What Works Better for Collocation Learning – Explicit Instruction or Incidental Learning? A Case Study of Arab Female Undergraduate Learners of English

Dina Abdel Salam El-Dakhs
(ddakhs@psu.edu.sa)
Prince Sultan University, Saudi Arabia

Fouzia Phyllis Amroun
(famroun@psu.edu.sa)
Prince Sultan University, Saudi Arabia

Musinah Charlot-Muhammad
(mmuhammad@psu.edu.sa)
Prince Sultan University, Saudi Arabia

Abstract

There is a strong agreement that mastering second language collocations is beneficial for language processing and acquisition (El-Dakhs, 2015b; Henriksen, 2013). The current study aims to examine what works better for L2 collocation learning; explicit instruction or incidental learning. To this end, 114 Arab elementary learners of English as a foreign language were divided into two experimental groups (i.e. explicit instruction and incidental learning) and one control group, and completed immediate and delayed post-tests that assessed the participants' receptive and productive knowledge of 24 verb + noun collocations which were introduced to the experimental groups during the four-week treatment period. The results show a clear advantage for explicit learning in form recognition and recall for short-term and long-term learning gains. Incidental learning only proved slightly beneficial in short-term form recognition. The results are interpreted in light of the existing literature and relevant theoretical models. Pedagogical implications and suggestions for further research are proposed.

1   Introduction

Formulaic sequences, or multi-word lexical units, which can be defined as frequent occurrences of language chunks, are known for their importance in vocabulary knowledge (e.g. Lewis, 1993; Nattinger & De Carrico, 1992; Pawley & Syder, 1983). Mastery of formulaic sequences (e.g. *have a good day*, *no use crying over spilt milk*, *in the same vein* & *strong tea*) is a main requirement for communicative competence, particularly for second language (L2) learners to facilitate fluent language processing and enhance the native-likeness of language production (Henriksen, 2013). A central component of these multi-word units is collocation (e.g. *firm belief* (adjective-noun), *interested in* (adjective-preposition), *sun rise* (noun-verb), etc.), "a group of words that belong together either

the meaning of the parts," (Nation, 2001, p. 317). This definition is adopted in the current study, because it combines two popular approaches to define collocations from a phraseological perspective and a frequency-based perspective, but various other definitions exist in the literature (e.g. Hoey, 1991; Lewis, 2000; Nesselhauf, 2005).

Collocations constitute a central component of L2 competence due to their high frequency of occurrence in natural language and their important role in processing language fluently under real-time conditions, increasing the native-likeness of language production, disambiguating the meaning of polysemous words and determining connotational meaning (El-Dakhs, 2015b; Henriksen, 2013). Despite this notable importance of collocations, their special difficulty for L2 learners has been recurrently noted (e.g. Howarth, 1998; Laufer & Waldman, 2011) because of their arbitrary nature, unpredictable variation across languages, and several impediments to their identification in natural language and subsequently their retention (see Boers, Lindstromberg, & Eyckmans, 2014; El-Dakhs, 2015b). Additionally, a number of variables influence the acquisition and retention of collocations, including their frequent use in the language, the congruency between L1 and L2 collocations, the word class and length of individual constituents and learners' language proficiency, language exposure and vocabulary size (e.g. Fernández & Schmitt, 2015; Granger & Bestgen, 2014; Peters, 2016; Webb & Kagimoto, 2011). The evident importance of collocations and their difficulty for L2 learners has triggered growing research interest over the last few decades.

L2 collocation studies have followed various research directions. Among the most common were attempts to (1) assess and trace the development of the learners' collocational knowledge (e.g. Bahardoust & Moeini, 2012; Bueraheng, 2014; Fan, 2009; Mutlu & Kaşlioğlu, 2016; Nizonkiza, 2014), (2) examine and explain collocation errors (e.g. Phoocharoensil, 2011; Sadeghi & Panahifar, 2013; Shitu, 2015; Yanjuan, 2014; Žemličková, 2015), (3) investigate the factors influencing L2 collocational competence (e.g. Fernández & Schmitt; 2015; Men, 2015; Nizonkiza, 2012; Yamashita & Jiang, 2010) and (4) explore ways to support L2 learners' development of their collocational knowledge (e.g. Laufer, 2011; Pellicer-Sánchez, 2017; Sonbul & Schmitt, 2013; Szudarski & Carter, 2016; Webb, Newton, & Chang, 2013). The current study belongs to the final direction, as it investigates the influence of explicit instruction versus incidental learning of collocations among Arab learners of English as a Foreign Language (EFL). The study aims to answer the question: "What works better for collocation learning for Arab EFL learners – explicit instruction or incidental learning?"

