The Effect of Using Bizarre Images as Mnemonics to Enhance Vocabulary Learning

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Abstract:

Mnemonic is a technique that helps someone remember better. The combination of images with mnemonics can make it more powerful and effective to help language learners remember better and for a longer time. Acquiring L2 vocabulary can be enhanced by using images. In the previous studies, mnemonics were used traditionally, that is, learners were asked to create a mental image to remember a word or any new item. Several studies were conducted to explore the use of mental images as mnemonics for vocabulary learning. However, no study has examined the integration of images as a mnemonic tool for vocabulary acquisition. Therefore, this study aimed at investigating the effect of images as mnemonics on vocabulary acquisition. The study examined the effect of images as a mnemonic tool for vocabulary acquisition in three conditions (i.e. normal images, bizarre images and traditional way of learning vocabulary). Sixty Arab learners of English as a foreign language enrolled in the English Department at Hodeidah University participated in this study and were randomly assigned into three groups. This study used an experimental method in which pre-, post- and delayed post-tests were administered to these groups. The results indicated that mnemonics with the help of images are useful tools to help learners remember many words.

Keywords: Bizarre images, Multimedia, Mnemonics, Vocabulary learning, Vocabulary retention.

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أثر استخدام الصور الغريبة كأدوات ربط ذهني لتطوير تعلم المفردات اللغوية

الملخص:

يعتبر الرابط الذهني تقنية تساعد الشخص على التذكر بشكل أفضل. كما أن المزج بين الصور والرابط الذهني يمكن أن يكون أكثر قوة وأكثر تأثيرا في مساعدة متعلمي اللغة للتذكر بشكل أفضل ولمدة أطول. ولذلك يمكن استخدام هذه الطريقة في تطوير تعلم المفردات اللغوية. كان الرابط الذهني في الفترة الماضية يستخدم بطريقة تقليدية حيث كان الطلاب يطالبون بخلق صورة ذهنية لتذكر الكلمة أو أي موضوع جديد. وقد أجريت دراسات عديدة للبحث في استخدام الصور الذهنية كرابط ذهني من أجل تعلم المفردات اللغوية. لكن لم تكن هناك أي دراسة تناولت دمج الصورة مع الرابط الذهني من أجل تعلم المفردات اللغوية. لذلك هناك حاجة لدراسات يمكن أن تناقش هذه القضية. وقد هدفت هذه الدراسة للتحقق من مدى تأثير استخدام الصور كأدوات ربط ذهني في تعلم المفردات اللغوية. وتبحث هذه الدراسة في معرفة مدى تأثير استخدام الصور على تعلم المفردات كأدوات ربط ذهني في ثلاث حالات: (1) استخدام الرابط الذهني عن طريق الصور العادية (2) استخدام الرابط الذهني عن طريق استخدام الصور الغريبة (3) استخدام الطريقة التقليدية في تعلم المفردات اللغوية. شارك في هذه الدراسة ستون طالبا جامعيا تم اختيارهم بطريقة عشوائية. بعد ذلك تم تقسيمهم إلى ثلاث مجموعات. تعتبر هذه الدراسة دراسة تجريبية حيث تم إعطاء اختبار قبلي واختبار بعدي واختبار بعدي متأخر. أظهرت النتائج أن استخدام الرابط الذهني مع الصور وسيلة مفيدة تساعد الطلاب على تذكر المفردات اللغوية

الكلمات المفتاحية: الصور الغريبة، الوسائط المتعددة، الرابط الذهني، تعلم المفردات، تذكر المفردات.

Introduction:

Vocabulary is considered an essential component of language learning. Nation (2001) states that there is a complementary relationship between vocabulary knowledge and language use. Good vocabulary knowledge leads to satisfactory performance in learning the language. Moreover, language uses such as reading or speaking foster vocabulary knowledge. The acquisition of vocabulary is a crucial factor for successful language learning and plays a vital part in mastering other skills such as listening, speaking, reading and writing. In addition, lack of vocabulary knowledge is the main obstacle for L2 learning.

Vocabulary can be presented in different environments. One of these environments is help options. Help options according to Cárdenas-Claros (2011) refer to resources that help learners in language learning. Help options were basically texts and involved transcripts with annotations in the learners' first language. They also consisted of definitions like those written in a dictionary. Then, with the addition of images, the design of help options moved from text-based to image. The use of help options creates new opportunities to foster vocabulary learning. The integration of help options in vocabulary learning is the subject of several studies (e.g., Aldera & Mohsen, 2013; Mohsen, 2016) which have confirmed the positive effects of help options on vocabulary learning.

