**Deanship of Scientific Research**

# Effect of Explicit Teaching of Vocabulary Strategies on EFL Learners' Recall and Recognition of Academic Words

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**Abstract**

**Objectives**: This study aimed at investigating the effect of the explicit teaching of vocabulary strategies on 202 EFL learners' improvement of receptive vocabulary knowledge in terms of meaning recall and recognition of academic words.

**Methods**: This mixed-methods study consisted of two phases: quantitative and qualitative. In the first phase which was a quasi-experimental design with two groups (experimental and control), all students responded to an adapted vocabulary test that has multiple choice and multiple matching questions. Through focus group interviews with some participants in the experimental group, qualitative data on students' perceptions of the effectiveness of explicit teaching of vocabulary strategies were collected. While the quantitative data were analysed using descriptive statistics and Analysis of Covariance (ANCOVA), the interviews were transcribed and analysed thematically.

**Results**: The results of the study revealed that the explicit method of teaching vocabulary strategies was effective in improving students' vocabulary knowledge in terms of both meaning recall and recognition of academic words.

**Conclusions**: Thus, the explicit method of teaching vocabulary strategies can be recommended for EFL learners in academic reading courses.

**Keywords**: EFL, explicit instruction, meaning recall, meaning recognition, vocabulary strategies.

## تأثير التدريس المباشر لاستراتيجيات تدريس المفردات في استدعاء المتعلمين للغة الإنجليزية كلغة أجنبية للكلمات الأكاديمية وتعرُّفها

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**ملخّص**

**الأهداف**: هدفت هذه الدراسة إلى اختبار تأثير التدريس المباشر لاستراتيجيات تدريس المفردات في استدعاء المتعلمين للكلمات الأكاديمية وتعرُّفها.

**المنهجية**: وتكونت عينة الدراسة من(202) متعلمًا يدرسون اللغة الإنجليزية كلغة أجنبية. واتخذت هذه الدراسة المختلطة مرحلتين في منهجية البحث: الكمي والنوعي. أما المرحلة الأولى فقد اشتملت على تصميم شبه تجريبي لمجموعتين (تجريبية وضابطة). وتكونت أداة الدراسة من اختبار مفردات الذي جرى تطويره وتطبيقه على عينة الدراسة واشتمل هذا الاختبار على أسئلة موضوعية. أما عن البيانات النوعية حول تصور الطلبة لفعالية التدريس المباشر لاستراتيجيات تدريس المفردات، فقد جرى إجراء المقابلات الجماعية البؤرية مع بعض المشاركين في المجموعة التجريبية. بينما جرى تحليل البيانات الكمية باستخدام الإحصاء الوصفي وتحليل التباين المشترك، فقد جرى نسخ المقابلات وتحليلها من حيث الأفكار.

**النتائج**: وقد أظهرت نتائج الدراسة فعالية التدريس المباشر لاستراتيجيات تدريس المفردات في تحسين معرفة الطلاب بالمفردات اللغوية من حيث استدعاء المعنى وتعرُّف الكلمات الأكاديمية.

**التوصيات**: وأوصت الدراسة باستخدام الطريقة المباشرة لاستراتيجيات تدريس المفردات لمتعلمي اللغة الإنجليزية كلغة أجنبية في مساقات القراءة الأكاديمية.

**الكلمات الدالة**: اللغة الإنجليزية كلغة أجنبية، التدريس المباشر، استدعاء المعنى، تعرُّف المعنى، استراتيجيات تدريس المفردات.

### 1. Introduction

Vocabulary knowledge is important in Second Language (L2) teaching and learning (Teng & Zhang, 2021). Yet, learning new words is considered to be one of the major challenges that face L2 learners (Alamri & Rogers, 2018). In the teaching of vocabulary, two popular approaches have emerged. These two approaches are: implicit and explicit. Implicit and explicit approaches of teaching vocabulary have been widely used in L2 contexts. Implicit teaching refers to the unconscious way of acquiring information (Ziori & Dienes, 2012). According to Reber (1993), this approach of teaching can enable learners to acquire knowledge indirectly because this approach views learning as an automatic process. On the other hand, explicit teaching refers to intentional learning conditions (Ellis, 1994).

Debates continue concerning the ideal instructional methods of teaching vocabulary. This is obvious in the discussion of implicit and explicit methods of teaching vocabulary. Implicit (indirect) and explicit (direct) methods of teaching vocabulary are two instructional methods that are used in various L2 learning contexts (Kaivanpanah, Akbarian, & Salimi, 2021). Implicit learning refers to the automatic process that takes place without awareness of either the acquisition process or the outcome knowledge (Weinberger & Green, 2022). On the other hand, explicit (direct) teaching refers to a more conscious process which enables learners to acquire knowledge in a conscious way (Fukuta & Yamashita, 2021). Theoretically, indirect and direct instructional approaches complement each other. However, scholars view that explicit teaching can help learners to increase their awareness towards conscious building of words (Ellis, 2005). Teaching a particular learning strategy intentionally for the first time is important because after some time the conscious deliberate becomes much more automatic (Pressley, Forrest-Pressley, Elliott-Faust, & Miller, 1985).