For the purpose of the current study, incidental learning, on the one hand, occurs when the learner's predominant focus is on the message, rather than the forms, of a given text while some new and particularly noticeable lexical items are acquired. Intentional learning, on the other hand, purposefully highlights the form-meaning relationships in texts to draw the learners' attention to new lexical items and thus enhances vocabulary learning (Tian & Macaro, 2012). Incidental language learning is traditionally supported by Krashen's (1993, 1989) Comprehensible Input Hypothesis that proposes that the majority of language learning occurs incidentally when the learner is exposed to frequent and comprehensible input that is just above their level. However, Segalowitz and Freed (2004) highlight that the opportunities learning contexts avail for language learners and the learners' linguistic and cognitive readiness to adequately exploit such opportunities vary a great deal, which may call for intentional intervention. Intentional learning, represented in the current study by explicit instruction, is also supported by Schmidt's (1990) Noticing Hypothesis, which postulates that noticing, which is better ensured in intentional learning, is an essential starting point for acquisition.

The current study, which employs a quasi-experimental design, was motivated by the proven importance of collocations for L2 competence and the frequent reports on the difficulty of collocations for L2 learners, particularly for Arab learners (e.g. Ahmed, 2012; Alotaibi, 2014; Brashi, 2009; Zohra, 2015). In order to address this recurrently proven difficulty, it is important to investigate how language instructors can support Arab learners' efforts to enhance their collocation knowledge. Unfortunately, research into potential instructional interventions for L2 collocation learning in the Arab World are relatively few (e.g. Abdellah, 2015; Kamal, 2014). This constitutes a major motivation

for the current study to investigate the different influence of incidental learning with explicit instruction on L2 collocation learning. The current study aims to extend our knowledge of how to best approach L2 collocation learning in the classroom, particularly in the Arab World, contribute to the area of incidental versus intentional learning and present useful pedagogical implications that can foster Arab learners' collocational competence.

To this end, the next section of the article includes a survey of literature on both incidental and intentional learning of L2 collocations along with a summary of relevant collocation studies involving Arab EFL learners. This is followed by the study research question, methodology and results. The results are then interpreted in relation to the existing literature and theoretical models. Finally, pedagogical implications and recommendations for future research are proposed.

2   Literature review

Due to the importance of collocations and the difficulty they constitute to L2 learners, researchers have recently set to explore this phenomenon in various languages, such as French (e.g. Kunz, 2015), German (e.g. Krummes & Ensslin, 2015), Spanish (e.g. Ferraro, Nazar, Ramos, & Wanner, 2014), Italian (e.g. Siyanova-Chanturia, 2015) and Korean (e.g. Park, 2007). As the current study focuses on collocation learning in the Arab EFL context, the present review will survey (1) research efforts on the explicit instruction/incidental learning of L2 collocations in English and (2) relevant collocation studies in the Arab World.

2.1   *Explicit instruction versus incidental learning of L2 collocations*

Despite the need for further research, the existing studies on the explicit instruction of L2 collocations have rendered interesting results. For example, Laufer (2011) investigated the potential benefit of dictionary use. Assessing the recall of target collocations by the participants after they had completed a gap-fill task without and with dictionary assistance, she revealed that the dictionary use significantly increased the collocational knowledge of the intermediate participants despite the noted errors. Likewise, Chan and Liou (2005) investigated the influence of using concordances on learning verb + noun collocations. Assessing the performance and attitudes of the Chinese participants after using web-based practice units and a web-based bilingual concordance, Chan & Liou (2005) revealed a positive effect for the use of an online concordancer for collocation learning. The benefit of the use of concordancers and concordancing materials has been highlighted in a number of later studies (e.g. Daskalovska, 2015; Kheirzadeh & Marandi, 2014; Koosha & Jafarpour, 2006).

Other studies have explored the benefit of specific tasks in explicit instruction. For example, Majd (2017) investigated the effect of tasks with different involvement indexes in accordance with Hulstijin and Laufer's (2001) Involvement Load Hypothesis. Examining the participants' performance following practice through recall (low involvement), multiple-choice (medium involvement) and gap-fill (high involvement) tasks, Majd (2017) showed positive influence for all three levels, although the low condition proved the most effective for the acquisition and retention of collocations and the high condition the best perceived by the learners. In the same vein, Ghomali & Farvain (2017) examined the effect of input-based versus output-based instruction on the productive knowledge of collocations. The results showed a positive effect for both types of instruction with no observed difference between them. Another example is Minaei and Rezaie (2014) who examined the effects of editing and cloze tasks, two output tasks, and collaborative learning on the learning of English collocations. Greater gains were found for cloze than editing tasks and for collaborative than individual output tasks.

Studies on incidental learning of L2 collocations are even fewer than those on explicit instruction. A relevant study is Pellicer-Sánchez (2017) who examined the effectiveness of incidental acquisition of collocations. After reading a story with embedded collocations and with varying repetitions of the target collocations, the participants' performance showed that collocation knowledge can be learned incidentally from reading, but failed to find a significant effect for the frequency

manipulation. Likewise, Webb, Newton and Chang (2013) found that collocations can be learned incidentally through reading and listening to a graded reader. The number of repetitions, however, proved effective. Few other studies compared the effect of different incidental learning techniques. For example, Szudarski and Carter (2016) compared the effect of input flood only versus input flood and textual enhancement on L2 collocation learning. No improvement of collocational knowledge was found for the input flood only group. The input flood plus textual enhancement group, on the contrary, displayed increased collocation knowledge in form recall and form recognition tests while failing to enhance semantic gains. The effect of varied repetitions was noted only on form recall for the input flood plus textual enhancement group. The researchers concluded that different aspects of collocation knowledge may respond differently to input methods and repetition.

