The Effect of Interactive-Image Elaboration on the Acquisition of Foreign Language Vocabulary

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Abstract   This study investigates the effect of interactive-image elaboration on the acquisition of English vocabulary by Arabic speakers. Three ESL classes at a technical college were divided into three groups and for each one a different procedure was used. The first procedure provides ready-made interactive pictures while the procedure in the second group was to ask participants to generate their own imagery pictures or to use the repetition strategy while the third treatment required students to use the strategy of repetition to learn the meaning of the new words, both in immediate and delayed tests (two weeks later). Tests of immediate and delayed results suggest that the use of the ready-made interactive pictures' strategy increased retention above the other strategies. Furthermore, the tests results also suggest that using elaborative devices either spontaneously or by design is more effective than the repetition strategy and it is possible for such a strategy to be adopted in natural classroom settings.

Keywords: acquisition, vocabulary, mnemonic devices, interactive-image elaboration

1. Introduction

To Vocabulary knowledge is considered to be an important factor in languag comprehension. Skilful language use can always be related to the number of known words [1,2,3]. as stated in [2]. Reference [4] claims that the majority of L1 vocabulary items of knowledge is considered to be implicit learning without any explicit instructions. In English as a second language (ESL) and English as a foreign language (EFL) learning vocabulary items plays a vital role in all language skills (speaking, reading, writing, and listening). Several strategies could be adopted to introduce new vocabulary items such as the grammar translation method, the direct method, the reading method, the audio lingual method, the communicative and the natural approaches repetition etc. All of these methods have their advocates and each one of these strategies has proven their effectiveness in different teaching contexts. Mnemonic devices is also one of the techniques that have proven to be effective. Reference [5] for instance, claims that mnemonic devices enhance acquisition performance and immediate recall; furthermore, [6] suggest that they increase learning speed.

This paper investigates the effect of *Interactive-image elaboration* on Arabic students' acquisition of new English vocabulary. The research is divided into four sections, the first section provides a literature review background to different mnemonic devices and strategies; this is followed by a section on the study itself giving information about the participants, and the procedures together with the materials used; the third section will reveal the results of the study; finally, a discussion section will conclude this paper.

2. Mnemonic Devices

Using memory techniques is considered to be a great aid in inculcating words to students' memories. Mnemonic devices according to [7] have been used for centuries; such devices can be verbal, visual or a mixture of both [8]. Students could be encouraged to use some of the mnemonic devices; the method of *loci,* for example could be a helpful technique. This method, according to [9] is considered to be the oldest memory device and is described in most self-help books. The student could be asked to imagine him/herself walking through a familiar location, e.g. rooms of his house. S/He then connects the items s/he wants to learn with every room. Forming a visual image of the items and placing them at one of (the loci) in the imagined scene will make retrieving these items easier if the entire scene is brought back to mind [9].

The use of 'paired associates' is also a widely used technique, the teacher links two words of similar

meanings and sounds [10] as stated in [9] called this association 'security words' and claims that it is one of the best ways to teach vocabulary. An example of this technique is to associate the meaning 'black' with the German word 'schwarz', the students could associate the word 'swarthy' which means 'dark, black' [9]. The *keyword* method invented by [11] could also be applied, for this technique the L2 word is remembered by linking it to a keyword, a sound-alike native word "*the acoustic link*", via using an interactive image that involves both the native word and the foreign word "*the imagery link*" [11] as mentioned in [12].

Reference [11] reported that using the key word techniques in his experiment has proved its effectiveness and the results are superior when compared to the control groups. He also claims that making participants generate their own imaginary pictures is more effective. Reference [13] reported that using the key words' strategy accompanied by ready made pictures to introduce new English words enhanced vocabulary acquisition for their Spanish speaking students when it was compared with just giving students the Spanish word and its English equivalent both in immediate and delayed tests. Reference [14] reported that using the context/keyword method has provided to be superior to other methods used (rote rehearsal, keyword, and context) with their Venezuelan students learning English vocabulary.

For Arabic speakers [15] suggests that Arabic students could learn the English word 'hat' by linking it to the Arabic word ' haat' which means 'give me', by imagining a situation where a student asks someone to give him a hat. Reference [16] compare three learning strategies, i.e. keyword, semantic, and keyword-semantic. with their Arabic speakers learning English words; they discovered that the keyword method facilitated their vocabulary acquisition in the immediate test but the final test results show that the combined keyword-semantic method is superior to the other two strategies.

The *Interactive-image elaboration* strategy which was used in our experiment has been described by [17] as " a memory aid consisting of a mental picture of two objects in some kind of interactive relationship" (p:197) in his experiment; reference [17] found that for their English speaking students learning the meaning of German words, using interactive-image elaboration either by providing ready-made interactive pictures or by making students generate their own strategy has proven to be superior when compared with the repetition method or students using their own strategies.

