

# THE EFFECTIVENESS OF USING CONTEXTUAL CLUES, DICTIONARY STRATEGY AND COMPUTER ASSISTED LANGUAGE LEARNING (CALL) IN LEARNING VOCABULARY

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## Abstract

*This study investigates the effectiveness of three vocabulary learning methods that are Contextual Clues, Dictionary Strategy, and Computer Assisted Language Learning (CALL) in learning vocabulary among ESL learners. First, it aims at finding which of the vocabulary learning methods namely Dictionary Strategy, Contextual Clues, and CALL that may result in the highest number of words learnt in the immediate and delayed recall tests. Second, it compares the results of the Pre-test and the Delayed Recall Post-test to determine the differences of learning vocabulary using the methods. A quasi-experiment that tested the effectiveness of learning vocabulary using Dictionary Strategy, Contextual clues, and CALL involved 123 first year university students. Qualitative procedures included the collection of data from interviews which were conducted to triangulate the data obtain from the quantitative inquiries. Findings from the study using ANOVA revealed that there were significant differences when students were exposed to Dictionary Strategy, Contextual Clues and CALL in the immediate recall tests but not in the Delayed Recall Post-test. Also, there were significant differences when t test was used to compare the scores between the Pre-test and the Delayed Recall Post-test in using the three methods of vocabulary learning. Although many researchers have advocated the relative effectiveness of Dictionary Strategy, Contextual Clues, and CALL in learning vocabulary, the study however, is still paramount since there is no study has ever empirically investigated the relative efficacy of these three methods in a single study.*

**Keywords:** Contextual Clues, Dictionary Strategy, Computer Assisted Language Learning (CALL), vocabulary learning methods, immediate recall test, delayed recall test.

## 1. Introduction

Vocabulary is the central component for acquisition of second language (L2) regardless of students' academic levels (Constantinescu, 2007; Nakata, 2007). Also, it plays an important part in their academic achievement (Constantinescu, 2007; Morris & Cobb, 2004). For students in tertiary education, Liu (1998) expresses that inadequate vocabulary can be a major obstacle in the course of learning in the university. Folse (2004) argues that a sizable portion of vocabulary enables language learners to comprehend what they read or hear. In fact, vocabulary is one of the most important components in language learning and language curricula must reflect this notion (Folse, 2004).

In Malaysia, the importance of vocabulary for students at tertiary level can be seen in relation to the higher education revolution as it is remarked by Syed Barkat Ali Syed Ali (as cited in Oorjitham, 2005), the Chairman and Principal Consultant of Transformational Leadership Development Sdn. Bhd.

“... quality education hinged on the use of an internationally popular language such as English and the more the vocabulary [the students have], the more concepts can be transmitted”

Limitation in English vocabulary, therefore, may impede the transmission of information as many reference books are written in the English language. Unfortunately, the area of vocabulary learning and teaching has long been overlooked by most linguists and language teachers (Vijayaletchumy Subramaniam, Mohd. Sahandri Gani Hamzah, Noor Aina Dani, Normaliza Abd Rahim, Nik Rafidah Nik Affendi & Abdul Rashid Daing Melebek, 2008). However, they contend that it is in these recent years that vocabulary learning and teaching has become “refreshed”, and consequently has led linguists and language teachers to be involved in facilitating the vocabulary acquisition among language learners of English. Since then, linguists and language teachers have been keen on searching the most effective approaches and strategies for helping students develop vocabulary acquisition (Iu, 2003). Yet, vocabulary learning and teaching remains a debatable issue as people have differing opinions on how learners acquire vocabulary effectively and efficiently, or how it can best be taught (Cheung, 2007). Nevertheless, the vocabulary learning methods namely Contextual Clues, Dictionary (monolingual) Strategy, and CALL can be taught to students in higher education.

## **2. Previous Research on the Use of Contextual Clues, Dictionary Strategy and CALL**

### **2.1 The Use of Contextual Clues among Language Learners**

A research was conducted by Hamada (2009) to investigate the use of contextual analysis among five Japanese college-level ESL learners. Its use was investigated in two ways. First, it looked at how the students made use of contextual and semantic understanding of the relevant portion of passages. Second, it looked at how they verified their checking when they used the inferred meaning in context. Two of the top students in his study consistently used contextual analysis when reading all the assigned passages. In using contextual analysis, the students were involved in a deeper level of understanding of the text as well as the world knowledge or global strategy. The researcher concluded that contextual analysis was more frequently used by learners with advanced L2 proficiency.

