

## The Effect of Using Memory-Aided Strategies on Vocabulary Retention of EFL Primary School Children

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### Abstract

If vocabulary is very essential to know a language, memory is vital to collect, store, and retrieve it. Accordingly, memory-aided strategies have been accepted as effective vocabulary learning strategies. However, teaching English vocabulary in primary schools relies on *direct instruction method* where vocabulary words are presented with their definitions or their translated equivalents and so students resort to memorization as a vocabulary learning strategy. Therefore, the current research investigated the effect of using two memory-aided strategies namely, *phonological* and *pictorial* associations on immediate and delayed retention of English vocabulary among Saudi primary school children. A sample of 92 Saudi primary school six-graders was selected from a Saudi government primary school. For data collection, a memory-aided strategy training unit, and a vocabulary retention test were developed and administered. Statistically, the t-test technique was used for analyzing the obtained data. Results showed that both the phonological and pictorial association strategies were more effective than the direct instruction method in improving children's immediate and delayed vocabulary retention. Interestingly, the effectiveness of the pictorial association strategy surpassed the effectiveness of phonological association strategy in improving children's immediate and delayed vocabulary retention.

## Introduction

After decades of neglect, vocabulary is now recognized as central to any language acquisition process. A solid vocabulary is necessary in every stage of language learning (Laufer, 1997:147). Simply speaking, it is impossible to learn a language without learning its vocabulary. Krashen (1989:440) adds that a large vocabulary is essential for mastering a second language so that language learners carry dictionaries with them, not grammar books. Harmer (1991: 153) analogizes the relationship between vocabulary and grammar saying: "If language structures make up the skeleton of language, then it is vocabulary that provides the vital organs and the flesh. In the same way, Read (2000: 1) exemplifies that "Words are the basic building blocks of language from which larger structures such as sentences, paragraphs and whole texts are formed.

In this respect, recent research on cognition has documented the importance of learning strategies in gaining command over second language skills. Cognitively speaking, if vocabulary is very essential to know a language, memory is vital to store and retrieve vocabulary. That is to say, knowing a language is to have it stored in and retrieved from memory. In this sense, the language system is treated and explored as a sub-domain of memory. Hence, vocabulary retention means storing vocabulary and retaining it over a long period of time in the long-term memory.

Persuasively, Ausubel argued that no learning can take place which is not anchored in previous learning, and there are benefits to be gained from making explicit links to the previous material (Wallace (1991: 36). To this point, Graham (1997: 77) states: "Cognitive psychology strongly indicates that the enhancement of the material to be memorized significantly improves its retention." As a result, learners are no longer passive recorders of information; they act as active participants in relating meaningfully the target information to what they already know. This active process helps retain information for relatively long periods of time.

Accordingly, vocabulary learning has become a very individualized and independent activity which requires a variety of vocabulary learning strategies for success in understanding and using English vocabulary. Memory-aided strategies or mnemonics are central to vocabulary learning. Cognitive memory research defines mnemonic strategies as artificial aids for refreshing and improving the memory. Simply, mnemonics are systematic procedures for transforming difficult to remember stimuli into more easily remembered stimuli. To Scruggs & Mastropieri (1990: 272), a mnemonic is a specific reconstruction of target content intended to tie new

information more closely to the learner's existing knowledge. Mnemonic strategies are systematic procedures for enhancing memory. O'Malley and Chamot (1990: 44) consider memory strategies as cognitive ones, whereas Oxford (1990:59) realizes them as specific memory strategies.

On one hand, Thompson (1987: 44-47) classifies mnemonics strategies into five sets. Linguistic mnemonic strategies include the keyword strategy, the peg-word strategy, the natural language mediator strategy and the first-letter strategy. Spatial mnemonic strategies involve the loci strategy and the spatial grouping strategy. Verbal elaboration mnemonic strategies contain the grouping strategy, the semantic mapping strategy, the narrative chain strategy and the diglot-weave strategy. Visual mnemonic strategies include pairing pictures with words and visualization. Finally, Physical response mnemonic strategies include physically enacting the information in a sentence. On the other hand, Oxford (1990:59) divides mnemonic strategies into four sets: Firstly, creating mental linkages that involves associating, elaborating, and placing new words into context. Secondly, images strategies that include imagery use, semantic mapping, using key-words, and representing sounds in memory. Thirdly, reviewing well that contains structured reviewing strategies. Finally, the forth set includes employing action such as using physical response and using mechanical techniques.

