

The effects of different tasks on verb-noun collocation learning

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It has been widely recognized that much of our vocabulary consists of different kinds of prefabricated chunks, among which the single most important kind is collocation. Both native speakers of a language and successful advanced learners of a foreign language have a high level of collocational competence. However, most foreign language learners of English with intermediate language proficiency lack this collocational competence. Recent research has further indicated that mere exposure does not guarantee language acquisition for EFL learners. Effective learning integrates the concept of noticing and attention into a language course for collocational knowledge development, followed by post-reading activities to strengthen the form-meaning connections. The present study was designed to investigate the extent to which drawing EFL learners' attention to the target collocations via textual enhancement techniques plus different post-reading activities would facilitate their receptive and productive knowledge of verb-noun collocations. Three tasks were included in this study: reading a text with L1 glossed and highlighted collocations; reading a text with L1 glossed and highlighted collocations followed by multiple-choice exercises; and finally reading a text with L1 glossed and highlighted collocations followed by fill-in-the-blanks activities. The results indicate that participants doing the second task outperformed those doing the other two tasks in terms of their receptive knowledge of form and meaning, but none of the productive knowledge was acquired with the three tasks. Implications are discussed at the end of the paper.

Keywords: verb-noun collocations; glosses; post-reading activities; receptive knowledge of collocations; productive knowledge of collocations

Introduction

Vocabulary undoubtedly plays a central role for a language learner who would like to communicate competently. It has been widely recognized that much of our vocabulary consists of different kinds of prefabricated chunks (Lewis, 2000), among which the single most important kind is collocation. Emphasizing the importance of collocations in language use, Lewis (2000) pointed out that both native speakers of a language and successful advanced learners of a foreign language have a high level of "collocational competence" which he defines as "a sufficiently large and sufficient phrasal mental lexicon" (p. 177) that is readily available to them when they use the language. This competence plays a significant role in helping them use a language efficiently, precisely, and appropriately. However, most foreign language learners of English with an intermediate level of language proficiency lack this collocational competence because of insufficient input when compared to native speakers. One may speculate that some of the features found for the development of individual lexical items in L2 could also be applied to acquisition of larger lexical chunks; for example, the acquisition process is accumulative in nature and is dependent on repeated exposure, which leads to the consolidation of knowledge as well as ability for use. However, there has been

increasing evidence that L2 incidental learning of individual lexical items may not be effective given that it is not combined with explicit teaching and learning, not to mention lexical chunks (Laufer & Girsai, 2008; Min, 2008; Peters, Hulstijn, Sercu, & Lutjeharms, 2009; Pulido, 2009). Due to the above concerns, increasingly research has indicated the concept of noticing and attention being integrated into a language course for collocational knowledge development (Boers, Demecheleer, Coxhead, & Webb, 2014; Hill, Lewis, & Lewis, 2000; Laufer & Waldman, 2011; Lewis, 2000; Peters, 2009; Schmitt, 2010; Sonbul & Schmitt, 2013; Webb & Kagimoto, 2009; Woolard, 2000), followed by post-reading activities to strengthen the form-meaning connections (Laufer & Girsai, 2008; Laufer & Waldman, 2011). The present study aimed to investigate the extent to which drawing learners' attention to the target collocations via textual enhancement techniques plus different types of post-reading activities would facilitate their receptive and productive knowledge of verb-noun collocations.

Literature review

The term "collocation" was introduced for the description of co-occurrence phenomena by the British linguist J. R. Firth in the 1950s. Firth considered the use of collocation from a broader language perspective in which meaning was constructed as the result of complex interaction of functions. Research on collocations has been proliferating since then, thus relabelling it with various designations and creating different definitions, among which one commonality is that it refers to some sort of established syntagmatic relations for lexical items (Bahns, 1993). Important for fluent and idiomatic language use, collocational knowledge is able to free attentional cognitive load for higher-order processing. That is, learners may not have sufficient attentional cognitive resources to notice new language elements in input and to engage in depth of processing due to the inadequacy of accessible and retrievable language chunks (Laufer & Hulstijn, 2001). L2 learners with insufficient L2 collocational knowledge may therefore encounter difficulties in both language reception and production. If learners have to spend much of their time combining individual lexical items into idiomatic, native-like phrases, they will lag behind others in the learning process, and if they focus only on individual items, comprehension of less transparent constructions may suffer. With the multi-functions of collocations identified above, it is unsurprising that there have been demands for a more "explicit and prominent place to be given to their teaching within academic curriculums" (Webb & Kagimoto, 2009, p. 55).