The ability of high and low proficiency learners to infer meaning from context depends on the difficulty level of a text. Such a finding was obtained from a study conducted by Kaivanpanah and Alavi (2008). In the study, 162 undergraduates took two tests (1) a proficiency level test, and (2) inference test. Results from the latter test showed that the upper intermediate proficient learners were more successful in inferencing for both, simple and difficult texts than the lower intermediate and intermediate ones. The results showed that the proficient learners were able to make extensive use of L2 linguistic clues. The other group of learners, however, were not able to relate unknown words to the co-text. Almost at all time, they relied on word-for-word translation of the co-text to comprehend the meaning.

Cheung (2007) in an experimental study attempted to draw upon the achievement made by low achieving secondary students in guessing meaning from context. The study involved 80 students who were divided into two groups representing two modes of learning: the context and keyword methods. Results from her study found that the mean scores for the keyword method were much higher in both immediate and delayed recall tests. Students in the context method asserted that it was difficult for them to use the method since they were required to learn too many words at one time. As a consequence, it was perceived to be too challenging at some points.

Ngan-ha (2007) surveyed 60 low proficiency secondary school students pertaining to their success rate of guessing as one of the strategies of learning vocabulary. The students were grouped according to their proficiency levels; highest, middle, and lowest. Results from the vocabulary pre-test and post-test showed that there was a difference before and after the students were introduced to lexical inferencing. It was reported that all groups except lowest proficiency level used all the inferencing strategies.

Contrary to Ngan-ha's study, Chung (2008) employed 30 upper intermediate level students in Hong Kong secondary schools to investigate guessing word meanings using different Contextual Clues. In the quasi-experimental study, the students were trained to use immediate context with synonyms, immediate context with inferences or antonyms, wider context with synonyms and wider context with inferences or antonyms. The study showed that all participants made progress in reading comprehension using all of the contextual clues' types. Interestingly, the mean scores of the pre-test and post-test between the higher-ability and the lower-ability participants indicated that the latter made greater progress than the former after the strategy training sessions in the study.

## **2.2 The Use of Dictionary Strategy among Language Learners**

A survey that was conducted by Chen (2008) involving 273 undergraduate has shown that the use of monolingual dictionaries has promoted positive learning attitudes among learners although this was slightly less than those exposed to the bilingual ones. They would still be consulting the bilingual dictionaries although there were taught the use of the monolingual dictionaries in the study. Such was due the lack of confidence and laziness in consulting the resource.

Nonetheless, an experiment such as that conducted by Chin (2001) has shown that students used a variety of strategies to understand vocabulary items when they used the monolingual dictionary (Spanish-Spanish). Such was the result when 44 students learning Intermediate Spanish were grouped into three experimental conditions: monolingual dictionary users, bilingual dictionary users and no dictionary users. Those who were in the group using monolingual dictionaries used English cognates and analyse morpheme as the strategies to understand meaning of a word.

It has also been suggested that attitudes play a role in learning vocabulary using monolingual dictionary. If learners harboured a negative attitude toward using the monolingual dictionary, they would not benefit from it at all. This was confirmed by Martínez's (2008) finding. In her study which employed 60 Pre-Basic English students, she reported that they would rather use the bilingual dictionaries rather than the monolingual dictionaries in English classes. They disliked the use of the monolingual dictionaries for three simple reasons: longer time to look up words, boring to look up words, and was a nuisance to the eyes during look up.

In view of Martínez's (2008) suggestion, Hunt (2009) proposed that training could make students become competent users of the learner's monolingual dictionaries. The aforementioned was the finding obtained after polling 250 learners at a high-level private Japanese university. The teachers and course planners needed to place greater emphasis on procedures for making inferences from L2 contexts so that learners eventually became more comfortable using the L2 information available in the dictionary.

## **2.3 The Use of CALL among Language Learners**

Accuracy, real time immediacy and reliability (Liou, 1991) have made the learning of vocabulary using CALL more interactive (Relan, 1992). Such learning is important due to several reasons. These are the

ability to increase learner autonomy, draw attention, arouse motivation, enhance learning, improve retention, provide immediate feedback, and supplement teachers' resources. These attributes are further elaborated in the subsequent discussions.

**a) Increase Learner Autonomy**

CALL increases autonomy among language learners. The one-on-one environment can activate students' learning because it provides them with rich and contextual environment. Fox (1984) showed that unscrambling or rebuilding text activity in CALL could provide a considerable control of students learning. Cloze exercises in the CALL programme enabled undergraduates in the United Arab Emirate to manipulate relevant information which they found could be fed into a particular sentence.

