

## The Effect of Pictorial Concept-mapping on EFL Learners' Collocation Retention

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### ABSTRACT

*The purpose of this research is to examine the effects of using pictorial concept mapping on the retention of collocations in English as a Foreign Language (EFL) learners. 59 intermediate-level students were randomly assigned to one of the three groups: collaborative pictorial concept mapping (22 students), individual pictorial concept mapping (17 students), and translation (20 students). All groups received the same material and instruction time. Two concept-mapping groups used pictorial concept-mapping techniques, while the translation group memorized collocations with their Farsi equivalents. After ten weeks, an immediate post-test was administered to test the first hypothesis. The results shows that the collaborative concept mapping group performed the best. A delayed post-test was given after three weeks to test the second hypothesis, and the findings indicate that the collaborative pictorial concept-mapping group performed better than the other two groups. This research suggests that using pictorial concept mapping in a cooperative learning environment has a positive impact on the retention of collocations for both short-term and long-term periods.*

*Keywords: Collocation; collocation retention; EFL; pictorial concept mapping*

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## INTRODUCTION

Vocabulary knowledge is among the most indispensable parts of every language and is vital for language mastery. According to Neofotist, Callahan, Schneider, and Traw (2020), improving one's language skills necessitates acquiring new vocabulary. Similarly, Brooks, Clinton, and Fraser (2021) contend that possessing a wide-ranging and varied vocabulary is fundamental to language acquisition, as it indicates a person's ability to communicate effectively.

In language teaching, vocabulary plays an integral role, so it receives special attention. While traditional grammar-translation methods emphasized memorizing vocabulary lists in isolation, there have always been various techniques for vocabulary learning, including more contemporary approaches that utilize vocabulary in context (Seyyedi, Ismail, Orang, & Sharafi Nejad, 2013). According to Zhang (2001), words in a language could be likened to bricks in a tall building; despite their small size, they strengthen the overall structure. It is now widely recognized that having a solid vocabulary is an essential component of language proficiency for effective communication.

Wilkins (1972) asserts that while grammar is important, vocabulary is essential in conveying messages effectively, highlighting the critical role that vocabulary plays in expressing the intended meaning of a language. Furthermore, among individuals who are learning a second language, errors related to vocabulary are the most frequent mistakes made. Additionally, for native speakers, lexical errors are more distracting than grammatical errors (Seyyedi, Ismail & Mohamed, 2014).

## COLLOCATION

Understanding vocabulary involves more than just knowing the meaning of a word in isolation. In other words, a learner's familiarity with how a word combines with other words, also known as collocational knowledge, is crucial, as described by Rahimi and Momeni (2012). According to Lei and Liu (2018), word combinations are a crucial aspect of vocabulary, and many EFL learners are not familiar with collocations. Collocations play a central role in vocabulary teaching and learning, and there is a consensus among scholars that they need to be taken into account. Many researchers, including Lewis (2000), have emphasized the significance of collocations, and they have become more prominent with advancements in computer-based language research and the emergence of lexical approaches.

According to Jaen (2007), non-native English speakers must have a solid grasp of collocations to speak and write accurately and fluently. Skrzypek (2009) noted that knowing about collocations is one of the requirements for understanding a word, emphasizing the importance of collocations. As Shin and Nation (2007) point out, teachers and students are interested in collocations since they assist learners in speaking more fluidly and selecting words like native speakers.

The consistent pairing of words is a fundamental characteristic of collocation, a ubiquitous linguistic phenomenon in all natural languages. Words are rarely found alone. Collocation is a crucial aspect of language that makes it distinctive and accurate. Therefore, students must focus more on collocations to learn English effectively (Lewis, 2000; Seyyedi & Ismail, 2012).

Even though researchers, teachers, and material designers all agree on the significance of vocabulary knowledge, including collocation, for foreign language learning, there is no definitive

knowledge of the most effective approaches for assisting students in learning and retaining collocations. English as a foreign language (EFL) instructors encounter several challenges when teaching collocations. To address these issues, they must develop techniques that meet students' needs.