Defining and understanding the meaning of collocations

Collocations, frequently recurring lexical patterns, often with specific semantic and syntactic restrictions, can be seen as a subset of formulaic sequences. The ability to use collocations is an important element in gaining native-like competence, and they may play an important role in taking on or rejecting group identity (Wray, 2002). According to Benson, Benson, and Ilson (1986), collocations can be divided into two major groups: *grammatical collocations* and *lexical collocations*. Grammatical collocations combine a lexical word, typically a noun, verb, or adjective with a grammatical word (e.g., "account for"). Lexical collocations consist of various combinations of nouns, adjectives, verbs, and adverbs. Six structural types of lexical collocations include the following: verb + noun ("set an alarm"); adjective + noun ("strong team"); noun + verb ("alarms go off"); noun 1 + noun 2 ("a pride of lions"), adverb + adjective ("quite safe"), verb + adverb ("appreciate sincerely"). Out of the six lexical collocations, verb

in the verb-noun type is considered to be the most problematic for L2 learners for the following reasons. First, it could be attributed to the interference between L1-L2 causing learners to make wrong choices (e.g., “make a mistake” vs. “do a mistake”). Second, learners sometimes ignore the unit they are already familiar with (e.g., “have a dream”). Third, some of the synonymous verb pairs are so confusing (e.g., “tell the truth” vs. “say a prayer”) that learners find it hard to commit them to memory (see Boers et al., 2014; Webb, Newton, & Chang, 2013 for further discussion).

SLA research on collocations

Collocation has become one of the main concerns in recent L2 language research for its significance in the development of learner competence. Nesselhauf (2005) identified frequency-based and phraseological approaches as the two main traits of collocation studies. As the name suggests, the former is concerned with the frequency of co-occurrence of lexical items by means of corpus-based methodologies for the analysis of language phenomenon, with Halliday (through work published in 1966, cited in Nesselhauf, 2005) and Sinclair (through publications in 1966 and 1968, cited in Nesselhauf, 2005) as the main contributors. On the other hand, researchers conducting phraseological studies are apparently more involved with phraseology and its application in lexicography and language pedagogy (Benson, 1990; Cowie, 1988, 1992). In the second approach, the term collocation is used for a group of words with fixed combinations in which the core word cannot be replaced by other words (e.g., “perform a task” instead of “make a task”). Recently, the corpus-based approach has been dominant in the research of collocations due to the easy accessibility of advanced computer technology. However; as noted by Sonbul and Schmitt (2013) and, Webb and Kagimoto (2009), the majority of corpus-based research has been descriptive in nature and concerned primarily with measuring learners’ collocational knowledge. Very few empirical studies address the pedagogical issues of how collocations can be most effectively taught and learned in language learning settings.

Nation (2001) claims that there are three processes leading to effective learning, which consists of noticing, retrieval, and generative (productive) use. Noticing is the preliminary step that needs to be complemented by the other two. Nation claims:

In order to acquire the language, learners need to consciously see language items as parts of the language system rather than only as messages. The problem lies in deciding how much of this kind of attention to give, what to direct it to, and when to give it (p. 64).

