The Use of Mnemonic Technique of Verbal-Pictorial Association in Retrieval of Vocabulary Development among Iranian Introvert vs. Extrovert EFL Learners

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Abstract: The main purpose of this study was to investigate the effect of a mnemonic technique of verbal-pictorial association among Iranian introvert and extrovert EFL learners on vocabulary development with a focus on the retrieval of words. Accordingly, one hundred subjects were divided into two 50 students control and experimental groups. Two series of flash cards, as a treatment, one with mnemonic bizarre nature in flash cards as well as drawing common pictures on the board was given to the experimental group, but the control group was given just common flash cards. A post-test of 30 items for measuring retrieval was administered. The result indicated that the experimental introvert and extrovert groups significantly outperformed the control introvert and extrovert groups on the retrieval test. The experimental extrovert group also significantly outperformed the experimental introvert group on the retrieval test.

Index Terms: Extrovert, Introvert, Mnemonic, Retrieval

1. INTRODUCTION

Liu (2011) asserts that vocabulary knowledge is an essential element of language learning. Thus, in the last 25 years, vocabulary learning has received increasing focus in the field of second language acquisition. But, in addition to the importance of vocabulary learning, Holden (2001, as cited in Azimi Amoli & Marzban, 2012) stated that the retention and retrieval of vocabulary in an EFL context is the most difficult aspect of learning a foreign language which learners always encounter with. Most routine and available techniques for the retention and retrieval of vocabulary in educational settings, especially for young language learners, were and are a negligence of creativity and ability in the retention of words over a long period of time.
Therefore, mnemonics are techniques providing creativity for acquiring information to boost the function of memory and the degree of the interval retention of lexicons. Coady and Huckin (1997) stated that "Mnemonics, fostering intentional learning, should be used for words that, for whatever reason, have not been successfully acquired." (p. 220). The use of mnemonic dates back to 500 B.C (Yates, 1966, as cited in Amiryousefi & Ketabi, 2011). Pattern (1990, as cited in White, 2014) gave a brief history on the earlier use of mnemonic, which throws back to the ancient time of Greece in 477 BC, when a Greek man named Simonides was the pioneer in inventing the first system of memory aids; although, there were controversial arguments in his forerunner use of mnemonic. Another source Pattern (1990) quoted from is an untitled and anonymous book "Ad Herennium" which the use of “images”, “lively colors” or “large jewels” in images were highlighted in order to make the retrieval easier. One of those techniques that can be effective in improving and boosting memory is using mnemonic devices which Solso (1995, as cited in Amiryousefi & Ketabi, 2011) stated that "mnemonics are techniques or devices, either verbal or visual in nature, that serve to improve the storage of new information, and the recall of information contained in memory." Accordingly, based on visually and verbally nature of mnemonic, verbal-pictorial association in mnemonic is known as "Face Name" technique which makes one part of the individual's face prominent and highlights and exaggerates some features of the visual part of information with a bizarre nature in order to teach the proper nouns. (Education Encyclopedia of Mnemonic); (Maxwell, Carney, Buchanan and Deal, 2014) & (Carney, Levin and Stackous, 1997).

1.1. Purpose and Significance of the Study

This study sought to examine the effect of mnemonic techniques, verbal-pictorial association on the learners of a foreign language across their two kinds of personality traits, introvert and extrovert characteristics. Therefore, the current study could be significant for the researchers, teachers, course designers, students, and material developers who are interested in the role of memory in the retention and retrieval of information, especially vocabularies that are difficult to remember. This study may open the new windows and offer suggestions to researchers who are enthusiastic to the function of memory and its relevance to the teaching of language and other issues.

This study released a standpoint to researchers about mnemonic, its function and the combination of its techniques in the sense that the linguistic part of a word can be associated with an unusually imagery part along with common forms which make learners come up with mental imagery. Course designers and material developers, as main sources of providing learning aids, can publish and design. Policymakers and syllabus designers also can concentrate more on the pictorial aspects of teaching which make a notion more concrete for children or even adults. This new approach to the teaching may be helpful to language teachers. They can start teaching class by focusing on the concrete aspects of learning and be aware of transmitting information through a sort of pictures which arouse and affect the cognitive processes. But those who mostly benefit from these findings are the students whose learning ways may be paved by the researchers working on mnemonic techniques. They from now on can meet more tangible, concrete concepts and notions in the textbooks and learning process. The other application of this study can be useful for elder language learners who can have visualization and mental imagery for abstract vocabularies to make them concrete as far as possible.