Researchers have also compared the effect of explicit instruction with the effect of incidental learning. For example, Laufer and Girasi (2008) compared the influence of meaning-focused instruction with two types of explicit instruction: namely, (1) form-focused instruction through text-based vocabulary tests; and (2) translation tasks with contrastive analysis. While the meaning-focused group did not lead to lexical gains, the other explicit instruction groups showed increased collocation knowledge particularly in favor of the translation and contrastive analysis group. Similar results were found by Szudarzki (2012) who failed to find any improvement for the meaning-focused instruction group while the meaning-focused plus form-focused instruction group showed gains on the receptive and production knowledge of collocations. Different results were found by Sonbul and Schmitt (2013) who compared the effect of explicit instruction in the form of decontextualized collocations versus the effect of two types of incidental learning; namely, input flood and enhanced input, on collocation learning by native and non-native speakers. The participants' performance on explicit tests of form recall and form recognition and an implicit test of priming showed the benefit of all conditions in explicit form recall and recognition, while no condition facilitated implicit collocational priming effects for native speakers or non-native speakers. Interestingly, enhanced input led to the best gains for non-native speakers.

2.2   Collocation studies for Arab learners of English

A great number of collocation studies among Arab learners of English aimed to assess the learners' collocational competence. A relevant study here is Brashi (2009) who examined the collocational competence of Saudi undergraduates who were English majors through multiple-choice and gap-filling tests. The results reflected the participants' poor collocation knowledge, particularly in production. Another relevant study is Ahmed (2012) who assessed the collocation knowledge of Libyan undergraduates at the English Department through multiple-choice and translation tests. Similar to Brashi (2009), the participants' knowledge proved much lower than expected whether at the receptive or productive levels. The study also highlighted the potential influence of the participants' mother tongue and amount of L2 exposure on their use of collocations. Likewise, Zohra (2015) examined the collocation knowledge of Algerian undergraduates at the English Department through multiple-choice and translation tests. In addition, surveys were disseminated among both the participating students as well as representative faculty members. The results again highlighted the participants' poor collocation knowledge, and shed light on potential sources for the difficulty represented in negative transfer from the first language (L1), overgeneralization, misuse of synonyms and ignorance of collocation restrictions.

Similar results were found in collocation studies that solely focused on the receptive knowledge of collocations. For example, Alotaibi (2014) examined the receptive collocation knowledge of Kuwaiti EFL intermediate and advanced learners through a multiple-choice test. The participants' performance in terms of scores and types of errors reflected their poor knowledge of collocations which did not significantly improve with increasing L2 proficiency. The researcher highlighted that the participants' lack of collocation awareness and reliance on L1 transfer strategies constituted the main causes of the difficulty. The study also showed the participants' special difficulty with adjective + noun collocations and verb + noun/pronoun/preposition collocations. Another relevant example is

Banboua (2016) who assessed the receptive collocation knowledge of Yemeni students enrolled in EFL courses at a Malaysian university. Analyzing the participants' responses to the study's multiple-choice test revealed their poor knowledge which was taken to reflect the lack of appropriate instruction in Yemeni schools.

The Arab learners' collocation difficulty was also highlighted in production studies. Two relevant studies are El-Dakhs (2015a) and Abu Naba'h & Al-Shara'h (2011). Using a gap-filling test, El-Dakhs (2015a) assessed the collocational knowledge of Arab undergraduate students at the same private Saudi university of the current study. The participants, who were non-English majors with varied L2 exposure, generally performed poorly on the test with slight improvement for increased exposure. Most of the difficulties arose from intralingual rather than interlingual errors, mainly due to misuse of synonyms and lack of awareness of collocational restrictions. The results also showed that the participants displayed more confidence in producing verb + noun than adjective + noun collocations, which were the two target patterns in the study. As for Abu Naba'h and Al-Shara'h (2011), they investigated the productive knowledge of Jordanian graduates of a Master's program in Teaching English as a Foreign Language through a completion test targeting four types of collocations that varied in restrictedness. The participants' knowledge was again much lower than expected, which was taken to reflect insufficient awareness of collocations and their restrictions, and L1 interference.

