

## **The Effect of Three Vocabulary Learning Strategies of Word-part, Word-card and Context-clue on Iranian High School Students' Immediate and Delayed English Vocabulary Learning and Retention**

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### **Abstract**

The present study was an attempt to compare the effect of three VLSs, namely word-part strategy, word-card strategy and context-clue strategy on immediate and delayed English vocabulary retention of Iranian third grade high school students. To this end, 90 students, studying at three high schools in Tabriz, in three intact groups, were considered as the participants of the study. In order to ensure their homogeneity, the researchers administrated a Preliminary English Test (PET). Based on the results, 20 students in each class were selected as the participants of the study. These three intact classes were then randomly assigned to three experimental groups, each receiving one type of vocabulary learning strategy. Then, 60 words were given to the students as a pretest in order to sort out 40 unknown words to teach. At the end of the last session of the treatment, an immediate posttest and after four weeks a delayed posttest were given to each group, and then, their mean scores were compared through ANOVA. The analysis of the results revealed a significant difference in the efficacy of context-clue strategy in contrast to both word-part strategy and word-card strategy in the delayed posttest. The findings of the present study can have important implications for EFL teachers and learners.

**Keywords:** vocabulary learning, word-part strategy, word-card strategy, context-clue strategy, vocabulary retention

## Introduction

Vocabulary is central to language and of critical importance to the typical language learner (Amer, 2002). It is argued that “if language structure makes up the skeleton of language, then, it is vocabulary that provides the vital organs and flesh” (Hammer, 1991, p. 153). Vermer (1992) points out that knowing words is the key to understanding and being understood. In fact, the bulk of learning new language consists of learning new words. Although learning grammar is crucial, grammatical knowledge does not make for great proficiency in a language (McCarthy, 1990).

Vocabulary learning has always been a major concern for language learners (Nation, 2002). One of the two main components of language teaching is vocabulary, the other one grammar. The importance of vocabulary learning can be perceived by looking at the body of research done in this regard (e.g., Nation, 2001; Schmitt, 2000; Singleton, 2008; White, Sowell & Yanagihara, 1989), the variety of teaching techniques and materials developed (e.g., Gairns & Redman, 1998), and also the number of word lists offered for different purposes (e.g., Cobb, 2002; Laufer, 1992; Nation, 1990; West, 1953).

To facilitate vocabulary growth, a number of researchers have demonstrated that explicit (direct) learning is more effective than indirect means (Beaton, Grunberg & Ellis, 1995; Hunt & Beglar, 2005; Prince, 1996) and that explicit vocabulary instruction can enhance vocabulary development (Hatch & Brown, 1995; Zimmerman, 1997). Hence, explicit vocabulary instruction is strongly recommended by several researchers for providing necessary assistance to language learners in both vocabulary learning and long-term retention (Rodriguez & Sadoski, 2000).

For the purpose of more effective instruction, teachers always have to make hard choices among a variety of vocabulary strategies, so the question they want to be answered is which strategy has a more significant effect on second language vocabulary acquisition and long-term recall (Oxford, 1990). Vocabulary learning strategies are one part of language learning strategies which in turn are part of general learning strategies (Nation, 2001). Nation (2008) mentions four vocabulary learning strategies, namely, word parts, word cards, context clues, and dictionaries, among which three are the focus of this study. Since using dictionary is simple and it is the most common type of the strategies students use (Summer, 1995), this strategy was excluded from the research. One way for English language learners (ELLs) to increase their vocabularies is to analyze newly encountered words by breaking them into manageable parts (prefixes, roots, suffixes) and by building words from *word parts*. Word analysis builds up on students' understanding of Latin and

Greek roots, which account for over 50% of the polysyllabic words in academic texts (Feldman & Kinsella, 2003; Stahl, Kuhn, & Nagy, 1991). Suffixes may be particularly important because, in addition to creating new words, they enable students to understand and interpret the languages in information texts (Nagy, 2010). Using flash cards is the next vocabulary learning strategy under study. Even though flash cards have been used in schools for many different purposes during the language teaching history, studies concerning the effects of flashcard applications on learning are limited. In the language area, a small number of studies are available. Although such rote learning is usually frowned on by the teachers, the research evidence supporting its use is substantial (Nation, 2001). The third vocabulary learning strategy which is the concern of the present study is using context-clue strategy. Text book writers usually know when they must use a word that will be new to their student readers. So, they often include other words or phrases to help with the understanding of the new word. These words or phrases are referred to as *context clues*. They are built into the sentences around the difficult word (Nassaji, 2003).