3. Research Questions

1-To what extend does the use of the visual interactive-image elaboration method, by limited English proficiency Arabic students improve their recall of new English vocabulary items either immediately or after a delayed interval of two weeks?

2- Is there a difference between the three different methods used by students in this experiment, in the amount of vocabulary they could recall either immediately or after a delayed interval of two weeks?

4. Methods

4.1. Subjects

The subjects were 30 male students 18-20 years old (M = 19). enrolled in a technical college in Saudi Arabia. They are all native speakers of Arabic and none had followed any language course in, or had extensive experience of English. They were assigned randomly in equal numbers to one of the three treatment conditions. The number of subjects per treatment condition was 10.

4.2. Materials and Design

Fifteen one-syllabic English words (completely new to the participants) were used in the experiment. All the words were carefully chosen to be phonetically similar to Arabic words, e.g. boom - /bu:m/ which means owl in Arabic; safe- /seIf/ which means sword in Arabic. The words were recorded for the experiment on a compact disc by a native English speaker and Arabic equivalents for the meaning of each word. The words were presented in a written form using over-head projectors. Ready-made interactive pictures accompanied the words for the first group only, as shown in Figure 1.

Figure 1.

The experiment was conducted in a normal classroom setting (equipped with speaker and over-head projectors), and included three procedures. Each procedure required the participants to use a different strategy to acquire the meaning of the English word. The procedures were run as follows:

Method I: was presented by Power-Point slides prepared by the researcher, they contained a visual elaborative prompt for each word. Each slide consisted of an interactive picture relating the English meaning to another English word which sounded like the Arabic word. Each picture was shown for twelve second intervals on the screen and pronounced three times.

The choice for Participants in method II was either to generate their own interactive-image mnemonics, or to use a repetition technique. The Arabic meaning together with the new English word was projected in front the students. A session was held prior this treatment to show students how to use the Interactive-image elaboration strategy.

In method III, (the control group) participants were instructed to learn the words by repeating the English words and the Arabic meaning over and over in their minds during the allotted time. Participants in this

treatment also saw the Arabic meaning together with the new English word on the screen.

4.3. Procedure

Students were assigned equally and randomly into three classrooms. Each class room contained a teacher who was also randomly chosen. The teacher explained that the purpose of the test was to examine several different methods of learning English vocabulary items. Students were informed that they were required to learn the meaning of 15 English words. The participants in group 1 were provided with examples of the picture mnemonics and shown how to use them to learn new English words. Participants in group 2 were given procedures to either choose between generating their own mnemonic or using the repetition strategy. Students in the third group were only given the procedure to use the repetition learning strategy. Each group then heard the identical three practice words and received feedback to ensure that they were using the prescribed strategy. The practice words were not taken from those assigned to collecting the data. When the instruction and practice was completed the 15 English words were pronounced at 12 second intervals while corresponding slides with the Arabic meaning was shown on the screen. Measures were taken when presenting the words to ensure that the same randomized sequence was presented to all three groups. Each word was pronounced twice at the beginning of the 12 second interval but was not repeated again. After they had listened to all 15 words A 20 minute break was given to the students. A retention test was then distributed in which the 15 English words were presented in a different sequence, student were required to write the meaning of the words in Arabic. At the end of the immediate retention test the students were asked to fill out a self-report form explaining the strategy they had used in learning the words. Two weeks later, students were reassembled and given the delayed retention test, which was identical to the previous test.

5. Results

Means and standard deviations for each group in both tests appear in Table 1 [1]. The ANOVA revealed a significant effect for learning conditions, (F (1,27) = 174,942, $p < 0.0005$). The test by the group was not significant (F (2,27) = 1.482, $p = 0.254$). Independent *t-tests* were performed on the data of each group for each test. In the immediate retention test, *t-tests* showed that the participants' scores in the first group were significantly higher than those of the second group: ($t = 8.033$, $df = 18$, $p < 0.0005$), and those of the third group: ($t = 13.311$, $df = 18$, $p < 0.0005$); the second group scores were also higher than the third group: ($t = 3.501$, $df = 18$, $p < 0.05$). Moreover, in the delayed retention test, participants of the first group outperformed their counterparts in the second group: ($t = 5.793$, $df = 18$, $p < 0.0005$) and the third group: ($t = 8.359$, $df = 18$, $p < 0.0005$). The second group scores, however, were significantly higher than those of the third group: ($t = 2.726$, $df = 18$, $p < 0.05$). This indicated that

the mnemonic strategy was superior to other strategies. Figure 2 reflects this finding.

Table 1.