1.2. Research Questions

Q1: Does the mnemonic technique of verbal-pictorial association have any significant effect on the retrieval of vocabulary among Iranian introvert EFL learners?

Q2: Does the mnemonic technique of verbal-pictorial association have any significant effect on the retrieval of vocabulary among Iranian extrovert EFL learners?

Q3: Is there any significant difference between the effect of using mnemonic technique of verbal-pictorial association on the vocabulary retrieval of introvert and extrovert EFL learners?
1.3. Research Hypotheses

**H0-1:** The mnemonic technique of verbal-pictorial association has no significant effect on the retrieval of vocabulary among Iranian introvert EFL learners.

**H0-2:** The mnemonic technique of verbal-pictorial association has no significant effect on the retrieval of vocabulary among Iranian extrovert EFL learners.

**H0-3:** There is no significant difference between the effect of using mnemonic technique of verbal-pictorial association on the vocabulary retrieval of introvert and extrovert EFL learners.

2. REVIEW OF THE RELATED LITERATURE

2.1 Theoretical background

The researchers found out the trace of earlier application of memory aids based on mnemonic in educational settings of the 13th century. Learning grammar, alphabet and complex ideas was the main realm in using mnemonics in the 1500s. By appearing various methods and approaches in the field of language teaching and learning in different ages, the use of mnemonic was encountered with ups and downs. Rote memorization or learning based on repetition was emerged in the 19th century and suspended the use of mnemonics for a long time. In the next period, scholars shifted the attention to the issues of stimulus, reactions and observable behaviors. Thus, behaviorism was appeared as a dominant approach in the language teaching. But cognitivism which was based on internal working of the mind, provided a situation for mnemonics to return. Therefore, the researcher, White (2014), believes that the most of the researches on mnemonics, despite its rich history, are mostly returning to the past 60 years and the flourishing age of mnemonic is between the end of the 19th century and the first half of the 20th century, which behaviorism was the most popular trend for the researchers of psychology and was replaced by cognitivism. (Levin, 1993; Packard & Chen, 2005; White, 2014)

Using silly phrases or something unusual was an available phenomenon in the literature of mnemonics. Lorayne and Lucas (1974) stated that the literature suggests that for mnemonic techniques to be effective, they should be "bizarre". According to Lombardo (2003) bizarreness is "one that is not likely to occur in a real-life situation, requires a good deal of imagination and can often be thought of as shocking." Delin (1968) released some findings on the effect of bizarreness on the memory performance. Abott (1959) and Ironsmith and Lutz (1996) found that if an association between two entities be "strong" and "bizarre" it would be remembered more easily. (Abott, 1959; Delin, 1968; Ironsmith & Lutz, 1996; Lorayne & Lucas, 1974, as cited in Lombardo, 2003)

Despite mnemonic’s old root, this technique can be applicable for the digital era. Balaji, Ramniklal, Balasupramanian and Malathi (2013) conducted a study in order to survey the impact of mnemonic devices with the help of modern technologies like E-learning and M-learning on the efficiency of information and communication technology. Their findings from two groups indicated that the performance of mnemonic group with the same material and teacher had a very low percentage of knowledge loss than the other group with the traditional language learning and teaching.

Mnemonic nature has two qualitative aspects of verbally and visually construction, and they are correlated with different traits in instructional purposes. The main intend of this combination as Duyck, Szmalec, Kemps & Vandierendonck (2003) stated that it can also provide verbal encodings of visually presented materials such as written words and nameable pictures. Verbal-pictorial association in mnemonic method is not too far from its original function. Education Encyclopedia of Mnemonic and Maxwell, Carney, Buchanan and Deal, (2014) stated that this technique is the same as the face name mnemonic technique and McPherson (2010, p.65) as well as Pressley, Levin and Delaney as cited in Feagans,
Short, Feagans and Meltzer (2012, p.145) insisted that verbal-pictorial association is a variation of the keyword method. What makes this technique distinguishable from common verbal-pictorial association is the exaggeration features that use to prominent the issues teachers decide to teach. McPherson (2010) also believed that the same characteristic establish the different point of the keyword method with the verbal-pictorial association or the face name.