Nowadays it is widely accepted that vocabulary teaching should be part of the syllabus, and taught in a well-planned and regular basis. Some authors, led by Lewis (1993) argue that vocabulary should be at the center of language teaching, because language consists of grammaticalized lexis, not lexicalized grammar. Various kinds of techniques, strategies, and, of course, materials have been designed and developed for effective vocabulary teaching. Using word etymologies, however, remains as one of the least researched techniques for teaching vocabulary, and to the knowledge of the researchers, no serious materials have ever been developed on the basis of etymological accounts. There are two studies (Boers, 2001 & Boers, et al., 2007) which closely examine the role of etymology, not concerning words but idioms, and they are experimental/statistical in nature and do not provide a practical framework for teaching etymologies.

Comparing flash cards to word lists, some researchers indicate that working with flash cards help learners in acquiring vocabulary more effectively than word lists (Mondria & Mondria-deVries, 1994; Schmitt & Schmitt, 1995). It can be seen that flash cards have been used for teaching a variety of purposes during the history of language teaching. An example is to teach sounds of the alphabet using them (Young, Hecimovic & Salzberg, 1983) or to help students to improve word recognition if they are poor readers (Culyer, 1988). Another example is to teach students to practice their vocabulary development and completion drills in the learning of foreign language (Ervin, 1988). Flash cards have also been used in teaching English as second language. They are used not

only for teaching vocabulary but also for teaching propositions, articles, sentence structures, tenses, and phrasal verbs (Palka, 1988). In addition to teaching vocabulary, flash cards have been used to improve both comprehension and reading speed (Tan & Nicholson, 1997).

In one study concerning the use of flash cards, Ehri and Roberts (1979) studied first graders to see whether they learned printed words better in isolation or in context. Post-test scores revealed that those who were taught words in isolation were able to read the words faster than those who were taught in context and they also learned more about orthographic forms but those who were taught in context learned more about the semantic identities rather than orthographic forms. In another study, Royer (1973) studied the effects of retrieval in the form of a test-like activity on receptive vocabulary knowledge of a foreign language (i.e., translating FL word into the first language [L1]). The retrieval group used word cards (with target words and L1 equivalents separated on each side of a card) to retrieve/recall/self-test meanings of foreign words within a limited time, while the non-retrieval group studied the same foreign words with L1 meanings presented simultaneously within the same length of time. The results showed the retrieval group significantly outperformed the non-retrieval group in the test assessing receptive vocabulary knowledge (i.e., translating target or foreign words into L1). Royer reported that the results of his study supported Izawa's (1967, 1968, 1969, 1970) findings and assertions that retrieval (i.e., test-like activity) might be crucial to the acquisition of word pairs (i.e., foreign word form and its L1 meaning).

Moreover, researchers have found that the students who tried to identify the meaning of the given word according to its preceding and succeeding words were generally more confident in the answers they gave (Jones, Levin, & Beitzel, 2000). The same study revealed that the students who worked in pairs, recalled more definitions and story information than those students who worked individually (Jones, Levin, & Beitzel, 2000). This could be considered an important component ineffective context clue instruction. Finally, Pemberton (2003) suggested that it is the job of the teacher to scaffold strategies that help develop independent readers (Pemberton, 2003). With effective instruction, students develop a greater use of word learning tools and strategies (Baumann, Ware, & Edwards, 2007).

Hence, the current study is a small-scale comparative study of three instructional strategies in vocabulary learning, described in the literature. In particular, this study investigates the effect of word-part strategy, word-card strategy, and context-clue strategy on Iranian EFL learners' vocabulary learning

and retention. Accordingly, the present study aimed at answering the following research questions:

- 1- Are there any significant differences among the word-part group, word-card group, and context-clue group in learning vocabulary?
- 2- Are there any significant differences among the word-part group, word-card group, and context-clue group in the retention of vocabulary over time?