Noticing can be achieved by negotiation (between learners) and definition. The second step is retrieval, which does not occur if the form and its meaning are presented simultaneously to the learner. Retrieval can be both receptive and productive. Receptive retrieval, which can also be considered as moderate, involves perceiving the form and retrieving its meaning, whereas productive or strong retrieval involves communicating the meaning of the word and retrieving its spoken or written form. The final step is generation, which refers to when previously met words are later met or used in ways that differ from the previous meetings with the word. Nation (2001) suggests that generation “can apply to a range of variations from inflection through collocation and grammatical context to reference and meaning” (p. 72). It can also be divided into receptive (moderate) or productive (strong) scales, whereas the former involves using the word in different ways from the previous encounter in reading and listening and the latter includes producing new ways of using the vocabulary in new contexts.

Some recent studies examined the effect of explicit learning on collocation in classroom contexts (Laufer & Waldman, 2011; Peters, 2012; Sonbul & Schmitt, 2013; Webb & Kagimoto, 2009). The way that explicit learning was operationalized included drawing learners' attention to target items via textual enhancements or engaging the learners into different types of tasks, and results of these studies showed that collocation learning can be enhanced in association with explicit learning conditions. For example, both Peters (2012) and Sonbul and Schmitt (2013) found that typographic salience had a positive effect on participants' recall and encouraged its salient use in context. Participants in Laufer and Waldman's (2011) study tended to under-produce verb-noun collocations, regardless of their proficiency levels. There was only a difference between the group of advanced learners and groups of intermediate and elementary learners, suggesting the development of collocational knowledge is slow. The researchers attributed the failure of collocation use to the lack of explicit instruction. Semantic transparency could be another factor causing the under production of collocations. By testing 101 Brazilian adult learners of English, Martinez and Murphy (2011) found that the number of multiword expressions in a text negatively affected learners' reading comprehension. Furthermore, learners were also too optimistic about their reading comprehension by overestimating their knowledge of those expressions composed of common words. This finding highlights the significance of conscious awareness in collocation learning.

Webb and Kagimoto (2009) attempted to examine the effects of receptive and productive vocabulary tasks on learning collocations and meaning. Japanese EFL participants learned target words in three glossed sentences and in a cloze test. The findings demonstrated that both tasks were effective for collocation learning. The lower group gained more receptive knowledge, whereas the learners with higher proficiency had more productive knowledge. However, there were no significant differences found between the effect of receptive and productive tasks on knowledge of collocation and meaning. This could be due to the low level of difficulty with the productive task, and the researchers suggested using a more demanding task such as sentence production.

Boers and his colleagues (2014) conducted 4 small-scale trials in which learning gains obtained from three verb-noun matching exercises were compared with those obtained from an exercise including some intact collocations. The results showed only small gains across the four conditions which the researchers attributed to the undesirable effect of wrong traces left in learners' memory, thereby minimising the potential for accurate learning.

As seen in the aforementioned studies, collocational knowledge is actually a language phenomenon that is acquired late and often not mastered very well by L2 language learners despite the fact that it is considered a significant factor contributing to language competence. It is difficult to raise learners' awareness of collocations, especially those with semantic transparency, but Laufer and Waldman (2011) suggest that extra language input will lead to additional attention. For example, learners can be asked to do pre-emptive focus-on-form activities in which attention is drawn to preselected structure or lexis, and these activities could facilitate the teaching and learning of collocations (Ellis, Basturkmen, & Loewen, cited in Laufer & Waldman, 2011). However, Boers and his colleagues (Boers, Eyckmans, Kappel, Stengers, & Demecheleer, 2006) argue that just raising learners' awareness is insufficient to cause learners to actively process the collocations in their mental representations. They concluded that "noticing may be a prerequisite for learning, but it does not necessarily guarantee the acquisition of every single element that gets noticed" (p. 257). Webb and Kagimoto (2009) further argued that noticing may be sufficient for learners in an ESL

context, but not adequate for those in the EFL context due to the smaller changes of incidental learning gains. Focusing on production and cross-linguistic comparison, teaching efforts should consist of activities such as matching the appropriate verbs to nouns, selecting the missing part of a collocation from semantically similar options, and completing parts of collocations without given options. However, it is important that teachers remember "that all activities and exercises should be designed to support the central activity of encouraging the learners to notice language in ways which maximize the chance of input being retained as long-term intake" (Hill et al., 2000, p. 117).