In EFL contexts, researchers have given attention to the impact of implicit and explicit teaching of vocabulary strategies (e.g., Alamri & Rogers, 2018; Fainman & Tokar, 2019; Sonbul & Schmitt, 2010). The differences between the current study and these studies are in terms of the type of course and the participants. While Alamri and Rogers (2018) selected participants who were in their second semester of their preparatory year, the participants in Fainman and Tokar (2019) were students in an Aviation English Course at the Flight Academy of the National Aviation University in Ukraine. Further, 40 female students of Medicine at Umm Al-Qura University, Saudi Arabia, participated in the study of Sonbul and Schmitt (2010). Despite the significant findings of these studies on the effect of explicit teaching of vocabulary strategies in EFL contexts, this issue has not been adequately explored in academic reading courses, especially in the Jordanian EFL context. Taking this into account, the current study examined the effect of explicit teaching of vocabulary strategies on Jordanian EFL university students' recall and recognition of academic words.

### 2. Literature review

### 2.1 Relationship between form and meaning of words

One basic characteristic of vocabulary is that meaning and form do not always have a one-to-one correspondence. This means that a single lexical unit can have more than one sole meaning. For better understanding of this issue, researchers used three important terms: lexeme, lexical unit, and lexical item (Nation, 2001). In linguistics, a lexeme refers to the fundamental unit of the lexicon of a language (Cruse, 2017). A lexeme can be an individual word such as *walk* which is a single entry in any English dictionary. It can have a number of inflectional forms or grammatical variants such as *walked* and *walking*. A lexical unit is a wider term that can cover other items which may not be considered words such as the bound morpheme -er, as in *teacher* (Brown, Stoeckel, Mclean, & Stewart, 2022). A lexical unit can refer to a single word, a part of a word, or a chain of words that are used to form the basic elements of the stock of words in a language.

Synonyms and homonyms are examples of the degrees of variation between form and meaning in many languages (Carter, 2012; Sinclair, 1996). Synonyms and homonyms are two categories that show how the meaning and form of a word differ. Synonyms are words that share similar meanings with other words. For example, the words *amazing*, *astounding*, and *marvellous* are considered synonyms because they have almost similar meanings and can be used interchangeably in a sentence. However, homonyms refer to words that have the same spelling and pronunciation, but they have different meanings. An example of this is the word *bear* which can refer to an animal (noun) and can have the meaning of carry (verb).

In some languages, the difficulty of learning lexical items can be attributed to some factors such as the lack of formal similarity among semantically-related lexical items. An example is the word *spider.* L2 learners may employ the phonological similarity with other words to wrongly connect the meaning of *spider* to the words *spy* or *spiral (Baxter et al., 2021).* This difficulty decreases in languages with more transparent formal relationships (Nation, 2001). While many lexical items have literal meanings, some have both literal and idiomatic meanings. A popular example of an idiom in English is "it is raining cats and dogs". When we look at the literal meanings of the words: "*cats*" and "*dogs*", it can be concluded that *cats* and *dogs* are coming down from the sky. But, definitely, this is not the accurate meaning of this idiom. Rather, it means that it is raining very heavily.

Idiomatic items are the most difficult ones to be learnt because they are far from frequency. Length and grammatical class have been listed to be among factors that can contribute to the difficulty of learning words (Laufer, 1998). Learners tend to acquire the more frequent words before the less frequent ones (Ambridge, Kidd, Rowland, & Theakston, 2015). Another useful distinction between form and meaning of a word is that lexical items carry content (meaning) and the form of the words carry grammatical functions. Thus, measures of vocabulary consider only content words such as *write* and *dance* (verbs) and *chair* and *house* (nouns).

### 2.2 Attrition and long term-memory

Knowledge of academic words is necessary for university students, scholars, and academics because academic words are common across various academic disciplines (Masrai & Milton, 2018). For the last decade, Coxhead (2000) academic vocabulary list has been widely used for research purposes and teaching practices. Vocabulary attrition is a natural phenomenon among all categories of learners (Mickan, McQueen, & Lemhöfer, 2020). The partial knowledge of the word would be continuously changing until the word is mastered and fixed in the memory. Yet, attrition can occur even when vocabulary is well-mastered in some cases. Although attrition starts with low-frequent words, in receptive vocabulary knowledge attrition does not occur all at once (Weltens, Grendel, & Schreuder, 1993). Rather, it occurs gradually.

For better understanding of vocabulary attrition, there is a need to understand how long-term memory works. Information is stored in the long-term memory as declarative or procedural knowledge (Light & Anderson, 1985). Declarative knowledge consists of facts and all knowledge that we know, and it is acquired through mental encoding processes. If information is successfully transferred to long-term memory, it will be remembered for a long time. When a new word is learnt, it goes through the sensory system and passes permanently to the brain's long-term storage after being properly processed in the working memory. Estimations state that 80% of information or words are lost within one day of initial learning. Generally, vocabulary knowledge is more likely to be forgotten than other rule-based linguistic aspects like grammar.

As exploiting strategies for learning vocabulary can be long-lasting (Ronald, 2009), learners should be trained on new ways such as repetition, retrieval, and pacing to avoid or reduce forgetting of words (Kang, Gollan, & Pashler, 2013). When repetition is chosen for implementation, learners can be encouraged to repeat a word for making the learned item permanently remembered. The effectiveness of repetition depends on spaced intervals, while gradually increasing the space between these repetitions. In the employment of retrieval, using a new word in a written sentence can make it easier for the leaner to recall this word in the future (Huang & Lin, 2014).