## Method

### Participants

The study took place in three intact classrooms within three different schools. Ninety EFL third grade high school students participated in the study. All of them were male students with an average age of 17 to 18 years old; their first language was Azery, Turkish. Prior to the experiment, the researcher administered a standard proficiency test, that is, the Preliminary English Test (PET), to examine the homogeneity of the groups in terms of their language proficiency. The researchers set  $\pm 1$  SD above and below the mean score as the criterion for selecting the research sample. Based on this criterion, 20 students in each class (totally 60 students) were selected as the participants of the study. These three intact classes were then randomly assigned to three experimental groups, each receiving one type of vocabulary learning strategy instruction.

### Instrumentation

Three tests were used to collect the data.

#### *Preliminary English Test (PET)*

At the onset of the study, a sample of PET was used as an instrument to select 60 participants from 90 pre-intermediate learners. For the sake of practicality, only the reading and writing parts of the PET were administered. The test had two sections including the reading part with 15 questions and five questions of fill-in-the-blanks and the writing part with a composition.

#### *Pretest*

A test of vocabulary, including 60 words, was given to the students as the pretest in order to sort out 40 words that they did not know their meaning to teach. Two criteria were applied in choosing the target words for the explicit vocabulary instruction. First, since the participants were students at the pre-intermediate level, the researchers selected words (from *Longman Dictionary Website*) at the intermediate level. Second, the words whose meanings were

supposed to be unknown to the students were selected. Therefore, a pretest containing a list of 60 isolated words, without any context from the students' English text books, was administered prior to the study. The students were asked to mark the unfamiliar words whose meaning they could not determine. The scoring method was one point for one correct answer. Based on the pretest results, 40 words which were new to the students were identified as the vocabulary to be taught during the treatment period.

#### *Immediate and delayed Posttests*

A test of vocabulary achievement (from *Longman Dictionary Website*) was used as an immediate posttest to investigate whether teaching words through these three strategies (word-part, word-card and context-clue strategies) had any significant effect on the overall vocabulary achievement of the students. To check the retention of the learned vocabulary over time, a delayed posttest was also held. It is worth mentioning that the delayed test was the same as the immediate test. The test had 20 multiple-choice items based on the vocabulary chosen at the pretest stage and taught to the three groups during the treatment.

#### **Procedure**

Initially, the researcher consulted with the teacher of each class concerning their grouping. The instruction for all groups was conducted in four sessions during four weeks. All three experimental groups were presented with 10 words every session, that is, 40 words in total, by the same teacher. The words which were taught in Session 1 were revised at the beginning of Session 2; the same procedure was applied in Sessions 3 and 4.

The students were randomly assigned to three experimental groups who received various treatments: the *word part group* who were taught words according to their prefixes, roots and suffixes, the *word card group* who used flash cards and the *context clues group* who were taught how to guess the meaning of the given word from the linguistic context, that is, from its preceding and succeeding words in the sentence.

In the *word-part* group, the researcher wrote the target words on the board where the structure of the word was underlined in terms of prefixes, suffixes and roots. By introducing the meaning of specific word parts, the teacher encouraged the students to make guesses about the meaning of the words. The students spent 30 minutes for each session discussing in groups of four. Later, they were required to offer consensus predictions and share them with the whole group. Finally, the researcher directed the students to look the words up in the bilingual dictionaries to verify the precise meaning of each word and revise their predicted meaning.

In the *word-card* group, the researcher gave the students forty flash cards

including the new words and asked them to figure out their meaning according to the definition and example given at the back of the cards. Finally, similar to the word-part group, the teacher directed the students to look the words up in the bilingual dictionaries to check the predicted meaning.

In the *context-clue* group, the researcher presented each target word in one meaningful sentence where some semantic or syntactic clues were available. The students were called on to infer the meaning of unknown words based on the information embedded in the linguistic context. Similar to the word-part group and word-card group, in this group also, the teacher asked the students to figure out the word meanings by probing the context clues and then sharing the results with the whole group. Finally, the students were allowed to check their guesses and identify the accurate meaning from bilingual dictionaries. The correct meaning of each word was written down.

The effects of the three types of the treatment on EFL vocabulary acquisition were assessed via an immediate posttest after the last instruction where the number of target words was reduced to 20. The targeted vocabulary (N= 40) was divided into four groups: the first 10 words were taught in Session 1, the second 10 words in Session 2, the third 10 words in Session 3, and the last 10 words were taught in session four. By selecting 5 words randomly from each vocabulary group the researcher (using tests from Longman Dictionary Website) designed both the immediate and delayed posttests containing a 20-item multiple-choice test. The students were asked to choose the appropriate synonym for 20 target words within 30 minutes. The scores were calculated by summing up the correct answers.