Exceptionally, the keyword strategies are considered as the most effective mnemonic strategies for accelerating learning of suitable material and improving immediate recall. Nation (2001: 312) mentions that the keyword method is probably one of the most researched strategies for vocabulary learning in the laboratory and in the classroom. Like almost all the mnemonic strategies, using the keyword strategy for learning vocabulary pass through three successive processes; reconstructing, relating and retrieving (Mastropieri & Scruggs, 1991: 12). Reconstructing means that the unfamiliar target word is reconstructed to a phonetically similar native language word. This word should be concrete and, as widely suggested, familiar to the learner. When teaching the keyword method, a vast number of keywords are needed and it is sometimes inevitable that the teacher uses some words that are unfamiliar to the learners. Relating is the process that once the reconstruction has been done, the keyword has to be related or linked to the target information in an interactive picture, image or sentence. This interaction is of prime importance and should be as vivid as possible. It is the degree of the interaction between the target word and the keyword that determines the memory trace. Retrieving is the third step in which the learner retrieves the definition of the target word from memory. This consists of repeating the two steps above. The learner is

required to, firstly, think of the keyword, then think back to the interactive picture or image and, secondly, think of the kind of interaction that happened in that picture or image and, thirdly, express the desired response.

A successful keyword strategy should have certain characteristics. The keyword should be phonetically similar (not necessarily identical) to the target word and the learner has to be able to form a link between them. The association between the keyword and the target word should be unique to avoid the possibility of interference with other associations. For most people the image will be predominantly visual, since visual memory is seen as the strongest by most practitioners, but smells, sounds, movements should be included wherever possible. The connection between the objects should be the prime feature of the image because disconnected images do not work well. The simpler the connection, the better learners bring their natural creativity to the classroom and this should be utilized by involving them in the search for a keyword if possible. Memory is intimately linked with conscious experience. The more strongly the learner experiences something, the better he will remember it.

### Previous Research

Levin & Levin (1990) used the mnemonic strategy of linking pictures of keyword mnemonics to facilitate the memory of a hierarchical system for classifying plants. The linked-keyword experimental group not only exceeded the control groups (one using a graphical depiction of the hierarchy, the other using free-study) in remembering the hierarchical system and the attributes of the categories presented, but also was better able to solve related analogy problems.

Brown & Jr. (1991) compared semantic, keyword, and keyword-semantic strategies. Six intact ESL classes at two levels of proficiency were divided into three treatment groups (keyword, semantic, and keyword-semantic). The students received 4 days of instruction. Both recognition and cued-recall instruments were used to measure effects both 1 day and 9 days after treatment. Cued-recall results immediately after treatment revealed that the keyword method facilitated vocabulary acquisition for lower-proficiency students. The delayed results for both the recognition and cued-recall tests suggested that the combined keyword-semantic strategy increased retention above the other strategies.

Wang et al. (1992) assessed the effectiveness of the keyword mnemonic technique versus rote rehearsal on the long term retention. The

study was conducted in four different experimental conditions. Subjects included 218 university students. Results indicated that the keyword technique was more effective than rote rehearsal in both the immediate and the delayed recall.

Van & Candia (1997) examined the effectiveness of the keyword method and rote rehearsal in learning foreign language vocabulary among university experienced and inexperienced foreign language learners. Results showed that rote learners' performance among experienced foreign language learners surpassed that of keyword learners. In inexperienced learners, rote learners and keyword learners recalled the same proportion of words, though keyword learners had longer retrieval times.

Rodriguez & Sadoski (2000) compared the keyword method with rote learning, and the keyword method without context. The material for the keyword/context group consisted of the target word, the keyword and three sentences in the target language that included the target word. The activity 'in the classroom' consisted of the learning of 15 words, all nouns. These nouns and the keywords were all concrete. Delayed recall was tested after one week. Results showed that the context/keyword method was superior to all other methods examined.