For memory to store the word, learning a word should happen in several separate occasions. Pacing which refers to the rate at which learning a word happens can be a useful technique for not forgetting words. So, better results regarding learning words may be obtained when learners are given enough time to carry out the required memory processing (Ehri, 2014). Using words in sentences is another way of ensuring that the words are properly added to long-term memory. This can be called the "Use It or Lose It" principle (Hertzog, McGuire, Horhota, & Jopp, 2010). Another way that can be used to remember words is cognitive depth (Zhang, Song, & Burston, 2011). Regarding this, it should be noted that words are better remembered when a learner has to make decisions about them (e.g., thinking about the spelling). Thus, it has been proposed that the more cognitively demanding these decisions are, the better the results will be.

Hence, when a learner of a language transfers a particular word and its meanings to the long-term memory, this word becomes a part of the active vocabulary of the learner. Regarding this, it has be pointed out that the proper rehearsal of words can be a useful strategy for increasing the level of processing of these words (Goldstein, 2005). Therefore, the present study aimed at examining how the processes of recalling and recognizing of words among EFL university students can be influenced by the implementation of explicit teaching of vocabulary strategies.

### 2.3. Studies used explicit instruction of vocabulary strategies

In explicit instruction, teachers use carefully articulated lessons in which cognitive skills are broken down into smaller units, sequenced deliberately, and taught explicitly (Carnine, Silbert, Kame'enui, & Tarver, 2004). In language teaching, attention has been given to teaching learning strategies. Wenden (1985) pointed out that learning strategies can help learners to take responsibility for their own language learning. They can also encourage learners to solve their learning problems effectively, helping learners to become autonomous language learners. Wenden and Rubin (1987) argued that the process of learner strategy instruction has two essential aspects: (1) the description of strategies that successful language learners employ and (2) training L2 students on how to apply the appropriate strategies.

Most of the studies that have been conducted in EFL contexts on the effectiveness of explicit instruction of vocabulary-teaching strategies have shown promising results. While Rasekh and Ranjbary (2003) revealed that teaching metacognitive strategies improved Iranian EFL students' vocabulary knowledge, Mizumoto and Takeuchi (2009) reported that 10 weeks of  explicit instruction of vocabulary learning strategies improved Japanese EFL students' scores in vocabulary test and increased vocabulary learning strategies among students with lower and moderate proficiency levels.

Additionally, recent studies have affirmed the effectiveness of explicit instruction of strategies for the development of vocabulary knowledge. Fainman and Tokar (2019) compared the effect of three approaches: explicit, implicit, and blended vocabulary teaching on Ukrainian EFL students' acquisition of vocabulary. Although immediate word acquisition was noticed in the explicit instruction group, the delayed test reflected that the blended instruction is the most effective approach in terms of vocabulary retention. Recently, Kaivanpanah et al. (2021) examined the effect of different vocabulary instruction methods on Iranian EFL learners' vocabulary learning and retention. Three different learning conditions were tested. The first group was taught vocabulary explicitly through vocabulary awareness-raising and pushed output activities. Learners in the second group were taught vocabulary implicitly through input flooding. In the third group, vocabulary was taught through the pushed output activity and input flooding. The study showed that learners who received explicit and modified-implicit activities outperformed those in other groups.

Nevertheless, some findings are controversial as they did not support the effect of direct teaching of vocabulary learning strategies. For example, in the Slovenian context, Jurkovic (2010) examined the effect of explicit language learning strategy instruction. Among the strategies which were taught in this interventional research, memory strategies were used to help students improve vocabulary retention and recall of words. Surprisingly, the study reported that there was no significant effect of explicit language learning strategy instruction on students' learning.

In the Arab EFL contexts, few studies have addressed the effectiveness of teaching vocabulary strategies. For example, in the Jordanian EFL context, Al-Khasawneh and Huwari (2014) examined  the effect of the metacognitive strategies on vocabulary learning through the employment of a quasi-experimental research. They reported that the metacognitive strategies proved to be effective, and the experimental group outperformed the control group in the vocabulary test. Employing quasi-experimental designs, in the Saudi EFL context, both Alamri and Rogers (2018) and Sabbah (2018) examined whether direct instruction can have effect on EFL students' vocabulary development. Sabbah (2018) investigated the effectiveness of two vocabulary learning strategies (guessing vocabulary meaning from context and getting meaning from a monolingual dictionary) on Suadi EFL students' vocabulary knowledge. The study reported that students who were asked to guess meaning from context had better achievement, compared to students in the dictionary group. In Alamri and Rogers (2018), the experimental group was taught explicitly. The results of an immediate vocabulary test revealed that the experimental group gained a higher mean score, compared to students in the control group who were taught vocabulary in

a traditional method. Further, Alamri and Rogers (2018) measured the retention of newly acquired vocabulary through a delayed test. The experimental group outperformed the control group with a higher mean.