Additional studies examined Arab learners' collocation knowledge in their free production through essay writing. These studies, which all targeted English-major undergraduates, include Dukali (2016) in Libya, Abdul Ridha and Al-Riyahi (2011) in Iraq, Farghal and Al Hamly (2007) in Kuwait, and Mahmoud (2005) in Oman. All studies highlighted the poor collocation knowledge of the participants despite being junior and senior English majors. Abdul Ridha and Al-Riyahi (2011) identified the verb + noun, adjective + noun and noun + verb patterns as the most problematic, while Dukali (2016) and Farghal and AlHamly (2007) highlighted more difficulty for verbal than adjectival collocations. All studies pointed out the influence of L1 interference on erroneous productions. Other reasons for errors comprised the participants' use of intralingual strategies (Mahmoud, 2005), use of language creatively (Farghal & AlHamly 2007), ignorance of collocation restrictions and adoption of ineffective strategies, such as approximation and interchangeable use of synonyms (Abdul Ridha & Al-Riyahi, 2011).

Other studies focused on examining relevant determinants of collocation learning. In Saudi Arabia, Gaballa and Al-Khayri (2014) and Alsakran (2011) examined the influence of the learning environment and word class. A strong influence was noted for the learning environment with a clear advantage for learning English as a second language (ESL) as compared to learning English as a foreign language (EFL) (second language learners learn the target language while practicing it in their locale outside the language school, while foreign language learners' exposure to the target language is confined to the classroom setting). The two studies also showed that verb + noun collocations were learned better than adjective + noun or verb + preposition combinations. In Palestine, Al-Miqdad (2012), on the one hand, showed a strong L1 influence, indicated that female participants may learn collocations better than men and highlighted the effect of word class as verb + noun collocations were learned significantly better than adjective + noun collocations. El-Mashharawi (2008), on the other hand, indicated that the participant's L2 exposure and academic discipline seem strong predictors of L2 collocation learning, but failed to find any influence for academic achievement. In Egypt, Shehata (2008) also showed a significant effect for the participant's mother tongue, learning environment and amount of exposure on the learning of collocations.

This survey of the existing literature on Arab EFL learners is not meant to be exhaustive. A number of other relevant studies (e.g. Alsulayyi, 2015; Shammas, 2013; Noor & Adubaib, 2011) have similarly highlighted the poor collocational knowledge for Arab EFL learners whether at the receptive or productive knowledge, although the latter always lags behind the former. This well-confirmed finding calls for further research into the best practices to support Arab EFL learners' efforts to promote their collocational knowledge. Relatively few studies have, however, addressed this much-needed research direction in the Arab World. For example, Abdellah (2015) revealed a

positive influence for the explicit teaching of collocations through corpus-based activities on enhancing the collocation knowledge of Egyptian preservice teachers of English, and Kamal (2014) showed a significant improvement of Egyptian intermediate learners' receptive and productive knowledge through explicit instruction. The current study represents another attempt to explore the best potential forms of instructional intervention in L2 collocation learning in the Arab World. The current study aims to contribute to knowledge in this important area and support instructors' efforts to improve their learners' collocation competence.

3   Research questions

The current study addresses the following research question:
    What works better for L2 collocation learning – explicit instruction or incidental learning? The question involves an assessment of the participants' receptive and productive knowledge.

4   Methodology

4.1   Participants

A total of 114 female undergraduate tertiary students participated in the study. All the participants are native speakers of Arabic and range in age between 18 and 20. The participants come from five Arab countries (i.e. Egypt, Jordan, Syria, Palestine and Saudi Arabia), but they are all graduates of the Saudi public schooling system during their middle and secondary schools. The participants were recruited from a private Saudi university in Riyadh, the capital of Saudi Arabia, in which English is the medium of instruction for degree programs. In order to ensure the Arab learners' ability to cope with university instruction in English, the language proficiency of all university applicants is assessed upon admission and only those who score at an intermediate level (equal to 5.5 on IELTS) are admitted into their majors (i.e. Engineering, Law, Humanities, Business Administration and Computer and Information Science). Applicants with lower scores are placed into three levels (i.e. beginners, elementary and pre-intermediate) of the Preparatory Year Program (PYP), which offers students 20 hours of English language instruction per week over three academic semesters for the beginners, two semesters for the elementary and one semester for the pre-intermediate. The participants in the current study were recruited from six intact classes of the elementary group whose proficiency level is assessed between 3 and 4 on IELTS.

It must be noted that the current study was approved by the Research Ethics Committee of Prince Sultan University. After seeking the permission of class instructors, the researchers visited the classes that took part in the study, explained the study aims and procedure to the students and sought their consent to participate in the research. The participants were also aware that no rewards would be offered to them, but that their efforts would support the development of scientific research. The students who did not consent to participate were allowed to leave the classroom during the treatment/testing times. The course instructors offered make-up classes for the time used for experimental purposes.

4.2   Materials

The first step to prepare the study materials was to select the target collocations. The current study targets the pattern of verb + noun collocations because earlier collocation studies highlighted the special difficulty of the verb + noun pattern for Arab learners among other patterns, such as adjective + noun, noun + verb, and verb + preposition (e.g. Alotaibi, 2014; Abdul Ridha & Al-Riyali, 2011). It must be noted though that some studies found the verb + noun pattern more challenging than the adjective + noun pattern (Dukali, 2016; Farghal & Al Hamly 2007), while others found it easier to learn (Al-Miqdad, 2012; Alsakran, 2011; El-Dakhs, 2015; Gaballa & Al-Khayri, 2014).