### **Design**

The design of the study was quasi-experimental with pretest and posttest but no control group. There were three independent variables, namely word-part strategy, word-card strategy and context-clue strategy and two dependent variables, namely, learning vocabulary and retention of vocabulary.

## **Results**

This part includes the results of the data analyses. It elaborates and clarifies the results of all tests given in the study in details. In order to ensure the homogeneity of the participants, a sample of the PET test was used. Table 1 shows the result.



*Table 1*  
*Descriptive statistics for the pet scores of the word-part group*

N	Valid	30
	Missing	0
Mean		<b>*14.4667</b>
Median		14.5000
Mode		14.00 <sup>a</sup>
Std. Deviation		<b>*4.84044</b>
Variance		23.430
Minimum		5.00
Maximum		22.00
Sum		434.00

The results in Table1 show that the mean and standard deviation for the word-part group are 14.47( $\approx 14$ ) and 4.84( $\approx 5$ ), respectively.

Based on the criterion set at the beginning of the study, the scores between  $\pm 5$  from the mean score (14) were selected as the participants, that is, the scores between 9 and 19. The others were left out.

#### *Pretest*

After ensuring the homogeneity of the participants, the researcher administered a vocabulary test including 60 words (at intermediate level) from Longman Dictionary Website as the pretest to select the unknown words. The result showed that 40 words were unknown to them.

#### *The First Research Question*

The first research question posed for this study is:

1. Are there any significant differences among the word-part group, word-card group, and context-clue group in learning vocabulary?

The test of homogeneity of variances (Table2) was conducted to see the homogeneity of variances in the immediate posttest.



*Table 2*  
*Test of Homogeneity of Variances in Immediate Posttest*

Posttests	Levene Statistic	df1	df2	Sig.
posttest1	.029	2	57	<b>*.971</b>

Table (2) shows that the homogeneity of variances is not significantly violated ( $p = .971 > 0.05$ ).

After the last session of the instruction, the immediate posttest was given to the students in all three groups. The participants' scores were obtained from the given test and analyzed. The mean of each group was calculated and compared to show the probable differences. In order to ensure the significance of the results, ANOVA was conducted (Table3).

*Table 3*  
*Descriptive Statistics of the Groups in the Immediate Posttest*

		N	Mean	Std. Deviation	Std. Error	95% Interval for Mean Lower Bound Upper Bound	Confidence Upper Bound Lower Bound	Minimm	Maximm
posttest1	CC	20	<b>15.2500</b>	<b>2.08061</b>	.46524	14.2762	16.2238	11.50	18.50
	WP	20	<b>13.8000</b>	<b>2.17280</b>	.48585	12.7831	14.8169	10.00	18.00
	WC	20	<b>12.5750</b>	<b>2.12921</b>	.47611	11.5785	13.5715	9.00	16.00
	Total	60	13.8750	2.36433	.30523	13.2642	14.4858	9.00	18.50

As Table 3 shows, there are differences among the three groups. Also, the standard deviation in the immediate posttest is above two. This means that the scores in the immediate posttest in all three groups were scattered. An ANOVA (Table 4) was employed to ascertain that the difference in the immediate posttest scores among these three groups was significant.

Table 4  
ANOVA for Determining Differences between Groups in Immediate Posttest

		Sum Squares	of Df	Mean Square	F	Sig.
posttest1	Between Groups	71.725	2	35.863	7.920	<b>*.001</b>
	Within Groups	258.088	57	4.528		
	Total	329.813	59			

The results in Table 4 revealed that there was a statistically significant difference ( $p = .001 < 0.05$ ) between the immediate posttest scores of the three groups. Therefore, the first hypothesis was confirmed. As the difference was significant, a Post Hoc test was conducted to show the differences among these three groups. Table 5 revealed that the difference between the context-clue group and word-card group was significant ( $p = .001$ ) whereas no significant differences were found between the word-part group and the other two groups (Table5).