This study addresses the fact that Iranian EFL students have difficulty retaining collocation. Since language is comprised of a vast number of words used in conjunction with one another, collocations should be regarded as one of the bases of vocabulary development. In addition, many linguists, such as Lewis, 2000; and Nation, 2001, assert that knowing language entails using collocations. Therefore, teaching collocations should be the most crucial aspect of every language class.

In language classes, concept mapping is one of the methods used to teach vocabulary. In educational settings, concept mapping has been employed to evaluate a learner's comprehension of a topic (Machado & Carvalho, 2020). According to previous research on the topic, the utilization of semantic maps significantly enhances vocabulary acquisition. For example, Harley, Howard, and Roberge (1996) used semantic mapping in two French classes.

## CONCEPT MAPPING

Concept maps are organizational and representational tools for knowledge. They consist of concepts, which are typically enclosed in circles or boxes (Kalhor & Mehran, 2016). Novak (2003) explains that a meaningful statement could be generated by connecting concepts or propositions using a connecting line to illustrate their relationships.

The underpinnings of concept mapping in educational settings could be traced back to the constructivist learning perspective. It is employed both as a learning strategy (Quinn et al., 2004) and as a teaching strategy (Marangos & Alley, 2007), and an evaluation tool (Novak, 2004; Quinn et al., 2004) to explore how much students have understood a topic. It also provides information about learners' existing knowledge of structure, adds new information to their previous and existing knowledge, and investigates learners' success and understanding (Carter, Jone & Rua, 2003). According to Barcroft (2004, p. 200), concept mapping is "an evaluation of an item concerning its meaning". It is a way of exploring the conceptual relationships between words which enhances the learning and retention of the words through integration. Integration is the stage in which new information is merged with what the learner knows beforehand. As a result, the use of concept mapping could result in more profound learning, which in turn leads to better retention of vocabulary over an extended period. As previous studies have demonstrated, a significant development in vocabulary learning occurred when concept mapping was utilized (Nilforoushan, 2012).

Concept mapping is a teaching and learning approach that is grounded in scientific research and a process for organizing key concepts into hierarchical structures based on their relevance to a specific domain of knowledge (Thomas & Thakur, 2011). It refers to the representation of concepts and their inter-relationships which indicate the knowledge that people have in their minds (Jonassen, Beissner & Yacci, 1993). Visual representation enables the formation of a holistic understanding that words alone are unable to convey, as the graphical form permits the depiction of both the parts and the whole, which is not feasible in the sequential structure of a text. Concept maps give scientific instructors fast visual data on student misunderstandings and knowledge levels.

Concept mapping facilitates learning by giving a pattern and framework for creating and organizing information, which not only allows it to be applied to different contexts but also allows it to be retained over time (Novak & Cañas, 2006; Cañas et al., 2003). By involving the learner in the learning process, concept mapping as a learning approach shifts the focus of learning from being teacher-centered to being student-centered, resulting in an increase in academic talents and competency as well as higher grades for the student (Laight, 2004). Research has provided evidence to support that concept mapping is an effective method for fostering meaningful learning. (Novak, 2003; Trifone, 2006). English non-native speakers require techniques to learn the language more effectively, retain it for longer, and apply it in novel situations. In addition, teachers seek instructional strategies that encourage student engagement in the learning process and achievement.

According to Barcroft (2004), when lexical items are semantically elaborated, learners' memory retention is enhanced considerably. Mantle-Bromley (1995) states that concept mapping represents a graphic strategy that could help learners build conceptual relationships to have a complete understanding of any kind of word. Concept mapping relies on the connections between its components as its fundamental structure. Once the connections between words are established, learners will be able to recollect them more easily (Nilforoushan, 2012).

Concept mapping helps the learners understand the words by connecting and relating them and guides them to include words and concepts in their concept repertoire. As a result, they will have deeper learning and longer word retention (Harley, Howar, & Roberge, 1996).