Hassanein (2004) investigated the effect of mnemonic strategies on developing vocabulary retention and retrieval of university first year English majors. The researcher used a training program for developing vocabulary retention and retrieval, a pre-post mnemonic vocabulary learning strategy test for measuring mnemonic awareness, and a pre-post written vocabulary cued-recall test for measuring vocabulary retention and retrieval. Results revealed that the program was effective in increasing mnemonic awareness, and vocabulary retention and retrieval.

Hauptmann (2004) investigated whether results in keyword method research, past and present, can be transferred to genuine classroom situations and whether the keyword method also affects the motivation of the learners. Results revealed that the keyword method enhances vocabulary retention to a great extent compared with comparison groups.

Fritz et al. (2006) compared the effectiveness of retrieval practice, the keyword mnemonic and rote rehearsal for learning foreign language vocabulary. They found that both mnemonic methods produced similar recall and were superior to rote rehearsal. Moreover, they compared using keywords, retrieval practice or learners' own method. Retrieval practice and keyword-based recall were similar and superior to self-directed study.

Finally, they compared using keywords, retrieval practice, and a combination or an elaboration strategy. For receptive learning, retrieval practice and keywords were equally beneficial but for productive learning, retrieval practice was more effective. Combining strategies produced mixed results with significant benefits only for receptive learning in the delayed test.

Sagarra & Matthew (2006) investigated the effectiveness of some methods of learning vocabulary among beginning second language learners. Rote memorization consists of memorizing the first language L1 translation of a new second language word by rehearsal. Semantic mapping displays L1 words conceptually related to the second language L2 word in a diagram. The keyword method involves associating the novel L2 word with the L1 keyword that is acoustically or orthographically similar. The results revealed that the keyword method caused the best retention.

Fontana et al. (2007) compared the relative effects of mnemonic strategies and direct instruction on academic performance. Keywords with interactive illustrations were alternated with direct instruction procedures to teach 2 units of world history to students in Grades 10 and 11 over a 4-week period. The results revealed that students for whom English was a second language scored significantly higher in the mnemonic condition, whereas no differences were observed for first-language English. Survey data revealed general overall satisfaction with mnemonic strategies on the part of teachers and students.

The previous review confirms the following conclusions: Firstly, vocabulary retention was the main target of almost all the reviewed studies. Secondly, almost all the subjects of the above mentioned studies were university and high school students. Thirdly, the keyword method was tackled as a key mnemonic strategy. Fourthly, both immediate and delayed recall tests were used. Sixthly, mnemonic techniques were superior to rote memorization. Seventhly, only one study was carried out in the EFL Arabic context. Eighthly, few studies targeted children. Ninthly and more importantly, it could be claimed that cognitive strategies were behind the memory strategies which include mnemonic strategies and the mnemonic strategies involve the keyword strategies to which the *pictorial* and *phonological* strategies are belonging. Finally, more research is needed to investigate the effect of using pictorial and phonological strategies on immediate and delayed retention of English vocabulary of EFL primary school children.

## Context of the Problem

Generally, language learners do not always use the most appropriate learning strategies or know how to employ them effectively. Hence, language teachers need to address the question of how their students learn, rather than what they learn (Graham, 1997: 83). More recently, Peters (2007:38) states: "Retention of new words is further determined by the way in which these words are processed, whereby deeper and more elaborate processing results in better word retention." In the kingdom of Saudi Arabia teaching English as a foreign language to primary school six-graders has become a fact since the academic year 2004/2005. The English language course currently taught in the Saudi primary schools is a beginner EFL course in which vocabulary occupies a central position. However, based on the researcher's field remarks as a TEFL supervisor, the general condition of teaching and learning English vocabulary in many Saudi primary schools is not rosy. That is to say, most of the prevailing teaching/learning practices seem ineffective or boring. Practically, many EFL teachers rely on the 'traditional direct instruction method' where vocabulary words are presented with their definitions and their translated Arabic equivalents. Consequently, many students resort to memorization. In short, using effective interactive vocabulary learning strategies is very rare in the observed primary schools.