Rationale of the study

As Webb and Kagimoto (2009) declared:

most research carried out within the L2 classroom has also been largely descriptive in nature, concerned primarily with assessing the extent of learner knowledge of collocation and its influence on learner errors...research on vocabulary in an EFL context indicates that incidentally acquiring meaning for even relatively single-word items is a relatively slow process with learning dependent on the amount of input (p. 57).

Their claim supports the significance of explicit learning in classroom settings not only on single words but also on multi-word items. Recently it has been acknowledged that noticing the target items followed by classroom-oriented activities facilitates subsequent learning, particularly in an EFL context. Though some studies examined the relationship between drawing learners' attention to the target collocations and learning outcomes, none of them have attempted to address the combined effect of attention-drawing techniques (e.g., textual enhancement and glosses) and post-reading activities on collocation learning. The present study is designed to fill this gap by exploring the extent to which collocation learning can be enhanced in combination with attention-drawing techniques plus different types of post-reading activities.

Research questions

The current study was designed to investigate the following research questions:

1. What is the effect of attention-drawing techniques (i.e., glosses) and post-reading activities on EFL learners' recall of target collocations?
2. Are receptive post-reading activities more efficient in helping EFL learners acquire receptive collocational knowledge better?
3. Are productive post-reading activities more efficient in helping EFL learners acquire productive collocational knowledge better?

Methodology

The participants

The participants were 2nd-year college business majors with at least 7 years of English learning experiences. They were recruited in the lower to mid-intermediate General English classes at a university of technology in Taiwan. There were 84 participants, with 28 allocated to each of the three conditions (see below). To ensure that all participants had sufficient vocabulary knowledge to take part in this programme, they were selected on the basis of the 2,000 Vocabulary Levels Test (Nation, 2001), which consists of the most frequently used 2,000 words. Only those who satisfied the threshold level (i.e., 12 out of 18 points on this test) suggested by Nation (2001) were selected for

the study. Once selected, participants were assigned randomly to each of the three conditions as described below.

The target items

The target items in this study were 10 verb-noun collocations picked up from a piece of 187-word text (Appendix 1) in *Collocations in Use* (Intermediate) by McCarthy and O'Dell (2005). Verb-noun collocations were chosen because they accounted for a large quantity of learner errors in previous studies (Chan & Liou, 2005; Laufer & Waldman, 2011; Nesselhauf, 2005). In the present study, the verb served as the node word with the noun as its collocate.

Research design

The main purpose of the study was to examine to what extent collocation learning can be enhanced by textual enhancement plus post-reading activities for EFL learners. Three tasks were included: reading a text with L1 glossed and highlighted collocations followed by reading comprehension questions; reading a text with L1 glossed and highlighted collocations followed by multiple-choice exercises, and finally reading a text with L1 glossed and highlighted collocations followed by fill-in-the-blanks activities. All participants in the three groups were informed that some after-reading exercises would be given, but they did not know what exactly would be done to prevent the intentional learning effects during the tasks. The time for completing the tasks were controlled the same across the three groups, and it took approximately 50 minutes for all the participants to complete each task. The three conditions of the study were:

1. The participants were required to read a text containing bolded target collocations along with their L1 glosses (in Chinese), followed by answering some comprehension questions that include information related to the target collocations.
Example: What does Bella do at the meeting?
a. Taking the minutes b. Speaking for her boss c. Making presentations
2. The participants first read a text containing bolded target collocations along with their L1 glosses (in Chinese), followed by answering multiple-choice questions directly targeting the 10 collocations. That is, the students had to choose the correct node word to match its collocate with three options provided in the same text.
Example: She arranges meetings for him and she (a. makes b. keeps c. takes) the minutes at the meetings.
3. The participants first read a text with bolded and L1 glossed collocations (in Chinese), followed by filling in the appropriate node words (the noun-collocate was provided) into sentences different from the original text.
Example: It is part of her job to set the agenda for board meetings and _____ the minutes.