The cognitive feature is one of the most important signs of the efficiency of concept mapping. Shapiro and Waters (2005) state that enhancing cognitive effort increases vocabulary retention, too. Morin and Goebel (2001) also support this view, suggesting that concept mapping encourages a higher level of cognitive processing.

Although concept mapping has advantages, it also has shortcomings, too. For example, it could constrain learners' creativity or cognitive capacity to form unconventional associations of words to group-related words. In other words, when learners are given just one map, it could limit their creativity. Moreover, learners may group the words in such a way that is inconsistent with the map (Baleghizadeh & Ashoori, 2011).

Some scholars have opposing opinions regarding the efficiency of concept mapping as a learning approach. While some researchers support this technique, others are against it. According to the opponents due to "cross association and possibly overloading in the short-term memory (STM)," retention of vocabulary may be impeded (Erten & Tekin, 2008, p. 408). To sum up, there is a need for more research to be done on concept mapping and its effects on vocabulary acquisition, particularly in terms of collocations.

## CONTEXT OF THE STUDY

The addressed problem in this research is that Iranian EFL learners face up with some problems regarding collocation retention. As Naraghizadeh and Barimani (2013) believe, most students face difficulty when they have to learn new words in one lesson. Since memorizing word lists in general and collocations, in particular, is non-meaningful and tough, Iranian learners most of the time complain that they forget the words and could not keep them in their minds. Consequently, these teaching methods of vocabulary will lead to short-term memory storage. Although there is an increasing focus on instructing collocations in second-language education, research on this

topic within Iranian foreign language classrooms remains limited.

Moreover, vocabulary learning in L2 has myriad of difficulties; hence, it requires particular instruction to overcome those difficulties by the language teachers. However, to my knowledge, vocabulary learning strategies are not explicitly taught in most language classes in the setting of the current study, and learners try to learn vocabulary by themselves without being provided with any guidance or instruction. There are many courses for reading, writing, speaking, listening, and grammar in L2 programs, but vocabulary courses rarely exist (Ghezelseflou et al., 2015). Many vocabulary instructions involve just giving the lists of words to the students to memorize or providing a few practicing opportunities without any assistance.

Vocabulary instruction in L2 classes is neglected. The primary focus of many studies on vocabulary acquisition techniques has been on how vocabulary is presented and memorized, that is, the majority have concentrated on the strategies related to memory (Gu & Johnson, 1996; Rasouli & Ahmadi, 2021). Most learners prefer mechanical strategies such as repetition (Schmitt & McCarthy, 1997) since vocabulary could be considered as the building blocks of language. Hence, this is vital to second language learning. It is also of primary importance in communication and other language skills. By acquiring and broadening their vocabulary knowledge, learners have the potential to enhance their abilities in listening, speaking, reading, and writing. (Ghalebi, Sadighi & Bagheri, 2021).

Because it may not be possible to provide a context for every word, concept mapping could be of assistance in this regard. The process of concept mapping includes elements that are both meaningful and mechanical. The implication of this approach lies in the fact that it teaches words within the framework of their semantic relationships, while also emphasizing the importance of mechanical practice that involves memorizing words out of any specific context in which they may be utilized (Baleghizadeh & Ashoori, 2011).

Teachers usually dedicate a considerable amount of classroom time to teaching vocabulary; however, since they adopt techniques primarily based on teaching vocabulary in isolation, they will undoubtedly face written or oral work from their students that contains incorrect word usage, which will annoy them. The issue may originate from the fact that comprehending a word requires more than simply understanding its definition. Students must understand how words are employed in different settings, their cultural meanings, the words that collocate with them, etc. In light of this, as well as the limited time available for instruction, teachers should employ more effective strategies that enable students to acquire and maintain a larger vocabulary. Regarding efficacy and time restrictions, teaching vocabulary through collocations may be one strategy to increase vocabulary acquisition and retention.