**b) Draw Attention**

Teachers can draw students' attention by integrating pictures into multimedia forms. A study conducted by Yunan (2003) revealed that information aided with pictures and rich learning environment in multimedia instruction could arouse the learners' attention. Such was the result after 30 English and Literature students' achievements were assessed employing immediate recall tests. In the experimental study, two modes of CALL learning were used as the treatments to investigate the effectiveness of vocabulary acquisition (1) printed definitions with pronunciations, and (2) printed definitions with pictures and pronunciations. Both group of learners were required to read selected passages and consulted the multimedia glossing or marked words in blue to hear their pronunciations as well as to read the English definitions. She concluded that the latter group stood to benefit the learning condition since pictures allowed for greater cognitive mapping and navigating in learning.

**c) Arouse Motivation**

The ease of using a CALL vocabulary programme contributes to students' motivation. Nakata's (2008) study showed that the use of Low-First Method had positive effects on students' motivation due to the tools were conducive to learning vocabulary. Such was the result when the use of computers were compared to List and Card. A total of 226 secondary school students participated in his study. He concluded a few important points after data was collected from the questionnaire, pre-test, immediate and delayed post-tests. First, they should be given time for rehearsal as the programme was still new. Second, the teacher must help students understand how the programme was designed to help improve their vocabulary.

**d) Enhance Learning**

The teacher's tailor-made vocabulary learning software programme could enhance the learning of vocabulary among learners. This finding was evident in a study conducted by Kuen (2000) employing 20 foundation diploma students. In the study, software programme namely Hot Potatoes enabled the teacher-researcher to create browser-based activities (Robb, 2004) which enhanced the learning of business vocabulary among the students. The interactive exercise allowed a deeper level of processing of the new words. They were made to pay more effort to repeat analysing the choices given by recalling from their memory the meaning of the newly acquired words.

**e) Improve Retention**

Marked and unmarked vocabulary in a CALL programme may improve students' ability in memorising a word, and thus, promote vocabulary growth among learners. A study by de Ridder (2002) revealed that hyperlinks attracted students' attention to the words they were learning. Hyperlinks had a positive effect on vocabulary acquisition because words that were marked or highlighted received more attention than those which did not. Sixty second-year university students took part in the study.

Marked (specific reading task) and unmarked (general reading task) vocabulary texts were used to gauge the usefulness of hyperlinks using a Latin-square design. Results of the immediate test showed that there was no difference in the vocabulary loss between marked and unmarked conditions. This means that not using highlights, thus making the glossed words less graphically salient, did not particularly influence the incidental learning of vocabulary in a negative way. However, the results were contrary in the delayed test. Students in the marked condition were reported to click the highlights more excessively. As a result, they retained the words learnt longer than those in the unmarked condition

**f) Provide Immediate Feedback**

In Hill's (1998) study, L1 meaning in Chinese characters were used to help the students learn the unknown words better. This feature enabled them to understand the meaning of the words before proceeding to answer the vocabulary items in a programme called "Words in Your Ear". Consequently, when their answers were wrong, the programme provided feedback in the form of definitions and contextualised examples of the inappropriate responses. However, feedback was not provided in the first attempt of answering a vocabulary item. Instead, it was only offered after three incorrect responses. The use of the programme with such features was rated favourably by majority of 200 Chinese tertiary students in the study.

**g) Supplement Teachers' Resources**

Supplementary resource could benefit students in their vocabulary learning. Tsai and Jenks (2007) report that VocaWord, a vocabulary game could allow learners to practise the words they have learned while enjoying themselves at the same time. In fact, it was a good strategic game that provided the opportunity to challenge other players and also to learn new words from each other. He concluded that VocaWord was a promising game which could grab the interest of learners, and helped them acquire more words in a shorter time.

**2.4 Limitations of the previous studies**

The research reviewed in the earlier discussions have given the researchers some basic ideas about the use of Contextual Clues, Dictionary Strategy and CALL in learning vocabulary among L2. Yet, the main limitations of the previous studies can generally be categorised in terms of their sample size, instruments, and tools used.

First, in terms of sample size, most studies employed secondary school students (Cheung, 2007; Ngan-ha, 2007 & Chung, 2008; Nakata, 2008). Second, concerning instruments, studies like Ngan-ha (2007) and Chung (2008) only included a single pre-test and post-test while Yunan (2003) only conducted several immediate tests to measure students' vocabulary achievements. Third, in learning vocabulary using CALL, all of the previous researchers used their respective CALL vocabulary programmes. Based on these observations, the study attempts to integrate the uses of Dictionary Strategy, Contextual Clues, and CALL employing tertiary students as the samples. Also, the current study conducts several vocabulary achievement tests; pre-test, delayed recall tests and immediate recall tests, unlike previous researchers. Since previous studies used researcher-made CALL programmes, the present study, however, attempts to use the pre-package language learning software namely TMM. Based on these arguments, the study aims at investigating the relative effectiveness of the three types of vocabulary learning methods in a single study. The following hypotheses are formed in respect to the objective of the study:

