute to reading comprehension, one of which is the knowledge of vocabulary as the most basic meaning conveying element of language. Although studies have reported constant and reliable correlations between vocabulary and reading comprehension (Bromley, 2004; Dalton & Grisham, 2011; Laufer, 1997; Paribakht & Wesche, 2006, to name a few), a causal relationship is yet to be found.

To come across unknown words while reading different texts hampers comprehension and consequently slows down the learners' general proficiency development. The situation becomes worse when the number of unknown words is high. Since looking up the words in dictionaries is quite time-consuming and sometimes boring, it can be used as the last resort. On the other hand, as Nagy (1997) states, there are many arguments against the efficiency of direct teaching of all needed vocabularies because there are too many words to teach and there is a lot to learn about each word. In line with the learner-centered views of education, several studies suggest that the readers make use of different strategies which involve less effort and less time (e.g., Gu & Johnson, 1996; Schmitt, 2000) to deal with the difficult texts. Accordingly, English teachers can facilitate the EFL learners' word knowledge growth through explicit teaching of vocabulary learning strategies. The goal of such instruction is to help students develop word consciousness and autonomy in determining the meaning of difficult words.

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Lexical inferencing (L1) and morphological instruction (MI), are considered as two leading strategies for vocabulary knowledge development highly recommended by many scholars (Bellomo, 2009; Diaz, 2010; Farsi, 2008; Kieffer & Lesaux, 2008; Kirby et al., 2012; Laufer, 1997; Paribakht, 2004; Qian, 2004; Zhang & Koda, 2013; to name a few) as they can help readers to cope with unknown words and have a better understanding of the texts.

The dearth of research to attest the effectiveness of L1 and MI strategies for Iranian EFL learners' vocabulary knowledge development and the lack of comparative studies of the two strategies compelled the researcher to examine their probable effects on the second language (L2) learners' reading comprehension since a great contribution of vocabulary knowledge is logically manifested in the reading comprehension of L2 learners.

2. Review of the Related Literature

2.1. Vocabulary Knowledge and Reading Comprehension

The role of vocabulary knowledge in reading comprehension of L2 has been deemed as crucially significant. Both language teachers and students acknowledge that inadequate vocabulary knowledge may lead to comprehension breakdown. Many studies (for example, Bromely, 2004; Chall, 1978; Dalton & Grisham, 2011; Droop & Verhoeven, 2003; Laufer, 1997; Sterberg, 1987) underscore that there is a strong relationship between students' vocabulary knowledge and their reading comprehension abilities. According to Paribakht and Wesche (2006), reading comprehension and vocabulary knowledge are inseparably linked. Laufer (1997) while pointing out the role of other factors contributing to reading comprehension highlighted the role of vocabulary knowledge as the best predictor of one's reading comprehension success. Laufer (1991) argued that at all proficiency levels there was a

significant correlation between vocabulary scores and reading comprehension scores. Anderson and Freebody (1983, p. 367), indicates that “people who do not know the meaning of many words are most probably poor readers.

Due to the attested importance of vocabulary knowledge for second or foreign language skills development, it is quite essential for both EFL teachers and learners to look for efficient vocabulary teaching and learning strategies and techniques. “Vocabulary learning strategies are defined as a part of language learning strategies which are in turn viewed as a part of general learning strategies” (Nation, 2001, p. 352). Many studies have explored the significant contribution of such strategies in language learners’ general language learning success during the last two decades (e.g., Gu & Junson, 1996; Nassaji, 2003; Nation, 2001; Oxford & Scarcella, 1994; Schmitt, 1997).

2.2. Studies on Lexical Inferencing Strategy

Lexical inferencing strategy of vocabulary learning has been studied in different projects in recent years, and various results are found. Fraser (1999) for example reported that participants of her research on lexical processing strategy use applied L1 in 58 percent of the cases when they come across unfamiliar words. According to Schmitt (2008), L1 is one of the effective strategies for determining the meaning of unknown words while reading a written text. According to Nassaji (2003, 2004); Huckin and Bloch (1993); O’Malley and Chamot, (1990) lexical inferencing is a cognitive process in reading comprehension which involves the reader in some mental processes while trying to guess the meaning of words. Similarly, Wesche and Paribakht (1999) believe that through the use of L1, the comprehension of difficult texts becomes possible. They also indicate that during this cognitive process the readers try to figure out the meaning of unknown words, which in turn

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enhances the retention power of the lexical items. Qian (2004), argues that L1 requires top-down processing in which the reader resort to different clues ranging from low-level ones to mid-level clues such as sentential, and then to more global ones.

Kaivanpanah and Moghaddam (2012), examined the role of reading proficiency in the Iranian EFL learners' use of knowledge sources in L2 and L1 and the level of success in guessing the meaning of unknown target words. They found that L2 reading proficiency contributes to L1 and the more proficient readers made more correct inferences than the less proficient counterparts. They also found that using certain knowledge sources is not the only reason for success in inferencing, but effective use of these knowledge sources is also necessary.

In another study, Riazi and Babaei (2008) investigated Iranian female EFL students' level of L1 and its relation to their L2 proficiency and reading skill. To this end, five elementary, five intermediate, and five advanced learners were asked to think aloud while they read a text. It was done to distinguish the knowledge sources they used for guessing the meaning of the unknown words. After taking a multiple-choice reading test, the results showed that for L1, elementary learners used contextual, intralingual, and interlingual clues; while intermediate students used only contextual clues and participants in the advanced group used contextual and intralingual clues. It was also found that the highest number of L1 belonged to elementary learners, while the highest number of correct guesses went to advanced learners. They concluded that there was no relationship between overall L1 skill and learners' reading performance.

In a recent study, Hu and Nassaji (2014) attempted to explore L2 learners' use of inferential strategies and its relationship with their inferencing success.