According to the 3-step learning theory (i.e., noticing, retrieval, and generation) by Nation (2001), all three conditions included noticing as they were equipped with L1 glossed definitions. The second task further consisted of receptive retrieval as the learners had to perceive the form of the collocations by choosing the accurate node words. The third task was the most demanding as it not only required noticing and retrieval but also generation. That is, learners had to process receptive and productive

retrieval by perceiving both the meaning and form of target collocations to fit into correct sentences, and they also had to process generation by using the target collocations in a context different from their previous encounters. The third task was assumed to yield the best collocation learning, and the second task was ranked higher than the first one. Following Nation's (2001) definitions, Tasks 1 and 2 were considered to be receptive whereas Task 3 was productive. Table 1 shows the components involved in each of the three tasks.

Table 1. The components of 3-step learning theory for the three conditions (Nation, 2001)

Tasks	Noticing	Receptive retrieval	Productive retrieval	Generation
Reading glossed text	✓			
Reading glossed text plus m/c exercise	✓	✓		
Reading glossed text plus fill-in-the-blanks	✓		✓	✓

Collocation pre-tests and post-tests

The four dependent measures adopted those in Webb and Kagimoto's (2009) study and Webb et al.'s (2013) study. One week prior to the study, a pre-test measuring the participants' receptive knowledge of form was conducted. The pre-test had a multiple-choice format, the collocate (i.e., noun) was shown and the participants had to choose the correct node word (i.e., verb) from three options (e.g., a. make; b. take; c. catch a cold). To prevent the participants from predicting the contents of the post-tests, only this pre-test of receptive form was provided. Two weeks after the study, the participants' long-term retention was measured on the following four aspects: productive knowledge of form (e.g., *catch* a cold), receptive knowledge of form (the same as the pre-test), productive knowledge of form-meaning (感冒 = catch a cold), and receptive knowledge of form-meaning (catch a cold = 感冒). To alleviate the potential learning effects across different post-tests, the order in which the collocations appeared varied between the four post-tests. Each test was provided with an example of how to respond appropriately.

Scoring

The scoring procedure included the productive and receptive knowledge of form and meaning as follows:

- 2 points for providing the correct verb in terms of productive knowledge of form
- 2 points for providing both an accurate verb and its collocate in terms of the productive knowledge of meaning
- 2 points for providing a correct Chinese translation in terms of the receptive knowledge of meaning
- 2 points for making the correct choice in terms of the receptive knowledge of form
- No partial scores were given.

Results

The descriptive statistics (means, standard deviations, and number of participants) of collocation knowledge on the pre-test and four post-tests are presented in Table 2. There was not a big difference in terms of the productive knowledge of form and meaning (post-test 3) across all three tasks. However, there were obvious differences in terms of the receptive knowledge of form (post-test 2) where the means for the three tasks are 10.79, 13.48 and 12.14, respectively, and also receptive knowledge of meaning (post-test 4) where the means are 9.36, 13.03 and 11.86 (respectively) across the three tasks. For the receptive knowledge of form (post-test 2), the participants doing Task 1 made an improvement of 2.29 between the pre-test and post-test, and participants doing Tasks 2 and 3 improved by 4.89 and 3.62, respectively. Overall, participants doing the first task showed the lowest gains with these two types of receptive knowledge out of the three conditions, and participants doing the second task outperformed those doing the third task.

Table 2. Descriptive statistics of the four post-tests across the three tasks (N=28)

Tasks		Pre-test	Post-test 1 (PF)*	Post-test 2 (RF)*	Post-test 3 (PM)*	Post-test 4 (RM)*
Task 1	Mean	8.5	9.71	10.79	8.43	9.36
	SD	3.95	5.07	5.05	4.61	5.84
	Min-Max	2-16	0-18	2-20	1-16	0-20
Task 2	Mean	8.59	9.78	13.48	10.07	13.03
	SD	3.03	5.93	3.95	5.38	5.16
	Min-Max	4-14	0-20	4-20	2-20	2-20
Task 3	Mean	8.52	8.79	12.14	8.35	11.86
	SD	2.97	4.85	3.78	4.89	5.53
	Min-Max	4-14	4-20	4-18	0-20	0-20

*Key: PF = productive knowledge of form; RF = receptive knowledge of form; PM = productive knowledge of meaning; RM = receptive knowledge of meaning

Note: The maximum score on all tests was 20.