- H<sub>01</sub> There is no significant difference in the achievement of the number of words learnt in the Immediate Recall Test 1 after receiving Dictionary Strategy, Contextual Clues and CALL in learning vocabulary among students.
- H<sub>02</sub> There is no significant difference in the achievement of the number of words learnt in the Immediate Recall Test 2 after receiving Dictionary Strategy, Contextual Clues and CALL in learning vocabulary among students.
- H<sub>03</sub> There is no significant difference in the number of words learnt between the Pre-test and the Delayed Recall Post-test using Contextual Clues among students.
- H<sub>04</sub> There is no significant difference in the achievement of the number of words learnt between the Pre-test and the Delayed Recall Post-test using Dictionary Strategy among students.
- H<sub>05</sub> There is no significant difference in the achievement of the number of words learnt between the Pre-test and the Delayed Recall Post-test using CALL among students.
- H<sub>06</sub> There is no significant difference in the achievement of the number of words learnt in the Delayed Recall Post-test using Contextual Clues, Dictionary Strategy, and CALL among students.

### 3. Methodology

The study uses quasi-experimental design, specifically the non-equivalent control group design as its method. The purpose of using the non-equivalent control group design is to investigate a situation in which random selection and assignment are not possible. A Pre-test was conducted to ensure the degree of equivalency among the comparison groups on the dependent variable before the experiment began (Key, 1997). Table 3.1 showed the design of the study. The study is conducted in six weeks. A Pre-test is conducted in the first week. The second and third weeks are allocated for lessons and tests. For these weeks, every first class meeting is allocated to learning sessions while immediate recall tests are administered in every second class meeting. A two-week gap of no vocabulary lessons and tests is scheduled in week four and five. In the sixth week, a Delayed Recall Post-test is administered to students. Besides that, interviews are conducted in week seven.

**Table 3.1: The Non Equivalent Control Group Design Pre-test Post-test Design**

Week 1	Week 2		Week 3		Week 4	Week 5	Week 6
					Break		
O <sub>1</sub>	X <sub>a</sub>	O <sub>2</sub>	X <sub>a</sub>	O <sub>3</sub>	X <sub>a</sub>	-	O <sub>4</sub>
O <sub>1</sub>	X <sub>b</sub>	O <sub>2</sub>	X <sub>b</sub>	O <sub>3</sub>	X <sub>b</sub>	-	O <sub>4</sub>
O <sub>1</sub>	X <sub>c</sub>	O <sub>2</sub>	X <sub>c</sub>	O <sub>3</sub>	X <sub>c</sub>	-	O <sub>4</sub>

**Legend:**

- O<sub>1</sub>: Pre-test
- X<sub>a</sub>: First and second lessons using Contextual Clues
- X<sub>b</sub>: First and second lessons using Dictionary Strategy
- X<sub>c</sub>: First and second lessons using CALL
- O<sub>2</sub>: Immediate Recall Test 1
- O<sub>3</sub>: Immediate Recall Test 2
- O<sub>4</sub>: Delayed Recall Post-test
- : Break of no lesson and test

### 3.1 Pilot study

A pilot study was conducted to test the feasibility of the design and instruments of the study (Fraenkel & Wallen, 2003). It involved 37 first year students. Content validity and face validity of all the instruments were assessed in the pilot study. The former was assessed by content experts while the latter was assessed by the students as the test-takers. Few amendments were done due to the comments received. The reliability of the instruments using KR-20 Reliability Coefficient was also assessed. Table 3.2 shows the reliability coefficient of all the instruments tested in the pilot study.

**Table 3.2: Internal Consistency of Instruments**

Instruments	KR-20 Reliability Coefficient
Pre-test	0.77
Immediate Recall Test 1	0.93
Immediate Recall Test 2	0.98
Delayed Recall Post-test	0.77

### 3.2 Participants

The study employs the first year students as its accessible population. The 123 first semester students are selected based on purposive sampling. Samples are selected based on the judgement that they are typical or representative from the population (Fraenkel & Wallen, 2003). The researcher selects the classes that are represented by as homogeneous groups as possible. As the study uses pre-existing intact group, all students in those particular classes are included as the subjects (Sytsma, 2009). Table 3.3 shows the total number of students involved in the study according to faculties and groups.