## Statement of the Problem

Vocabulary occupies a large position in Saudi primary school English language course, yet the current teaching and learning practices are not up to the standards required. Due to the traditional teaching techniques, many primary school six-graders resort to rote memorization to learn English vocabulary. Therefore, the current study attempted to investigate the effectiveness of using two memory-aided mnemonic strategies namely, phonological association and pictorial association on immediate and delayed vocabulary retention of Saudi primary school six-graders.

## Research Questions

The study tried to answer the following questions:

- To what extent is the traditional direct instruction method effective in developing immediate vocabulary retention of primary school six-graders?

- To what extent is the traditional direct instruction method effective in developing delayed vocabulary retention of primary school six-graders?
- To what extent is the phonological association strategy instruction effective in developing immediate vocabulary retention of primary school six-graders?
- To what extent is the phonological association strategy instruction effective in developing delayed vocabulary retention of primary school six-graders?
- To what extent is the pictorial association strategy instruction effective in developing immediate vocabulary retention of primary school six-graders?
- To what extent is the pictorial association strategy instruction effective in developing delayed vocabulary retention of primary school six-graders?

### Research Objectives

This research targeted the following objectives:

- Investigating teaching vocabulary in Saudi primary schools.
- Investigating the effectiveness of using two memory-aided mnemonic strategies on children's immediate and delayed English vocabulary retention in EFL context.
- Designing a memory-aided strategy training unit (MASTU).
- Designing a vocabulary retention test (VRT).
- Training EFL learners on memory-aided strategies.

### Research Significance

The significance of this study stems from the following considerations:

- Vocabulary learning is a focal variable in teaching and learning English as a foreign language.
- The main component of the EFL course taught in Saudi primary schools is on vocabulary.
- Almost all the questions of the EFL primary schools tests depend on vocabulary words.
- Using mnemonic strategies among EFL Arab children provides them with positive strategy awareness that is applicable to vocabulary learning as well as the other language areas.

- Learning and retrieving English vocabulary easily is recommended in primary schools where children are forming their linguistic abilities as well as their attitudes toward EFL.
- Tentatively, this study may be of the pioneer studies that used mnemonic strategies with EFL children in an Arabic context.
- This study may draw the attention of the researchers to investigate other variables of teaching EFL in primary school in the Arab world.
- This study affords the information that may help decision makers and course designers improve teaching EFL to children in primary schools.

## Research Hypotheses

The following null hypotheses were formulated to be tested:

- There would be no statistically significant difference between the mean scores of the traditional control group and the experimental pictorial group on the immediate vocabulary retention test (IVRT).
- There would be no statistically significant difference between the mean scores of the traditional control group and the experimental phonological group on the immediate vocabulary retention test (IVRT).
- There would be no statistically significant difference between the mean scores of the experimental pictorial group and the experimental phonological group on the immediate vocabulary retention test (IVRT).
- There would be no statistically significant difference between the mean scores of the traditional control group and the experimental pictorial group on the delayed vocabulary retention test (DVRT).
- There would be no statistically significant difference between the mean scores of the traditional control group and the experimental phonological group on the delayed vocabulary retention test (DVRT).
- There would be no statistically significant difference between the mean scores of the experimental pictorial group and the experimental phonological group on the delayed vocabulary retention test (DVRT).

## Methodology

### Participants

The sample of the study involved 92 male primary school six-graders selected from a Saudi governmental primary school in Tabuk city, KSA.

The targeted primary school involved three six-grade classes (6/a, 6/b and 6/c). Accordingly, the three intact classes were involved in the study. The sample was homogeneous in terms age, language experience, schooling environment. The participants' age was between 11 and 12 years old. They were studying English for the first time. Though non-Saudi students participated in the study, their participations were excluded because most of them studied English before in their home countries.

