Exploring the Efficiency of Associative Vocabulary Teaching Strategies to Foreign Language Learners

Mohammad Abed Aljburi
Department of foreign languages and linguistics, Shiraz University, Shiraz, Iran, *aljburi.abed@gmail.com*

Mohammad Saber Khaghaninejad
Corresponding author, Department of foreign languages and linguistics, Shiraz University, Shiraz, Iran, *mskhaghani@shirazu.ac.ir*

This study attempted to explore the effect of applying three associative vocabulary instruction strategies (context-based, morphemic analysis and concept map) compared with the traditional strategies on the intermediate EFL learners' vocabulary development employing a quasi-experimental, quantitative, pre-test/post-test design. With the aid of an English proficiency test and a researcher-developed vocabulary test the homogeneity of the participants were checked before the study's treatment. Subsequently, 80 intermediate EFL learners were chosen via convenience sampling procedure from private language schools and recruited for the study and divided into four groups of 20 as the experimental and control participants. The experimental participants were taught the target lexical items with the aid of contexts, concept maps and morphemic analyses while the control participants experienced the traditional instruction (i.e., L1 equivalent provision, word lists, flashcards and memorization). The same vocabulary test was administered this time as the post-test to check whether there was a significant difference in the learners' attainment for the taught lexical items. The performance of the participants on the vocabulary post-test was analyzed both descriptively and inferentially (a MANOVA, an ANOVA and an independent-samples t-test). It was revealed that all the associative vocabulary teaching strategies were significantly more efficient than the traditional vocabulary teaching strategies. Moreover, it was found that concept mapping was the most efficient instructional strategy for teaching the lexical items compared with the traditional strategies and other associative strategies for the intermediate EFL learners.

Keywords: associative vocabulary teaching, context-based instruction, morphemic analysis, concept maps, traditional vocabulary instruction

INTRODUCTION

Vocabulary acquisition has occupied a distinctive place within the bounds of applied linguistics during the last twenty years and hence mastering lexical items is considered

to be a necessity for learners to become competent language users (Zwier & Boers, 2023). Vocabulary is the most difficult, manageable component in language learning regardless of being a native or a foreign language learner. Thus, vocabulary teaching is considered a big challenge for both teachers and learners of EFL in recent years (Elyas & Shah, 2018). Although, acquiring words in the first and foreign languages is not essentially different, the rate and growth of lexical development drastically differ. This is because in the L1 context much of the lexicons are acquired occasionally and randomly while the input in L2 is limited to opportunities for gaining new words (Renandya & Widodo, 2016), hence, incidental vocabulary learning is restricted due to a deficiency of input in foreign language classrooms (Renandya and Widodo, 2016; Freeman & Anderson, 2011; Farahani & Khaghaninezhad, 2009). However, the function of vocabulary in language development is pivotal, yet instructing lexical items could be demanding as most teachers and curriculum developers are not "confident about best practices in vocabulary instruction and at times do not know where to begin to form an instructional emphasis on word learning" (Berne & Blachowicz, 2008, p. 315). On the one hand, teachers have been confronting dilemmas in figuring out a proper strategy for effective vocabulary teaching in their classes and they need to promote their knowledge and skills in this area accordingly (Thornbury, 2002). On the other hand, EFL learners, find it difficult to set suitable words to explain their expressions and ideas to interact effectively throughout using the language as a result of their limited vocabulary knowledge (Mahmood & Arslan, 2017).

Although many improvements and proposal have been made regarding the appropriate strategies of vocabulary teaching, traditional vocabulary teaching strategies are the most dominant strategies in many EFL contexts such as the Iraqi one (Alsaawi, 2013). This can be related to the less demanding nature of these strategies both on the part of instructors and material developers. In search of a more promising instruction type, associative vocabulary teaching and learning can be a theoretically-rich solution. The associative vocabulary teaching approach is emerged in response to growing interest in L2 vocabulary acquisition and as a reflection of the need for new methods and approaches to provide the vocabulary teaching domain with strategies to enhance the learners' lexical abilities in EFL/ESL contexts (Liu, 2016).

Shanks (1995) identified the associate learning as "a kind of acquisition that happens in an associative situation, the environment (or the experimenter) arranges a contingent relationship between events, allowing the person to predict one from the presence of others" (p. 2). Consequently, this term has been utilized to specify phenomena such as habituation, priming, and perceptual learning. As one of the associative vocabulary teaching strategies, *context-based instruction* refers to adapting incidentally learnt vocabularies, whether from reading and/or listening to common language use (Zwier & Boers, 2023). Vocabulary growth depends largely on selecting words from context and recycling the whole process by exposing the EFL learners to new contexts with aiding their reading ability and comprehension (Nation, 2013). As another strategy of associative vocabulary instruction, *morphemic analysis* strategy is a systematic approach to create the compositional word awareness (Azad & Ahmadian, 2021). It contains the analysis of the root of a word to unlock the meaning of vocabulary items.

As the third associative vocabulary teaching strategy, *concept-map instruction* can be employed to help EFL learners generate and develop their vocabularies (Rezvani and Sadrosadat, 2020). They are graphical tools that promote the ability to study and master lexical items (Nurfitri & Sunubi, 2018). The concept maps could show the relationships and links between ideas as well as details of knowledge and information in a given text for better comprehension (Aryanti & Emzir, 2016). Despite the benefits of concept mapping, there are challenges in some aspects concerning using this strategy to explore and explain large and pervasive concepts especially in instructional contexts and practices (Machado and Carvalho, (2020).