**Table 4.9: Distribution of Subjects according to Faculties and Groups**

Faculty	Groups	Total number of subjects
Industrial Sciences & Technology	Dictionary Strategy	37
Civil Engineering & Earth Resources	Contextual Clues	43
Chemical & Natural Resources Engineering	CALL	43

### 3.3 Instruments

Four vocabulary achievement tests are employed in the study. These are the Pre-test, Immediate Recall Test 1, Immediate Recall Test 2 And Delayed Recall Post-test. Also, two formats that are fill-in-the-blanks and multiple choices are used for the design of all the tests. The fill-in-the-blank items require students to choose suitable meanings for the words that are underlined from four choices of answers. On the other hand, the multiple choices require them to choose answers that can be obtained by selecting words contain in the boxes allocated at the top of the test's section. The Pre-

test and Delayed Recall Post-test involve testing students a total of 42 target words while 21 target words are tested in each of the immediate test. The Delayed Recall Post-test is equivalent to the Pre-test to prevent students from remembering the subject matter being tested from the latter (Fraenkel & Wallen, 2003).

Besides that, semi-structured interviews are employed to support the hypotheses that are formulated in the study. Two competent and two basic learners in each vocabulary learning group, making a total of 12 respondents are called for the interview.

### **3.4 Vocabulary Selection**

In considering the inclusion of target vocabulary, Read (2000) argues that there is no standard approach to the selection of target vocabulary for testing, yet, they may be selected from class texts or activities (Schmitt & Schmitt, 1995). Most importantly, ensuring various parts of speech should be a priority (Folse, 2006) that can be achieved by conducting need analysis (Oxford & Scarcella, 1994). Moreover, the number of target words should depend on the goal of the class, and 20 words per week should be sufficient for vocabulary enrichment (Schmitt & Schmitt, 1995). Since effective vocabulary teaching depends on the students, the nature of the words, instructional purpose and strategies of learning vocabulary (Flanigan & Greenwood, 2007), the sufficiency for instructions therefore, cannot be measured with the classroom time spent (Twaddel, 1973). Rather, vocabulary learning is an ongoing process especially in teaching the low context vocabulary (Mehring, 2005). The following procedures were followed in selecting the target vocabulary.

- a) Analysis of target vocabulary was done by examining the words contained in 48 slides of the Fill-in-the-Blanks exercise in the Vocabulary Workshop.
- b) Fifty-two target words were preselected.
- c) Four highly proficient students were appointed to make sentences using the target words.
- d) Sentences written by them were checked by three teachers as examiners. They were only able to make sentences of 10 target words.
- e) Forty-two words that are characterised by nouns, verbs and adjectives were determined as the target words for the study (Appendix 1).
- f) The selected words were confirmed by the English lecturers and teachers to enrich students' vocabulary.

### **3.5 Item Analysis**

Item analysis is conducted to explore the research subjects' responses to each of the test item as to judge its quality (Mehrens & Lehman, 1973). Generally, there are two measures which are calculated for each of the objective test items: the facility value or item difficulty and the discrimination index.

The formulas by Mehrens and Lehman (1973) are used to calculate the item difficulty and item discrimination. In selecting good items, any test item with the value of 0.20 to 0.80 for the level of difficulty are considered acceptable (Mehrens & Lehman, 1973). The final breakdown of all the test items showed that their difficulty ranged from 0.20 to 0.79. Regarding the items for power of discrimination, any test items with the value of 0.20 to 1.00 is considered acceptable and can be kept in the question bank (Mehrens & Lehman, 1973). The final breakdown of the whole items in the tests showed that their discrimination ranged from 0.20 to 0.83.



#### 4. Results and Discussions

Exploratory Data Analysis (EDA) was conducted to reveal the possible errors i.e. outliers in the data. Detecting them enables the researcher to establish the normal distribution of the data, and hence, determine whether parametric or non-parametric tests should be used (Field, 2009). Besides that, a Pre-test was conducted to examine possible differences in the vocabulary knowledge of the three groups among the students. The analysis of variance (ANOVA) in the Pre-test (Table 4.1) showed a non-significant result [ $F(2, 120) = 1.413, p = .248$ ]. The discussions that proceed concern with reporting the hypotheses of the study.

**Table 4.1: ANOVA of Pre-test to Determine Homogeneity of Subjects**

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	57.628	2	28.814	1.413	.248
Within Groups	2447.893	120	20.399		

**H<sub>01</sub>: There is no significant difference in the achievement of the number of words learnt in the Immediate Recall Test 1 after receiving Dictionary Strategy, Contextual Clues and CALL in learning vocabulary among students.**

A one-way ANOVA was used to explore the differences in the number of words learnt as measured by the Immediate Recall Test 1. From the analysis (Table 4.2), there was a statistically significant difference at the  $p < .05$  level in the Immediate Recall Test 1 for the groups: [ $F(2, 120) = 7.365, p = .001$ ]. The effect size calculated using eta squared ( $\eta^2$ ) was 0.11. The actual difference in mean scores among the groups was medium (Cohen, 1988). This also mean the null hypothesis was rejected.