## Instruments

### I- Memory-Aided Strategy Training Unit (MASTU)

The memory-aided strategy training unit (MASTU) was basically developed to familiarize EFL primary school six-graders with the *advantages* and the *procedures* of using pictorial association and phonological association strategies for learning vocabulary. To match young learners' learnability conditions, the content of the training unit was very simple, concise, and limited to explaining the *advantages* and modeling the *procedures* of the target strategies. Upon the request of the experts, the Arabic language was used as a medium of training and instruction. The training unit lasted for three forty-five minute sessions. The training was limited to the two experimental groups. The students in classroom (6/b) were trained on the pictorial association strategy, whereas the students in classroom (6/c) were trained on phonological association strategy.

### II- Vocabulary Retention Test (VRT)

The main objective of the vocabulary retention test (VRT) was to assess the immediate and delayed English vocabulary retention of primary school six-graders. The test consisted of ten word-picture matching items. The items targeted ten English words previously taught to the three groups with different styles. Test simplicity was considered and the directions were reported orally in Arabic. The maximum test score was 10 points where each correct item was given one point. The students were given enough time (30 minutes) to recall and visualize the target words. In terms of the content validity of the test, three EFL experts considered the (VRT) as a valid test for assessing English vocabulary retention of primary school six-graders. The test was piloted twice in another similar primary school to estimate its reliability. Using the test-retest procedure showed that the (VRT) was reliable where  $r = .83$ . The same test was used as an immediate vocabulary retention test (IVRT) and as delayed vocabulary retention test (DVRT).

## Design and Variables

The present study used a three-group experimental design. The participants were divided into three intact classes according to the school classroom capacity. As intact classes, students in the class (6/a) were treated as a control group or a non-strategy group. Students in the class (6/b) were placed in the experimental pictorial association instruction group, whereas students in the class (6/c) were placed in the experimental phonological association instruction group. Post immediate and delayed tests were used to assess the participants' outcomes in the three groups. Accordingly, the traditional direct method, pictorial association, and phonological association were independent variables, whereas immediate vocabulary retention and delayed retention were the dependent variables. This study was a genuine classroom research so that the researcher dealt with intact classes where a random redistribution of the learners was not possible.

## Experimentation

Having the memory-aided strategy training unit (MASTU) developed, and the class teacher trained on using and teaching the target strategies, the class teacher explained and modeled the *advantages* and the *procedures* of using the pictorial association strategy to the children of the first experimental group. On the same day, the teacher explained and modeled the *advantages* and the *procedures* of using the phonological association strategy to the children of the second experimental group. Intentionally, the third group left with no training. On the next day, the teacher taught the children ten English words chosen from the not-yet-studied units of the assigned textbook. The children of the first experimental group studied the ten words using the pictorial association strategy, whereas the children of the second experimental group studied the same target words using the phonological association strategy. The same words were taught to the children in the third group using the traditional direct instruction method. Having these measures done, immediately the (VRT) presented to all the children in the three groups at the same time to assess their immediate vocabulary retention. In this case, the test was used as an immediate vocabulary test (IVRT). After one week, the same test was administered to the same children to assess their delayed vocabulary retention. Hence, the test was considered as a delayed vocabulary retention test (DVRT). Finally, children's scores were calculated, tabulated, and statistically analyzed.

## Results

### I- Immediate Vocabulary Retention Results

**Table 1: Comparison of the mean scores of the control group and the pictorial group on the (VRIT)**

Group	N	M	SD	t	P
Control	30	3.33	1.47	7.66	<0.00
Pictorial	29	7.07	1.40	2	01

As shown in Table 1, the mean scores of the traditional control group (3.33) is lower than the mean scores of the experimental pictorial group (7.07) on the immediate vocabulary retention test (IVRT). The difference between the two mean scores is statistically significant where the calculated t value is (7.662) and the P value is less than (0.0001). Accordingly, the first hypothesis was rejected and the alternative one was stated as follows: There is a statistically significant difference between the mean scores of the traditional control group and the experimental pictorial group on the (IVRT) favoring the experimental pictorial group. This result reveals that the pictorial association strategy was more effective than the traditional direct instruction method in improving immediate vocabulary retention.