This study's primary goal was to look into the effectiveness of associative vocabulary teaching strategies in comparison with the traditional vocabulary teaching strategies and secondly to compare the efficacy of three types of associative vocabulary teaching strategies (Context-based instruction, morphemic analyses and concept maps provision) for intermediate EFL learners' vocabulary development in the Iraqi EFL context. Considering the research objectives, the study attempted to check if:

- Associative vocabulary teaching strategies can significantly improve the learning of lexical items for Iraqi Intermediate EFL learners compared to traditional vocabulary instruction, and
- Any of the three associative vocabulary teaching strategies (Context-based instruction, morphemic analysis and Concept maps) can cause a superior effect on the vocabulary learning of Iraqi Intermediate EFL learners.

Literature Review

Teaching lexical items plays an important role in helping EFL learners evolve their competence in any foreign language communication (Wilkins, 1972). This important role urged the researchers to conduct studies to feature practical and effective strategies for developing the learners' knowledge of vocabulary usage. Considering the undeniable significance of vocabulary learning in language development and due to the dominance of traditional vocabulary teaching strategies in many EFL contexts, a theoretically- rich alternative seems an instructional necessity. The associative vocabulary teaching involves teaching vocabulary by using the notion of interconnections to facilitate word acquisition and then a contribution to language development (Colunga & Smith, 2005).

Associative Vocabulary Teaching and Learning

Many researchers have investigated associative vocabulary teaching to designate its function in vocabulary teaching and learning process (Colunga & Smith, 2005; Sloutsky et al., 2017). Several researchers documented that Arab learners of secondary school broadly encounter difficulties in communicating effectively in English due to the lack of vocabulary items, strategies of teaching, and incompatible learning environment (e.g., Al-Jarf, 2022). To overcome these problems, other studies suggested that novel words for actions and objects could undoubtedly be learned through associative learning without feedback (Kucker et al., 2018).

In the same vein, Zhang (2014) expressed in his study the importance of using an associative method in enhancing learners' retention of English words. Li et al. (2019)

also examined the associative learning mechanisms of L2 learners by proposing a *Dynamic Vocabulary Theory*. They showed that the proposed theory could fruitfully affect the associative learning process of acquiring vocabulary. In search of the most appropriate vocabulary teaching strategy, Khaghaninejad and Arefinejad (2015) documented the significant effectiveness of associative learning on the learners' vocabulary acquisition. Tsuboi and Francis (2020) studied the claim that associative vocabulary strategies are more effective in bilinguals than in monolinguals. They found that the higher proficiency in language through which bilinguals learn the second or foreign language vocabulary could improve associative memory which was not the case for traditional vocabulary teaching strategies.

Associative vocabulary teaching strategies deal with several aspects, such as the words' pronunciations, meanings, morphology and semantic interrelations based on which three major strategies for vocabulary instruction have been introduced: Context-based instruction, morphemic analysis and concept maps (Al-Jarf, 2022).

Contexts and vocabulary instruction

Using context as a strategy for teaching vocabulary contains various kinds of cues that a learner can depict depending on implication, background, knowledge and linguistic cues. Nation (2013) argued that "guessing from context is a complex activity drawing on a range of skills and types of knowledge" (p, 330). However, Webb (2008) claimed that a single glossed sentence context may have little effect on vocabulary development. In another study, Nurfitri and Sunubi, (2018) presented a cognitive model which clarified the role of context in language vocabulary acquisition, then he added that "rich contexts such as comics, animations, and dramas facilitate instantiation greatly by providing a vast amount of visual, auditory, psychological, perceptual and kinaesthetic information which is much less tangible when presented in the form of verbal description" (p. 47).

Nassaji (2003) researched using strategies in L2 lexical inferences and their relationships with inferential resources. The findings denoted that the intermediate EFL learners did not understand the lexical items from the contexts of the reading passages. In addition, the study proved that EFL learners had difficulties in effectively deducing the meanings of unknown words from the context. It was also revealed that most of the lexical items in the text and successfully used the strategies and knowledge sources at their disposal. Finally, the outcomes suggested that learners should not be pushed to depend on context to grasp the meanings of new vocabulary in EFL classrooms. Consequently, teachers should dedicate part of the class time to distinguishing, identifying and explaining the new lexical items to the learners. In an attempt to study the effects of applying two vocabulary strategies on EFL learners, Ciftci and Uster (2009) used two vocabulary strategies; the first was teaching vocabulary in context while the other was teaching vocabulary by providing the definitions. The results demonstrated no discernible distinction between the target vocabulary taught in context and by their definitions in terms of retrieval and usage. Khoshsima et al. (2016) clarified that adapting concept-maps into class activities improved learners' capabilities in learning and retention of the vocabularies as well as their attitudes towards better

vocabulary utilities. Different studies have also dealt with concept mapping effectiveness in vocabulary retention (e.g., Kaveh & Rassaei, 2019; Razvani & Sadrosadat, 2020) as well as EFL learners' reading comprehension performance (Tamimy et al., 2022; Wang & Chen, 2018).

In a theoretical study, Alsaawi (2013) attempted to study learning lexical items by guessing the meaning of words from a context. The study focused on the effect of guessing from context in developing learners' words and observing to what extent this strategy was effective and helpful in teaching and learning the new lexical items. Guessing from context was found to be a successful strategy for learners who were in upper intermediate and advanced levels, but it had less effectiveness or almost negligible on acquiring vocabulary with learners who these levels were beginners and did not have a sufficient size of words to be guessed. In another study, Ballance (2020) explored the amount of vocabulary recognition via corpus composition as a key predictor of lexical recognition. The study indicated that concordances produced to different designations were not equal in terms of clarifying patterns of words' recurrence and concluded that collocations are very beneficial for learning lexical items due to their mental interconnections with the target words.