It has been argued that previous studies on strategy instruction in the Jordanian EFL context have reported inconsistent findings (Al-Khasawneh, 2013). Further, our review of previous studies has highlighted that academic reading at undergraduate level in the Jordanian EFL context has not received proper attention from researchers, especially in terms of the effect of explicit teaching of vocabulary strategies on EFL students' abilities to recall and recognize English vocabulary. In fact, in the Arab EFL contexts, further investigations should focus on whether explicit instruction of vocabulary teaching strategies can be effective in vocabulary acquisition. Hence, the findings of the current study can have significant contributions in relation to teaching vocabulary in academic reading courses at the undergraduate level in the Jordanian EFL context.

### 3. Research Questions

Our study addressed two research questions:

1.    Does the explicit teaching of vocabulary strategies have an impact on Jordanian EFL students' abilities to recall and recognize academic words?

2.    How do Jordanian EFL students perceive the effect of the explicit instruction of vocabulary strategies on improving meaning recall and recognition of the targeted academic words?

The two research questions differ in terms of how they are addressed by the researchers. While the first research question was addressed through the analysis of the quantitative data, the second research question was answered through interviewing students about their perceptions of the effectiveness of explicit instruction of vocabulary strategies. The qualitative data are used in this study to support and explain the results obtained through the quantitative phase of the study.

### 4. Method and Materials

#### *4.1. Research design*

This mixed-methods study included two phases: quantitative (a quasi-experimental phase) and qualitative (focus group interviews). Participants of the study were assigned in non-random manner to two groups: control and experimental. Both groups underwent pre-test, post-test, and delayed-test. However, only the treatment group received the explicit instruction of vocabulary strategies.

#### *4.2. Participants*

The sample consisted of 122 EFL university students who registered for the Advanced Reading course at the Department of English and Literature, in the Hashemite University in Jordan. Ages of the students ranged between 19-21 years old and all were also homogenous in terms of their mother tongue, cultural background, and the years of studying EFL (12 years). As there were three groups in the selected course, cluster sampling was utilized to carry out random selection of two clusters. For focus group interviews, 24 participants were purposefully selected, who were divided into four groups, with six students in each. The selection of the participants took into account variations in their performance based on the data obtained from the course instructor at the end of the treatment.

#### *4.3. Instruments*

Data were collected using an adapted format of vocabulary test, which included 40-multiple-choice questions, to measure students' recall and recognition of receptive vocabulary knowledge. The content of the selected items was validated by a panel of five experts from two Jordanian public universities. The panel confirmed the appropriateness of the vocabulary test.

Qualitative data were collected through focus group interviews. According to Litosseliti (2003), 4-6 persons in a focus group is an adequate number. We used purposeful sampling to select participants in the focus group interviews. We had four focus groups with six participants in each. We used pseudonyms to ensure anonymity of the respondents and confidentiality of the data. We selected eight students were from the category of very good, eight students were from the category of good and eight students from the category of fair. Almost half of the participants were from the experimental group.

*4.4 Selection of the Target Words (Corpus analysis)*

The selection of the target words was based on the Academic Word List (AWL) by (Coxhead, 2000). The researcher executed some procedures to make the corpus and select the target words in the present study. First, the texts from the prescribed textbook, Panorama 3, were typed and saved as (.txt) files. Second, the saved resulted files were processed and analysed using RANGE program (Nation & Heatley, 2002). RANGE is a software program that is used to compare a text against the vocabulary list. This was done to check the words in the list and to calculate whether the percentage of the words in the test is covered by the list. Third, to cross check the results from RANGE, the researchers used Beta Vocabulary Profiler, which can be used for purposes similar to those of RANGE. However, RANGE has more functions. The coverage of the academic words in both software programs was the same. Fourth, all the academic words were compiled from the corpus and tabulated using vocabulary profiler, Beta Version. On Beta Version, the AWL is divided into 10 sub-lists or levels (sub-list 1= the most frequent words, sub-list 10 = the less frequent words).

The target words included *challenge, symbol, enable, vision, images, aware, decline, survive, evolve, generation, enforce, stability, ignore, migrant, federal, displayed, blur, react, survive, intelligence, discrimination, release, unique, decade, facility, globe, prohibit, isolated, phenomenon,* and *expand*. Fifth, words that belonged to levels 5, 6 and 7 were selected because they appear in the middle of the list, thus they are neither very high frequent nor very less. Sixth, the researchers selected 35 words and reduced the number during piloting to 30, as some of the students were familiar with 5 words. The final list included 30 words.

*4.4.1 Sampling the size of the target words*

It has been argued that there is no right or wrong answer regarding the number of words to be studied (Nation, 2001). However, the provision of reliable genuine results from the measured sample could be the only concrete guide. In other words, the sample size needs to be large enough to realistically model the behaviour of the total vocabulary population (Nation, 2001). A list of 30 words can be effectively handled by treating it as an unconnected list of discrete items (Nation, 2001). However, a larger number of words can lead to more subsets of words which are semantically or morphologically linked together, and these different connections must make it more difficult to have control over the words as a simple list. Thus, the researchers selected 30 words to teach after the compilation of the academic words from the corpus that made by the researcher from the prescribed textbook which is used in the Advanced Reading course.