To this end, they conducted a mixed-design study. Results of think-aloud procedure revealed that Chinese EFL learners used twelve types of inferential strategies. Based on the learners' success in inferential processes they were divided into two groups, namely, successful inferences and less successful inferences. Quantitative and qualitative analysis of the obtained results showed that participants of both groups differed not only in the degree to which they used specific strategies but also when and how they used them effectively. They concluded that successful inferences had some key characteristics. These key characteristics were frequent use of evaluation and monitoring strategies, a combination of both textual and background knowledge, self-awareness, and repeated efforts to infer the target words' meaning. Further, they noted that the determining factor for successful inferencing was the quality not the quantity of the strategy use.

2.3. Factors Affecting Learners' Lexical Inferencing Success

According to Nation (2001), guessing from context is highly influenced by learners' proficiency level, and a good level of proficiency is required for successful inferencing. Tavakoli and Hayati (2011) while investigating the L1 success of a group of Iranian students, found that high-intermediate level students are more successful than low intermediate students. In addition to proficiency level, studies indicate that learners use a wide range of knowledge sources for making lexical inferences (e.g., Bengelil & Paribakht, 2004; Comer, 2012; Haastrup, 1991; Paribakht & Weshe, 1999). According to Schmitt and McCarthy (1997), Linguistic knowledge, world knowledge, and strategic knowledge are the knowledge sources that contribute to effective use of context. Comer (2012) introduced a range of knowledge sources for L1 including, contextual cues, word level knowledge, sentence level knowledge,

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discourse-level knowledge, and background knowledge. Nassaj (2003) states that grammatical knowledge, discourse knowledge, word knowledge, and morphological knowledge are the available knowledge sources for readers' lexical inferencing. He also argues that successful L1 highly depends on how the readers use and link different knowledge sources.

On the other hand, according to Nassaji (2004), there is a significant relationship between the depth of vocabulary knowledge and the degree and type of strategy use and success in L1. Read (2000) defines the depth of vocabulary knowledge as how well one knows the words; in other words, it is the quality of one's vocabulary knowledge while the breadth of vocabulary knowledge is defined by Nation (2001), as the number of words one knows. In fact, it is the quantity of one's vocabulary knowledge. Carlisle (2007) maintains that "breadth and depth of word knowledge are key factors in reading comprehension" (p.78). Marzban and Hadipour (2012) revealed that both the depth and breadth of vocabulary knowledge were correlated with learners' L1. However, depth of vocabulary knowledge was found to have a greater impact on L1 success than the breadth of vocabulary knowledge.

Hirsh and Nation (1992) indicate that success or failure in L1 is highly dependent on the density of unknown words. They also note that high density of unknown words decreases readers' inferencing success. According to Laufer (1991) and Haastrup (1991), a threshold level of vocabulary is also needed for successful L1. Laufer and Kalavski (2010) defined vocabulary threshold as the minimum number of vocabulary knowledge which is necessary for reading comprehension. Moreover, Mondria and Wit-de-Boer (1991), indicate that the amount and quality of contextual clues influence readers' success at guessing. According to them, a context which provides sufficient clues is a rich context and enables readers to infer the meaning of unknown words easily and

correctly, while the poor contexts with inadequate contextual clues make inferencing hard or even sometimes impossible. Goodman (1971) also argued that adequate contextual clues encourage the readers to follow the “psycholinguistic guessing game” and finally distinguish the meanings of unknown words (p. 128). According to Kaivanpanah and Alavi (2008), contextual factors such as text characteristics, word characteristics, existence of contextual clues, and topic familiarity affect learners’ L1 ability. The ability to distinguish such contextual factors is a determining factor for the readers L1 success (Huckin & Bloch, 1993).

2.4. Morphological Instruction Studies

Robinson (1989), argues that attention should be given to non-context dependent strategies for vocabulary learning since they enable the learners to negotiate the meanings of words consciously. In recent years the investigation of the role of MI in improving language learners’ reading abilities has attracted researchers’ attention (e.g., Carlisle, 2007; Diaz, 2010; Kieffer & Lesaux, 2007, 2008; Farsi, 2008; Mountain, 2005; Tong, Deacon, Kirby, Cain, & Parrila, 2012). Nagy and Anderson (1984) note that the readers can work out the meanings of about 60 percent of the new words through morphological analysis based on the predictable component parts. Similarly, Nation (2001) maintains that the learning burden of words decreases if the learners are able to learn and distinguish the known parts (i.e., affixes and roots). Kieffer and Lesaux (2007, 2012), state that “when it comes to teaching vocabulary, little knowledge of root words, prefixes, and suffixes goes a long way” (p.134).

According to Anderson and Freebody (1983) since a great number of English words have been shaped through the combination of different morphemes, making the readers aware of these combinations can help them to

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enhance their morphological awareness and consequently lead to vocabulary growth. Likewise, Nation and Baur (1993) state that a large number of words in English have Greek, Latin, and French origins and a great number of other words are made up of distinguishable parts (i.e., roots and affixes), so making the students aware of them through morphological analysis will increase their morphological awareness, which really can help them to deal with many unknown words while reading different texts. In other words, the justification for MI is that it helps English learners to uncover the meanings of thousands of derivational and multisyllabic high frequency and low-frequency words. Hence, morphological instruction increases language learners' morphological awareness (e.g., Carlisle, 1995).

Kieffer and Lesaux (2012) investigated the role of derivational morphological awareness in reading comprehension of 952 six-grade students from different language background and found that morphological awareness directly contributes to reading comprehension. Kirby et al. (2012) in a study investigated the effect of morphological awareness on five measures of reading from grade one to three. They tried to examine the nature and extent of the relationship between students' reading development as a result of their morphological awareness. For this aim, 103 students from grade 1 to 3 were chosen. Based on the results they concluded that word reading and reading comprehension were influenced by the students' morphological awareness.