Context-based instruction has been investigated by many scholars to observe the learners' word enhancement (e.g., Çetinavcı, 2014; Khaghaninejad et al., 2021; Mulder et al., 2019) or to focus on deriving vocabulary meaning from context and its effect on lexical repertoire development (e.g., Baumann et al, 2003; Chao & Hu, 2013), or even to check the context awareness in vocabulary immersion system to boost learners' vocabulary acquisition (e.g., Tipprasert et al, 2017). However, by reviewing the vocabulary learning in context, many English learners realized that it was a challenge to guess and extract the known words meaning from the indigenous contextual input and information (Mulder et al., 2019). Zwier and Boers (2023) affirmed this by stating "inferring word meanings from context requires comprehension of the surrounding lexical clues" (p. 50).

Morphemic analysis and vocabulary instruction

The morphemic analysis plays a crucial role in vocabulary acquisition (Cross et al., 2020). The ability to identify meaningful parts of a word enables the learners to communicate successfully in the target language. Most studies that are conducted to investigate the morphemic analysis strategy detected the essential role that morphemic awareness plays in establishing new words (e.g., Azad & Ahmadian, 2021; Cross et al., 2020; Ramirez, 2020). Morphological analysis instruction which is a strategy that enables EFL learners to acquire new words by analyzing the words' components to infer and understand inclusive word meanings can facilitate vocabulary learning for EFL learners (Brandes & McMaster, 2017). Jarad (2015) searched for the effects of morphemic analysis in increasing learners' vocabulary size and comprehension. The results indicated that the morphemic analysis strategy enhanced learners' vocabulary and comprehension. The impact of morphological instruction on lexicon acquisition was also studied by Bowers and Kirby (2010). The study was designed to address the recognition of the taught and untaught lexical items and the motivation to utilize them

in practice. The outcomes revealed that teaching aspects of morphological families developed the recognition of even untaught words for learners; rising precise morphological knowledge might encourage and support the growth of lexical features and representations, particularly for words, but for the families of structurally and meaningful related words. Kaveh and Rassaei (2019) investigated the function of morphological awareness in vocabulary acquisition in English as a second language. The study aimed to further examine the relationship between multi-dimensional morphological realization and lexicon knowledge in EFL classes. Their results demonstrated the essential role of derivational awareness in developing and boosting the learners' vocabulary depth and breadth. Additionally, the morphological awareness presented as a basis for learners to broaden their lexical items, however, in terms of compound words no significant effect was observed. Brande and Mcmaster (2017) reviewed the literature on instruction in morphological analysis strategy for English language learners to specify the results of morphology effects in vocabulary acquisition. They documented that this type of instruction had an advantage in that it outfitted the learners with two options to enhance vocabulary knowledge which bringing attention to the text. Furthermore, they found that the context analysis alone generated uneven outcomes especially for readers with none or little abilities in reading a text, with morphological analysis, they were likely together to enhance and develop learners' comprehension and probably more reliable path to deduce the words' meaning.

The effectiveness of morphological analysis was also investigated by Eviyuliwati et al. (2018) who researched the technique of using morphological analysis in teaching and learning vocabulary. The findings showed that the morphological analysis was an effective way of increasing the learners' vocabulary. Crosson et al. (2020) discussed the impact of morphology interferences set to boost academic lexical items learning, morphological analysis and reading comprehension. They revealed a firm relationship between the morphological awareness and the academic lexical development. In addition, the study implied a significant indirect effect on reading comprehension by employing academic language and having a substantial impact through morphological knowledge. Azad and Ahmadian (2021) compared the impact of morphological analysis and incidental learning on EFL learners' English vocabulary acquisition. By studying the morphological analysis and incidental strategies, the researchers attempted to pay attention to the essential role of utilizing two vocabulary acquisition and then make a comparison between these two strategies to note if there were differences in terms of teaching words with morphological analysis and incidental learning. The findings indicated that morphological analysis played a significant role in identifying the meanings of words and understanding unfamiliar words, and improving learners' vocabulary building. In conclusion, the study emphasized that morphological analysis might be more effective, successful and productive in vocabulary acquisition than incidental learning. These findings matched with previous studies conducted by Crosson et al. (2019) and Deacon et al. (2017).

Concept mapping and vocabulary instruction

Many researchers have tested the effectiveness of concept maps to record the progress in gaining new words and developing student's use of vocabulary. As an example,

Khaghaninejad and Arefinejad (2015) investigated the impact of using concept mapping on the learners' reading comprehension and indicated that applying the concept mapping successfully affected the learners' capability to read the texts and comprehend their meanings. Nurfitri, and Sunubi (2018) also examined the influence of concept mapping and vocabulary development on Iranian EFL English learners and revealed that concept mapping affected learners' vocabulary development and hence improved their lexical items. Another study by Wang and Chen (2018) investigated the effect of multimodal learning analytics with concept mapping approaches in improving learners' vocabulary and reading ability. The study confirmed the benefits of concept maps in terms of vocabulary and reading learning. Rezvani and Sadrosadat (2020) also examined the effect of concept maps strategy on meaningful learning, focusing on the retention theory of collocations. This study aimed to highlight the potential impact of concept mapping strategy on learners' enhancement and development in vocabulary relating to collocation knowledge. The study tried to answer the question whether the concept maps strategy had significant influence in enhancing the learners' awareness and knowledge in English collocations. The findings indicated that mapping could be a useful instructional approach for improving collocation learning ability. In this sense, it was an essential strategy that offered huge support to acquire new lexical items through realizing the vocabulary and developing word connections and links for learners according to their prior knowledge. In a quasi-experimental study, Yeganehpour and Zarfsaz (2021) sought to determine how the concept mapping affected EFL learners' vocabulary acquisition and retention. The findings showed a statistical significance in using concept mapping strategy for lexical development. The study also assured an ease and acceleration in vocabulary enhancement when the concept-mapping is utilized in vocabulary teaching process.