**Table 2: Comparison of the mean scores of the control group and the phonological group on the (VRIT)**

Group	N	M	SD	t	P
Control	30	3.33	1.47	7.36	<0.00
Phonological	33	6.33	1.51	8	01

Table 2 shows that the mean scores of the traditional control group (3.33) is lower than the mean scores of the experimental pictorial group (6.33) on the immediate vocabulary retention test (IVRT). The difference between the two mean scores is statistically significant where the calculated t value is (7.368) and the P value is less than (0.0001). Accordingly, the second hypothesis was rejected and the alternative one was stated as follows: There is a statistically significant difference between the mean scores of the traditional control group and the experimental phonological group on the (IVRT) favoring the experimental pictorial group. Thus, the phonological association strategy was more effective than the traditional direct instruction method in improving immediate vocabulary retention.

**Table 3: Comparison of mean scores of the pictorial group and the phonological group on the (VRIT)**

Group	N	M	SD	t	P
Pictorial	29	7.03	1.40	1.86	<0.00
Phonological	33	6.33	1.51	5	01

Table 3 demonstrates that the mean scores of the experimental pictorial group (7.03) is higher than the mean scores of the experimental phonological group (6.33) on the immediate vocabulary retention test (IVRT). The difference between the two mean scores is statistically significant where the calculated t value is (1.865) and the P value is less than (0.0001). Thus, the third hypothesis was rejected and the alternative one was stated as follows: There is a statistically significant difference between the mean scores of the experimental pictorial group and the experimental phonological group on the (IVRT) favoring the experimental pictorial group. This finding demonstrates that the phonological association strategy was more effective than the traditional direct instruction method in improving immediate vocabulary retention.

## II- Delayed Vocabulary Retention Results

**Table 4: Comparison of the mean scores of the control group and the pictorial group on the (VRDT)**

Group	N	M	SD	t	P
Control	30	2.97	1.63	6.80	<0.00
Pictorial	29	6.62	1.50	0	01

As shown in Table 4, the mean scores of the traditional control group (2.97) is lower than the mean scores of the experimental pictorial group (7.62) on the delayed vocabulary retention test (DVRT). The difference between the two mean scores is statistically significant where the calculated t value is (6.800) and the P value is less than (0.0001). Accordingly, the fourth hypothesis was rejected and the alternative one was stated as follows: There is a statistically significant difference between the mean scores of the traditional control group and the experimental pictorial group on the (DVRT) favoring the experimental pictorial group. Thus, the pictorial association strategy was more effective than the traditional method in improving delayed vocabulary retention.

**Table 5: Comparison of the mean scores of the control group and the phonological group on the (VRDT)**

Group	N	M	SD	t	P
Control	30	2.97	1.63	7.16	<0.00
Phonological	33	5.58	1.15	0	01

Table 5 shows that the mean scores of the traditional control group (2.97) is lower than the mean scores of the experimental pictorial group (5.58) on the delayed vocabulary retention test (DVRT). The difference between the two mean scores is statistically significant where the calculated t value is (7.160) and the P value is less than (0.0001). Thus, the fifth hypothesis was rejected and the alternative one was stated as follows: There is a statistically significant difference between the mean scores of the traditional control group and the experimental phonological group on the (DVRT) favoring the experimental pictorial group. Hence, the pictorial association strategy was more effective than the traditional direct instruction method in improving delayed retention.

**Table 6: Comparison of the mean scores of the pictorial group and the phonological group on the (VRDT)**

Group	N	M	SD	t	P
Pictorial	29	6.62	1.50	2.56	<0.00
Phonological	33	5.58	1.15	6	01

Table 6 displays that the mean scores of the experimental pictorial group (6.62) is higher than the mean scores of the experimental phonological group (5.58) on the delayed vocabulary retention test (IVRT). The difference between the two mean scores is statistically significant where the calculated t value is (2.566) and the P value is less than (0.0001). Accordingly, the sixth hypothesis was rejected and the alternative one was stated as follows: There is a statistically significant difference between the mean scores of the experimental pictorial group and the experimental phonological group on the delayed vocabulary retention test (DVRT) favoring the experimental pictorial group. This result reveals that the pictorial association strategy was more effective than the phonological association strategy in improving delayed vocabulary retention.