Sritulanon (2013) investigated the effect of MI on the reading ability of low proficiency adult EFL learners at a university in Thailand. The subjects of the study were randomly assigned to control and experimental groups. For the experimental group, the researcher provided MI to enhance their reading abilities, and the participants of the control group followed their regular classes. At the end of the experiment, the scores from the vocabulary and

reading comprehension tests were analyzed. Results of the study revealed that there was no statistically significant difference between the pre-test and post-test scores of the control group and experimental group.

Diaz (2010), through an experimental design study, attempted to determine whether MI improves high school language learners' spelling, vocabulary, and reading comprehension. The obtained results from 140 students showed MI had a significantly positive effect on learners' vocabulary, spelling, and reading comprehension. He concluded that mastery of simple and complex morphemes was necessary in order to help the students understand high-level word constructions. Finally, he argued that MI cannot improve students' performance unless it becomes a major part of the language curriculum.

In another study, Kieffer and Lesaux (2008), examined the relationship between morphological awareness and reading comprehension of Spanish-speaking English language learners from fourth through fifth grade. Students' ability to decompose derived words while reading was assessed using an experimental task. It was found that the magnitude of the relationship between morphological awareness and reading comprehension increased between fourth and fifth grades. They argued that students' awareness of words' morphological structure not only improves their understanding of the individual words but also it improves overall reading comprehension.

Asgharzadeh, Rahimi, and Kalhor (2012) investigated the effect of explicit morphological practice on 60 Iranian intermediate EFL learners' reading comprehension improvement and concluded that explicit morphological practice improved Iranian intermediate learners' reading comprehension. Carlisle (2003) also examined the role of lexical processing of morphologically complex words for elementary years students to find out its relationship with children's acquisition of morphological knowledge for reading comprehension.

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The third graders were given two tasks involving lexical analysis of morphologically complex words. Two years later, they were given a measure of processing derived words in sentence context and a reading comprehension test. Results of the study indicated that lexical analysis of complex words in the early elementary years contributed to vocabulary and reading comprehension by the late elementary years.

According to the brief outlined review of the literature while L1 and MI have been shown to be useful for English speakers; this benefit has not been fully and comparatively investigated in Iranian English language learning contexts. Against this backdrop, this study seeks to illuminate the possible effects of strategy training on the development of Iranian EFL students' reading comprehension. For the stated purpose the study addresses the following research questions:

1. Do lexical inferencing and morphological instruction have any significant effect on EFL learners' reading comprehension development?
2. Do lexical inferencing, morphological instruction and no-strategy based traditional instruction have a significantly different effect on learners' reading comprehension development?
3. Is there any significant difference among the effects of lexical inferencing, morphological instruction, and no-strategy traditional instruction on the EFL learners' reading comprehension development over time?

3. Methodology

3.1. Participants

Participants of this study were 60 third grade high school students ranging in age from 17 to 19. All participants were male and native speakers of Turkish. Based on the results of a general English proficiency test (PET in this study),

out of the initial 86 students, those whose score fell between one standard deviation above or below the mean were selected as the participants of the main study and were assigned randomly to three 20 member groups (one control and two experimental groups).

3.2. Instrumentation

Preliminary English Test (PET for School-Aged Learners)

As a Cambridge English Language Assessment (previously known as Cambridge ESOL) general English proficiency test for School-Aged learners, PET is internationally renowned as a valid and reliable test. However, its reliability was reassessed using Cronbach α measure of internal consistency. Table 1 presents reliability estimation results.

Table 1. The Result of Cronbach's Alpha for PET

N of Participants	N of Items	Cronbach's alpha
86	42	.876

As is evident above in Table 1, the test was highly reliable ($\alpha = 0.87$).

Reading Comprehension Test

Three parallel reading passages followed by reading comprehension question items were extracted from a book published by Cambridge university press entitled "*Read This!*" Intro (Daphne, 2012) and were considered as the pre and post-test s package. It must be noted that a panel of three experienced English teachers, who were teaching in the same school where data were collected, were asked to comment on the appropriateness of the selected texts and the test for the participants' level of reading proficiency. Hence expert judgment was employed as a measure of the validity of reading comprehension tests. After being viewed by the experts, the validity of the test was relatively assured.

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Furthermore, Cronbach's alpha consistency was run to estimate the reliability of the reading comprehension test (Cronbach $\alpha=0.89$).

3.3. Data Collection Procedure

The following steps were taken to collect the data. First, prior to the start of the main study, the teacher informed the selected participants (as described above) of the purpose of the study and its possible benefits and hence obtained their consent. Then, the reading comprehension pretest was administered to all participants in all three groups, and the scores were recorded. Next, the specific treatment for the two experimental and the placebo instruction for the single control group commenced as is described below.

Group A: Lexical Inferencing Training

In this group, the teacher trained the students how to use lexical inferencing strategies to infer the meaning of unknown words. To provide the participants with a practical framework of lexical inferencing, the model proposed by Clarke and Nation (1980) was used. The model consisted of the following steps:

- 1) looking at the unknown word and its surrounding in order to determine the part of speech
- 2) looking at the immediate grammar context of the word, usually within a clause or sentence.
- 3) looking at wider context usually over several sentences, and
- 4) guessing the meaning of the unknown word and checking the guess

According to Clarke and Nation (1980), following the same order is not necessary, but it is crucial to take all the steps for making informed guesses. For training the participant how to make inferencing, six passages (a single passage

for each session) were used. The passages were extracted from the book “*Read This*” (Daphne, 2012). At the beginning of each session, the students were asked to read the passage and underline unknown words. Then the teacher chose 10 of the unknown content words which were underlined by the students as the target words for lexical inference. Next, the lexical inferencing steps were written on the board and explained. Each step was illustrated with some examples. The group participants were required to follow the following steps for guessing the meaning of the selected ten unfamiliar words.