This technique for the first time was devised by Lorayn (1957 as cited in Patton, 1994) to enhance memory for the storage of last names. Hill, Yesavage, Sheikh and Friedman (1989 as cited in Patton, 1994), stated that three components comprised the main function of this technique. The first component is the identification of a prominent feature of a person’s face, then the derivation of a concrete, the visually transformation of the verbal person’s name, and the last component which is the formation of a visual image with an association manner, which links the prominent feature with the transformed name. Similarly, one part of visually physical feature of a person’ face which is distinguishable from the other parts due to exaggeration will be associated to that person’ last name or that person’s name which is verbally decomposed to extract the corresponding word in English (McDaniel & Pressley, 2012, p. 336). Vernon (2009, p. 127) criticized this technique for its demanding and time-consuming process and its requirement to ensure its influential effect.

All the studies that have been done through this mnemonic technique is the instruction of proper nouns along with the exaggeration in the form of pictures in the face of characters so that the link between verbal and pictorial part can be an uncommon linkage. But the focus of the present study is not teaching of proper nouns, but also instructing of vocabulary, especially through mnemonic verbal-pictorial association with an uncommon relationship between linguistic and visual parts of words.

Among the studies and researches that have been done in the domain of mnemonics, the concept which is able to provide an uncommon connection between entities is the nature of bizarreness or an unusual image that can be correlated with the specific nature of mnemonics. What this technique can provide, according to Lorayne and Lucas (1974), is "ridiculous-impossible, crazy, illogical, absurd-picture or image to associate the two items. What you don't want is a logical or sensible picture." (p. 9 as cited in Hauck, Walsh and Kroll, 1976). This technique attracts the attention of learners to the specific and unusual images that according to Riefer and Rouder (1992) recall the information better than common imagery

Writers in their writings suggest some characteristics for bizarre pictures. They suggest that: 1. Images should be interactive and well integrated 2. Images should not be only active, but the component parts of the image should all be engaged with one another 3. Images should be striking or bizarre. Also, they suggest that there are two ways to make an image bizarre by changing and manipulating the characters of the image and the interaction between the characters which are changed into bizarre through various types of distortion or by interacting in unusual ways. (McDaniel and Pressley, 2012, p. 104) Bizarreness effect itself is a source of discussion by which the researchers develop their own theories about the way bizarre imagery affects the learning information. For example, Cox and Wollen (1981) explained that the effect of bizarreness is directly related to the attentional property of this method providing novelty and bizarre items for attracting the attentions rather than common ones. Sloutsky and Napolitano (2004) in a discussion on the effect of bizarre imagery for stimuli recall concluded that the findings from this effect are derived from the cognitive function and effort.

2.2 Related Studies

However, another topic to discuss in the domain of this theory is the issue of retrieving the item or images. The image retrieval in distinctiveness theory occurs in two formats: the distortion and integration. If images are distorted through distortion, they are bizarre images (distinctiveness) and then the retrieval of images occurs, whereas if images are integrated through integration, the images are common and the interaction and retrieval from images occur. Wollen, Webber and Lowry (1972) studied the bizarreness effect on the recall of pictures along with word pairs through interacting and bizarre, interacting and non-bizarre, non-interacting and bizarre and non-interacting and non-bizarre items and a control group only
with word pairs. The result showed that the interaction items affect the recall in contrast to bizarre ones which have no effect and performance in non-interacting was low.

Again, in the searching of bizarre effect, Emmerich and Ackerman (1979) conducted a study which subjects are asked to perform a paired-associate memory task that they are either a normal interaction, like the horse eats the apple, or a bizarre interaction, like the horse peels the apple. In a recognition test, no differences was found between these two elaborations. But in recall test the performance in normal interaction was better than bizarre one. Collyer, Jonides and Bevan (1972) developed a study on eighty subjects to learn noun-verb-noun triplets through plausible scenes vs. implausible and bizarre scenes to measure free recall performance with instruction of imagery or a verbal memorization strategy. The result had no significant effect of bizarre on the recall. Riefer and Rouder (1992) conducted a series of experiments to explore the effect of unusual imagery and bizarreness in contrast to common imagery in recalling the items and find the differences in the ways items stored and retrieved. Subjects in these experiments were male and female undergraduate participants who were given noun pairs in a mixed list of unusual and common sentences. MaDaniel and Einstein (1986) conducted a study for several times and this time the equal result of mixed list and common sentences were brought about.