To answer research question 1, a one-way Manova was conducted to examine task differences on the four aspects of collocation knowledge. There was a significant difference across tasks on the combined dependent variables, $F(12, 204) = 24.46$, $p = 0.000$ (Table 3).

Table 3. One-way Manova of the post-tests across the three tasks

Effect	Value	F	df	Error df	p*	Partial Eta Squared
Pillai's Trace	.976	9.520	12.000	237.000	.000	.325
Wilks' Lambda	.095	24.457	12.000	204.014	.000	.544
Hotelling's Trace	8.844	55.769	12.000	227.000	.000	.747
Roy's Largest Root	8.763	173.065a	4.000	79.000	.000	.898

To answer research questions 2 and 3, the LSD post hoc tests were further conducted on the dependent variables to examine the task differences in relation to the receptive and productive knowledge of collocations (Table 4). The analysis demonstrated the following findings:

1. There was no significant difference in productive knowledge of form and productive knowledge of form-meaning across all three tasks.
2. There were significant differences in receptive knowledge of form and receptive knowledge of form-meaning in the second and third tasks.
3. The participants in the second task performed better in receptive knowledge of form and receptive knowledge of meaning than those in the third task.
4. Overall, out of the two receptive tasks (i.e., Tasks 1 and 2), only the second task contributed to receptive knowledge of form and meaning.
5. Task 3 also contributed to receptive knowledge of form and meaning though it did not contribute better than Task 2.
6. None of the three tasks contributed to productive knowledge of form and meaning.

Table 4. Results of analyses of variance across tests

	SS	df	MS	F	p*	Partial Eta Squared	Post hoc tests
PF**	7384.91	3	2461.64	87.79	.073	.77	
RF	12293.12	3	4097.71	221.67	.000	.89	T2>T3
PM	6684.86	3	2228.29	90.44	.356	.77	
RM	10977.18	3	3659.06	120.22	.000	.81	T2>T3

*Alpha level set at $p < 0.01$. **PF = productive knowledge of form; RF = receptive knowledge of form; PM = productive knowledge of meaning; RM = receptive knowledge of meaning

As with the findings of Webb et al. (2013), the results for receptive knowledge of meaning as well as productive knowledge of form and meaning should be interpreted with caution as the three types of knowledge were not measured in the pre-test so it is not possible to know whether the participants actually made improvements on these aspects because of being engaged in the tasks.

Discussion and conclusions

This study examined the extent to which tasks combining textual enhancement (i.e., glosses) with post-reading activities would facilitate EFL learners' verb-noun collocation learning. The study also looked at whether receptive tasks strengthen learners' receptive knowledge of form and meaning, and whether productive tasks enhanced learners' productive knowledge of form and meaning. The results indicated that tasks combining glosses with post-reading activities enhanced EFL learners' collocation learning, suggesting that the facilitative effects of glossed texts in association with post-reading activities and this is in line with the findings of Peters (2012), Webb and Kagimoto (2009) and Sonbul and Schmitt (2013). In particular, participants in the second and third tasks demonstrated significant differences in their receptive knowledge of form and form-meaning connection, but not in their productive knowledge. The first task did not contribute to any of the post-tests because it consisted