Although most of the above literature paved the way to realize the position of contexts, morphology and concept-maps three strategies in developing learners' vocabulary, inconsistent findings and the lack of an empirical comparison of these strategies in the EFL context. This issue is addressed in the current study by considering the use of these three associative vocabulary teaching strategies in observing the learners' improvement of vocabulary acquisition and comparing them with the traditional vocabulary instruction in the Iraqi EFL context.

METHOD

Participants

In order to check the efficiency of the associative vocabulary teaching strategies in comparison with the traditional strategies, 120 male and female Iraqi intermediate EFL learners were selected via convenience sampling procedure as the initial participants of the study. They were intermediate EFL learners of two private language learning institutes in Al-Muthanaah in the south of Iraq. They had studied English as a foreign language for more than 6 years, and their ages ranged from 14 to18 years old while their first language was Arabic. After employing the Macmillan Placement Test and gaining certitude about their English proficiency level, 80 participants were recruited for the study. They were divided into four groups of 20 as the experimental and control

participants. Moreover, their consent was sought before the study's commencement. The 80 selected learners (42 males and 38 females) were randomly assigned to three experimental groups of context-based, morphemic analysis and concept map instructions and one control group of traditional vocabulary instruction. Throughout the semester, 12 sessions were held each lasted 60 minutes of practicing one of the four vocabulary instruction types.

Instruments and materials

Macmillan Placement Test (MPT)

The purpose of employing this test was to obtain a homogenous sample of learners. This test was conducted in the first session and the intermediate learners recruited depending on their level of English language proficiency. The test contains 70 multiple-choice test items of grammar, vocabulary and reading comprehension and is usually used to measure the learners' English proficiency level from beginner to advanced levels. The acceptable reliability (92%) of the test which is a universally-accepted and employed English placement test, is reported by Macmillan straight forward (2022). Moreover, the validity of the test was approved by a group of experts in TEFL at Shiraz University. Considering the test's rubric, 103 learners were in the range of intermediate level from whom 80 learners were chosen randomly to be the final participants of the study.

The Vocabulary Test

One hundred words were selected from *English Vocabulary in Use* (Redman, 2017) which is designed to develop the lexical competence of intermediate EFL learners. The purpose of using this book was to ensure that the learners would be exposed to the most important vocabulary for their level (Redman, 2017). The lexical items were chosen based on their utility in daily situations. A multiple-choice vocabulary test was designed and piloted based on the target words. After revising some items, the finalized test (containing 80 items) was administered in 40 minutes. The process of word selection and test construction was supervised by a couple of experts in TEFL. The advantage of using a multiple-choice format is that scoring the responses is comparatively easy and practical compared with other formats (Little and Bjork, 2012). Before the test's administration, its reliability was attested satisfactorily (%93) and checked meticulously by a couple of experts for its face validity. The finalized test was conducted once as the pre and once as the post-test.
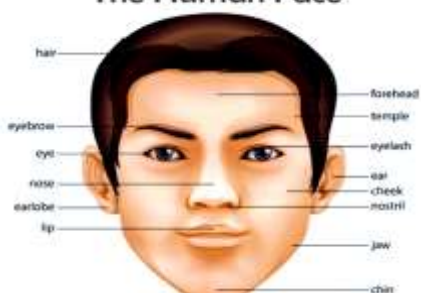
Associative vocabulary instruction techniques

Context-based vocabulary instruction_ Dialogue was the main device for introducing vocabulary items in this practice. Dialogues were designed to create contexts and encourage conversations via the target words (Schmitt & Schmitt, 2011). Sentence completion task was another task for this instruction type. Participants were supposed to use the words that occurred in a text. Learners can grasp a word from a certain context and then know how to utilize it in a given question. However, the privilege of using sentence completion lies in that learners will enjoy these vocabulary-focused learning activities as they have a good degree of success and will gradually see better progress.

Using pictures to present vocabularies, is also considered as one of the best types of acquiring, categorizing and generalizing the target words (Carolina, 2019). Pictorial context highly brings vocabulary to be vivid and comprehensible and provides visual aids which help learners remember the words. After presenting the target words pictorially, some exercises were practiced in class. Moreover, guessing the words' meaning from the context was also performed by the experimental participants (Nation, 2001).

Table 1
Examples of context-based vocabulary instruction

Reading and sentence completion	In the UK, many people keep pets. The most common are dogs and cats, but people also keep birds, e.g. parrots, that are usually in a cage. Children sometimes keep mice and rabbits. Some people keep more unusual animals as pets, e.g. frogs, snakes and spiders. Now Complete the sentence: *1- Cats and Dogs are the most common .... in the UK.* *2- I don't like keeping birds in a .... ; they need more space.* *3- ....sometimes can change their skin several times a year.*
Using pictures to present vocabulary	The Human Face
Guessing the words' meanings from the context	The rock singer was very popular. A *crowd* was waiting at the park to listen to her songs. The word "*Crowd*" means": *a. people* *b. rock singer*

Morphemic analysis vocabulary instruction_ In this instruction technique, learners were taught how to change the meaning of a word by adding different prefixes/suffixes to derive the opposite meanings. Different types of affixes (prefixes, infixes and suffixes) were introduced to the experimental participants by ample exemplifications. Moreover, through this activity the functional differences between the "free" and the "bound" morphemes were clarified and practiced via multiple-choice test items.