*4.5. The intervention program*

Teaching materials, reading texts, and lesson plans were prepared for the instructor of the course. The focus was on how to help students in the course improve their meaning recall and recognition of the academic words using vocabulary strategies in 10 weeks (the duration of the treatment). Topics of the lessons relate to academic curricula in various areas. The intervention program relies on the explicit instruction of vocabulary learning strategies which are particularly important for students seeking to master both academic language and academic content simultaneously. In this approach, highly explicit instruction in applying strategies to learning tasks is gradually faded so that the students can begin to assume greater responsibility in selecting and applying their own preferred learning strategies. The strategies which were taught throughout the course included: imagery, sound, grouping or classifying, making inferences, paraphrasing, and making predictions.

*4.6. Data analysis*

Quantitative data were analysed using Statistical Package for the Social Sciences (SPSS Version 22, IBM 2016). The statistical analysis included descriptive and inferential statistics. While the descriptive statistics were used to obtain the differences in the means between the pre- and post-tests, Analysis of Covariance (ANCOVA) was used to determine whether there are any significant differences between the two independent groups (control and experimental) on a dependent variable (overall scores of students' responses to the academic words in the vocabulary test). This measured the effect of explicit teaching of vocabulary strategies on the mean score of each of the receptive vocabulary knowledge aspects (meaning recall and meaning recognition). The ANCOVA was used in the analysis because it looks for differences in adjusted means (i.e., adjusted for the covariate). Further, the ANCOVA was used because this research examined the

effect of explicit teaching on two variables: meaning recall and meaning recognition.

To code students' responses to the interview questions, coding themes were generated based on the research questions of the study and the results of the analysis of questionnaires. The analysis of the qualitative data generated three themes: (1) effect of the explicit instruction of vocabulary strategies on improving meaning recall and recognition of the receptive vocabulary knowledge, (2) remembering meaning of words, and (3) understanding meanings.

## 5. Results

### 5.1. Research question one

To find out the meaning recall, repeated measures ANCOVA was run to determine first the difference among variables with the effect of other covariate variables. The final model of meaning recall is shown below in Table 1, which shows the means of groups based on pre-, post-, and delayed tests. Higher means were observed in the experimental group in all sessions. To determine the differences in meaning recall, the groups are the only significant factor, as shown in Table 2.

**Table 1: Means of meaning recall with sessions of study**

| Sessions | Group | Mean | SD |
|---|---|---|---|
| Pre | Experiment | 3.42 | 1.963 |
| | Control | 2.95 | 2.127 |
| Post | Experiment | 8.56 | 2.207 |
| | Control | 6.37 | 2.083 |
| Delayed | Experiment | 7.89 | 2.081 |
| | Control | 5.47 | 2.375 |

**Table 2: Impact of groups on differences in meaning recall among sessions**

| Source | Df | Mean Square | F | *p* value* | Partial Eta squared |
|---|---|---|---|---|---|
| Meaning recall | 1.539 | 7.951 | 1.587 | .211 | .013 |
| Meaning recall * Group | **1.539** | **45.679** | **9.119** | **.001** | **.072** |

*\*Greenhouse-Geisser*

The analysis was done again to measure the meaning recall in both the experimental and control groups. As for the new results, the effect size for the impact of time with meaning recall with sessions was significantly measured with 58.1% (partial Eta squared= 0.581), while the impact based on types of groups was 7.1% (partial Eta squared= 0.710). To measure the impact of intervention based on group for each session, parameter estimates were conducted. For the pre-session, no significant differences were observed between the experimental and control groups. For post and delayed sessions, significant results were obtained with effect size of the experimental to control groups by 21% (partial Eta squared = 0.210) and 23% (partial Eta squared= 0.230), respectively. Thus, the impact of the intervention program was significantly observed in post and delayed sessions of experimental group as shown in Table 3.

**Table 3: Parameter estimates of meaning recall**

| Sessions | Parameter | B | SE | T | *p* value | 95% CI Lower Bound | 95% CI Upper Bound | Partial Eta Squared |
|---|---|---|---|---|---|---|---|---|
| Pre | Intercept | 2.950 | .264 | 11.173 | .000 | 2.427 | 3.473 | .510 |
| | Experiment | .469 | .370 | 1.267 | .208 | -.264 | 1.203 | .013 |
| | Control | 0 | . | . | . | . | . | . |
| Post | Intercept | 6.367 | .277 | 22.969 | .000 | 5.818 | 6.915 | .815 |

| Sessions | Parameter | B | SE | T | *p* value | 95% CI Lower Bound | 95% CI Upper Bound | Partial Eta Squared |
|---|---|---|---|---|---|---|---|---|
| | Experiment | 2.198 | .389 | 5.653 | .000 | 1.428 | 2.968 | .210 |
| | Control | 0 | . | . | . | . | . | . |
| Delayed | Intercept | 5.467 | .288 | 18.982 | .000 | 4.896 | 6.037 | .750 |
| | Experiment | 2.420 | .404 | 5.991 | .000 | 1.621 | 3.220 | .230 |
| | Control | 0 | . | . | . | . | . | . |