Having decided to target verb + noun collocations, two of the researchers who are also experienced PYP instructors prepared a list of 120 potentially unfamiliar collocations to the participants as per their discretion. This list was disseminated to 15 other experienced PYP instructors for their input. The instructors were required to assess the participants' knowledge of the collocations on a 5-point Likert scale where one extreme end reads "Excellent" and the other end "Poor." Based on the instructors' accumulative rating, 24 unfamiliar collocations were selected for the study (see Appendix A). The target collocations were rated as "poor" on the Likert scale by at least 12 out of the 15 PYP instructors who completed the familiarity survey. It must be noted that the choice of target collocations is based on the subjective familiarity assessment of the instructors, not objective frequency measures. The researchers relied on the subjective assessment, because the study participants had studied English for many years at schools, but still failed to achieve the expected proficiency level. In such EFL learning contexts, learners may be familiar with low-frequency collocations through the curriculum, while they miss out on some more frequent ones that are not introduced in the curriculum (El-Dakhs, 2015a). Additionally, the high frequency of occurrence of collocations in natural language does not automatically lead to their acquisition in foreign language learning contexts where exposure to natural language is relatively limited (Park, 2007).

The teaching and testing materials were developed by the two researchers who are experienced PYP instructors and native speakers of English. The teaching materials consisted of four dialogues in each of which 6 of the target collocations were embedded. The dialogues ranged between 200 and 300 words and addressed topics of interest to the learners as shown in Table 1.

Table 1. Topics of dialogues

Dialogue #	Topic
1	Voting at the University Youth Club
2	The Student Karate Competition
3	King Faisal of Saudi Arabia
4	The 2016 Olympic Games

As for the testing materials, a multiple-choice test was devised to assess the learners' receptive knowledge. Each target collocation was assessed in one sentence with four options. The learners' productive knowledge was assessed through a gap-filling test in which the participants supplied missing words in isolated sentences. In order to restrict the participants' choice to the target collocations, the first letter of every missing word and its Arabic translation equivalent were supplied. The missing word in the multiple-choice test or the gap-filling test was always the verb part of the target collocation. The teaching and testing materials were reviewed by five PYP instructors and modified accordingly.

4.3   Procedure

The current study was conducted in six weeks during the months of November and December 2016 (see Table 2). The participants were divided into three groups: two experimental and one control. One of the experimental groups (n=36) represented the explicit instruction condition (EI), the other experimental group (n=43) reflected the incidental learning condition (IL), while the control group (CG; n=35) did not receive any special treatment. The treatment period consisted of four 45-minute weekly sessions. During each session, six target collocations were practiced by the experimental groups and two immediate post-tests (i.e. MCQ and gap-fill) were taken by the experimental and control groups. Two weeks after the treatment, the delayed MCQ and gap-filling post-tests were administered.

Table 2. Study design

Weeks (1-4)	Week (6)
Treatment + Immediate post-tests	Delayed post-tests

The study was conducted in six elementary classes. The experimental groups were taught by two of the researchers who are Master's degree holders and native speakers of English. To ensure consistency, the two classes which received explicit instruction followed a unified detailed lesson plan, while the two classes who were incidentally trained followed another unified detailed lesson plan (see the details of the plans below). As for the control group, which was only introduced to the target collocations during the post-tests, it was taught by two volunteer colleagues who are also graduate degree holders and native-like English speakers. The three groups, the experimental and control, followed unified testing instructions for the sake of consistency. It must also be noted that the four instructors are experienced PYP instructors whose EFL teaching experience ranges between 10 and 20 years.

The treatment of the experimental groups followed unified detailed lesson plans as mentioned earlier. In the EI group, a brief lead-in was followed by the teacher delivering the designated dialogue to students and reading it out loud while changing voices for different speakers. The teacher would then deliver another handout including the target collocations for the session with their definitions and discuss them with the students. The students would then read the definitions handout again individually and write a sentence for a collocation of their choice. The teacher allowed two to three students to share their sentences with the whole class and provided relevant feedback. As for the IL group, the initial stages of lead-in and teacher reading the dialogue are the same. However, no explicit instruction of collocations was provided. Right after the teacher's reading, students read the designated dialogue in pairs twice, switching roles each time. Then, two students read the dialogue out loud to the whole class. This allowed the IL participants at least four encounters with the target collocations. In the last 10 minutes of the session, the participants were tasked with completing the two immediate post-tests.

Two weeks after the completion of the treatment period, one session was assigned to the delayed post-tests which assessed the participants' receptive and productive knowledge of all 24 target collocations. The scoring of the immediate and delayed post-tests was conducted by the two researchers who are PYP instructors. In the MCQ tests, a point is given for each correct choice. If a student selected more than one choice for a given test item, it was not accepted. As for the gap-filling test items, one point was granted for each answer that could be easily pronounced as the target word despite minor spelling deviations.