Table 2
Examples of morphemic analysis vocabulary instruction

Prefixes: Change the meaning	Make the following words' opposites by adding un-, dis- and im-. ..... happy, ... honest, ... possible
Suffixes: Forming nouns, adjectives and adverbs	Form nouns by adding the suffixes –ion and –ment to verbs *Invent_ Invention Discuss...............* *Improve_ Improvement Develop..................* Forming adjectives by adding –al , -able, -ful and –less to nouns. *Care_ Careful Help............* *Politics_ Political Music.........*

Concept map vocabulary instruction_ Using words integrated with other associated items and instructing them together is an effective strategy for learning and acquiring vocabulary. The benefits of applying the networks appear clearly in organizing the words and making the meaning understood by associating one single vocabulary with other words (Meara, 2009). The participants of this study were exposed to various maps, trees and diagrams for the target words and were taught the target words schematically. The acquisition of the target words was checked via matching and inclusion/exclusion exercises.
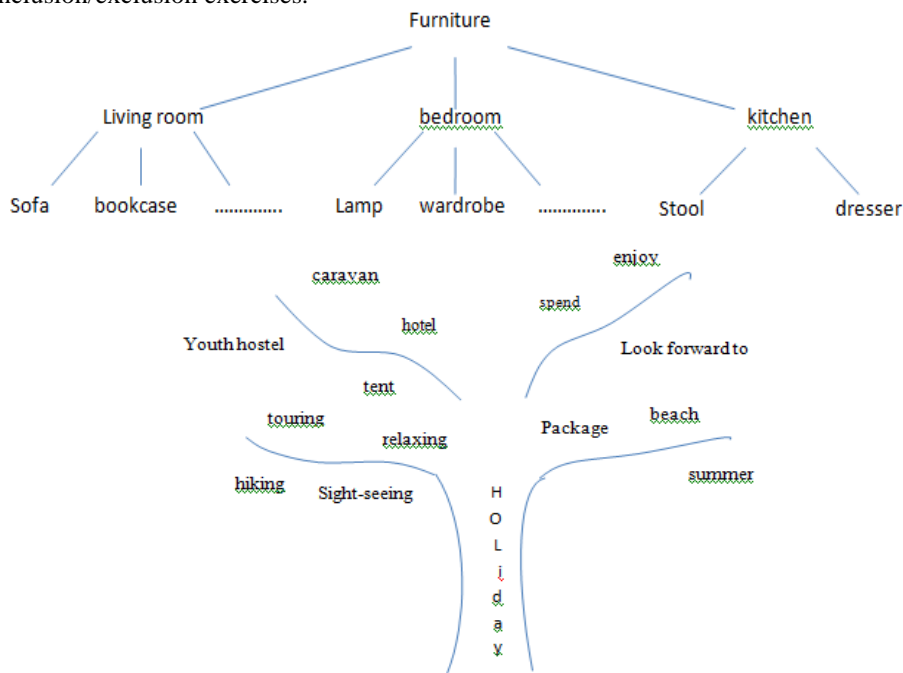

Figure 1
Examples of word-tree and concept maps used for concept-map vocabulary instruction

Traditional vocabulary instruction_ In this vocabulary instruction techniques, word lists, bilingual dictionaries, flashcards, L1 provision of the target words and memorization were employed. One reason which makes word lists essential in teaching vocabulary is that they give learners the ability to narrow and manage the focus in terms of what is necessary to learn (Greene & Coxhead, 2015). Using dictionaries to improve learners' vocabulary is an important strategy that could help learners develop their lexical awareness by themselves. Thus, learners need to focus on the definition of a word and understand its conceptual functions to use it correctly (Ezeh et al., 2022). Another traditional vocabulary instruction technique was presenting L1 equivalents for the target words and their memorization. Foreign language vocabulary acquisition seems to be a growing and increasing awareness which assures that the first language could facilitate vocabulary gaining for English language learners. Researchers have found evidence to support the confirmed and positive effects of utilizing the L1 as an effective instructional tool, especially at the beginning stages of learning English vocabulary. Flashcards were also employed for this instruction type. Flashcards remain a good way to generate, practice, recycle and develop vocabulary, and they function for learners learning the words on their own or in small groups. Importantly, flashcards are plain and easy for learners to take home and work with their parents and families; this may encourage a broader engagement in language learning and vocabulary development (Supriatin & Rizkilillah, 2018). As a schematic summary, Table 3 shows different class activities in teaching English lexical items in three associative vocabulary teaching and traditional classes.

Table 3
Instructional activities for the participants of four groups

Context-based instruction		Morphemic analysis Instruction		Concept-map instruction		Traditional instruction	
activity	duration	Activity	Duration	activity	duration	activity	duration
Dialogue practicing	15 mins	Prefixes: Changing meaning	15 mins	Networking	15 mins	Word lists and flash cards	15 mins
Reading and sentence completion	15 mins	Suffixes: Forming nouns	15 mins	Word trees	15 mins	Dictionary use	15 mins
Using pictures to present the vocabulary	15 mins	Suffixes: Forming adjectives	15 mins	Tree diagrams	15 mins	Presenting L1 equivalents and Memorization	15 mins
Guessing word meanings from context	15 mins	Suffixes: Forming adverbs	15 mins	Word maps	15 mins	Word definitions	15 mins