Figure 1 depicts the improvement in participants' meaning recall, starting from similarity in scores of experiment and control at pre session and reaching higher mean of experiment after intervention had done. Improvement in the control group at post and delayed sessions is not highly significant.
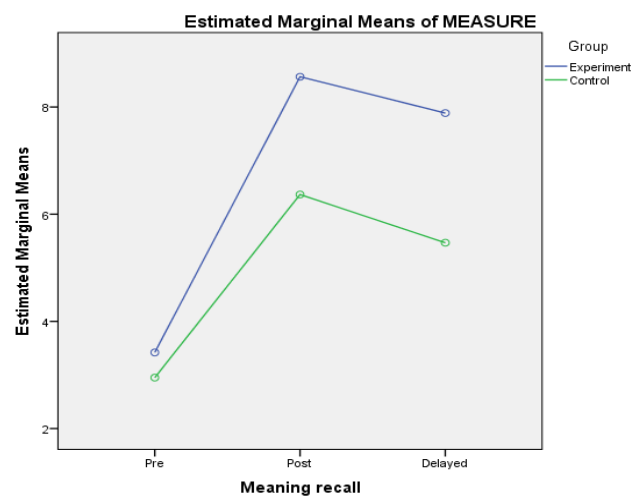


**Figure 1: Improvement in score of meaning recall at sessions of study groups**

To find out meaning recognition, repeated measures ANCOVA was used to determine the differences among variables with the effect of other covariate variables. The final model of meaning recognition is shown in Table 4, which shows the means of groups based on sessions. Higher means can be observed with the experimental group in post and delayed sessions, while similar means were obtained in the pre-session. To determine the difference in meaning recognition, the groups are the only significant factor, as shown in Table 5.

**Table 4: Means of meaning recognition with sessions of study**

| Sessions | Group | Mean | SD |
|---|---|---|---|
| Pre | Experiment | 5.32 | 2.006 |
| | Control | 4.84 | 1.890 |
| | | | |
| Post | Experiment | 8.00 | 1.355 |
| | Control | 5.26 | 1.802 |
| | | | |
| Delayed | Experiment | 7.42 | 1.325 |
| | Control | 4.91 | 1.689 |

**Table 5: Impact of groups and other variables on differences in meaning recall among sessions**

| Source | Df | Mean Square | F | *p* value* | partial Eta squared |
|---|---|---|---|---|---|
| Meaning recognition | 1.776 | 2.958 | 1.051 | .345 | .009 |
| Meaning recognition * Group | **1.776** | **44.456** | **15.804** | **.000** | **.125** |

*\*Greenhouse-Geisser*

Therefore, reanalysis was done using the meaning recognition with their sessions of experimental and control groups. As for the new results, the effect size for the impact of time with meaning recognition with sessions was significantly measured with 20.6%, (partial Eta squared= 0.26), while the impact based on types of groups was 14% (partial Eta squared = 0.140).

To measure the impact of the intervention program based on group for each session, parameter estimates were conducted. For the pre-session, no significant differences were observed between experimental and control groups. For post and delayed sessions, significant results were obtained with effect size of the experimental to the control group by 44.1% (partial Eta squared= 0.441) and 41.3% (partial Eta squared = 0.413), respectively. Thus, the impact of the intervention program was significantly observed in post and delayed sessions of experimental group, as shown in Table 6.

**Table 6: Parameter estimates of meaning recognition**

| Sessions | Parameter | B | SE | T | *p* value | 95% CI Lower Bound | 95% CI Upper Bound | Partial Eta Squared |
|---|---|---|---|---|---|---|---|---|
| Pre | Intercept | 4.800 | .251 | 19.133 | .000 | 4.303 | 5.297 | .753 |
| | Experiment | .523 | .352 | 1.485 | .140 | -.174 | 1.219 | .018 |
| | Control | 0 | . | . | . | . | . | . |
| Post | Intercept | 5.183 | .206 | 25.103 | .000 | 4.775 | 5.592 | .840 |
| | Experiment | **2.817** | **.290** | **9.724** | **.000** | **2.243** | **3.390** | **.441** |
| | Control | **0** | . | . | . | . | . | . |
| Delayed | Intercept | 4.883 | .197 | 24.795 | .000 | 4.493 | 5.273 | .837 |
| | Experiment | **2.536** | **.276** | **9.179** | **.000** | **1.989** | **3.083** | **.413** |
| | Control | **0** | . | . | . | . | . | . |

Figure 2 depicts the improvement in participants' meaning recognition, from the similarity in scores of both the experimental and control groups at the pre-session, to higher means of the experimental group after the intervention program. The improvement in the control group at both the post and delayed sessions is non-significant.
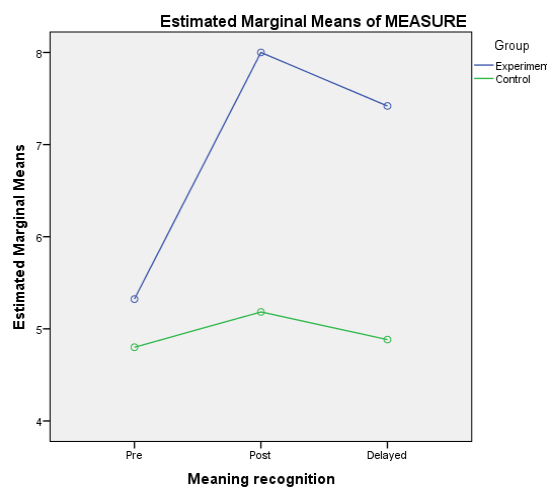