5 Results

The current section presents the statistical analysis results in relation to the study research question: "What works better for L2 collocation learning – explicit instruction or incidental learning?" The section is composed of two subsections to address the receptive and productive aspects of collocation knowledge.

5.1 *Receptive collocation knowledge*

The receptive aspect of collocational knowledge was assessed at a recognition level through a multiple choice test. The statistical analysis was based on the use of ANOVA supplemented by Bonferroni-corrected post hoc pairwise comparisons. Tables 3 and 4 show the comparison results among the three study groups for the immediate post-test. It is noted that the experimental groups outperformed the control group with a clear advantage for the instructed group over the incidental group. Tables 5 and 6 show the comparison results among the three study groups for the delayed post-test.

The analysis indicates that the instructed group maintained its edge over both the control and incidental groups, whereas no significant difference between the incidental and control groups was observed.

Table 3. ANOVA comparison between groups for the immediate MCQ post-test

	#	Mean	SD	F	Sig.
EI	36	20.6111	3.78174	43.944	.000
IL	43	13.9070	6.51304		
CG	35	9.2286	4.41312		

Table 4. Bonferroni comparisons between groups for the immediate MCQ post-test

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig
EI	CG	11.38254*	1.22258	.000
	IL	6.70413*	1.16349	.000
CG	EI	-11.38254*	1.22258	.000
	IL	-4.67841*	1.17250	.000
IL	EI	-6.70413*	1.16349	.000
	CG	4.67841*	1.17250	.000

*The mean difference is significant at the 0.05 level.

Table 5. ANOVA comparison between groups for the delayed MCQ post-test

	#	Mean	SD	F	Sig.
EI	36	12.5000	6.46971	5.053	.008
IL	43	8.5581	5.86475		
CG	35	8.8857	5.44908		

Table 6. ANOVA comparison between groups for the delayed MCQ post-test

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig
EI	CG	3.61429*	1.41052	.035
	IL	3.94186*	1.34234	.012
CG	EI	-3.61429*	1.41052	.035
	IL	.32757	1.35274	1.000
IL	EI	-3.94186*	1.34234	.012
	CG	-.32757	1.35274	1.000

*The mean difference is significant at the 0.05 level.

5.2   Productive collocation knowledge

The productive aspect of collocational knowledge was assessed at the form recall level through a gap-filling task. Similar to the receptive knowledge, the statistical analysis for the productive collocation knowledge was based on the use of ANOVA supplemented by Bonferroni-corrected post hoc pairwise comparisons. Tables 7 and 8 show the comparison results among the three study groups for the immediate post-test. The statistical analysis indicates that the instructed group outperformed the incidental and control groups, whereas the incidental group failed to achieve significant gains in comparison with the control group. Regarding the delayed post-test, Tables 9 and 10 show the comparison results among the three study groups. The analysis indicates that the instructed group maintained its advantage over the incidental group in the delayed post-test, whereas the comparisons between the instructed group and the control group, on the one hand, and the incidental group and

Table 7. ANOVA comparison between groups for the immediate gap-filling post-test

	#	Mean	SD	F	Sig.
EI	36	19.2500	5.88157	21.801	.000
IL	43	12.5814	6.39655		
CG	35	10.3714	5.39654		

Table 8. Bonferroni comparisons between groups for the immediate gap-filling post-test

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig
EI	CG	8.87857*	1.41056	.000
	IL	6.66860*	1.34238	.000
CG	EI	-8.87857*	1.41056	.000
	IL	-2.20997	1.35278	.315
IL	EI	-6.66860*	1.34238	.000
	CG	2.20997	1.35278	.315

*The mean difference is significant at the 0.05 level.

Table 9. ANOVA comparison between groups for the delayed gap-filling post-test

	#	Mean	SD	F	Sig.
EI	36	11.8889	6.22795	5.220	.007
IL	43	7.4884	5.94968		
CG	35	9.5429	5.91778		

Table 10. Bonferroni comparisons between groups for the delayed gap-filling post-test

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig
EI	CG	2.34603	1.43121	.312
	IL	4.40052*	1.36203	.005
CG	EI	-2.34603	1.4321	.312
	IL	2.05449	1.37258	.412
IL	EI	-4.40052*	1.36203	.005
	CG	-2.05449	1.37258	.412

*The mean difference is significant at the 0.05 level.

6   Discussion

The current study aimed to answer one research question: "What works better for L2 collocation learning – explicit instruction or incidental learning?" The results displayed in the previous section for the post-tests reveal a clear advantage for explicit instruction at the level of form recognition as the EI group significantly outperformed the IL group and the control group at both the immediate and delayed post-tests. The IL group also reflected some vocabulary gains in the immediate post-test with better performance than the control group, but failed to maintain these gains at the delayed post-test two weeks after exposure. Similar to form recognition, the EI group outperformed the IL group at both the immediate and delayed post-tests for form recall. Despite its better performance than the control group at the immediate post-test too, the EI group did not maintain this advantage at the delayed post-test. As for the IL group, it did not seem to achieve any learning gains in form recall.