Data collection and analysis procedure

After conducting the Macmillan Placement Test to homogenize the participants in terms of English proficiency level, the participants were divided into four classes and experienced different vocabulary teaching strategies for twelve sessions. Although the

participants were at the same level of English proficiency based on their schools' criteria and their performance on the placement test, the constructed vocabulary test was conducted before the study's treatment as the pre-test. As anticipated, the participants of the four groups performed more or less similarly on the vocabulary test and no significant differences were observed. Then, the instruction phase initiated and lasted for 12 sessions. After the termination of the instruction phase, the vocabulary test was conducted as the post-test for the participants of four groups to see whether there was a statistically meaningful difference in the participants' performance who experienced associative vocabulary teaching and those who underwent the traditional approach. Moreover, comparing the performances of the experimental participants on the vocabulary test made it possible to comment on the efficacy of each of these three different associative vocabulary instruction techniques for EFL learners. It is worth mentioning that the vocabulary test consisted of 80 multiple-choice items with 40 minutes time to complete. The items were incomplete sentences of a dialogue that needed to be completed by the taught words during the instruction phase. For each item 4 options were provided. All the test construction necessities were observed consulting with Piramanayagam et al. (2024) and Gutiérrez-Santiuste, et al. (2023). The test is piloted once and undergone some revisions to become finalized. The performance of each participant was measured based on the number of correct responses to the test items. The following table depicts two of the test items.

Table 4
Examples of vocabulary test items

Ahmed: We went to Zagros mountains last week. Kareem: Great: Did you have a good ……?			
A pleasure	B climb	C happiness	D enjoyment
Buyer: What kind of a shirt do you prefer? Customer: well, I prefer a shirt with the … rolled up.			
A sleeves	B clothes	C colour	D size

The obtained data were fed into SPSS (Statistical Package for Social Sciences) version 25 and were analyzed both descriptively and inferentially (a MANOVA, an ANOVA and an independent-samples t-test) to see if the observed differences were statistically significant or not. Moreover, the effect sizes of the mean differences were calculated.

FINDINGS

Before the instruction phase of the study, in order to gain certitude about the homogeneity of the participants, the constructed vocabulary test was conducted as a pre-test. As Table 5 suggests, no significant difference was observed among the experimental and control participants before the study's commencement.

Table 5
Mean comparison for the experimental and the control participants on the vocabulary pre-test

	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal Variances assumed	.780	1.56	0.32	78	.938	9.167	1.963
Equal Variances not assumed	.678		0.67	35.60	.938	9.167	0.822

After gathering the data from the participants of the study in four different groups, the performance of the participants was compared on the vocabulary post-test. Table 6 presents the descriptive statistics of the control and the experimental participants.

Table 6
Descriptive statistics of the experimental and control groups of vocabulary test

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Scores	Experimental group	60	47.466	11.734	1.514
	Control group	20	35.350	10.648	2.381

As Table 6 depicts the mean scores of the control and the experimental participants were different on the vocabulary test. In order to check if this difference was statistically significant, an independent-sample t-test was run. As Table 7 shows, there was a significant difference between the experimental and control participants on the final vocabulary test. The calculated effect size also certified a significant, practical difference (Eta-squared = 0.83) between the participants' performance. In the way that the experimental participants who had experienced associative vocabulary teaching strategies outperformed their peers in the control group remarkably.

Table 7
Mean comparison for the experimental and the control participants on the vocabulary post-test

	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal Variances assumed	.326	.570	4.089	78	.000	22.116	2.963
Equal Variances not assumed	.342		4.294	35.60	.000	22.116	2.822

In order to check if the difference on the vocabulary post-test was the function of the employed vocabulary instruction strategies, a one-way MANOVA was run. As Table 8 depicts, the instruction type had significantly affected the post-test performance of the participants (Wilk's Lambda Sig. = .000).

Table 8
MANOVA comparison of the participants' performance on the post-test

Effect		Value	F	Hypo- df	Er- df	Sig.
Intercept	Pillai's Trace	.982	234.98	4.000	10.00	.000
	Wilk's Lambda	.027	234.98	4.000	10.00	.000
	Hotelling's Trace	.985	234.98	4.000	10.00	.000
	Roy's Largest Root	.016	234.98	4.000	10.00	.000
Strategies	Pillai's Trace	.017	.673	4.000	10.00	.000
	Wilk's Lambda	.984	.673	4.000	10.00	.000
	Hotelling's Trace	.013	.673	4.000	10.00	.000
	Roy's Largest Root	.018	.673	4.000	10.00	.000

In order to detect where exactly the differences existed, a one-way ANOVA with Post-Hoc Tests was run to know if there were any significant differences among the experimental participants as the acquisition of target words was concerned. Table 9 presents the descriptive statistics.

Table 9
Descriptive statistics for the three associative vocabulary groups

					95% Confidence Interval		Minimum	Maximum
Groups	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound		
Context-based instruction	20	46.60	10.565	2.362	41.658	51.544	25.00	70.00
Morphemic analysis	20	48.20	7.904	1.767	44.500	51.899	31.00	62.00
Concept map	20	54.40	8.242	1.843	50.542	58.257	42.00	73.00
Total	60	49.73	9.457	1.221	47.290	52.176	25.00	73.00

Table 9 illustrates the descriptive statistics of the vocabulary test scores for the four groups. However, this result reveals that there was a huge difference in means between the three associative vocabulary groups in general and between the first group (context-based instruction M=46) and the third group (concept mapping M=54) in particular. Table 10 depicts the Levene's Test for the homogeneity of the four groups and certifies that the assumption of homogeneity of the variances was not violated. Table 11 depicts the multiple comparisons for the efficacy of three associative vocabulary teaching techniques. In order to explore how meaningful the differences were, the effect size of the differences were also measured (Table 12).