Throughout the history of teaching vocabulary, a number of techniques have been utilized to help learners understand and remember new words. One of these techniques is mnemonic. The word mnemonic is originally from the word "Mnemosyne", the name of the ancient Greek goddess of memory. According to Higbee (2001, p. 9915), mnemonic means "aiding the memory," and therefore could be used to mean any technique, or system that improves memory. A number of studies were done to examine the effectiveness of mnemonic on vocabulary learning (e.g. Beni & Cornoldi, 1984; Dolean, 2014; Jusczyk et al., 1975; Pressley & Ahmed, 1986). With the exception of Jusczyk et al., (1975), these studies found that using mnemonics for vocabulary learning was an effective tool. However, Jusczyk et al., (1975) found that there was no noteworthy statistical difference between the control group and the experimental group who used mnemonics for vocabulary learning.

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Mastering vocabulary is a significant aspect of learning a foreign language. However, many EFL learners complain that they forget most of the words they have learned. To help in solving this problem, many techniques can be used to help EFL learners memorize vocabulary. One of them is using mnemonics, which is the focus of this study. It investigates how mnemonics with the help of images can be used to help EFL learners memorize words.

Mnemonics can be enhanced with images to create an effective environment for vocabulary learning. To date, to the best of the authors' knowledge, there is no study examining the impact of images as a mnemonic tool on vocabulary learning. Therefore, the current study seeks to address this issue by exploring the effectiveness of mnemonics enhanced by images on vocabulary learning.

Review of literature:

Vocabulary learning:

It is obvious that it becomes difficult for a person to convey the message if he/she does not have enough vocabulary. Similarly, communicating in a foreign language seems to be a complicated process if language learners lack good knowledge of vocabulary. That is why language teachers pay attention to vocabulary learning. Second language (L2) vocabulary acquisition requires more efforts and time. Moreover, the frequent occurrences of vocabulary, as well as the vocabulary size, have an important impact on vocabulary acquisition (Laufer & Hill, 2000). High-frequency vocabulary needs to be presented with other skills.

Intentional approach to vocabulary learning:

It is well known that learning vocabulary can be held in two diverse ways. The first way is the intentional way of vocabulary learning. It refers to any task that can be used to help learners memorize the new words (Robinson, 2001). It needs some elements that are necessary for mental determination and memorization (Koren, 1999). Second, vocabulary can be learnt incidentally. This means that the focus is not vocabulary, but something else such as listening or reading comprehension (Gass & Selinker, 2001), but learners may come up with new vocabulary. In a comparative study of the impact of incidental and intentional vocabulary learning, Hulstijn (1992) concluded that the intentional learning group did better than the incidental group. These results are also supported by other studies such as Mondria and Boer (1991).

There are two major views regarding the intentional learning pattern: explicit instruction and strategy instruction. Some scholars (e.g., Coady, 1993; Nation, 1990, 2001) point out that vocabulary can be presented obviously by using several ways including traditional memorization techniques. The concern is mainly with learners of low-level who have low knowledge of vocabulary to read well. Nation (2001) suggests that language teachers should treat high-frequency word level and low-frequency vocabulary in a diverse way. High-frequency words have a high coverage of text and should be grasped as soon as possible. This can be attained by direct teaching, direct learning, incidental learning and planned encounters with the words. As for the low-frequency words, teachers should teach learners to use strategies such as contextual guessing, dictionary use, memory techniques and vocabulary cards to handle these words and to increase their vocabulary. The studies of Paribakht and Wesche (1997) and Wesche and Paribakht (2000) show that reading with explicit vocabulary training enables learners to learn vocabulary better than by simply learning vocabulary through context alone.

The second one is strategy instruction. This approach states that learners should be equipped with specific learning strategies to make learning more effective (Cohen, 1998; Cohen, Weaver, & Li, 1996; O'Malley et al., 1985; Oxford & Scarcella, 1994). Researchers believe that context can provide dynamic ways for learning vocabulary. Traditionally, strategy instruction is suitable for advanced learners rather than low-level learners (Coady & Huckin, 1997). However, strategy instruction can also be useful to low-level learners.