**Figure 2: Improvement in score of meaning recognition at sessions of study groups**

*5.2. Research question two*

In the focus group interviews, students revealed that the explicit instruction of vocabulary strategies helped them to improve both meaning recall and recognition. The analysis of the qualitative data generated three themes: (1) effect of the explicit instruction of vocabulary strategies on improving meaning recall and recognition, (2) remembering meaning of words and (3) understanding meanings. Excerpts 1-4 below reveal that students perceived explicit instruction of vocabulary strategies as useful for meaning recall and recognition. Further, interviewees showed that the intervention program helped them organize their vocabulary and improve it after they were taught vocabulary strategies explicitly, as reflected in the excerpts below.

**Excerpt 1 [Focus Group One]**

*Dalia:*

*Yes, I improved my vocabulary because the method of teaching helped us to read more words in the sentences not isolated.*

**Excerpt 2 [Focus Group One]**

*Dina:*

*By using these strategies, like classifying, paraphrasing through using the synonyms. By rewriting the sentences in our own words, we can find more synonyms and become familiar with many other words.*

As shown in Excerpts 3-7, the explicit teaching of the vocabulary strategies stimulated students to remember meanings of words. For example, Noura in Excerpt 3 showed that the instructor of the course taught them specific strategies that helped them to memorize easily the target words which were encountered by students in more than one lesson. Similarly, excerpts below reflect how the explicit teaching of the vocabulary strategies was useful for students to develop skills of remembering meanings of words.

**Excerpt 3 [Focus Group One]**

*Noura:*

Yes, it helped me because the instructor repeats words and vocabulary we studied in not one lesson. I mean in more than one lesson.

**Excerpt 4 [Focus Group Two]**

*Feryal:*

*I guess yes. When our teacher taught us in this way, we could improve ways of remembering words.*

**Excerpt 5 [Focus Group Three]**

*Interviewer:*

*How could teaching vocabulary strategies explicitly help you in remembering the meaning of words?*

*Sanaa:*

*The strategies helped us. Strategies like guessing meaning and imagery.*

*Interviewer:*

*How? Which strategies? Can you clarify?*

*Sanaa:*

*These strategies helped me to solve many problems. First, in remembering the words and their meanings through watching different videos about the topic. Second, I try to guess the meaning of the difficult words through the context clues in the text.*

**Excerpt 6 [Focus Group Three]**

*Aroob:*

*The strategies in this course helped me increase my vocabulary. Remembering the meaning of the new words became easier to me as I know many ways to organize my information. Watching videos is great. I am a person who prefers seeing things, I can this way remember easily.*

**Excerpt 7 [Focus Group Four]**

*Amani:*

*I believe that imagery and interference were the most helpful to me because they helped to find information and to remember the meanings of the words. Even grouping was useful.*

Further, the analysis of the interviews revealed that students employed their own strategies to resolve the problem of understanding meanings of unfamiliar words. These strategies included guessing the meaning from the context, inferencing the meanings, classifying some different words under one category, paraphrasing and using image and sound strategy. Further, the students showed that they employed these strategies in order to understand the whole text and to get meanings of unfamiliar vocabulary. In Excerpt 8, Lina pointed out that she employed guessing to understand meanings of unfamiliar words. Some interviewees found rereading as a useful strategy as it helped them to develop better understanding of what they have already read.

**Excerpt 8 [Focus Group One]**

*Interviewer:*

*Okay, I know that reading academic texts would put many challenges on you. So, when you are encountered by unfamiliar words difficult word. How would you solve or handle this problem?*

*Lina:*

I mostly try to guess the meaning of the difficult or unfamiliar word.

**Excerpt 9 [Focus Group Three]**

*Kholoud:*

*Yes, vocabulary strategies helped us to know the meaning of unfamiliar words*

**Excerpt 10 [Focus Group Four]**

*Alaa:*

*Generally, vocabulary strategies helped us to solve problems of unfamiliar words. But inference was the best strategy to me. It made me challenging myself to find the exact meaning of the word.*

**6. Discussion**

The analysis of the quantitative data revealed that the students' meaning recall and recognition of the academic words improved significantly. This was obvious because the results showed that after the explicit instruction of vocabulary strategies, the students in the experimental group outperformed the students in the control group which received instruction in the traditional way. Furthermore, the analysis of post-delayed test showed that attrition of academic vocabulary occurred in very small amounts, because students in the treatment group scored higher than their counterparts in the control group.

The improvement in students' vocabulary knowledge reported in this study is consistent with what was reported by Rasekh and Ranjbary (2003), who examined the effect of using the explicit instruction of vocabulary strategies to improve EFL students' vocabulary. The analysis of the qualitative data also revealed that the participants found that the explicit instruction of the vocabulary strategies was useful for them to improve and develop their meaning recall and recognition of the words. These findings are consistent with what has been reported by Al-Khasawneh and Huwari (2014), and Mizumoto and Takeuchi (2009), who reported that students' vocabulary can be increased through the explicit teaching of strategies. Furthermore, this finding supports those reported by Sabbah (2018), who also reported positive effects of the explicit instruction of learning strategies on the development of EFL students' vocabulary knowledge. Similarly, findings of this study supported the findings of Fainman and Tokar (2019) and Kaivanpanah et al. (2021).