The unknown words were chosen in turn from the passage for the whole class to guess. One participant had the task of saying what part of speech the word was, and then another looked at the immediate grammar context of the word, one to guess the meaning and finally one to check the guess. For distinguishing the part of speech of the words a kind of analysis along the lines of ‘who does what to whom’ as Clarke and Nation (1980) suggested was practiced. After dealing with the target words, the participants were ready to work on their own; therefore, the teacher provided some activities as homework for the learners to practice inferencing at home. This procedure lasted for six 45-minute sessions.

Group B: Morphological Instruction

In this experimental group for morphological instruction, a word list containing 100 words in isolation was given to the participants, and they were asked to underline unknown ones. Eventually, 60 unknown words were chosen as the target words for morphological instruction (10 words for each session). Since the goal of the technique was to help the learners recognize the most common affixes and roots in English derivational words, word families and multisyllabic words and enable them to analyze the words to the component parts, those

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words which instantiated these conditions were chosen as the target words for strategy instruction. The process of strategy instruction involved the participants first to analyze the unknown words into the meaningful parts and then to add up the meaning of the parts to make a general meaning for the whole word.

Like lexical inferencing group, to provide a practical and formal training, the model proposed by Kieffer and Lesaux (2007) was used for Strategy instruction in this group. This model suggests using morphology as a cognitive strategy with the following explicit steps:

- 1) Learners recognize those words the meaning of which they do not know, or they cannot deeply understand
- 2) They analyze the word form orphemes they recognize (both roots and affixes).
- 3) They hypothesize a meaning for the word based on the word parts.
- 4) Check the hypothesis against the context.

The teacher taught these four steps explicitly, modeled them several times with various examples, and provided the participants with time to practice in the class. Similar to the first experimental group, the participants of this group took part in six 45-minute sessions of morphological instruction.

Group C: Place bo Instruction

Participants of the control group followed their regular reading comprehension course without any strategy training. They took part in reading comprehension classes in which they worked on the same passages as the lexical inferencing group for six 45-minute sessions.

After the treatment sessions, the same reading comprehension pretest was administered to all three groups as the first post-test. The participants were

encouraged to try using those strategies they were taught in their peculiar intervention program. After two weeks the reading comprehension test was administered again to all the three groups once more as a delayed post-test to investigate the efficacy of the strategies for the EFL learners' reading comprehension development over time.

4. Results

In order to answer the research questions, the obtained data were fed into statistical analyses including paired samples t-tests, and one-way ANOVA. In the following part, concerning each research question, the results obtained are described, and the assumed hypotheses are tested. Before embarking on inferential statistics and hypothesis testing the pretest and post-test results of the three groups were subjected to Shapiro-Wilk test of normality of the data in an effort to check if one of the main assumptions of t-test and ANOVA, i.e., normality of data distribution, is observed or not. The results of the test are shown in Table 2 below.

Table 2. Results of Shapiro-wilk Test of Normality

	Group	N	Z	Sig.
Pre-test	Control	20	.925	.126
	Inferencing	20	.969	.730
	Morphology	20	.969	.739
1 st Post-test	Control	20	.968	.709
	Inferencing	20	.978	.900
	Morphology	20	.926	.127
2 nd Post-test	Control	20	.974	.844
	Inferencing	20	.933	.179
	Morphology	20	.930	.156

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As the Table shows, the scores in the pre-test, the first post-test, and the second post-test administrations were all normally distributed since in all cases the p-value was above the critical 0.05 level ($p > 0/05$). After making sure of the normality, the obtained data were fed into different statistical tests including paired t-tests and one-way ANOVAs to spot the probable differences among the three groups.

The first research question sought to investigate if lexical inferencing and morphological instruction have any significant effect on EFL learners' reading comprehension development. To answer this question, the pre and post-test results of the two L1 and MI groups were subjected to two within-group comparison using paired samples t-test. Table 2 presents the descriptive results of the analyses.

Table 3. Descriptive Statistics for the Paired Sample t-tests

		Mean	N	SD	Std. Error Mean
Pair 1	pretest of inferencing	10.95	20	4.47	1.00
	1 st post-test of inferencing	14.70	20	4.62	1.03
Pair 2	pretest of morphology	11.50	20	4.85	1.08
	1 st post-test of morphology	12.70	20	3.41	.76

Table 3 summarizes the descriptive information of the two groups' pre and first post-test. Accordingly, it seems that the mean score in lexical inferencing group has undergone greater change in comparison with the mean of morphology group after the implementation of the treatments. However, As stated above, to check for the statistical significance of the differences between the mean scores of the pre and post-test results of the two groups paired samples t-tests were run. The results are presented in Table 4 below.

Table 4. The Results of Paired-samples T-test

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	SD	Std. Error Mean	95% Confidence Interval of the Difference Lower Upper			
Pair 1	Pre-test & 1 st Post-test of Inferencing	-3.75	3.07	.68	-5.18 -2.31	-5.45	19	.000
Pair 2	Pre-test & 1 st Post-test of morphology	-1.20	2.70	.60	-2.46 .06	-1.98	19	.062

As is evident in table 4, Lexical inferencing had a statistically significant effect on the EFL learners' reading comprehension improvement since $t(19) = -5.45$, $p = 0.00 < 0.05$. However, it was found that morphological instruction did not have a statistically significant effect on the EFL learners' reading comprehension improvement as $t(19) = -1.95$, $p = 0.06 > 0.05$. Hence the null hypothesis for the lack of any significant difference in the pre and post-treatment tests of Lexical inferencing group was rejected while the null hypothesis for the Morphological instruction strategy was confirmed.