Technology and vocabulary learning:

Vocabulary can be learned with the help of technology because technology can provide language learners with opportunities to learn vocabulary in an effective and interesting way. Many studies were conducted to examine the effectiveness of computer on vocabulary learning (e.g., Aldera & Mohsen, 2013; Al-Seghayer, 2001; Chun & Plass, 1996; Hulstijn, 2000; Jones, 2003, 2006; Jones & Plass, 2003; Koren, 1999; Mahdi, 2017; Mohsen, 2016; Tsoua, Wang, & Li, 2002). The results of the previous studies showed that vocabulary learning aided with computers can be more effective than using traditional learning methods.

The combination of help options for vocabulary learning supports learners to create associations between the verbal and pictorial representational systems

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(Mayer & Sims, 1994). This association increases vocabulary knowledge and creates a positive effect on word recognition. The use of help options for vocabulary learning takes different forms, depending on the teaching setting and learners' needs. Chun and Plass (1997) concluded that the use of bizarre pictures for reading comprehension and vocabulary learning may require a low amount of mental demand than the use of ordinary pictures. This will enable students who used the text and pictures perform better and get higher scores than students who used text and video annotations.

Mnemonics and vocabulary language learning:

Vocabulary learning is not just to know the meaning of words and use them in a new context. It also involves that new words can be kept in the learner's memory and can be recalled at any time. Language learners can enhance their memory of new vocabulary by employing several strategies. Mnemonic is one of these strategies that enable language learners to remember new words. The mnemonic is a useful technique that helps language learners retain new vocabulary for a longer period of time (Ellis, 1995). They support learners to memorize new items by linking new items with prior knowledge and keep new information in long-term memory (Zimbardo, Johnson, & Weber, 2006). One of the fundamental characteristics of mnemonics is that new items can be learned by associating them with what the learners have already learned (Ellis, 1995). Foreign language learning can get benefit from mnemonic strategies by using some techniques like keywords and using imagery (Ellis, 1995). Using keywords includes the use of a sound link between a word in the second language and a word in the first language that has a similar sound. The results of the previous studies showed that pictures are more memorable than words. Paivio (1971, 1972) suggested that words which can be presented with images may be coded dually (in both verbal and visual memory) so remembering them can be doubled.

The use of mnemonics is not new. Yates (1966) pointed out that mnemonics was in use at least 500 BC. The integration of mnemonics in learning is the topic of several studies since the mid-1960s (McDaniel & Pressley 1987). The results indicated that mnemonics have been used effectively to help people learn and memorize better. Mnemonics are classified into two types: verbal and visual. Verbal mnemonics use words as a link to remember another word or group of words. For example, the first letter of a word in a set of words can be created to help someone remember these words. In this regard, the word

TEAM stands for Together, Everyone, Achieves, Miracles. The second type is visual-imagery mnemonics. This type involves the associations of words with mental images. To make visual associations effective, three strategies have been suggested. They are "interaction, vividness, and bizarreness" (Higbee, 2001, p. 9915). The first one is called interaction. It means that the two items should be actively relating to each other in some way not just pictured beside each other. For example, the images of a mouse and pen can be linked. You can visualize someone writing with a mouse as it were a pen. The second strategy is vividness which means that images should be clear, distinct, and powerful. It is useful to add motion so that the interaction is like a movie instead of a still image. The third strategy is bizarreness. It refers to using images in a weird way. For example, a picture of a dog sweeping with a broom would be somewhat uncommon or a dog riding a broom like a witch would be weird. Some studies suggest that unusual imagery is an effective way that helps people remember better. However, these studies did not investigate the impact of bizarre imagery in comparison to real imagery to find out which type is more effective (Briggs, Hawkins, & Crovitz, 1970; Persensky & Senter, 1970). Bizarre images can be exceptional and unique which can be helpful to memory (Lesgold & Goldman, 1973).

There are many techniques used to help someone remember language better. Lorayne and Lucas (1974) introduced some of these techniques such as the substitute word, association, the «peg», and so on. A good number of studies were conducted to examine the effect of mnemonics on vocabulary learning. For example, Zahedia and Abdib (2012) investigated the impact of imagery strategy on vocabulary learning in comparison to direct translation. The experimental group was taught using imagery instruction as a treatment. Results indicated that the performance of learners in the experimental group was better than the performance of the learners in the control group. Similarly, Marzban and Amoli (2012) examined the effect of mnemonic strategies instruction on the peformance of the learners in the immediate and delayed post tests. The participants in the experimental group were asked to use the two vocabulary mnemonic strategies (i.e. visualization and images), while the participants in the control group were taught in a traditional way. The study concluded that visualization and images were better than the traditional way.