Nappe and Wollen (1973) also studied the facilitation of effect of bizarreness through cued test by increasing the number of subjects in order to achieve an appropriate result. Thus, the subjects were asked to form the bizarre and plausible images for the items they had and two series of images were recorded before administrating of a recall test. The result was a confirmation of previous findings in the sense that the bizarre images were not more effective than the common ones, because the images did not have the "idiosyncratic power" and they were time-consuming to form bizarre mental imagery as well. Hauck, Walsh and Kroll (1976) conducted a study to incorporate Nappe and Wollen (1973) research along with the element of practice in order to explore the effect of visual imagery mnemonics in terms of common vs. bizarre images. This was a research of about five days and based on this discussion, directly improving the bizarre imagery or indirectly increasing the interference among common images could be confirmed the superiority of the effectiveness of bizarre imagery through recall test. But the result was in contrast with the expectation and no differences were found between the recall advantages of two kinds of images. But the only advantage for this research was the speed of forming bizarre and common images due to the element of practice.

3. Method

3.1 Sample/ Participants

The target population for the present study included 193 Iranian EFL learners – from 9 to 12 years old – and this study was conducted in Nobaharn and Meyar Language Institutes in Shiraz, Iran. Then 100 individuals were selected as participants through purposive sampling. The participants, for the present study, were assigned to the two groups through purposive sampling: one group of 50 EFL learners with both 25 introvert and 25 extrovert subjects as the experimental group and a group of 50 EFL learners with both 25 introvert and 25 extrovert subjects as the control group.

3.2 Instruments

Oxford Placement Test (OPT)

Oxford Placement Test2 (Grammar test part 1) was edited and revised by David Allen (2004) that was appropriate for elementary and beginner students and language learners. This test contained 50 three multiple choice items focusing on the simple grammatical points. Based on the subjects' level and lack of time, the first 30 items of this test were chosen to determine the homogeneity of subjects according to their English knowledge. Before the main experiment, this test was piloted with 25 subjects with the same background of knowledge and range of ages and the reliability for both pilot test and test of homogeneity was calculated through KR-21. (See Appendix A)
Junior Eysenck Personality Questionnaire (JEPQ)

Junior EPQ was a personality questionnaire based on Eysenck self-report personality of young children which measured four personality indicators of extroversion (E), neuroticism (N), psychoticism (P) and lie (L). The original version of this questionnaire contained 81 yes/no questions based on the degree of extroversion and introversion and other indicators of personality. The reliability of this version and its translation were affirmed and testified by Rahiminezhad (2003) through test-retest and Cronbach's alpha measurement. In order to reach an appropriate reliability and validity's result, Rahiminezhad added 9 questions and changed the placement of 12 questions in the original version. Thus, this questionnaire contained 90 questions which indicated Cronbach's alpha measurement for E=0.79, P=0.48, N=0.78 and L=0.82. The usage of this questionnaire was applicable for -16 years old subjects. For acceleration in the process of data collection, only 24 items which determined the extrovert and introvert personality characteristic were selected. (See Appendix B)

The Researcher Made Pre-Test of Target Words

This test was the researcher made test just to make sure that students were unfamiliar with the target words. This test was used prior to the treatment.

The Researcher Made Post-Test

This was a multiple-choice test with 30 items along with common pictures with four alternatives and subjects were asked to mark the correct answer based on given picture. The allowed time for this test was 30 minutes and this test was constructed in order to measure retrieval (short-term memory). The post-test was piloted and KR-21 Reliability indices which indicated an appropriate reliability for main administrating.

The Researcher Made Flash Cards

There were two series of different handmade flash cards which provided and selected by the researcher. One series of these flash cards were real pictures in usual color, shape and size in real context. The other series were unreal pictures with unusual and surrealistic characteristics in color, shape and size with unusual contexts.