Table 10
Test of Homogeneity for the three groups

Levene Statistic	df1	df2	Sig.
.887	2	57	.418

Table 11
ANOVA comparisons for the three associative vocabulary instruction groups

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Context-based instruction	Morphemic analysis	-1.600-	2.840	.840	-8.433-	5.233
	Concept map	-7.800-*	2.840	.022	14.633-	-.967-
Morphemic analysis	Context-based instruction	1.600	2.840	.840	-5.233-	8.434
	Concept map	-6.200-	2.840	.083	13.033-	.633
Concept map	Context-based instruction	7.800*	2.840	.022	.967	14.633
	Morphemic analysis	6.200	2.840	.083	-.633-	13.033

Table 12
The effect sizes for the differences among associative vocabulary instruction groups

		Point Estimate	95% Confidence Interval	
			Lower	Upper
Associative vocabulary instruction	Eta-squared	.914	.896	.926
	Epsilon-squared	.913	.895	.925
	Omega-squared Fixed-effect	.913	.895	.925
	Omega-squared Random-effect	.840	.810	.861

As Table 11 demonstrates, the *p*-value for the context-based instruction group was 0.8 compared with the morphemic analysis instruction group (indicating no significant difference) while the *p*-value of the concept map instruction was 0.02 compared with the context-based instruction group which detects a significant difference between these two experimental participants. In effect, concept maps were found to be the most efficient associative strategy compared with the context-based instruction and morphemic analysis groups. The other important result was related to context-based instruction as the least effective strategy near traditional instruction. Figure 2 schematically demonstrates the different performance of the experimental participants on the vocabulary test.
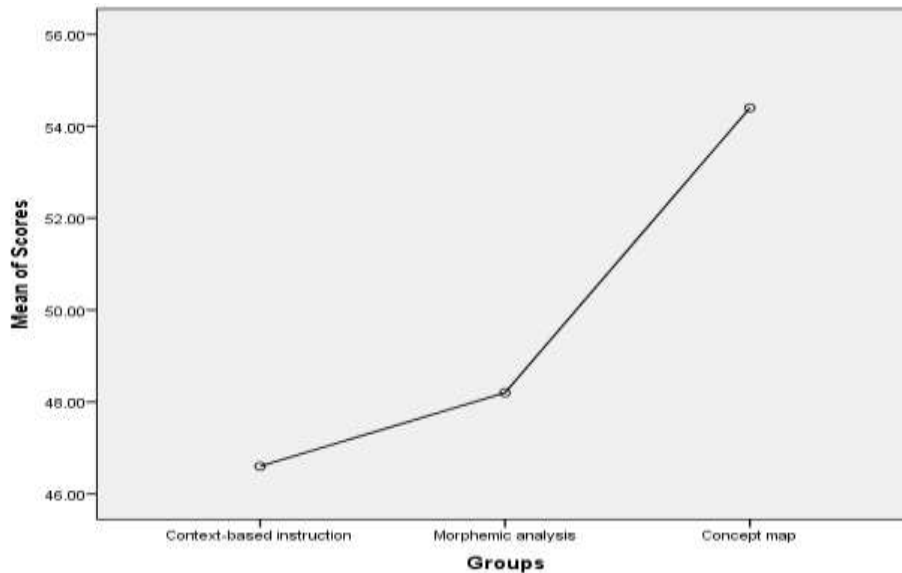
Figure 2
The performance of the experimental participants on the vocabulary test

As the results showed, associative vocabulary teaching performed remarkably better than the traditional vocabulary teaching. That clearly appeared in the learners' performance, where the experimental group (context-based instruction, morphemic analysis, and concept map) gained higher mean scores than the control group. Although the effect size of the difference between the two groups was moderate, the experimental learners performed better in the vocabulary test in terms of improving their words after applying the associative vocabulary teaching strategies. Moreover, concept mapping was found to be the most effective associate strategy for EFL learners. In fact, concept mapping urged the learners to manage and organize their vocabularies and use them in an appropriate way in terms of their relationship with other words compared with the other strategies.

DISCUSSION

The present study aimed to investigate the efficiency of three associative vocabulary teaching strategies compared with traditional vocabulary instruction for intermediate EFL learners. Moreover, it attempted to see which one of these strategies can be more successful for the learners' vocabulary development. The findings revealed that all the three associative vocabulary teaching strategies were more efficient than the traditional strategies to the varying degrees. In associative vocabulary teaching and learning, the emphasis is on the connections between the new information that learners gain and the pre-existed knowledge. According to Ausuble (1977), meaningful learning is "a promising strategy in a formal teaching situation, which consists of non-arbitrary and non-literal interaction of new knowledge with relevant prior knowledge" (Agra et al.

2019, p. 249). The common factor between the meaningful learning theory and associative vocabulary learning is the interconnections of the learners' lexical items in their lexicon, meaning that learners' knowledge is influenced by the quantity, clarity and organization of their past knowledge which are considered substantial elements for knowledge development (Agra et al., 2019).