The second research question was raised in an attempt to see whether lexical inferencing, morphological instruction, and no-strategy based traditional instruction have a significantly different effect on learners' reading comprehension development. In order to answer this research question and test the related null hypothesis a one way ANOVA analysis was on the post-test results of the three groups. Table 5 summarizes the descriptive information of the three groups' post-test results.

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Table 5. Descriptive Statistics for the First Post-test Results ANOVA Analysis

	N	Mean	SD	Std. Error	95% Confidence Interval		Minimum	Maximum
					for Mean			
					Lower Bound	Upper Bound		
Control	20	13.35	3.32	.74	11.79	14.90	7.00	19.00
Inferencing	20	14.70	4.62	1.03	12.53	16.86	6.00	24.00
Morphology	20	12.70	3.41	.76	11.09	14.30	7.00	19.00
Total	60	13.58	3.86	.49	12.58	14.58	6.00	24.00

Table 5 summarizes the first post-test results of the three groups. As it is apparent, lexical inferencing group mean ($X=14.7$) is higher than the other two groups. In order to check the statistical significance of the differences among the groups, one-way ANOVA was run on the data.

Table 6 below presents the ANOVA analysis results achieved for the comparison of the first post-test results of the three groups.

Table 6. ANOVA Results of the Three Groups' First Post-Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	41.63	2	20.81	1.41	.25
Within Groups	838.95	57	14.71		
Total	880.58	59			

As is evident above in Table 6, it was found that the difference among the three groups first post-test mean scores did not come up to a statistically significant level ($F(2,59)=1.41, p=.25$).

Finally, in order to answer the third research question which looked for any significant difference among the effects of lexical inferencing, morphological instruction and no-strategy traditional instruction on EFL learners' reading comprehension development over time a one-way ANOVA was run on the second post-test scores of the three groups. Table 7 summarizes the descriptive information of the analysis.

Table 7. Descriptive Statistics for the Delayed Post-test

N	Mean	SD	Std. Error	95% Confidence		Minimum	Maximum	
				Interval for Mean				
				Lower Bound	Upper Bound			
Control	20	13.95	4.97	1.11	11.61	16.28	4.00	22.00
Inferencing	20	13.25	4.32	.96	11.22	15.27	3.00	19.00
Morphology	20	12.85	4.80	1.07	10.60	15.09	6.00	23.00
Total	60	13.35	4.65	.60	12.14	14.55	3.00	23.00

The second post-test mean scores of the three groups as is reported in Table 7 are apparently minimally different. The statistical significance of the attested differences was checked using a one-way ANOVA. Table 8 presents the inferential statistic results of this analysis.

Table 8. ANOVA Results for the Three Groups Delayed Post-Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.400	2	6.200	.279	.757
Within Groups	1265.250	57	22.197		
Total	1277.650	59			

According to Table 8, no statistically significant difference was found between the L1, MI, and the control group in their delayed post-test reading comprehension performance ($F(2,59)=0.279, p=.757>0.05$).

5. Discussion and Conclusion

While some studies have confirmed that both lexical inferencing and morphological instruction can positively affect the readers' reading comprehension ability, the results obtained in this study revealed that lexical inferencing strategy could lead to improvement of the EFL learners' reading comprehension, but morphological instruction was not found effective in this regard. On the other hand, the difference between lexical inferencing and morphological instruction in their effect on the learners' reading comprehension was not found to be statistically significant. As the comparisons conducted to answer the second and third research questions did not reveal a significant difference between the L1 and MI, the only significant difference which was reported for the difference between L1 pretest and post-test results was questioned by the researchers of the study due to the increased risk of type I error commitment and the lack of logical significance. This finding is in line with those studies which highlighted the role of context and context-dependent programs for vocabulary instruction (e.g., Clarke & Nation, 1980; Laufer, 1996; Nation, 2001). Nation (2001) believes that attention to word form through morphological instruction may result in ignoring the context, and using context is more likely to result in correct guesses than using word parts (personal communication, November 4, 2014).

Laufer (1996) also states that it is naïve to think that if language learners make use of guessing strategies, they are always deemed to make successful guesses, because these strategies will not automatically lead the learners to successful guesses since it is not possible for the readers to control all the factors that directly or indirectly influence their guessing. Therefore it can be said that as Nation (2001) states, some realistic and favorable conditions are required for the readers to be able to infer the meanings of unknown words.

EFL learners' lack of lexical inferencing success in this program might be related to some reasons that are to be discussed briefly in the following part.

The rather brief literature review conducted for the present work revealed that the learners' proficiency level is one of the determining factors in learners' success in strategy use. Since the general proficiency level of the participants of this study as the results of the homogeneity test (PET) shows, regarding the general proficiency level, they can be considered as lower-intermediate or elementary language learners. It is reasonable not to expect an immense change in learners' reading comprehension development after strategy training. This is in line with Comer (2012), in that because of the students' low proficiency level they were not able to successfully guess the meaning of unknown words.

This finding is also congruent with the finding of Gao (2012), who investigated some low proficiency undergraduate students' lexical inferencing ability and discovered that the participants' lexical inferencing ability was influenced by their proficiency level and low-level participants were not able to utilize right strategies for inferring the meaning of unfamiliar words.

This study also confirms the findings of the study conducted by Riazi and Babaei (2008) who investigated Iranian EFL students' level of lexical inferencing and its relation to their L2 proficiency and reading skill. It was found that there is no relationship between overall lexical inferencing and students' reading performance.