Considering language learning conditions in Iran, it appears that students need to be exposed to innovative ways of vocabulary instruction to learn, remember, and recall vocabulary, particularly collocations. There is some dispute among academics over the application of concept mapping. Although some researchers favor this procedure, others assert that it could result in word interference. These opponents also assert that “cross association and probable short-term memory saturation” may make it difficult to recall words (Erten & Tekin, 2008, p. 408).

Although many studies have been undertaken on the importance of concept mapping in second language acquisition, the questions of how EFL learners might develop an understanding of the realm of collocation and how to improve vocabulary retention have not been thoroughly studied. Furthermore, the majority of high school students and teachers appear to be unfamiliar with concept mapping and collocations. The majority of teachers are neither aware of the authentic use of collocations nor do they teach their students about them.

To achieve this objective, the researcher intended to employ collaborative pictorial idea mapping and investigate its effect on EFL learners' retention of collocations. It is anticipated that investigating this topic will aid language instructors and students in evaluating the efficacy of various methods of teaching and learning vocabulary and selecting those methods that help students retain the most information.

According to what has been mentioned, the subsequent questions were asked:

1. Is there a significant difference among groups of collaborative pictorial concept mapping, individual pictorial concept mapping, and translation in terms of immediate effects on pre-intermediate EFL learners' collocation retention?
2. Is there a significant difference among different groups of collaborative pictorial concept mapping, individual pictorial concept mapping, and translation in terms of delayed effects on pre-intermediate EFL learners' collocation retention?

## METHODOLOGY

This study is a quasi-experimental involving intact classes serving as two experimental groups: collaborative pictorial concept mapping, individual pictorial concept mapping, and one control group. This study is quantitative in nature since it was conducted to investigate the possible effects of pictorial concept mapping on EFL learners' collocation retention of EFL learners based on several numerical analyses of the data gathered from a series of tests. Thus, the nature of the research questions was quantitative and the nature of the research hypotheses was null.

This study was done with 59 intermediate English as a Foreign Language (EFL) students from Foreign Language Institute in Mahabad, Iran. All participants were female and between the age of 18 to 27 years old. A total of 67 students took the TOEFL English proficiency test. Students who got a TOEFL score that was one standard deviation above or below the mean were chosen as qualified participants. However, eight test-takers were significantly below the mean, so they were excluded from the study to maintain the distribution's normality. The remaining 59 students were randomly assigned to one of three groups: collaborative pictorial concept mapping (N = 22), individual pictorial concept mapping (N = 17), and a control group: translation (N = 20). Table 1 shows that the TOEFL pre-test mean scores of the three groups amounted to 49.04, 50.35, and 50.30, respectively.

**Table 1**

*Descriptive statistics of proficiency test*

Groups	N	Minimum	Maximum	Mean	Std. Deviation
Collaborative	22	34.00	69.00	49.0455	9.14162
Individual	17	36.00	69.00	50.3529	9.27996
Translation	20	33.00	70.00	50.3000	9.27986
Valid N (Likewise)	59				

It also contained a number of other information such as minimum, maximum, and standard deviation. In the Collaborative group, 22 participants got 34 as the minimum and 69 as the maximum

score in the TOFEL test with a standard deviation of 9.14. There were 17 students in the Individual group who obtained 36 as the least score and like the previous 69 as the maximum score with a standard deviation of 9.27. Finally, the Translation group with 20 students scored 33 as the minimum and 70 as the maximum with a deviation from the standard of 9.27.

To ensure that participants were homogeneous, all three groups took the collocation pre-test before the treatment. Before administering the multiple-choice collocation exam that the researcher created, he piloted it on a similar group.