**Table 4.2: Results of ANOVA of Immediate Recall Test 1**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	640.044	2	320.022	7.365	.001
Within Groups	5213.960	120	43.450		
Total	5854.005	122			

Further, a post hoc test using the Gabriel test was employed to further analyse which group differed from the other groups since sample sizes were slightly different(Field, 2009). The result presented in Table 4.2 showed that the mean scores for the Dictionary Strategy group ( $M = 22.33, SD = 8.55$ ) was significantly different from the Contextual Clues group ( $M = 16.67, SD = 5.22$ ). The CALL group ( $M = 18.99, SD = 5.84$ ) did not differ significantly from either the Dictionary Strategy or Contextual Clues group.

**Table 4.14: Gabriel Post Hoc Test of Immediate Recall Test 1**

Group	(J) Group	Mean Difference (I-J)	Sig.
Dictionary Strategy	Contextual Clues	5.66241*	.001

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

Findings from the interviews are presented to justify the highest scores obtained by the Dictionary Strategy group. First, in the interview, competent learners claimed that the various definitions guided their understanding on the meanings of the target words. However, the usefulness of various definitions in the monolingual dictionary was inconsistent with Chan’s (2005) finding. Students in Chan’s (2005) study were not able to remember the words learnt. They were unable to figure out the appropriate meanings of a multi-sense of word or the correct usage of a target word. Second, the advantages of examples of sentences in the dictionary might influence the students in the Dictionary Strategy group to obtain the highest scores in the Immediate Recall Test 1. However, such finding was inconsistent with Lu’s (2003) finding. The results of the students’ immediate recall test scores show that there are no difference in the amount of words learnt when target words are added to examples of sentences regardless of using bilingual and monolingual dictionaries. Third, students in the Dictionary Strategy group scored the highest due to the benefits they gained from the phonetic symbols. Two competent learners who were interviewed claimed that learning the IPA symbols were interesting because they were able to know the pronunciations of the target words. However, such finding does not correlate with the previous studies. Chow (2001) manifested that the pre-university students in her study failed to understand the information given on pronunciation. The absence of prior knowledge of the phonetic symbols led them to face difficulties reading the symbols. Similarly, Martínez’s (2008) subjects reported disappointment with the phonetic transcriptions given in the monolingual dictionaries. About one third of them faced the difficulty to decode the pronunciation of a target word.

In summary, the preceding discussions only highlighted the views made by the competent learners and ignored the views of the basic learners. However, it is done so as to triangulate with the results in the Immediate Recall Test 1. Such was so as to justify the highest scores obtained by the Dictionary Strategy group.

**H<sub>02</sub> There is no significant difference in the achievement of the number of words learnt in the Immediate Recall Test 2 after receiving Dictionary Strategy, Contextual Clues and CALL in learning vocabulary among students.**

A one-way ANOVA indicated that there was a significant effect at the  $p < .05$  level on the scores in Immediate Test 2, [F (2, 120) = 6.812,  $p < .002$ ]. The eta squared ( $\eta^2$ ) of 0.10 showed a small effect size (Cohen, 1998). The observed significant level that was lower than the 0.05 level also meant that the null hypothesis was rejected.

**Table 4.3: Results of ANOVA for Immediate Recall Test 2**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	792.836	2	396.418	6.812	.002
Within Groups	6983.551	120	58.196		
Total	7776.388	122			

Further, post hoc comparisons using the Gabriel test that had great power was used since sample sizes were slightly different (Field, 2009). Table 4.4 showed that the mean scores for Contextual Clues group (M = 30.01, SD = 6.78) was significantly different from CALL group (M = 23.98, SD = 7.28). The

mean scores for Dictionary Strategy group did not differ significantly from either Contextual Clues or CALL group.

**Table 4.4: Gabriel Post Hoc Test of Immediate Recall Test 2**

Group	(J) Group	Mean Difference (I-J)	Sig.
CC	CALL	6.03558*	.001

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

However, such result is inconsistent with the finding derived from Çiftçi and Üster’s (2009) study. They argued that students were highly successful in the sections parallel to the way they were taught. In their study, the students in the beginner level who are taking A Level were divided into two different vocabulary learning conditions. One group was exposed to learning vocabulary in context indicating the use and function of the word, and the other group was exposed to learning vocabulary by providing only the dictionary definitions of words. Findings from their study reveal that there is no significant difference between the two methods of vocabulary learning.