Table 5  
Post Hoc Test for Three Groups in the Immediate Posttest

Dependent Variable	(I)group	(J)group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
posttest1	CC	WP	1.45000	.67289	.088	-.1693	3.0693
		WC	2.67500*	.67289	<b>*.001</b>	1.0557	4.2943
	WP	CC	-1.45000	.67289	.088	-3.0693	.1693
		WC	1.22500	.67289	.172	-.3943	2.8443
	WC	CC	-2.67500*	.67289	<b>*.001</b>	-4.2943	-1.0557
		WP	-1.22500	.67289	.172	-2.8443	.3943

### The Second Research Question

The second research question that dealt with the retention of the learned vocabularies overtime is as follows:

2. Are there any significant differences among the word-part group, word-

card group, and context-clue group in retention of vocabulary over time? Similar to the analyses carried out for the immediate posttest, to check the homogeneity of variances in the delayed posttest, the test of homogeneity of variances (Table 6) was conducted.

*Table 6*  
*Test of Homogeneity of Variances in the Delayed Posttest*

Posttests	Levene Statistic	df1	df2	Sig.
posttest2	1.661	2	57	<b>*.199</b>

As seen in Table 6, the variances are not significantly different ( $p = .199 > 0.05$ )

After four weeks, the same test, used in the immediate posttest, was given to the students in all three groups as the delayed posttest to see whether there was any significant difference between groups in the retention of the learned vocabulary overtime (Table 7). The participants' scores were obtained from the given test and analyzed. The mean of each group was calculated and compared to show the probable differences. In order to ensure the significance of the results, ANOVA was administered.

*Table 7*  
*Descriptive Statistics of the Groups in the Delayed Posttest*

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Posttest2 CC	20	<b>13.2500</b>	<b>1.86025</b>	.41596	12.3794	14.1206	9.00	16.00
WP	20	<b>10.9500</b>	<b>1.89111</b>	.42287	10.0649	11.8351	7.00	14.00
WC	20	<b>9.6250</b>	<b>2.43805</b>	.54516	8.4840	10.7660	5.00	13.00
Total	60	11.2750	2.54189	.32816	10.6184	11.9316	5.00	16.00

As Table 7 shows, in the delayed posttest, the mean scores of the context-clue group, the word-part group, and the word-card group are 13.25, 10.95, and 9.62 respectively. To ensure the significance of the difference, another ANOVA test was conducted for the delayed posttest (Table 8).

Table 8  
ANOVA for Determining Differences between Groups in the Delayed Posttest

	Sum of Squares	Df	Mean Square	F	Sig.
posttest2 Between Groups	134.575	2	67.288	15.551	<b>*.000</b>
Within Groups	246.638	57	4.327		
Total	381.213	59			

As indicated in Table 8, there is a statistically significant difference ( $p = .000 < 0.05$ ) between the three groups in vocabulary retention overtime. Therefore, the second hypothesis is also confirmed. A Post Hoc test was conducted to find out where the difference between the three groups occurred (Table 9).

Table 9  
Post Hoc Test for Three Strategies Among Three Groups in the Delayed Posttest

Dependent Variable	(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
posttest2	CC	WP	2.30000*	.65780	<b>*.003</b>	.7171	3.8829
		WC	3.62500*	.65780	<b>*.000</b>	2.0421	5.2079
	WP	CC	-2.30000*	.65780	<b>*.003</b>	-3.8829	-.7171
		WC	1.32500	.65780	.118	-.2579	2.9079
	WC	CC	-3.62500*	.65780	<b>*.000</b>	-5.2079	-2.0421
		WP	-1.32500	.65780	.118	-2.9079	.2579

\*. The mean difference is significant at the 0.05 level.

As Table 9 shows, the difference between the context-clue group and word-part group ( $p = .003 < 0.05$ ) and also between the context-clue group and word-card group ( $p = .000 < 0.05$ ) is significant whereas the difference between the word-part group and word-card group is not statistically significant ( $p = .118 > 0.05$ ).

Since the ANOVA result showed that there was a treatment effect, a simple

examining of the means indicated which treatment had more effect. Table 10 displays the descriptive statistics regarding the immediate and delayed posttest scores.