3.3 Procedure

The treatment that the experimental group received was based on the theory of mixed list of common and bizarre pictures. For common pictures, the researcher drew the picture of new words on the board as well as its names. For example, the researcher drew the shape of a "cow" on the board and wrote its name above it. Then some subjects were asked to draw the same picture on the board. After drawing and showing the common picture, the researcher showed the bizarre picture of the "cow" in the form of a flash card along with its name so that subjects could have a mixed list of common and bizarre pictures.

After this process, the subjects were asked to pay attention to the two kinds of pictures and try to describe the two pictures in regard of their shapes, colors, sizes and features and then repeat the new word for several times. And the same process was run for all 6 new words during one treatment session. The control group received the same process as the experimental group except receiving the bizarre pictures, in the sense that, they just drew common picture on the board along with its name as well as looking at common pictures of flash cards instead of receiving bizarre ones so that they were asked to pay attention and describe the common drawings and flash cards. The treatment was finished in the last session on Sunday and post-test for measuring the retrieval was administrated two days later on Tuesday.
4. RESULTS AND DISCUSSION

Testing Normality Assumption

The present data enjoyed normal distribution. As shown in Table 1, the ratios of skewness and Kurtosis over their standard errors were lower than +/- 1.96.

Table 1
Descriptive Statistics; Testing Normality Assumption

<table>
<thead>
<tr>
<th>Group</th>
<th>Type</th>
<th>N</th>
<th>Skewness Statistic</th>
<th>Skewness Std. Error</th>
<th>Kurtosis Statistic</th>
<th>Kurtosis Std. Error</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>Experimental</td>
<td>Extrovert Retrieval</td>
<td>25</td>
<td>- .185</td>
<td>.464</td>
<td>- .040</td>
<td>.902</td>
<td>- .89</td>
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<tr>
<td></td>
<td>Introvert Retrieval</td>
<td>25</td>
<td>- .077</td>
<td>.464</td>
<td>- .17</td>
<td>.902</td>
<td>- 1.56</td>
</tr>
<tr>
<td>Control</td>
<td>Extrovert Retrieval</td>
<td>25</td>
<td>.307</td>
<td>.464</td>
<td>.66</td>
<td>.902</td>
<td>- .56</td>
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<tr>
<td></td>
<td>Introvert Retrieval</td>
<td>25</td>
<td>- .047</td>
<td>.464</td>
<td>- .10</td>
<td>.902</td>
<td>- 1.48</td>
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Main Study
First Research Question and Hypothesis

The first, second and third research questions targeted at comparing experimental and control extroverted and introverted groups’ performance on retrieval test. To achieve these goals, a one-way ANOVA was run. As shown in Table 2, the experimental extrovert group (EXPEXTROV) (M = 24.60, SD = 2.46, 95 % CI [23.58, 25.62]) had the highest mean on the retrieval test. This was followed by experimental introvert (EXPINTROV) (M = 21.84, SD = 3.41, 95 % CI [20.43, 23.25]), control extrovert (CONTEXTROV) (M = 16.20, SD = 1.87, 95 % CI [15.43, 16.97]) and control introvert (CONINTROV) (M = 15.16, SD = 2.23, 95 % CI [14.24, 16.08]) groups.
The results of one-way ANOVA (F (3, 96) = 77.87, p = .000, \( \omega^2 = .698 \) representing a large effect size) indicated that there were significant differences between the four groups’ means on the retrieval test.

Although the F-value of 77.87 (Table 3) indicated significant differences between the four groups on the retrieval test, the planned contrast (a-priori) should be run to make the desired comparison shown in Table 4.

Based on the results displayed in Table 5, it can be claimed that A: The experimental introvert group (M = 21.84) significantly outperformed the control introvert group (M = 15.16) on the retrieval test (t (96) = 9.22, p = .000). Thus the first null-hypothesis was rejected.
Table 5

<table>
<thead>
<tr>
<th>Contrast Tests; Retrieval by Groups</th>
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<tbody>
<tr>
<td>RQ</td>
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<tr>
<td>First</td>
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<td>Second</td>
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<td>Fifth</td>
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</table>

Second Research Question and Hypothesis

The experimental extrovert group (M = 24.60) significantly outperformed the control extrovert group (M = 16.20) on the retrieval test (t (96) = 11.60, p = .000). Thus, according to Tables, 2, 3, 4, 5 the second null-hypothesis was rejected.