Nevertheless, there are a number of reasons as to the effective use of Contextual Clues based on the interview conducted on the competent learners. First, they claimed that they would look at the clues near the target words to help them identify their meanings. The finding on guessing the meaning of a target word by looking at the clues is consistent with Chung’s (2008) study. Her subjects used words that are closest to those of the target words, and hence, provided them sufficient information to understand their meanings. Second, think-aloud techniques help students in justifying their guesses. The advantage of this technique is consistent with Hamada’s (2009) findings. Five Japanese college-level ESL learners used the think-aloud technique to infer the meaning of unknown words after underlining them in a passage. Third, students perceived that figuring out meaning from context was analogous to a guessing game. They used their ‘feelings’ to insert the target words in the sentences. Lawson and Hogben(1996) argue that the rich context provides generation of a likely meaning of the unknown words, and therefore, helped her to install the meaning of the words in the short term memories Yet, this is only likely the experience of successful learners compared to the ones who performed least well (Lawson &Hogben, 1996; Nassaji, 2006).

**H<sub>03</sub> There is no significant difference in the number of words learnt between the Pre-test and the Delayed Recall Post-test using Contextual Clues among students.**

A paired-samples t-test in Table 4.5 revealed that there was a significant difference between the Delayed Recall Post-test (M = 17.57, SD = 6.221) and Pre-test (M = 14.38, SD = 5.141);  $t(36)$ ,  $p \leq .010$ . The eta squared ( $\eta^2$ ) of 0.17 produced a medium effect size (Cohen, 1998). Since the observed significant level was lower than the 0.05 level, the null hypothesis, therefore, was rejected.

**Table 4.5: Result of the Paired-Sample t Test for the Contextual Clues group**

Treatment		N	Mean	Standard Deviation	t	df	p
Contextual Clues	Pre-test	43	12.68	3.97	-7.285	42	.000
	Delayed Recall Post-test	43	18.33	5.22			

**H<sub>04</sub> There is no significant difference in the achievement of the number of words learnt between the Pre-test and the Delayed Recall Post-test using Dictionary Strategy among students.**

Table 4.6 showed that there was a significant difference between the Delayed Recall Post-test (M = 17.57, SD = 6.221) and Pre-test (M = 14.38, SD = 5.141);  $t(36), p = .010$ . The eta squared ( $\eta^2$ ) of 0.17 produced a medium effect size (Cohen, 1998). Since the observed significant level was lower than the 0.05 level, the null hypothesis, therefore, was rejected.

**Table 4.6: Result of the Paired-Sample t Test for the Dictionary Strategy group**

Treatment		N	Mean	Standard Deviation	t	df	p
Dictionary Strategy	Pre-test	37	14.38	5.14	-2.704	36	.010
	Delayed Recall Post-test	37	17.57	6.22			

**H<sub>05</sub> There is no significant difference in the achievement of the number of words learnt between the Pre-test and the Delayed Recall Post-test using CALL among students.**

The  $t$  test results in Table 4.7 indicated that the students in CALL group obtained significantly higher scores in the Delayed Recall Post-test (M = 18.27, SD = 4.46) than to the Pre-test (M= 13.46, SD = 4.46);  $t(42) = -5.707, p = .000$ . The calculated eta squared ( $\eta^2$ ) with 0.44 produced a large effect size (Cohen, 1998). The observed significant value below 0.05 level resulted in the rejection of the null hypothesis.

**Table 4.7: Result of the Paired-Sample t Test for CALL group**

Treatment		N	Mean	Standard Deviation	t	df	p
CALL	Pre-test	43	13.46	4.460	-5.707	42	.000
	Delayed Recall Post-test	43	18.27	4.461			

The results from the Pre-test and Delayed Recall Post-test scores reveal that all students in each group, generally had made progress in learning vocabulary after they were taught to use Contextual Clues, Dictionary Strategy, and CALL. This might be due to the following factors. First, the students might have benefited from the class discussions as Stahl and Clark (1987) affirm that discussions appear to improve vocabulary learning. In the lessons, it was observed that the students benefitted from pair and group works that was formed among their friends who were sitting close to each other. To a certain extent, the tasks or activities in the lessons provided the platform for them to reflect their learning through discussions. Second, it is also likely that the teacher made students focus on the techniques of using the methods in detail that yielded the improvement in the scores of the Delayed Recall Post-test. Although the students were instructed to follow their teacher, this did not

mean that they were to totally depend on her. Yet, the teacher having the role of a facilitator and resource person negotiates with the students whenever they ask for clarifications (O'Neill & McMahan, 2005). Besides, it is rather inappropriate for the teacher to spoon feed them as they are studying at tertiary level. They have other options to create their own learning in that they assimilate the techniques and apply those they find suitable when doing exercises in the lessons.