All of the participants in the study were given the same amount of teaching and identical materials to study throughout the course of the treatment. On the other hand, the researcher instructed the learners in the concept mapping groups using a visual concept mapping technique that was based on Harris and Graham's (1996) procedure of strategy instruction. This procedure of strategy training consisted of the following five stages:

- Strategy description in which students were acknowledged that they were going to acquire knowledge regarding concept mapping, which is a method for organizing information in a graphical style through the use of drawing;
- Discussion of goals and purposes in which concept mapping was defined as a helpful strategy that could help learners with collocation development and their retention;
- Modelling of the strategy in this stage the instructor introduced a concept that was familiar to all students, such as "shoe". Then, the instructor drew a square in the center of the board and put the word inside it (Figure 1);
- Student mastery of strategy during which the instructor encouraged students to draw other parts of the concept map using the grammatical category for example verb or noun;
- And guided practice and feedback in which the instructor collected the students' concept maps and after reviewing them and correcting the mistakes, returned the corrected concept maps to the learners.

In each session for the two experimental groups, the researcher introduced some words, such as “**shoes.**” Then learners in the collaborative pictorial concept mapping worked in pairs to make different collocations. They were required to write the word in the center and try to find as many collocations as they could with the meanings using the book and dictionary. For individual pictorial concept mapping, students used the same method as the first group, but individually. The following Figure 1 illustrates the example of a procedure in experimental groups.



**Figure1**

*Concept mapping for “shoes”*



On the other hand, the translation group had to memorize a list of collocations and their Farsi equivalents. After eight sessions, an immediate post-test was conducted, followed by a delayed post-test three weeks later. Descriptive and inferential statistics using ANOVA were performed using the Statistical Package for Social Sciences (SPSS) software version 20.

## DATA ANALYSIS

### IMMEDIATE POST-TEST

A valid and reliable collocation post-test was used to examine the effect of collaborative pictorial concept mapping on the retention of collocations among participants in all groups. Below is a table with a statistical analysis of the data.

**Table 2**

*Descriptive statistics on immediate post-test*

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Collaborative	22	24.14	3.044	.649	22.79	25.49	19	27
Individual	17	23.06	3.561	.864	21.23	24.89	17	28
Translation	20	21.35	3.329	.744	19.79	22.91	15	29

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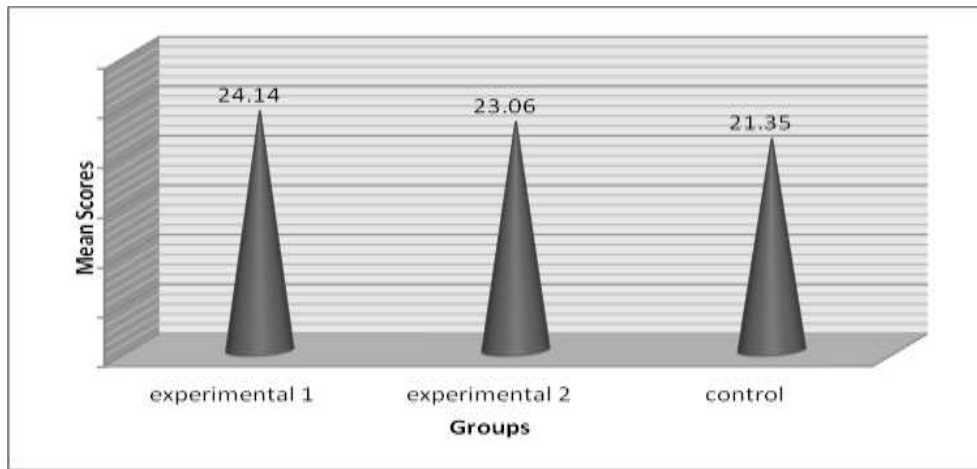
Total	59	22.88	3.450	.449	21.98	23.78	15	29
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According to the displayed table, there exists a distinction in the average scores among the three groups. The statistical analysis suggests that the collaborative pictorial concept mapping group obtained the highest score ( $M = 24.14$ ) compared to the other two groups. Furthermore, the individual pictorial concept mapping group had a higher mean score ( $M = 23.06$ ) when compared to the translation group ( $M = 21.35$ ). The difference in the average scores is presented in Figure 2.