Another explanation for the inadequacy of lexical inferencing strategy training might be attributed to the model of instruction used in this study that was proposed by Clarke and Nation (1986). It can be argued that this model encourages the readers to primarily rely on very immediate context only in which the unknown word exists and ignores the whole context. For solving this

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problem, as Hu and Nassaji (2014), indicated for successful inferencing, the readers should not rely merely on the local context in which unknown words are located rather they should continue reading the subsequent sentences for verifying and monitoring their inferences throughout the whole reading process. The findings of this study confirm those of Nassaji (2006) in that, reliance on the context alone is not sufficient for successful lexical inferencing.

Haastrup (1991), believes that any guesses must be informed, logical, and based on using all available Linguistic and non-Linguistic clues. The readers' lack of success in lexical inferencing might also be attributed to the learners' inadequate use of required knowledge sources since the appropriate use of different knowledge sources is of critical value for successful inference making.

Another probable reason for not gaining the expected results after lexical inferencing training might be related to the learners' inadequate breadth and depth of vocabulary knowledge. It seems reasonable to test EFL learners' breadth and depth of vocabulary knowledge prior to strategy instruction through some vocabulary size tests and depth of vocabulary knowledge tests and as Laufer (1991) indicates, make sure that they have reached a threshold level of vocabulary knowledge which is needed for successful lexical inferencing. According to Nation (1993), knowledge of around 3,000-word families is the vocabulary threshold that is required for dealing with language skills.

On the other hand, one possible reason for the ineffectiveness of morphological instruction might be related to the learners' low proficiency level. Results of some morphological instruction studies show that Iranian EFL learners with higher levels of proficiency benefited from explicit morphological instruction (e.g., Asgharzadeh, Rahimi, & Kalhor, 2012); and this benefit has not yet been shown for the EFL learners with lower levels of proficiency. This is

in line with those of Sritulanon (2013), who conducted a study to investigate the effect of morphological instruction on the reading ability of low proficiency adult EFL learners in Thailand. It was found that morphological instruction did not improve EFL learners' vocabulary knowledge and reading comprehension of the learners who had low level of language proficiency.

As Clarke and Nation (1980) state, mastering a list of high-frequency affixes and roots is useful, but some affixes and roots have several meanings and analyzing transparently clear words most probably leads the readers to interpret the unknown words incorrectly.

It may also be justified to argue that the time spent on morphological instruction was not sufficient for the EFL learners of the present study since as discussed earlier most of the morphological instruction studies were carried out over a relatively longer period of time (e.g., Carlisle, 2003; Kirby et al.; Tong et al., 2011). Hence, more time and practice might have been needed for effective morphological instruction programs. In line with this view, Diaz (2010) argues that morphological instruction cannot improve students' performance unless it becomes a major part of the language curriculum.

It can also be argued that morphological instruction may show its positive impacts on learners' reading comprehension after a time interval. Carlisle's (2003) for example, who examined the role of lexical processing of morphologically complex words in the elementary students to find out its relationship with children's acquisition of morphological knowledge for reading comprehension. The third graders were given two tasks involving lexical analysis of morphologically complex words. Two years later, they were given a measure of processing of derived words in sentence context and a reading comprehension test. Results of his study revealed that lexical analysis of

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complex words in the early elementary years contributes to vocabulary and reading comprehension by the late elementary years.

However, the findings of this study seem not to support those of Kieffer and Lesaux's (2008), who claimed that students' awareness of words' morphological structure not only improves their understanding of the individual words but also it improves overall reading comprehension and their vocabulary retention power. The findings are also in contrast with those of Diaz (2010), who attempted to determine whether morphological instruction improves high school language learners' vocabulary and reading comprehension. The obtained results from his study showed that morphological instruction has a significantly positive effect on learners' vocabulary, and reading comprehension.

6. Conclusion

Although it seems the study could not achieve the expected outcomes; the findings seem to provide some useful theoretical and pedagogical implications. Firstly, since the results of the study did not provide enough evidence to claim that lexical inferencing and morphological instruction could significantly improve low proficiency EFL learners' reading comprehension, it can be concluded vocabulary knowledge seems to be necessary but not enough for the low proficiency level EFL learners reading comprehension development and other contextual, Linguistic and cognitive factors should also be considered as significant determinants of reading comprehension development. Secondly, vocabulary teaching and learning strategies may help develop EFL learners vocabulary knowledge but not necessarily lead the readers to a better understanding of the texts however, as Oxford and Nyikos (1989) argue, an important advantage of the use of learning strategies is that such strategies help

the EFL learners become more autonomous and self-directed; therefore for achieving an acceptable level of self-efficacy both low and high-level EFL learners are required to employ such learning strategies more frequently for a prolonged time period (Zimmerman & Pons, 1986).

Finally, strategies are value-neutral and should not be regarded as inherently good or bad (Schmitt, 2000), in other words, no single strategy is a panacea which can help all language learners in any contexts. Different studies show that some strategies may work for a group of learners in a special context which may not work for another group in another context and depending on a number of variables such as learners' proficiency level, background knowledge, context of learning, and learners' characteristics, the teachers should employ the strategies that can help the learners acquire vocabularies efficiently.

References

- Alderson, J. C. (2000). *Assessing Reading*. Cambridge: Cambridge University Press.
- Anderson, R. C., & Freebody, P. (1983). *Reading comprehension and the assessment and acquisition of word knowledge*. In B. Hutson (Ed.), *Advances in reading/language research: A research annual* (pp. 231–256). Greenwich, CT: JAI Press.
- Asgharzade, M., Rahimy, R., & Kalhor, O. P. (2012). The Effect of Explicit Morphological Practice on the Reading Comprehension Abilities of Iranian Intermediate Level English Language Learners. *Theory and Practice in Language Studies*, 2(8), 1668-1677.
- Bauer, L., & Nation, P. (1993). Word families. *International Journal of Lexicography*, 6(4), 253-279.
- Bellomo, T. S. (2009). Morphological analysis as a vocabulary strategy for L1 and L2 college preparatory students. *TESL-EJ*, 13(3), 1-27.