*Table 10*  
*Means and Standard Deviations of Immediate and Delayed Posttest Scores in all Three Groups*

Group	Immediate posttest	Delayed posttest
Context-clue	M = 15.25 SD = 2.08	M = 13.25 SD = 1.86
Word-part	M = 13.80 SD = 2.17	M = 10.95 SD = 1.89
Word-card	M = 12.57 SD = 2.13	M = 9.62 SD = 2.44
Total	M = 13.87 SD = 2.13	M = 11.27 SD = 2.06

As shown in Table 10, the context-clue strategy use yielded higher immediate posttest scores ( $M = 15.25$ ,  $SD = 2.08$ ) than the word-part strategy use ( $M = 13.80$ ,  $SD = 2.17$ ) and the word-card strategy use ( $M = 12.57$ ,  $SD = 2.13$ ). In addition, all three groups achieved lower scores for the delayed posttest in contrast to the immediate posttest. However, the total means of the groups in the delayed posttests were lower than the total means in the immediate posttest (Table 10).

## Discussion

In terms of training in a single type of VLS, as reported by many educators and researchers (e.g., Atkinson, 1975; Cohen & Apeh, 1980; Sadoski, 1996) a certain amount of previous studies reveal the success of training in a single VLS, for example, keyword mnemonics, association strategies, and so on. In addition, Nation (2001) remarks that other studies reveal the success of other VLS as a single strategy, guessing from context, which were reported by many scholars (e.g., Buikema & Graves, 1993; Carnine, Kameenui & Coyle, 1984; Fukkink & de Glopper, 1998; Kuhn & Stahl, 1998).

Due to the existing evidence for the success of VLST, we can see the promising possibility of success in training learners to know how to use VLS effectively. Clearly, the findings of the current study confirm the efficiency of VLS instruction. As the results attest, the immediate and delayed posttests,

adopted for this study, yielded sufficient data for comparing the effects of three vocabulary learning strategies on EFL vocabulary learning and retention. The findings are consistent with previous research (e.g., Chin 1999), in that there were (at least at the 0.05 level) treatment effects for the posttests in the explicit vocabulary instruction. Based on the results of this study, the immediate performance of EFL students using context-clue strategy was significantly better than that of students using word-card strategy. Similarly, in the delayed posttest, the students in context-clue group significantly outperformed both word-part and word-card groups. From this point of view, that is, vocabulary retention, the current research finding is in line with that of Xiaolong's (1988) research suggesting that learners who are good at inferring meaning from context are more likely to retain meaning. However, in the delayed posttest, all three groups suffered a decrease in vocabulary retention.

The treatment effect of the context-clue strategy instruction was, in general, stronger than the effects of word-part and word-card strategy instruction on the immediate and delayed vocabulary tests. The superiority of the context-clue strategy could have been for many reasons. The students who received word-part strategy instruction had some difficulties in working out the word meanings of the target vocabulary. On the one hand, the students might lack the basic knowledge of word parts. They could not identify the common prefixes, roots, and suffixes let alone the corresponding meanings. On the other hand, one and the same affix might express different ideas (e.g., the prefix 'in' means 'not' or 'in, into') in which case the students might have been too confused to determine the appropriate interpretation. In some cases, combining the meanings of word parts do not lead the language learners to an appropriate meaning; for example, the word 'elaborate': 'e' = 'out, beyond' + 'labor' = 'work'. Due to the problems the students might encounter in the word-part group, they were more likely to depend on the teacher for guidance rather than to actively participate in the process of vocabulary learning.

The second strategy employed in the present study was using word cards. The review of the related studies reveals that there is little value in learning vocabulary using word cards. This type of learning, however, should be seen as part of a broader program involving other kinds of direct learning as well as the strands of meaning-focused input, meaning focused output and fluency development (Nicholson, 1998). The research also shows that there are ways of maximizing learning and that learners need to know about these and how to make use of them. Yet, some of Griffin's (1992) suggestions regarding the importance of informing learners about how to go about learning through word cards are as follows:

- Learners should know about the importance of retrieval in learning and how word cards encourage this by not allowing the word form and meaning to be seen simultaneously.
- Learners should know the value of repeating and spacing learning and to include long-term review in their learning.
- Learners should know what information to include on their word cards, particularly a sentence context or some useful collocations.
- Learners should know what words to choose to put on their cards, giving particular attention to high-frequency words.
- Learners should keep changing the order of the cards, avoiding serial learning and putting more difficult items at the beginning of the pack so that they get more attention. They should reform packs, taking out words now known and inserting new items.
- Learners should use small packs of cards in the early stages of learning and bigger packs when learning is easier.
- Learners should be aware of interference effects between semantically and formally related words and avoid including such related items in the same pack.