**Figure 2**

*The mean score of immediate post-test*



As the above figure depicts, there is a difference in the mean scores of participants in the experimental groups and the control. To explore whether this difference is statistically significant, the researcher used the One-Way ANOVA test.

**Table 3**

*One way-ANOVA of immediate post-test*

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	82.087	2	41.044	3.780	.029
Within Groups	608.082	56	10.859		
Total	690.169	58			

The above table contains statistical data, which shows that mean scores of collocation accuracy were different on post-tests,  $F(2, 56) = 3.78, p = 0.029 (p < 0.05)$ . Besides that, to find out where the exact difference lies, a post-hoc Tukey test was run. The results are reported in Table 4.

**Table 4**

*Post-Hoc-Tukey ANOVA*

(I) groups	(J) groups	Mean Difference(I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Collaborative	Individual	1.078	1.064	.572	-1.48	3.64
	Translation	2.786*	1.018	.022	.34	5.24
Individual	Collaborative	-1.078	1.064	.572	-3.64	1.48
	Translation	1.709	1.087	.266	-.91	4.33
Translation	Collaborative	-2.786*	1.018	.022	-5.24	-.34
	Individual	-1.709	1.087	.266	-4.33	.91

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

According to the presented table, the mean score difference (2.78) of the collocation retention of the collaborative pictorial concept mapping group (M = 24.14) and translation group (M = 21.35) was statistically significant at a p-value of 0.05. The collaborative pictorial concept mapping group retained collocations better than the translation group.

To sum up, the above one-way ANOVA and post-hoc Tukey ANOVA results show that collaborative pictorial concept mapping helps Iranian EFL learners at an intermediate level to remember collocations better. According to the statistical analysis conducted on the collected data, a significant distinction was found in the performance of the three groups. As a result, the first null hypothesis was rejected.

### DELAYED POST-TEST

A delayed post-test was administered to investigate the effects of different techniques of collocation teaching (collaborative pictorial concept mapping, individual pictorial concept mapping, and translation) on intermediate EFL learners' collocation retention over time. A delayed post-test was conducted to see whether the special treatment of the study aids in encoding information in students' long-term memory. To eliminate the effects of practice, students were not told when they would be required to have the next post-test. After a three-week interval, the second post-test was administered. The results are tabulated and depicted in Table 5:

**Table 5**

*Descriptive statistics of delayed post-test*

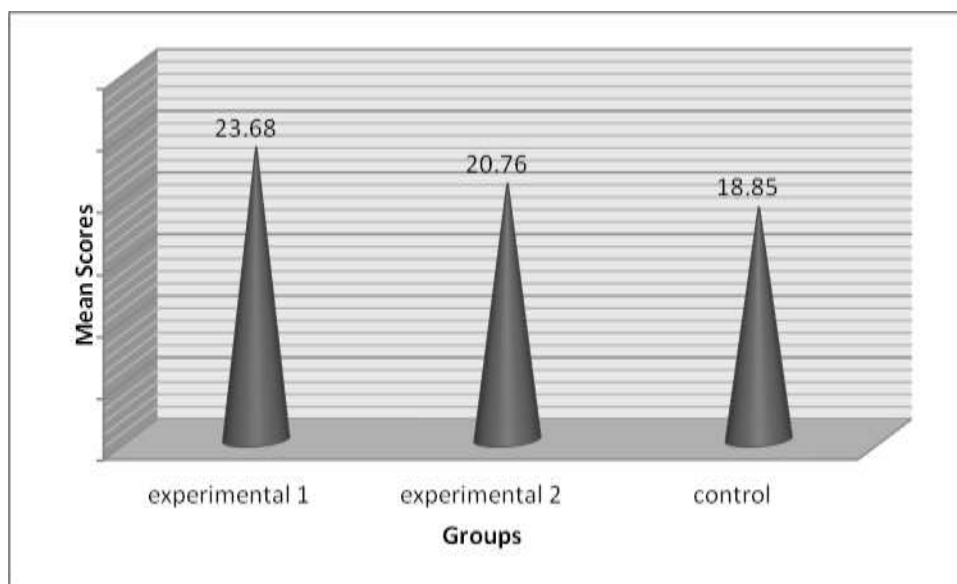
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Collaborative	22	23.68	2.358	.503	22.64	24.73	19	27