The Role of Lexical Inferencing and Morphological...

- Bengeleil, N. F., & Paribakht, T. S. (2004). L2 reading proficiency and lexical inferencing by university EFL learners. *Canadian Modern Language Review/La Revue canadienne des languesvivantes*, 61(2), 225-250.
- Bromley, K. (2004). Rethinking vocabulary instruction. *The Language and Literacy Spectrum*, 14, 3-12.
- Carlisle, J. F. (1995). *Morphological awareness and early reading achievement*. Morphological aspects of language processing, 189-209.
- Carlisle, J. F. (2003). Morphology matters in learning to read: A commentary. *Reading Psychology*, 24(3-4), 291-322.
- Carlisle, J. F. (2007). Fostering morphological processing, vocabulary development, and reading comprehension. In R. K. Wagner, A. E. Muse & K. R. Tannenbaum (Eds.), *Vocabulary acquisition: Implications for reading comprehension* (pp. 78-103). New York, NY: Guilford Press.
- Chall, J. S. (1987). Two vocabularies for reading: Recognition and meaning. In M. McKeown, & M. Curtis (Eds.), *The nature of vocabulary acquisition* (pp. 7-17). New Jersey: Lawrence Erlbaum Association.
- Clarke, D. F., & Nation, I. S. P. (1980). Guessing the meanings of words from context: Strategy and techniques. *System*, 8(3), 211-220.
- Comer, W. J. (2012). Lexical Inferencing in Reading L2 Russian. *Reading in a Foreign Language*, 24(2), 209-230.
- Dalton, B., & Grisham, D. L. (2011). eVoc strategies: 10 ways to use technology to build vocabulary. *The Reading Teacher*, 64(5), 306-317.
- Daphne, M. (2012). Read this! Intro students' book: Fascinating stories from the content areas. Cambridge: Cambridge University Press.
- Diaz, I. (2010). The effect of morphological instruction in improving the spelling, vocabulary, and reading comprehension of high school English language learners (ELLs) (Doctoral dissertation), Retrieved from Pro Quest Dissertations and Theses, Accession Order No. AAT 3405091.

- Droop, M., & Verhoeven, L. (2003). Language proficiency and reading ability in first-and second-language learners. *Reading Research Quarterly*, 38(1), 78-103.
- Farsi, B. (2008). Morphological awareness and its relationship to vocabulary knowledge and morphological complexity among Omani EFL University students. Unpublished master's thesis, University of Queensland, St Lucia, Australia.
- Fraser, C. A. (1999). Lexical processing strategy use and vocabulary learning through reading. *Studies in second language acquisition*, 21(02), 225-241.
- Gao, H. (2012). A quantitative study into Chinese EFL learners' lexical inference ability and strategy use in EFL reading. *Linguistics, Culture & Education*, 1(1).58-77.
- Gillette, B. (1994). The role of learner goals in L2 success. In J. P. Lantolf & G. Appel (Eds.), *Vygotsky approaches to second language research* (pp.195–213). Oxford: Oxford University Press.
- Goodman. (1971). Psycholinguistic universals in reading process. In P. Pimsleur & T. Quinn (Eds.), *The Psychology of Second Language Learning* (pp.135-142). Cambridge: Cambridge University Press.
- Gu, Y., & Johnson, R. K. (1996). Vocabulary learning strategies and language learning outcomes. *Language learning*, 46(4), 643-679.
- Haastrup, K. (1991). *Lexical Inferencing procedures or talking about words*. Tübingen: Gunter Narr.
- Hirsh, D., & Nation, P. (1992). What vocabulary size is needed to read unsimplified texts for pleasure? *Reading in a foreign language*, 8(2),689-696.
- Hu, H. C. M., & Nassaji, H. (2014). Lexical inferencing strategies: The case of successful versus less successful inferences. *System*, 45, 27-38.
- Huckin, T., & Bloch, J. (1993). Strategies for inferring word meaning in context: A cognitive model. In T. Huckin, M. Haynes, & J. Coady (Eds.) *Second language reading and vocabulary learning* (pp. 153-178). Norwood, NJ: Ablex.

The Role of Lexical Inferencing and Morphological...

- Kaivanpanah, S., & Alavi, S. M. (2008). The role of Linguistic knowledge in word-meaning inferencing. *System*, 36(2), 172-195.
- Kaivanpanah, S., & Moghaddam, M. S. (2012). Knowledge sources in EFL learners' lexical inferencing across reading proficiency levels. *RELC Journal*, 43(3), 373-391.
- Kieffer, M. J., & Lesaux, N. K. (2007). Breaking down words to build meaning: Morphology, vocabulary, and reading comprehension in the urban classroom. *The Reading Teacher*, 61(2), 134-144.
- Kieffer, M. J., & Lesaux, N. K. (2008). The role of derivational morphology in the reading comprehension of Spanish-speaking English language learners. *Reading and Writing*, 21(8), 783-804.
- Kieffer, M. J., & Lesaux, N. K. (2012). Direct and indirect roles of morphological awareness in the English reading comprehension of native English, Spanish, Filipino, and Vietnamese speakers. *Language Learning*, 62(4), 1170-1204.
- Kirby, J. R., Deacon, S. H., Bowers, P. N., Izenberg, L., Wade-Woolley, L., & Parrila, R. (2012). Children's morphological awareness and reading ability. *Reading and Writing*, 25(2), 389-410.
- Laufer, B. (1991). The development of L2 lexis in the expression of the advanced learner. *The Modern Language Journal*, 75(4), 440-448.
- Laufer, B. (1997). The lexical plight in second language reading: Words you don't know, words you think you know, and words you can't guess. *Second language vocabulary acquisition: A rationale for pedagogy*, 1, 20-34.
- Laufer, B., & Ravenhorst-Kalovski, G. C. (2010). Lexical threshold revisited: Lexical text coverage, learners' vocabulary size and reading comprehension. *Reading in a Foreign Language*, 22(1), 15-30.
- Marzban, A., & Hadipour, R. (2012). Depth versus breadth of vocabulary knowledge: Assessing their roles in Iranian intermediate EFL students' lexical inferencing success through reading. *Procedia-social and behavioral sciences*, 46, 5296-5300.