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Dual coding theory:

The use of images in supporting memory can be studied in the light of Paivio (1971) dual coding theory. It is used as a framework for this study. According to this theory, there are two systems that affect cognition. The first one is responsible for representation and processing non-verbal items. The second one is concerned with verbal items and deals with language. The term related to non-verbal systems is the imagery system. Usually, verbal information is processed only in the verbal subsystem, whereas pictorial information is processed in both systems. The distinction between these two systems means that they are assumed to be structurally and functionally different. They are different in the nature of representing items and how items are organized. They are also independent in which each one can be active without the other or both can be active simultaneously. Moreover, these systems are interconnected in a way that one system can initiate the activity in the other. Paivio's (1971) suggested three levels of process information. The first level is called representational level which activates the suitable symbolic representations in long-term memory. The second level is the referential level. In this level the symbolic illustrations of one system activate the representations of the other system. These interrelated systems are in charge of recognizing items and creating the image of these items. The connections between the two processes are inspired when one type of information inspires the other system. This leads to a double encoding.

The role of images and dual coding on memory were examined by a number of studies using learners' reports about their perceptions about the combination of images and verbal processes in learning activities. Sadoski, Kealy, Goetz, & Paivio (1997) pointed out that images can be used as an abstract hook to help learners recall a story. The effects of dual coding had been supported in some studies and indicated that the implementation of images in vocabulary learning was a useful tool. In addition, using images increases recall, especially for the concrete vocabulary. Research provided additional support for the theory. For example, Thompson and Paivio (1994) found that the integration of images and sounds had a powerful impact on memory. In addition, a number of studies adapted dual coding theory to examine the effect of multimedia on language learning (e.g. Baldwin, 2013; Cohen & Johnson, 2011; Zhu, Fung, & Wang, 2012). Baldwin (2013) investigated the impact of images on vocabulary learning. A total of 56 students were randomly divided into two groups (i.e. control and experimental). The experimental

group used an imagery strategy called "Snapshot". The control group used a dictionary to discover the meaning of the word and its parts of speech. The results revealed that students who used images to learn new vocabulary did better than students who learned new words in a typical approach. Similarly, Cohen and Johnson (2011) investigated the effect of images on the vocabulary acquisition of second-grade students. A total of 15 students were randomly assigned to three different groups: word only group, dual coding group, and image group. The results showed a significant difference between the image creation and word only group. Participants also stated that the use of images facilitated the ease with which they learned the new words. Zhu et al., (2012) explored the difference between text assisted with images and an ordinary text. It involved 106 students randomly assigned into two groups. The results showed that, for memorization of words, animation had a noteworthy negative effect. However, the effect of animation and pronunciation was significant.

The aforementioned studies have investigated the effect of images on vocabulary learning in general. The investigation of the effect of bizarre images combined with text in comparison to normal images or no images has not yet been conducted. Therefore, this study addresses this issue by examining the effect of bizarre images on vocabulary learning in comparison to no images or normal images.

The study:

The aim of this study is to find out the impact of two types of images as a mnemonic tool (bizarre and normal) on learning L2 vocabulary. The study also seeks to explore how words' recall could be enhanced by the use of mnemonics assisted with images. It also explores the learners' perception of using images as mnemonics in learning vocabulary.

The research questions are:

1. Does the use of "bizarre" images have an effect on vocabulary learning and retention?
2. How do the students perceive learning vocabulary with the help of images as a mnemonic tool?

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Methods:

This study followed a mixed-methods approach. It employed a between-subjects design in which the participants learned new words under one of three conditions. The primary independent variable was the type of images. There were three types: (a) bizarre images+ text, (b) normal images+ text, and (c) text + no images. Figure 1 shows an example of the images used in the study. The learners' grades on the vocabulary tests included in the immediate and delayed posttests were the dependent variable of this study.

Figure (1): Sample of images used in the study

Participants:

The participants of this study were sixty EFL students enrolled in the 2nd level of English Department, at Hodeidah University, Yemen. They were selected based on their willingness to participate in the study. Only those who were interested in participating in the study were selected. All of them had the same native language (i.e. Arabic). The participants were 13 male students and 47 female students. The students' ages ranged between 20 and 25. They were requested to participate in the study and they were randomly assigned to study under one of three conditions: text+ bizarre images group (N=20), text+ normal images group (N=20), text+ no images group (N=20). They were divided randomly into the three groups.