## Discussion

The findings of the present study revealed that the pictorial association strategy proved more effective than the traditional direct instruction method in improving both immediate and delayed vocabulary

retention. On one hand, the target English words were associated to well-selected vivid pictures so that the children were able to recall both the key pictures and their representative words immediately. That is to say, pictures reinforced the connection between the words and their visual representations. Similarly, children's delayed vocabulary retention improvement could be rendered to the effort that the children made in linking pictures to words. Such effort might create long-term mental representations in their working memory. Peters (2007: 38) states that "deeper and more elaborate processing results in better word retention. On the other hand, children's inability to realize the linguistic links between the English words and their translated equivalents could be one of the factors behind the low scores of the children in the traditional direct instruction method on both immediate and delayed vocabulary retention tests. Another explanation is that they depend on rote repetition which only works with short-term memory items (Carney, et al., 1993). Empirically, these findings are in line with Mastropieri, et al. (1997) who found out that students scored 32% on weekly tests after traditional instruction, and 68.8% after being taught mnemonically. More specifically, this finding matches well the findings of Levin and Levin (1990), Bryant et al. (2003), and Jitendra et al. (2004) who realized that pictorial association conditioned group outscored direct vocabulary instruction group.

In addition, the findings revealed that the phonological association strategy was more effective than the traditional direct instruction method in improving both immediate and delayed vocabulary retention. Possibly, the acoustic coding that the children were trained on and their innate tendency to rhyming enabled them to easily learn and recall the target English words. Peters (2007: 38) states: "Retention of new words is further determined by the way in which these words are processed. Moreover the effectiveness of the phonological association strategy was highlighted by Sagarra & Matthew (2006) who concluded that using the keyword method with phonological keywords in the classroom leads to better L2 vocabulary learning at early stages of acquisition. Typically, this finding is in agreement with Mastropieri, et al. (1997) who concluded that effectively link acoustically unfamiliar verbal information to prior knowledge increases vocabulary retention. Partially, this finding is consistent with the findings of Wang et al. (1992), and Hassanein (2004) who remarked that students trained in mnemonics recalled significantly more vocabulary words than students who received direct instruction.

Finally, although the pictorial and phonological strategies proved effective in improving immediate and delayed vocabulary retention, these strategies were slightly apt to vocabulary loss. The vocabulary loss rate of

the pictorial strategy was 4.1% (immediate M 7.03 - delayed M 6.62 = 4.1). Similarly, the vocabulary loss rate of the phonological strategy was 7.5% (immediate M 6.33 - delayed M 5.58 = 7.5). So while mnemonics can give better scores on immediate and delayed vocabulary retention tests, it may be liable to the forgetting curve over time. Hence, more experiments should be carried out to decide the effectiveness of memory-aided strategies in vocabulary retention over long periods of time.

## Conclusion

Teaching EFL in the Saudi government schools is a novel experience which needs more support and evaluation. Using traditional techniques in teaching vocabulary led to rote learning on the part of the learners. Memory-aided strategies proved effective in teaching and learning English vocabulary to primary school six-graders. The pictorial and phonological strategies proved effective in improving immediate and delayed vocabulary retention. Training EFL learners and teachers on memory-aided strategies is very easy in terms of the effort, time, and money.

## Implications

In the light of the findings of the present study, some educational implications are suggested.

- Vocabulary teaching/learning should make good use of appropriate memory-aided strategies.
- More pictures and rhyming should be an integral part of teaching and learning vocabulary.
- Teachers should be trained on the memory-aided strategies to better teach vocabulary and the other language features.
- EFL teachers should provide primary school students with direct instruction in various memory-aided strategies appropriate for their age and context.
- EFL teachers should encourage the use of memory-aided strategies among primary school students.
- EFL teachers should model memory-aided strategies at appropriate opportunities.
- A vocabulary lab with pictorial and acoustic facilities is urgently required for teaching vocabulary to EFL children using memory-aided strategies.
- More research projects are required in the area of vocabulary learning among EFL primary school learners.

- More research projects are required to study the effectiveness of memory-aided strategies in improving reading, writing, listening, and speaking in EFL context.

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