Third Research Question and Hypothesis

Again, based on the Tables 2, 3, 4, 5, the same process was held for third research question and thus, C: The experimental extrovert group (M = 24.60) significantly outperformed the experimental introvert group (M = 21.84) on the retrieval test (t (96) = 3.81, p = .000). Thus, the third null-hypothesis was rejected.

Discussion

The experimental and control groups -both introverts and extroverts- were compared in result section, according to table 2, it was proved that experimental introvert and extrovert groups significantly outperformed the control introvert group on the retrieval test. Thus, it was obvious that the group who received mnemonic treatment had significant effect on the retrieval test. Based on fifth research question, it proved that experimental extrovert group significantly outperformed the experimental introvert group. Without taking into account the role of introvert and extrovert personality, the retrieval
test which here measured the short-term memory of participants could be the issue of discussion at the continuous of this part to compare the previous literature measuring short-term memory through this technique.

Geraci, McDaniel, Miller and Hughes (2013), based on discussion of previous criticisms and studies, used the mixed list of common and bizarre sentences. Their study was concentrated only on the retrieval context to measure the bizarreness effect. In two different classrooms, participants who were male, female and undergraduate students were given common and bizarre sentences respectively. The result showed that advantage of bizarre sentences was in a mixed of bizarre and common format and not in an unmixed list of sentences.

Iaccino, Dvorak and Coler (1989) in their study, by referring to the two elements of lengthy retention intervals and normal elements in surrounding context (O'Brien & Wolford, 1982 and McDaniel & Einstein, 1986 as cited in Iaccino, Dvorak and Coler, 1989), combined an interaction between the context and time of testing with bizarre images. In this experiment the participants were male and female college students. The arrangement of images was three lists of normal, bizarre and mixed images and sentences included in these lists were "stimulus-response pairs of high imagery nouns". The result showed that bizarre imagery in immediate cued recall and a one-week retention interval were considerably boosted memory over time and bizarre encodings enhanced memory when common materials were embedded within the learning context.

Kroll, Workman and Zoller (1989) in two experiments on the bizarre context effect (BCE) with immediate recall as well as male and female undergraduate subjects revealed results and discussed that in two lists of words, a mixed of bizarre and common and a pure common list, words in bizarre context were remembered better than the pure common one. But in experiment one this result based on measuring the immediate recall indicated that there was no evidence to suggest the continuous of bizarre effect context in the longer interval retention. In the other word, the bizarre context effect was beneficial for a short or brief interval retention. In experiment two, words along with pictures were presented which they were remembered better than words along with sentences and also there was no correlation between mental image ability and BCE magnitude.

5. CONCLUSION

The findings of the present study revealed that vocabulary learning through the mnemonic technique of verbal-pictorial association especially by presenting a mixed list of pictures with bizarre and common nature provides an effective and considerable degree of retrieval of vocabulary for beginner male introvert and extrovert language learners. Therefore, the result of this study can be generalized to the effect of this mnemonic technique on the beginner male (9-12 years old) learners. This study also proved that children like adults, can use this mnemonic technique and benefit from its advantages.

The results of the current study were obtained through a one-way ANOVA, and retrieval data analysis indicated that subjects of this study were able to use the effect of mnemonic technique for retrieving of vocabulary with a short time delay. Before applying the post-tests, it was obvious that experimental group in contrast of the control group was more active and motivated due to the treatment, drawing the common pictures on the board and describing both two kinds of pictures. It can also be added that extrovert EFL learners benefited more over introvert ones in terms of their using of mnemonic technique. These findings also revealed that in addition to extrovert, introvert learners on retrieval benefited, but in a smaller scale than extrovert learners, from this mnemonic technique and its benefits were not limited to the only extrovert learners. In conclusion, what this study revealed is that in addition to the traditional methods of instructing vocabulary, this kind of mnemonic technique can be an influential element in the process of vocabulary learning when the issue of retention of information is the controversial point both for retrieving information and retaining them after a short or long time.
REFERENCES


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