Study design:

The present study employed a pretest-treatment-posttest design as a commonly used method in language learning research. Sixty EFL learners were instructed to engage in the activity during which they looked up 25 words using three modes: bizarre image + text, normal image + text, and text+ no images. Words recognition was measured before the treatment (i.e., pretest), immediately after the treatment (i.e., posttest), and one week after the treatment (i.e., delayed post-test). In addition, the learners were

asked to fill in an online questionnaire to elicit their perceptions of using bizarre-assisted mnemonics for vocabulary learning. A more detailed description of the research design is given below.

Instruments:

Pretest:

The pre-test, which included 25 target words, aimed to confirm that the target words were new to the participants. Sixty students were asked to do the pre-test. They were instructed to translate the 25 words into their mother tongue (i.e. from English into Arabic). Translation is one of the techniques used to check how many words learners have achieved. Nation (2009, p. 51) points out that "translation can be used to check the learners' comprehension". It also enables teachers to check if their learners learn what have been taught.

Materials:

The target words were presented along with images. There were two types of images. The first type contained bizarre images presented along with the target words. The second one contained normal images presented along with the target words. There were 25 target words (see Appendix A). These words were selected based on some criteria. First, they had to be new and unfamiliar to students. Second, they could be shown with images. The words designed for experimental group were shown with bizarre images. The same words but with "normal" images were presented to the second experimental group. The same words were used for the third group (i.e. the control group). They were presented in a traditional way. Two post-tests (i.e. an immediate and a delayed) were administered to the participants. Each one consisted of the same words. The aim of the delayed post-test was to measure how many words could be recalled by the learners in each group.

The treatment:

The experiment was carried out during the students' regular classes and conducted in one session. In this session, a total of 25 words presented which were sent to the students via their mobile phones. Students were asked to look at the images and the words written under each image.

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Questionnaire:

A close-ended questionnaire (see Appendix B) was conducted in order to investigate the learners' perceptions about using bizarre-assisted mnemonics for vocabulary learning. The questionnaire consisted of 8 statements. A web-based questionnaire was hosted by Google forms. A survey link was distributed to the participants of the two experimental groups. The Likert five-point scale (1= strongly disagree, 2= disagree, 3 = neutral, 4 = agree, and 5 = strongly agree) was used for the questionnaire. The questionnaire items were evaluated by two experts in Applied Linguistics to check its content validity. The questionnaire reliability was tested using Cronbach's Alpha test. The result was .427. The low number of Cronbach's Alpha was due to the few items (i.e. eight statements) of the questionnaire, therefore this number is acceptable.

Procedure:

The study procedures consisted of four steps. First, the pre-test was conducted. Before the experiment, all the participants were asked to translate the target words into Arabic. Second, the participants were randomly divided into three groups, bizarre images group, normal images group, and no images group. Except for different types of images, the same words were presented to ensure the participants had received an equal input. The images were sent to the students' mobile phones. The control group was taught the same words but in a traditional way. The words were presented by the instructor. Third, participants took the same translation test that was conducted before the experiment. They were asked to translate the target words. Fourth, after two weeks, all participants took the delayed post-test. This test consisted of the same target words which were given in the previous tests. An online questionnaire hosted by Google Forms was conducted in order to investigate the learners' perceptions about using images as a mnemonic tool in vocabulary learning. A total of 25 students out of 40 in the two experimental groups completed the online questionnaire. The responses rate was 62.50 %.

Data Analysis:

The difference between the mean scores of the two experimental groups and the control group in the pre-test, post-test, and the delayed post-test was performed using an ANOVA analysis. The analysis also investigated whether the differences among the groups changed over time between the first and

the second posttests. Moreover, to find out the participants' perception of mnemonics effectiveness, data elicited by the questionnaire were coded and analyzed using SPSS. The responses to the online questionnaire were coded and calculated. The mean and standard deviation techniques were used to indicate how participants perceived learning vocabulary using mnemonics.

Results:

To find out the effect of mnemonics on vocabulary learning, an ANOVA was computed to compare the means of the three groups of target words. The test was conducted to determine that students had no significant difference in terms of their level before the commencement of the study. The scores analyzed are presented in Table 1 below.