**H<sub>06</sub> There is no significant difference in the achievement of the number of words learnt in the Delayed Recall Post-test using Contextual Clues, Dictionary Strategy, and CALL among students.**

A one-way ANOVA was used to explore the differences in the achievement of the highest amount of words learnt as measured by the Delayed Recall Post-test. Table 4.8 showed that there was no statistically significant difference at the  $p < .05$  level in the Delayed Recall Post-test for the groups [ $F(2, 120) = .249, p = .780$ ]. The no significant result obtained from the analysis, therefore, meant that the null hypothesis was accepted.

**Table 4.8: Results of ANOVA for Delayed Recall Post-test**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13.984	2	6.992	.249	.780
Within Groups	3371.320	120	28.094		
Total	3385.304	122			

The hypothesis that there would be significant differences when the students are exposed to learning vocabulary using Contextual Clues, Dictionary Strategy and CALL in the Delayed Recall Post-test is not supported in the present study. The students demonstrated they were not able to remember all the words they learnt when they were tested in the delayed recall. It is not astounding that the students could not remember the words after a two-week break as they were not able to review them in that period. In fact, they were warned not to do so, and if otherwise committed, it would affect the results of the study. They only benefitted the revisions in the two lesson periods whereby they were given a few activities to familiarise themselves with the target words. It is apparent from the previous discussion that the finding of no statistical differences among the three treatments, tentatively suggested that it might be the amount of practice and reinforcement intervals, not the particular methods that impeded the students from acquiring the vocabulary for long term. The finding is consistent with the result obtained by Liu (1998) when she could not find any significant difference in the delayed recall post-test using three vocabulary learning methods namely Subjective Approach to Vocabulary (SAV), context method and CAI. While the data of Liu's study indicated that SAV method had the highest mean of correct word, the results were not conclusive enough to be statistically significant. Hence, she concluded that all vocabulary learning methods could produce better learning of the words, and no one method has shown to be consistently superior for long term retention.

## **5. Conclusion**

The present study has demonstrated the advantages of Dictionary Strategy and Contextual Clues in the achievement of the number of words learnt in the immediate recall. However, for the delayed recall, it showed that all the three methods were not significantly different in helping the students to store the vocabulary for long term retention.

Such findings are significant because although many researchers have advocated the relative effectiveness of Dictionary Strategy, Contextual clues, and CALL in the achievement of the number of words learnt, no study has ever empirically investigated the relative efficacy of these three methods in a single study. However, more research will be needed to address some limitations of the present study.

First, it might be valuable to extend the duration of the study. Interested researchers may extend the duration of the study to a period of a semester or fourteen weeks according to the general academic calendar in most local public universities. Second, the current investigation was limited by the number of target words used for learning and testing. Having only 42 target words seemed to be quite small to be accounted for the vocabulary sample. Hence, having more target words enables students to learn the strategies and techniques of using Dictionary Strategy, Contextual Clues and CALL to be more promising. The last concern was that the format of the tests that used multiple choice type answers and fill-in-the-blanks. Freely guessing the answers still offered a one-in-four possibility of them getting it correct, and thus, scoring one point for the question. Similarly, students might just want to get over with the fill-in-the-blanks questions. Hence, future researchers may use cloze-test to replace the existing format. For multiple-choice questions, they can provide two choices of answers instead of four for prospective students to choose from. This means they need to provide selection of true or false answer only.

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**Appendix 1: List of Words According to Alphabetical Order**

Nos.	Words	Nos.	Words
1.	Accent	22.	laundrette
2.	aisle	23.	marmalade
3.	ancient	24.	pasture
4.	arch	25.	poach
5.	ascent	26.	precipices
6.	brochettes	27.	reefs
7.	bunk bed	28.	shipwreck
8.	catamaran	29.	slate
9.	corduroy	30.	soloist
10.	corkscrew	31.	sorbet
11.	crevasses	32.	spinnaker
12.	crumbs	33.	stale
13.	cutlets	34.	stiff
14.	drawbridge	35.	stitches
15.	drizzly	36.	suppositories
16.	flippers	37.	tack
17.	gliding	38.	tapestries
18.	gruelling	39.	tempted
19.	hedgehogs	40.	tickles
20.	inanity	41.	veal
21.	jib	42.	vicinity