- Mondria, J. A., & Wit-de Boer, M. (1991). The effects of contextual richness on the guess ability and the retention of words in a foreign language. *Applied Linguistics*, 12(3), 249-267.
- Mountain, L. (2005). Rooting out meaning: More morphemic analysis for primary pupils. *The Reading Teacher*, 58(8), 742-749.
- Nagy, W. E. (1997). On the role of context in first and second language vocabulary learning. In N. Schmidt, Mc Carty, M. (Eds.), *Vocabulary: Description, Acquisition, and Pedagogy* (pp. 64-84). Cambridge: Cambridge University Press, pp. 64–84.
- Nagy, W. (2006). Why vocabulary instruction needs to be long-term and comprehensive. In E. H. Hiebert, M. L. Kamil (Eds.), *Teaching and learning vocabulary: Bringing research to practice* (pp.27-44). Erlbaum, Mahwah, NJ.
- Nagy, W. E., & Anderson, R. C. (1984). How many words are there in printed school English? *Reading Research Quarterly*, 19, 304-330.
- Nassaji, H. (2003). L2 vocabulary learning from context: Strategies, knowledge, sources, and their relationship with success in L2 lexical inferencing. *TESOL Quarterly*, 37(4), 645-670.
- Nassaji, H. (2004). The relationship between depth of vocabulary knowledge and L2 learners' lexical inferencing strategy use and success. *Canadian Modern Language Review/La Revue Canadienne des Langues Vivantes*, 61(1), 107-135.
- Nation, I. S. P. (1993). Vocabulary size, growth, and use. In R. Schreuder & B. Weltens (Eds.), *The bilingual lexicon* (pp.115-134). Amsterdam/ Philadelphia: John Benjamins.
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.
- O'malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition*. Cambridge University Press.
- Oxford, R. L., & Nyikos, M. (1989). Variables affecting choice of language learning strategies by university students. *Modern Language Journal*, 73(3), 291-300.

The Role of Lexical Inferencing and Morphological...

- Oxford, R. L., & Scarcella, R. C. (1994). Second language vocabulary learning among adults: State of the art in vocabulary instruction. *System*, 22(2), 231-243.
- Paribakht, T. S. (2004). The role of grammar in second language learning processing. *RELC*, 35(2), 149–160.
- Paribakht, T. S., & Wesche, M. (1999). Reading and “incidental” L2 vocabulary acquisition. *Studies in second language acquisition*, 21(02), 195-224.
- Paribakht, T. S., & Wesche, M. (2006). Lexical inferencing in L1 and L2: Implications for vocabulary instruction and learning at advanced levels. In H. Byrnes, H. Weger-Guntharp & K. Sprang (Eds.), *Educating for advanced foreign language capacities: Constructs, curriculum, instruction, assessment* (pp. 118–135). Washington, DC: Georgetown University Press.
- Qian, D. (2004). Second language lexical inferencing: Preferences, perceptions, and practices. In B. Laufer, P. Bogaards (Eds.), *Vocabulary in a second language: Selection, acquisition and testing* (pp.155-169). Amsterdam: John Benjamins.
- Read, J. (2000). *Assessing vocabulary*. Cambridge: Cambridge university press.
- Riazi, A., & Babaei, N. (2008). Iranian EFL female students’ lexical inferencing and its relationship to their L2 proficiency and reading skill. *The Reading Matrix*, 8(1), 186-194.
- Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt, M. McCarthy (Eds.), *Vocabulary: Description, Acquisition, and Pedagogy* (pp.199-227). Cambridge, Cambridge University Press.
- Schmitt, N. (2000). *Vocabulary in language teaching*. Cambridge: Cambridge university press.
- Schmitt, N. (2008). Review article: Instructed second language vocabulary learning. *Language Teaching Research*, 12(3), 329-363.
- Schmitt, N., & McCarthy, M. (Eds.). (1997). *Vocabulary: Description, acquisition and pedagogy*. Cambridge: Cambridge university press.

- Sritulanon, A. (2013). The effects of morphological instruction on reading abilities of low proficiency adult EFL learners at a university in Thailand. *Learn Journal: Language Education and Acquisition Research Network*, 1(1), 50-67.
- Sternberg, R. J. (1987). Most vocabulary is learned from context. In M. G. McKeown & M. E. Curtis (Eds.), *The nature of vocabulary acquisition* (pp. 89-105). Hillsdale, N.J.: Lawrence Erlbaum.
- Tavakoli, M., & Hayati, S. (2011). The relationship between lexical inferencing strategies and L2 proficiency of Iranian EFL learners. *Journal of Language Teaching and Research*, 2(6), 1227-1237.
- Tong, X., Deacon, S. H., Kirby, J. R., Cain, K., & Parrila, R. (2011). Morphological awareness: A key to understanding poor reading comprehension in English. *Journal of Educational Psychology*, 103(3), 523.
- Williams, R. (1985). Teaching vocabulary recognition strategies in ESP reading. *The ESP Journal*, 4(2), 121-131.
- Zhang, D., & Koda, K. (2013). Morphological awareness and reading comprehension in a foreign language: A study of young Chinese EFL learners. *System*, 41(4), 901-913.
- Zimmerman, B. J., & Pons, M. M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal*, 23(4), 614-628.