Individual	17	20.76	3.093	.750	19.17	22.35	15	28
Translation	20	18.85	2.996	.670	17.45	20.25	14	23
Total	59	21.20	3.448	.449	20.30	22.10	14	28

As indicated in Table 5, the difference in the mean scores among the groups in the delayed post-test was 23.68 for the collaborative pictorial concept mapping group, 20.76 for the individual pictorial concept mapping group, and 18.85 for the translation group. The results of the delayed post-test are illustrated in Figure 3.

**Figure 3**

*The mean score of the delayed post-test*



As evident from Table 5 and Figure 3 above, there is a difference in the participants' performance in the delayed collocation post-test. To check whether this discrepancy is statistically meaningful, the researcher conducted a one-way ANOVA test and presented the calculated raw data in Table 6 below.

**Table 6**

*One way-ANOVA of delayed post-test*

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	249.178	2	124.589	15.843	.000
Within Groups	440.382	56	7.864		
Total	689.559	58			

Table 6 presents the results of a study on the delayed post-test treatment, which demonstrate that there was a noteworthy difference in the collocation retention gains of the translation group

and the two experimental groups of individual and collaborative pictorial concept mapping. This difference was found to be statistically significant, with a p-value of  $0.00 < 0.05$ . To determine the specific source of this difference, a post-hoc Tukey test was conducted, and the results are displayed in Table 7.

The results of one-way ANOVA and Post-Hoc Tukey ANOVA indicated that collaborative pictorial concept mapping significantly contributed to improving the collocation retention of intermediate-level Iranian EFL learners after a delay. Therefore, the second null hypothesis was rejected based on the statistical analysis of the data collected, indicating that there was a significant difference between the different methods of collocation teaching (collaborative pictorial concept mapping, individual construction of pictorial concept mapping, and translation) in terms of their effects on intermediate EFL learners' collocation retention in the delayed period.

**Table 7**

*Post-Hoc-Tukey ANOVA of delayed post-test*

(I) groups	(J) groups	Mean Difference(I-J)	Std. Error	Sig.	95% Interval	Confidence
					Lower Bound	Upper Bound
Collaborative	Individual	2.917*	.906	.006	.74	5.10
	Translation	4.832*	.866	.000	2.75	6.92
Individual	Collaborative	-2.917*	.906	.006	-5.10	-.74
	Translation	1.915	.925	.105	-.31	4.14
Translation	Collaborative	-4.832*	.866	.000	-6.92	-2.75
	Individual	-1.915	.925	.105	-4.14	.31

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

Table 7 shows that the mean score difference (4.83) of the collaborative pictorial concept mapping group ( $M = 23.68$ ), the mean score difference (2.91) of individual pictorial concept mapping ( $M = 20.76$ ), and the mean difference (1.95) of the translation group ( $M = 18.85$ ) were statistically significant at a p-value of 0.05. The collaborative pictorial concept mapping group retained more collocations than the individual pictorial concept mapping and translation groups.

## DISCUSSION

Mastery of vocabulary is a pivotal factor in language acquisition and ranks among its most significant elements. Developing a rich vocabulary significantly contributes to attaining advanced proficiency levels in the intended language (Boers & Lindstromberg, 2008). According to McCrostie (2007), possessing an extensive and diverse vocabulary signals communicative prowess and stands as a vital facet of language learning. Unfortunately, vocabulary was not a focus until the mid-1980s, as noted by Coday (1997).