The findings also supported what Luo and Chen (2021, p. 67) claimed "learners preferred to study English vocabulary in contexts rather than to memorize and have words by English definitions". Accordingly, the advantage of employing contexts is intrinsically laid in promoting learners' interest to raise a flexible adaptability to recognize words and their textual functions. The findings also attested what Tripprasert et al. (2017) documented about the effect of designing contexts to support English lexical items learning by using contexts. Their findings showed that the learners' vocabulary development was enhanced by the learners' context awareness. The results also indicated that the learners' comprehension was increased when changing their position to be a teacher to teach someone the lexical items. Concept mapping is a technique to motivate meaningful learning by explaining that "concepts should be hierarchically arranged with more general concepts placed higher on the map and linked to more specific ones which are placed lower" (Schroeder et al., 2018, p. 56). However, the findings were in contrast with Mulder et al. (2019) who claimed that contexts are only useful when all the comprising words are familiar for the learners.

Morphemic awareness, in the same vein, was revealed to be an effective vocabulary teaching and learning strategy for intermediate EFL Iraqi learners. The findings were in line with what Brande and McMaster (2017, p. 780) found, "morphemic strategy in vocabulary instruction might be a promising word strategy to improve the EFL learners' vocabulary development and knowledge". Additionally, Crosson et al. (2019) and Deacon et al. (2017) found that the morphemic analysis strategy played an important role in determining and identifying the meanings of newly-taught words, comprehending the unfamiliar words and creating meaningful semantic networks. In the same vein, Davidson and O'Connor (2019) documented that "morphological analysis strategies help EFL learners to combine the meanings or morphemes to derive the novel words meanings" (p. 2). The findings also certified what Tomaschek et al. (2021) reported about the effects of morphology and context on a foreign language lexical development. They revealed that the difference in durations of final "*s*" as a function of morphology could be estimated by the support of these features from words' sub-lexical as well as contextual/morphological properties.

Furthermore, concept maps were found to be more efficient than context-based and morphemic analysis techniques for EFL learners' lexical development. In other words, vocabulary knowledge is enhanced in a prominent way during the sessions of applying the related concept maps for the target lexical items (Thornbury, 2002). In effect, a concept map was found to be a useful strategy to produce and generate new semantic networks, new ideas, organize complex structures, accelerate the communication performance and process, and provide an effective learning atmosphere and environment by integrating old and new lexical schemata (Luo and Chen, 2021). Compared with context-based and morphemic analysis strategies, concept maps helped

maximally the EFL learners organize and manage new information and enabled them to create meaningful connections in linking the essential ideas with more information from the concept maps. Moreover, the study's findings were consistent with what Kaveh and Rassaei (2019) reported about the impact of using the concept mapping on Iranian EFL learners' vocabulary learning. They attested the function of the concept mapping in helping the EFL learners' retention of new lexical items as well as their level of vocabulary awareness and acquisition techniques. However, the findings challenged what Machado and Carvalho, (2020, p. 38) claimed "some findings also indicate challenges integrating concept mapping in academic practices such as learners having difficulties in concept and link selection, student resistance, and software difficulties".

Overall, considering the fact that EFL learners would acquire the target lexical items in relation to other semantically-related items under the influence of associative vocabulary teaching strategies unlike the traditional strategies, they can retrieve the target words more efficiently in all language-related comprehension and production tasks and consequently the rate and the quantity of the learnt items in addition to their functional awareness would increase. As Liu (2016) claimed, "students' divergent thinking ability can be improved through association ability" (p. 226). Thus, learners could capture the items features precisely and grant complete function to their imagination and associative with pertinent origins or images and deep thoughts might be shaped in learners' mind which is advantageous to enhance their vocabulary ability.

CONCLUSION

The findings empirically documented the positive effects of three associative vocabulary teaching techniques compared to the traditional vocabulary instruction. The concept maps had been found to have a superior effect on the learners' lexical items than the morphemic analysis while the context-based instruction had approximately an equal impact with traditional instruction and was the least efficient among the three associative vocabulary teaching strategies.

More than its consistency with the *meaningful learning* principles, the notion of associative vocabulary learning has merits in terms of developing semantic associations which are considered to be an aspect of lexical proficiency; semantic associations are essential components of lexical competence which lies basically in the knowledge of the relationships between one word and others. This also aligns with the *vocabulary theory* which claims that experiencing lexical growth makes it easier to learn new lexical items. Associative vocabulary teaching is also an effective approach for early language development and for gaining words by pairing an idea with a word. Associative vocabulary teaching and learning is an important means for motivating learners' and raising their curiosity and interest in knowing more about the lexical items.

The dominance of traditional vocabulary instruction techniques and strategies particularly in EFL contexts, and the fact that many of the earlier research only paid attention to one of the three associative vocabulary education methods led to the necessity to look into associative vocabulary teaching and learning as a practically fruitful alternative which brings about meaningful learning in comparison with the common strategies of vocabulary instruction. Associative vocabulary instruction led to

enlarging the vocabulary network and then promoting semantic association processing among the EFL learners in acquiring new words. The findings can provide insight for teachers and material developers to prepare the vocabulary teaching materials considering the semantic associations and interconnections of target items by providing the suitable contexts, morphemic clarifications and maps for EFL learners. This can be achieved by pre-task activities to activate the related schemata via concept maps. Concept maps, as the most efficient associative technique, would provide a conceptual framework to assist readers in establishing links between their prior knowledge and new vocabulary words, which is essential to reading development at all levels. Moreover, for contextualizing the target words, providing contextual clues such as synonyms, antonyms and examples, summarizing, introducing words in texts and performing guessing games for their meanings can be accommodated in the class activities. Morphological awareness can also be raised by sorting the words by their morphology, word-building tasks and even rhythms and chants.

Further research would be suggested to illuminate the efficiency of associative vocabulary teaching for other language proficiency levels in either foreign or second language learning contexts. Moreover, the possible effects of associative teaching and learning can be investigated for language comprehension (reading and listening) and language production (writing and speaking) skills.

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