The third strategy employed in the present study was using context clues. By comparison, in the context-clue strategy instruction, useful clues within a sentence were given to the students for word decoding, by which they could infer the word meanings more accurately. Hence, they got actively involved in group discussion and expected to share their own guessing of word meanings with others. The discussions encouraged the students to become active learners who were more motivated with learning. Their achievement might have been enhanced by such a positive classroom climate. In a word, the students from the context-clue group showed more enthusiasm for vocabulary learning, and this might have facilitated their vocabulary learning. Therefore, the researcher's findings remind Schmitt's (2002) remarkable statement that "guessing a meaning for a word from context clues is the most useful of all the strategies" (p.44).

However, from the immediate to the delayed posttests, none of the students in all three groups retained their learning gains over the four-week period. Although the students who were in the context-clue group performed better on the immediate posttests, they suffered almost the same loss in the retention scores as the word-part group and word-card group. For L2 learners generally, there is some evidence that long-term retention of word knowledge "requires frequent exposure of intentional rehearsal" (Hulstijn, 2003, p. 372). In this study, the target words were not reviewed after the treatment during the delay time.



Although all three groups experienced a decline in the retention test scores after four weeks, the students from the context-clue group had significantly higher rates of vocabulary acquisition on the delayed posttest. The test results may be an indication of the treatment effect—employing context clue-strategy can improve vocabulary recall. In addition, it is possible that four weeks are such a short period of time that students can remember what they wrote in the earlier test.

The results of the present study offer only partial support to the general belief that word parts can lead to better learning than flash cards (Weihua, 2007). Although the word-part technique brought about a higher mean score than the flash card, there was no statistically significant difference between these two, suggesting that the advantage of word parts over flash cards is limited. The results also seem consistent with Schmitt and Zimmerman's (2002) claim that L2 learners have difficulties in producing various affixes within a word family. This was taken to indicate a need for more explicit instruction in the affixes. The study by Mochizuki and Aizawa (2000) addressed this issue as well. The results also are in a good line with the findings of Baumann, et al. (2002), suggesting that there was evidence of an immediate effect on transfer words in isolation, but no compelling evidence of its effects on comprehension. The students in the word-part group were unfamiliar with even simple affixes and roots. This may come from the fact that, as Aizawa (1998) suggested, since the learners' L1 is unrelated to English, they lack sufficient affix knowledge, which makes it difficult for them to benefit from the word family concept.

Moreover, the results of the present study is in partial agreement with Cuvo and Klatt's (1992) findings. They indicated the positive effects of flash cards on language learning. According to McCullough (1995), some researchers have criticized flash cards for emphasizing memorization over comprehension; others have argued that they should be used as a device to create fun classrooms (Nicholson, 1998). There appears to be two reasons for this discrepancy. The first reason might be attributed to the limitations in the learners' ability to use flash cards effectively. Nakata (2008) has postulated that learners have to evaluate each word regarding its difficulty level and implement extensive rehearsal by cards. Furthermore, learners should have a review plan in their learning process. This will demand expansive meta-cognitive abilities on the part of the language learner; if they lack such abilities, no difference may be found in comparing flash cards and other vocabulary learning strategies (McCullough, 1955). The second reason is the issue of time duration. There is a direct relation between working with flash cards and time duration. If the

learners allotted much more time to flash cards, they can learn vocabularies more easily (Kuo& Ho, 2012).

The findings also support the claims by Beck, et al. (1983), as well as previous L1 findings (Jenkins, Matlock& Slocomb, 1989) suggesting that context may affect acquisition of meaning. Learners who met target words in the more informative contexts produced significantly higher scores on both tests measuring knowledge of meaning. The quality of the context provides an answer to why gains in knowledge of meaning have varied from word to word (Horst, et al., 1998; Saragi, et al., 1978) and study to study (Horst, et al., 1998, Rott, 1999; Saragi, et al., 1978; Waring&Takaki, 2003).

In the present study, the students from the context-clue group had significantly higher rate of vocabulary learning as compared to the other groups. The results may be an indication of the effectiveness of the specific treatment, that is, context clue-strategy instruction, which was used in this group. Thus, it seems helpful to provide students with examples of different types of context clues. Teachers can ask questions which focus learners' attention on the unknown words and the clues to their meanings. However, students need repeated practice with this vocabulary learning strategy to become comfortable with using it independently and to understand how this strategy can help them decipher the meaning of unknown words when reading texts.

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