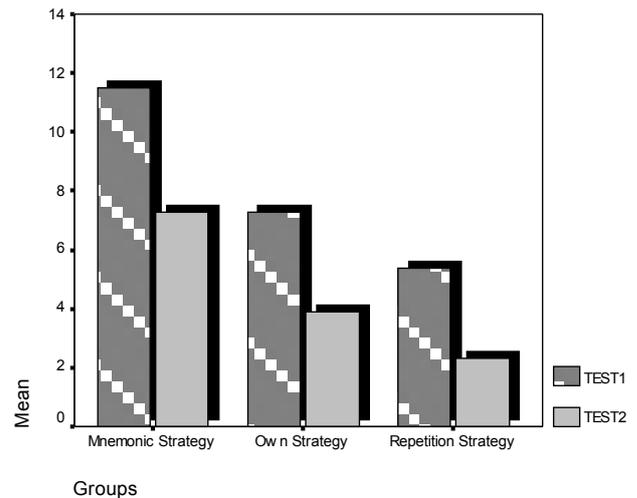| Groups	Immediate			Delayed		
	M	SD	n	M	SD	n
(1) Group with mnemonic strategy	11.50	.97	10	7.30	1.33	10
(2) Group with own strategy	7.30	1.33	10	3.90	1.28	10
(3) Group with repetition strategy	5.40	1.07	10	2.30	1.33	10

Figure 2. Mean words recalled on the immediate and delayed retention tests

Paired *t-tests* were applied to compare the performance of each group on the immediate and delayed retention tests. Figure 3 shows the proportions of words recalled by participants. These tests revealed that the subjects' performances in the first test were significantly better than in the second one; group with the mnemonic strategy ($t = 8.202$, $df = 9$, $p < 0.0005$); group with own strategy ($t = 9.160$, $df = 9$, $p < 0.0005$); and group with repetition strategy ($t = 9.146$, $df = 9$, $p < 0.0005$). This suggests that forgetting had occurred in all learning conditions. In fact, approximately 52% of words were forgotten in the mnemonic strategy; 74% in the own strategy; and 85% in the repetition strategy.

Furthermore, ANOVA and *t-tests* were performed on the Own Strategy Group to compare the performance of participants who used their own mnemonic strategies with the rest of the same group who had used the repetition strategy. ANOVA revealed a significant effect (F (1,8) = 71,412, $p < 0.0005$). There was no significant difference in the group by strategy (F (2,8) = 0.098, $p = 0.672$). Figure (4) presents the average number of words correct on each test. The *t-test*s, however, showed that there was no significant difference between learners who used their own mnemonic strategies and those who used the repetition strategy in the immediate retention test ($t = 1.427$, $df = 8$, $p = 0.191$), but there was a marginal significant difference in the delayed retention test ($t = 1.955$, $df = 8$, $p = 0.043$, one-tailed). This was probably due to the low number of subjects in the group ($n = 10$).

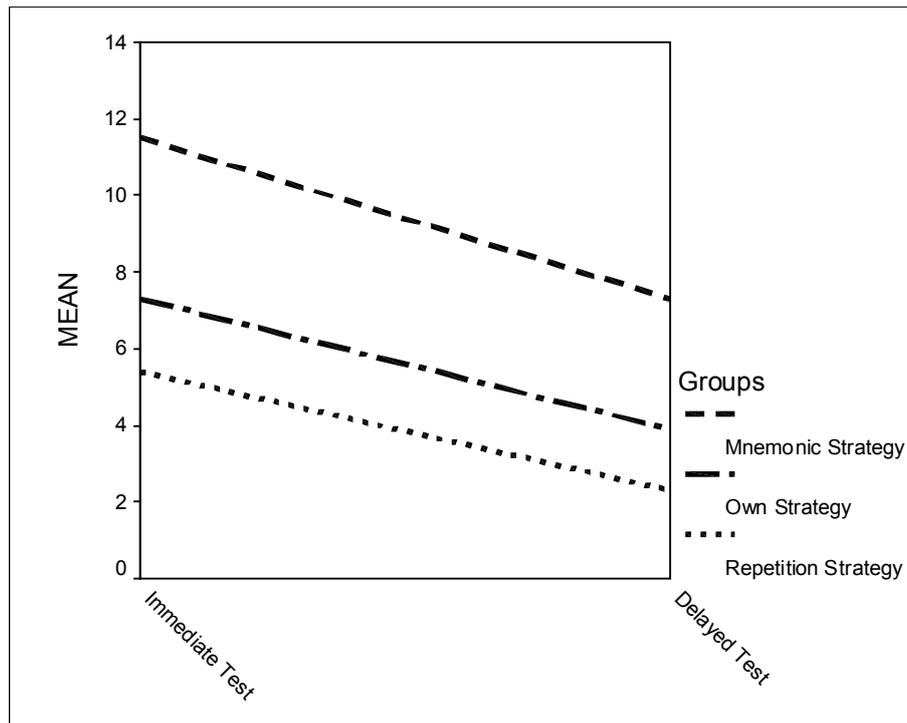
[1] *Note:* Maximum Score = 15.