These results are closely related to the distinction between receptive and productive vocabulary knowledge. The first type of knowledge (represented here by form recognition) seems easier to

acquire than the latter (represented here by form recall) which requires the use of more cognitive resources and deeper levels of processing. This distinction is supported by recurrent reports that L2 learners' productive knowledge of collocations lags behind their receptive knowledge (e.g. Ahmed, 2012; Brashi, 2009; Zohra, 2015) and may explain why the IL group performed better at form recognition than form recall at the immediate post-test and the EI group outperformed the control group at form recognition but not recall at the delayed post-test. The distinction between short-term and long-term learning gains is also relevant. It is widely acknowledged that long-term retention is more challenging, which may explain why the experimental groups failed to maintain their advantage over the control group at the delayed post-test in form recognition for the IL group and form recall for the EI group.

In addition, the results can be interpreted within theoretical L2 learning models. Of extreme relevance is Schmidt's (1990) Noticing Hypothesis that states that noticing is a starting point for learning. In incidental leaning, where focus is on the message, acquisition of new lexical items is dependent on how noticeable the new items are. It seems that four encounters to new collocations are not sufficient for elementary learners to notice the target items and incorporate them in their lexical repertoire for short/long-term form recall or long-term form recognition. Krashen's (1993; 1989) Comprehensible Input Hypothesis also requires lexical items to be frequent and comprehensible to result in incidental learning gains. Once more, four encounters do not seem frequent enough for EFL elementary learners. Plus, learners may not have managed to infer the meaning of the target collocations to achieve the comprehensibility requirement.

It is worth noting that explicit instruction in the current study involved the provision of definitions by the instructor and the students' writing sentences individually to later receive feedback by the instructor within a whole class activity. Sentence writing is generally viewed as a useful vocabulary learning activity, as it involves a relatively high involvement load as per Hulstijn and Laufer (2001)'s Involvement Load Hypothesis. According to Hulstijn and Laufer (2001), learning gains increase through tasks requiring more cognitive resources and higher processing. Likewise, in terms of Swain's (1985) Comprehensible Output Hypothesis, writing sentences should support learners' noticing through raising their awareness of relevant learning gaps. However, the participants in the current study were required to write one sentence every session for the collocation they prefer among the six target collocations. Besides, the instructor would listen and offer feedback to only two to three students' sentences. Such procedure may not help highlight gaps of knowledge (Swain, 1985) or provide sufficient involvement (Hulstijn & Laufer, 2001).

In comparison with earlier studies on collocation learning, the results of the current study seem highly in congruence with Szudarzki (2012) and Laufer and Girasi (2008), which showed no incidental learning gains, while clear gains were evident for explicit instruction. The results are also highly similar to Szudarski & Carter (2016), which failed to show any learning gains for incidental learning in terms of sole input flood, the technique used in the current study to allow repeated encounters with the target collocations. As for the studies in support of incidental learning, they seem to apply to different contexts. For example, Pellicer-Sánchez (2017) and Sonbul & Schmitt (2013) involved participants of higher levels of proficiency (i.e. intermediate for the first and advanced for the latter) living in English-speaking countries. Regarding Webb, Newton and Chang (2013), which targeted EFL learners similar to the current study, the participants possessed higher vocabulary knowledge than the elementary participants of the current study. This was evident in their remarkably high scores (minimum of 27 out of 30 and mean of 28.38) on the Vocabulary Levels Test (Schmitt, Schmitt, Clapham, 2001) for the first 2,000 words. Besides, sizeable learning gains were particularly clear at high collocation repetition that reached 15 times in the graded reader. It seems that incidental learning may prove beneficial at higher language proficiency and frequency of occurrence.

It is worth highlighting that the current study was implemented in a foreign language context where learning collocations is particularly challenging (e.g. Alsakran, 2011; Gaballa & Al-Khayri, 2014). As Segalowitz and Freed (2004) rightly note, different learning environments offer varied

learning opportunities and the learning opportunities in EFL contexts do not seem to support inci-
dental vocabulary learning due to their limited L2 input and exposure (e.g. Peters, Hulstijn, Sercu,
& Lutjeharms, 2009; Szudarski & Carter, 2016). Segalowitz and Freed (2004) also highlight that
learners vary in their readiness to explore the available learning opportunities. According to the
current study, learners at early stages of L2 learning may lack such readiness with regard to inci-
dental collocation learning. Another factor that may have decreased the participants' readiness is
their lack of collocation awareness. No collocation orientation was offered to participants prior to
the treatment, which may have impacted the study results as lack of collocation awareness has been
repeatedly reported as a main cause for poor collocation knowledge (e.g. Abdul Ridha & Al-Riyali,
2011; Abu Naba'h & Al-Shara'h, 2011; Alotaibi, 2014; El-Dakhs, 2015a).