It is important to note that the reported improvement of meaning recall and recognition among the sample of the current study can be attributed to the effectiveness of the explicit teaching of vocabulary strategies as a good teaching method in which academic words were selected and taught based on what is recommended in literature. In the current study, form-meaning relationship helped the participants to recognize the different aspects to be focused on while studying words. Thus, in turn, the explicit instruction helped the participants to understand the academic reading texts and to develop their meaning

recall and recognition effectively. Students in this study were taught explicitly to use vocabulary strategies whereby they could learn through incidental learning. Thus, the conscious processing continues to become unconscious processing after some time. This was proposed by Ellis (2005), who explained the dynamic interaction between both the explicit and implicit approaches of teaching.

The analysis of the focus group interviews asserted the effects of the explicit instruction of vocabulary strategies on the development of students' meaning recall and recognition. In fact, the participants perceived the explicit teaching of strategies as an effective instructional approach because it encouraged them to remember the meanings of words they studied and to increase their receptive vocabulary. Thus, the instructional declarative input which included the target words and the procedural knowledge which included vocabulary strategies could help students to remember the meanings of the words they studied. Students in the focus group interviews affirmed that the explicit instruction of vocabulary strategies was not only useful for increasing their meaning recall and recognition, but it also encouraged them to read more.

As information is first processed and stored in the short-term memory, the extended practice can move information from the short-term memory to be stored in the long-term memory. This can be applied to the explicit instruction of vocabulary strategies because EFL students learn words and vocabulary strategies that are first stored in the short-term memory. After a good extended period of practice during the reading classes, these elements are transferred to the long-term memory for leaners to use when needed. This was measured in this study using a delayed test.

Furthermore, the results of the analysis of the qualitative data revealed that students could improve their abilities in inferring meanings of words using clues given in the texts. This improvement in students' abilities to make inferences, in turn, helped them to improve their abilities in understanding words they learnt. All these were mentioned by the majority of the participants in the focus group interviews. Schmitt (2010) and Nation (2001) asserted that inferring meanings from context and other deep strategies could result in successful retention of vocabulary. The focus group interviews also revealed that students employed the strategies they were taught in order to resolve the problem of understanding meanings of unfamiliar words. These strategies include guessing meanings from the context, inferencing the meanings, classifying some different words under one category, paraphrasing, and use of image. Students in the treatment group showed that they have employed these strategies to understand the whole text and to get meanings of unfamiliar vocabulary. To elaborate, the inclusion of receptive vocabulary exercises constituted a deep processing, which could enhance the vocabulary retention (Nation, 2001).

Additionally, the results of this study showed that the explicit instruction was useful as it helped the instructor of the Advanced Reading course to train students on how to use vocabulary strategies to enhance vocabulary acquisition. This has been asserted by Zechmeister et al. (1993), who argued that vocabulary growth should involve an effective vocabulary instruction that considers learners' vocabulary size along with the type of the vocabulary to be taught.

In this study, the intervention program was completed in 16 weeks. The results of this study have confirmed that this period was enough to enable the occurrence of the incremental acquisition of vocabulary knowledge (Nagy & Scott, 2000) and constantly over time (Ronald, 2009). An immediate post-test was conducted after the treatment to determine its effect on students' retention of vocabulary knowledge. This immediate post-test was useful for measuring the effectiveness of the explicit instruction of vocabulary strategies on students' meaning recall and recognition. Since it has been pointed out that attrition occurs in any learning, a delayed post-test was useful in this study as it helped the researchers to capture the long-term learning. Only by measuring the participants learning after subsequent sessions, the effect of cumulative learning can be effectively determined. Accordingly, the treatment included three sessions: pre-test, post-test, and delayed post-test. The results of the study showed that attrition has occurred, but it was in a very small percentage.

## 7. Conclusions, practical implications and recommendations

The explicit teaching of instruction assisted students to overcome problems related to recalling and understanding meanings of academic words. Therefore, this can reflect that the students are capable of transferring these strategies to other contexts where they will be independent users of these strategies without the help from a teacher. The findings of the current

study have some good implications that can be useful for teaching academic vocabulary in the Jordanian EFL context and in other similar EFL contexts. This study emphasises the importance of the explicit teaching of the procedural knowledge of using strategies. The findings of the study have confirmed that the use of vocabulary strategies improved students' meaning recall and recognition of academic words. Strategic learners perceive themselves as more able to succeed academically than learners who do not know how to use strategies effectively. Explicit instruction of vocabulary strategies in EFL classrooms through teacher modelling and guidance would raise learners' awareness of the importance of these strategies. Thus, the goal of teaching reading should depart from teaching strategies to developing a strategic reader. Such a goal leads to long-term improvements in strategy use and a gradual transfer to independent learning context.

Hence, it is recommended that integrating the explicit instruction of vocabulary strategies with everyday English lesson could come up with independent and strategic learners. Future researchers can focus on the effect of explicit instruction of vocabulary strategies in other EFL contexts. Further, as the current trend in education is the use of online mode for teaching, future researchers can examine how explicit instruction can be useful in such environment.

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