Table (1): Comparison of pre-test scores between the three groups

	N	Mean	SD	Std Error	95% confidence		F	Sig.
					Lower limit	Upper limit		
Bizarre group	20	2.00	1.41	.316	1.338	2.661	1.109	.337
Normal	20	1.45	1.23	.276	.872	2.027		
Control	20	2.05	1.57	.351	1.314	2.785		

The pre-test means scores of the control group (no images) and the two experimental groups (normal and bizarre images) were compared to explore if they were the same or different before the experiment started, using an ANOVA test. The results indicated no significant difference (the *p*-value is .337) showing that the level of the three groups was homogeneous at the outset of the study. To further examine the differences among the three groups and how these modes affected the students' achievement in learning vocabulary using mnemonics, an analysis was conducted for the posttest. Table 2 below shows the results obtained from the posttest.

Table (2): Comparison of post-test scores between the three groups

	N	Mean	SD	Std Error	95% confidence		F	Sig.
					Lower limit	Upper limit		
Bizarre group	20	16.00	3.81	.852	14.21	17.78	9.38	.000
Normal	20	12.53	2.88	.645	10.99	13.70		
Control	20	10.50	5.21	1.166	8.05	12.94		

The results shown in Table 2 indicate that the mean score of the group who saw the words with bizarre images (M = 16.00, SD = 3.81) was higher than

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the mean score of the group who saw the words with normal images (M = 12.35, SD = 2.88). Similarly, the mean score of the group who saw the words with normal images was higher than that the mean score of the control group (M = 10.5, SD = 5.21). The results revealed a statistically significant difference between the three groups (F =9.38, P= .000 > .05). The results indicate that using bizarre images was more effective than normal images or no images. To further examine the differences between the three groups and how these three modes affected retention, an analysis was conducted for the delayed post-test.

Table (3): Comparison of delayed posttest scores between the three groups

	N	Mean	SD	Std Error	95% confidence		F	Sig.
					Lower limit	Upper limit		
Bizarre group	20	8.30	2.10	.470	7.314	9.285	7.03	.002
Normal	20	7.65	2.90	.650	6.289	9.010		
Control	20	5.25	3.02	.676	3.834	6.665		

Table 3 shows the results of the delayed post-test to explore whether there was any statistically significant difference between students' success rate on vocabulary retention in the delayed post-test. Results clearly indicated that students who saw the words with bizarre images (MD = 8.30) outscored the students in the other groups. The results indicated a statistically significant difference between (among) the three groups (F = 7.030, p = .002).

Table 4 shows the results obtained from the online questionnaire which consisted of 8 items which were designed to elicit the participants' perceptions of learning vocabulary using mnemonics aided with bizarre images.

Table (4): Students' perception of bizarre-assisted mnemonics for vocabulary learning

Statement	Strongly agree	Agree	neutral	Disagree	Strongly disagree	Mean
To have a good number of words in English is important to me.	25	75	0	0	0	4.75
I believe I can improve my vocabulary in English by many ways.	40	50	10	0	0	4.30
I believe more emphasis should be given to learning vocabulary in class.	35	60	5	0	0	4.30

Table (4): Continued

Statement	Strongly agree	Agree	neutral	Disagree	Strongly disagree	Mean
I am not satisfied with my current level of vocabulary.	40	40	15	5	0	4.15
I believe that my vocabulary can be improved after using mnemonics.	30	55	15	0	0	4.15
Using words plus images caught my interest to learn new words.	45	40	15	0	0	4.30
Using words plus images helps me remember words better than other ways.	25	50	15	10	0	3.90
I focus much more on words attached to images when they are strange.	30	20	25	25	0	3.55

The results as shown in Table 4 indicated that most of the respondents felt that learning vocabulary was an important aspect of learning English. The majority of the respondents believed that they could improve their vocabulary when using bizarre-assisted mnemonics. About 85% of the respondents felt that using words plus images caught their interest to learn new words and then helped them remember words better than any other way. In sum, the participants felt that using bizarre-assisted mnemonic was a useful tool for learning and memorizing English words better and longer than other ways of learning vocabulary.

Discussion:

The aim of this study was to investigate vocabulary learning from different types of images used as a mnemonic tool. The findings obtained from the data analysis are discussed below in detail.

Research question 1:

Does the use of «bizarre» images have an effect on vocabulary learning and retention?