7   Pedagogical implications and research directions discussion

Based on the current study results, explicit instruction, in the form of definitions and sentence
writing, is recommended for L2 collocation learning in the classroom setting. This form of explicit
instruction seems to allow learners to notice the target collocations and thus attempt to incorporate
them in their lexical repertoire. To this end, raising awareness of the nature of collocations and their
restrictions may be helpful, particularly in contexts where students are more familiar with learning
individual words, but not word combinations. It may also be helpful to involve students in tasks that
require deeper levels of processing (Hulstijn & Laufer, 2001), help them identify gaps in their
knowledge (Swain, 1985) and target both the receptive and productive aspects of collocation
knowledge. This does not rule out incidental learning totally from the picture, since it can still in-
crease students' collocation competence and enhance their autonomous learning. It is recommended
to enhance learners' readiness to benefit from incidental exposure to collocations through conscious-
ness-raising tasks. Additionally, learners need to have sufficient encounters with target collocations
and understand their surrounding context in order to infer their meaning. Curriculum designers and
textbook writers are thus advised to systematically integrate formulaic sequences, including collo-
cations, into the curriculum and textbooks. Likewise, vocabulary test designers need to pay much
more attention to collocation knowledge than it is currently the case.

The current study highlights a real need for further research on L2 collocation learning, particu-
larly on varied patterns of word combinations to develop a more comprehensive understanding of
the phenomenon. Further research is also needed to inform L2 teaching. The current study used
definitions and sentence writing for explicit instruction, which proved effective. Additional studies
are needed to investigate which other activities (e.g. editing, cloze, role-play, etc) may also prove
beneficial. Besides, further research needs to investigate when incidental learning can work consid-
ering different learning conditions (e.g. foreign language learning and collaborative learning),
learner characteristics (e.g. proficiency and confidence) and word characteristics (e.g. frequency and
congruency). Researchers also need to examine useful techniques/strategies to build learners' ca-
pacity to learn incidentally, such as awareness-raising activities, the manipulation of texts and sys-
tematic training.

8   Conclusion

The strong agreement in the literature that sound collocation knowledge is essential for adequate
mastery of L2 vocabulary, efficient L2 processing and effective L2 acquisition has recently called
for research into the best practices of collocation learning/teaching. The current study was designed
to contribute to this gap in the literature through addressing the question, "what works better for L2
vocabulary learning – explicit instruction or incidental learning?" Explicit instruction was imple-
mented through the use of definitions and engaging students in writing sentences, while incidental
learning was to result from the participants' four encounters of target collocations while reading,
listening to and acting out short dialogues. The results came clearly in favor of explicit instruction,
which led to learning gains in short-term and long-term form recognition and short-term form recall.

Incidental learning, however, proved beneficial only for short-term form recognition and still to a lesser extent than explicit instruction.

The above results must be interpreted within the specific context of the study which involved elementary EFL learners. It seems that incidental exposure to L2 collocations within limited class time may not facilitate collocation learning particularly at low levels of language proficiency. Explicit instruction thus seems necessary in this context to support collocation learning. This finding does not, however, overrule the benefit of incidental learning, which supports autonomous learning and the expansion of vocabulary knowledge. In the current study, incidental learning led to noticeable gains in short-term form recognition. Further research is needed to highlight how these gains can be enhanced and to empower learners to achieve maximum benefit from incidental learning opportunities. Further research is also needed to examine the most effective techniques and strategies for explicit L2 collocation instruction.

The present study is subject to a number of limitations. First, the study recruited only female participants. Future studies may consider more gender-balanced samples to cater for any potential gender differences. Second, the current study did not address the learners' affective, motivational and attitudinal needs or learning styles or preferences. Further research needs to explore such important learner characteristics, as they may impact collocation learning. Third, the current study employed one form of explicit instruction (i.e. the combination of definitions and sentence writing). Other forms of explicit instruction and teaching methods may lead to different results. Finally, the current study assessed the participants' collocation competence only through controlled written tests with multiple-choice and gap-filling items. Using other forms of assessment, such as free writing or oral production, may reveal other interesting findings. The conclusions of the current study should thus be interpreted within these study limitations.

Acknowledgement

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Appendix A

Target Collocations

Dialogue (1)	Dialogue (2)	Dialogue (3)	Dialogue (4)
Voting at the University Youth Club	The Student Karate Competition	King Faisal of Saudi Arabia	The 2016 Olympic Games
Hold an election	Break the news	Join forces	Break a record
Cast a vote	Admit defeat	Satisfy a requirement	Express concern
Consider a possibility	Regain control	Pose a threat	Balance a budget
Face the fact	Achieve a goal	Wage a war	Boost morale
Cut the cost	Raise doubts	Impose restrictions	Catch a glimpse
Gain access	Meet a standard	Hold talks	Cost a fortune