Figure 3. Mean number of words correct on the immediate and two-week delayed retention tests
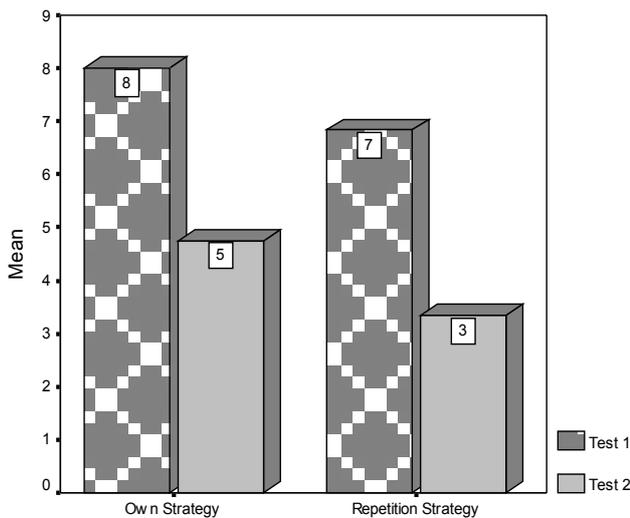

Figure 4. Mean number of words correct of subjects of group (2) on each test.

6. Discussion

This study compared the effect of three vocabulary items teaching strategies (interactive- image elaboration, either by providing pictures to students or by asking them to generates their own imagery pictures and the repetition strategy) on students' recall of new English language vocabulary items either immediately or after a delayed interval of two weeks.

We addressed two major questions in the study; first, to what extend did the use of the visual interactive-image elaboration method, by limited English proficiency Arabic students improve their recall of new English vocabulary items either immediately or after a delayed interval of two weeks? Results have shown that using such a technique either by providing ready made pictures or by asking students to create their own imagery pictures is more effective than the repetition strategy for both the immediate and the delayed interval of two weeks, this result goes along with [17] experimental findings.

Research question 2 asked whether there is a difference between the three different methods used by students in this experiment, in the amount of vocabulary they could recall either immediately or after a delayed interval of two weeks?. Detailed examination of the "picture given" elaboration treatment shows that it was more successful in terms of initial learning than the two treatments given to the other two groups (group with their own strategy and group with the repetition strategy). The superiority of the elaboration strategy was also seen in the second group of students who generated their own pictures while using the elaboration strategy; this finding agrees with those researchers who claim that using imaginary-based mnemonics boosts immediate recall of second language as compared to different strategies [8,14,17].

The superiority of the first group over the second and third groups remained after the two-week delay test which proves the efficiency of this technique compared with the other two techniques. This finding does not go along with [17] experiment who found out that groups who used the elaboration strategy both with providing them with pictures or making them generate their own pictures were almost the same for the amount of vocabulary items gained.

Furthermore, the results show that even students who used the elaboration method to generate their own imagery pictures were more successful than students who used the repetition strategy after the two week interval; this finding agrees with studies that suggest that repetition is always a less effective way of learning when it is compared to a mnemonic strategy [5,11,13,16,18].

Moreover, the findings of this study suggest that the imagery-based elaboration method could be successfully

used in classrooms with beginners. In addition, the findings show that the imagery-based elaboration method can be successfully implemented by foreign language teachers, and students can be taught the procedures of the imagery-based elaboration methods in a short time.

However, some limitations of the study should be noted. The choice of words did not include a wide range of vocabulary items. The selection was done on the basis that the words could be represented by pictures which excluded items such as idiomatic phrases and polysyllabic words. Presumably, learners would require other methods to learn more types of words. Also, my participants learnt only one meaning of each word, whereas many words have several meanings. Some English words are similar to their Arabic counterparts such as /sugar=sukar/; /bus=buas/, making the elaboration strategy or other strategies potentially less necessary or effective. However, for many words in English and in other languages, the elaboration technique may be very effective.

Since the experiment did not include all parts of speech it is always possible to investigate the effect of this method on adverbs, articles etc. Moreover, it is possible to conduct the same experiment on younger students or on students with higher or lower levels of English. Moreover since I used this technique to teach English it would be interesting to use the same technique to teach Arabic to native English speakers.

7. Conclusion

The picture given elaboration method of teaching vocabulary has proved to be consistently superior to other foreign language vocabulary teaching methods. The without picture method also proved to be better than the repetition treatment which makes the elaboration method a good tool for teaching English words.

The results of this study are straightforward but further studies are required to be carried out using the interactive-image elaboration strategy. Nevertheless, the successful implementation for this strategy in a normal EFL classroom setting could make adopting it for with other languages well worth while.

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