The scores of the students in the post-test revealed that bizarre images group performed better on words' translation than other groups. The difference was statistically significant and indicated that the students' scores were higher in the case of using bizarre images along with words. Also, the students' scores

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of the normal images were higher than the scores of the students who did not see any images. The results support the assumption that mnemonics help learners learn quicker and recall better. Mnemonics can be used to aid memory and provide cues that can foster vocabulary learning. The results are in line with Marzban and Amoli (2012) who found that learners in the experimental group who used mnemonic strategy achieved better than learners in the control group.

These results are also in line with Kordjazi (2014) and Zahedia & Abdib (2012). This study confirms the effect of mnemonics on memory and recalling words. On the post-test, the participants in the experimental groups outperformed the participants in the control group on the total number of words translated correctly after the experiment. Moreover, this study demonstrated that using images as a mnemonic tool should be one of the techniques that can be used for presenting new words to language learners. Based on the dual coding theory, using images to learn new words is the reason for successful learning and remembering these words. It is also assumed that concrete words can easily be recalled. The mnemonic can be examined based on dual coding theory because it involves the link between the new word and the image related to this word. According to McDaniel and Pressley (1987), the keyword method is a useful technique that helps learners' retention of words because the words are linked to images. In conclusion, the dual coding theory can offer a suitable explanation of the results. The results of the delayed post-test indicated that there was a significant difference between the three groups on recalling the word meaning. The performance of the participants using the mnemonic images was significantly better than that of those using the traditional way.

Research question 2:

How do the students perceive learning vocabulary with the help of images as a mnemonic tool?

Regarding the participants' perception(s) about learning vocabulary with bizarre-assisted mnemonics, the results showed that the participants had a positive attitude towards implementing bizarre-assisted mnemonics in learning vocabulary. They reported that their understanding and remembering of words had improved after seeing the words presented using this technique. Moreover, most of the participants pointed out that learning vocabulary using mnemonics was an effective tool that motivated them to learn vocabulary.

Conclusions:

This study examined the effect of images as a mnemonic tool on vocabulary learning. The results obtained from the experiment revealed that learners' performance in the group who saw words with bizarre images in the two tests outscored significantly the learners who saw words with normal images. In turn, learners who saw words with normal images did better than learners who learned the words in a traditional way. These findings suggest that using mnemonics creates new opportunities for students to develop their vocabulary learning. Based on the findings of this study, we conclude that implementing mnemonics in vocabulary learning is more effective than traditional ways of presenting vocabulary.

The findings of the current study have some important pedagogical implications. First, language teachers can make use of the images as a mnemonic tool with EFL students in their classrooms. Second, language learners can be encouraged to use this technique to improve their vocabulary knowledge.

Suggestions for future research:

These findings can provide important guidelines for future vocabulary learning research. This study has focused on concrete words, so we suggest future studies to examine the effect of mnemonics on abstract words. We also suggest that further studies are required to investigate the impact of mnemonics on learning different aspects of vocabulary such as their pronunciation and collocation.

There is a caution in generalizing the results of this study due to some limitations. First, the small size of the participants may limit the validity of the study findings, so we recommend further studies with a considerable number of students. It is advisable to replicate this study with a larger number of words, images and distinct types of vocabulary tests. The participants in this study were all Arabs and adult at a university level majoring in English. Thus, the results cannot be generalized to learners of distinct levels, in different contexts, or with different types of teaching and learning. Therefore, it is recommended that more studies are required with different types of learners with different language level, and different types of instruction (e.g. informal, online, etc.). One factor not considered in this study is the age of the students, which could influence vocabulary learning.

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Appendix A: The questionnaire

	Statement	Strongly agree	agree	neutral	disagree	Strongly disagree
1.	To have a good number of words in English is important to me.					
2.	I believe I can improve my vocabulary in English by many ways.					
3.	I believe more emphasis should be given to learning vocabulary in class.					
4.	I am not satisfied with my current level of vocabulary.					
5.	I believe that my vocabulary can be improved after using mnemonics.					
6.	Using words plus images caught my interest to learn new words.					
7.	Using words plus images helps me remember words better than other ways.					
8.	I focus much more on words presented in the videos when they are strange.					

Appendix B: the target words

1.	**applaud**	14.	crutch
2.	armor	15.	grief
3.	beak	16.	grill
4.	belly	17.	gym
5.	bowl	18.	hose
6.	broom	19.	marathon
7.	bucket	20.	massage
8.	bullet	21.	monument
9.	bunch	22.	ring
10.	cane	23.	victory
11.	cart	24.	vote
12.	chimney	25.	lame
13.	claw		