Furthermore, a thorough examination of the relevant literature reveals that understanding collocations holds the utmost importance for proficient language learning in both a general sense and, more specifically, for vocabulary acquisition. Hill (1999) asserts that collocations serve as the key to fluency in both written and spoken language. Hill (1999) additionally states that

acquiring words in phrases enhances pronunciation and intonation, expediting reading comprehension by processing phrases as units. Lewis (2000) elaborates on the significance of collocations, positing that they offer a more pragmatic and focused approach to language instruction and curriculum development compared to grammar. This is because grammar imparts only broad language rules, whereas collocations address some of the nuances not covered by rules, guiding language usage that might be grammatically correct yet not culturally appropriate—situations that often arise in a classroom setting.

Regarding the importance of collocation and vocabulary retention, this study investigates collaborative and individual pictorial concept mapping to find a solution to the gap and difficulty Iranian EFL learners experienced in collocation retention.

Studies have shown that language production is often compromised by unfamiliarity with collocations. For example, investigating the 'keyword in context,' Flowerdew (1999) discovered evidence indicating that the students had a comprehensive understanding of the relevant lexicon, but that they were unfamiliar with the natural setting in which the word is typically used. As evidence, Al-Zahrani (1998) discovered a significant difference in learners' lexical collocation knowledge across different language proficiency levels, implying that as learners' lexical collocation knowledge improved, so did their proficiency levels. He reported that there is a significant correlation between the language proficiency of learners and their knowledge of collocations.

On the other hand, concept mapping is conceived as the relationships among the elements. Learning words becomes easier when there is a relationship between them (Fan, 2000). An apparent reason for concept mapping's effectiveness is its cognitive component. Shapiro and Waters (2005) suggest that an increase in cognitive effort leads to a corresponding increase in vocabulary retention, a viewpoint supported by Morin and Goebel (2001) who argue that semantic mapping promotes profound cognitive engagement.

These study results align with previous research (Ebbers & Denton, 2008; Palmer, Boon & Spencer, 2014). To put it another way, this study advocates the usefulness of employing a concept mapping model in order to improve collocation knowledge among Iranian intermediate-level language learners. Compared to the translation group, the experimental groups' retention of collocations was found to be much higher as a consequence of the application of the method of concept mapping.

## CONCLUSION

Concept mapping acts as a kind of feedback for both teachers and students, enabling them to evaluate their knowledge, comprehension, and learning gaps. Moreover, evaluating and grading the students' learning based on the map and having them construct the concept map served as an external motivator for them. The researchers observed that using concept mapping improves text comprehension and aids in the storage and retrieval of vocabulary.

The study found that concept mapping enhanced higher cognitive levels and activated learners during the learning process. Furthermore, the research confirmed the efficiency of concept mapping in facilitating meaningful learning of the English language. Thus, it is recommended that students utilize concept maps to improve their understanding and that teachers use them as an instructional approach, learning activity, and assessment tool to enhance students' academic achievements (Rasouli, 2022).

According to Fore et al. (2007), the results indicate that concept mapping could be a valuable strategy for improving intermediate-level learners' retention of collocations. Additionally, the study shows that concept mapping could have a positive impact on learners' collocation learning in a short period. By defining the term, placing it in context, making word connections based on previous knowledge, forming a mental image, and drawing a picture related to the word, concept mapping provides learners with multiple ways to reinforce their vocabulary acquisition. As a result, teachers could benefit from using this method as a vocabulary instruction aid in group-based language learning settings.

Even though the results of this study are similar to those of previous research conducted by Fore et al. (2007), there are numerous distinctive implications for the classroom. First, the application of concept mapping as an approach for teaching vocabulary in the classroom, including the learning of collocations, is a straightforward and uncomplicated activity that could be incorporated into ordinary language education. Second, even though this research was carried out with EFL learners of an intermediate level, the process for employing the concept mapping strategy is simply adaptable for use with students in educational contexts possessing a variety of levels of language proficiency who come from a variety of different backgrounds. Thirdly, using concept maps could enable students to expand their vocabulary knowledge, which could potentially improve their reading comprehension skills in various subject areas. Last but not least, concept maps offer a conceptual framework that might assist students who have difficulty reading in making linkages between existing knowledge and new words. This is a vital skill for the development of reading in all students.

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