of only noticing, with which the learners probably did not pay much attention to the target items in the post-reading activities. As Boers et al. (2006) argued, “noticing may be a prerequisite for learning, but it does not necessarily guarantee the acquisition of every single element that gets noticed” (p. 257), a claim also supported by Webb and Kagimoto (2009). Sonbul and Schmitt (2013) found that direct approaches facilitated explicit knowledge for both native (i.e., decontextualized) and advanced non-native (i.e., enhanced) learners, but it is unclear whether implicit approaches (e.g., enriched) privileged implicit knowledge. Furthermore, the participants in Sonbul and Schmitt’s (2013) study under the decontextualized condition with direct instruction showed better performance with word recognition and recall than the enriched condition with repeated encounters, but their performance was no better than the enhanced condition with glosses. Webb et al. (2013) found that collocations with at least 5 exposures was the minimum facilitating threshold for receptive knowledge of form, and those with 15 encounters showed sizeable gains. Interestingly, the participants doing the second receptive task with glosses and multiple-choice items in the present study showed even higher gains in terms of both receptive form and receptive meaning than did the third productive task. This finding was consistent with the assumption that participants could acquire more receptive knowledge from receptive task types, and the analysis may also indicate that learners’ receptive knowledge of collocations could be gained through only two encounters (i.e., in the reading text and post-reading activities). However, the finding was different from those in Webb et al. (2013) study in which 5 encounters were needed for some receptive knowledge of form to be acquired, and this may be because the length of the article in the current study is much shorter (187 words) than the graded readers used in Webb et al.’s (2013) study. It may also be attributed to the glosses that drew some attention of the learners to the target collocations in this study, whereas in their study the collocations were not highlighted due to the design of an incidental learning condition.

Both the second and third tasks in this study contributed to EFL learners’ receptive knowledge of form and meaning, but none of the productive knowledge was gained in these two tasks. This result was predictable with the second task as it mainly consisted of activities with a focus on receptive retrieval. However, the third task, with a productive component, also did not contribute to learners’ productive knowledge of form and meaning. This could be attributed to learners’ insufficient exposure to the target items. They read the text only once prior to doing the post-reading activities. Productive knowledge requires more repeated encounters with the target items in association with the task effect (Webb et al., 2013). Another equally possible cause is the participants’ proficiency levels, which were low to intermediate. Thus, they might not have been competent enough to achieve a productive task in which they had not only to understand the text but also to process generation while filling in the sentences, even with a short piece of text. In other words, the task with too much working load might distract their attention from the target items and thus reduce the chance of the target items being retained in their long-term memory.

Implications

This study investigated the effects of glosses and post-reading activities on EFL learners’ different aspects of collocational knowledge. Participants read the 187-word text only once prior to being engaged in the post-reading activities. An important pedagogical implication for EFL collocation learning is that instructors could combine the textual enhancements with different types of post-reading activities to complement

the disadvantage of insufficient exposure with the target items in most EFL contexts. Teachers could also use texts of different length to motivate learners depending on what the learning goals (receptive vs. productive knowledge) are. There are also some implications for further research. First, studies could employ multiple texts with which the learners have varied opportunities and exposures to encounter the target collocations in different contexts. Second, there were only 10 target collocations being examined in this study. To satisfy ecological validity, further research could also adopt a longitudinal approach in which the learning effects of more target collocations are explored. Third, this study only examined learners' collocation learning in a two-week delayed post-test, rather than in an immediate post-test. Future research could also investigate the time-lapse effect on collocation learning. Fourth, L1 glosses were used to draw learners' attention to the target collocations in this study, and L2 glosses can be used to compare the extent to which they contribute differently to collocation learning. Finally, a design with more types of post-reading tasks could also be used with different proficiency levels of learners to examine how and in which ways learners would benefit the most from varying tasks on their collocation learning.

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Appendix 1: Things you might do at work (based on McCarthy & O'Dell, 2005)

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|---------------|--|----------------------------|
| 1. 負責 | Bella has a job as a PA. Basically her role is to take charge of ¹ her boss, who is not a very organized person, and make sure nothing goes wrong. She makes appointments for her boss and she makes sure he keeps his appointments ² . She spends a lot of | 2. 守約 |
| 3. 過濾
電話 | time answering the phone and fielding telephone calls ³ on his behalf. When her boss has to travel, she makes the reservations for him. When her boss has to | |
| 4. 做完
善的準備 | give a presentation, she makes all the preparations ⁴ that are required, including making photocopies of any papers that he needs. She arranges meetings for him | |
| 5. 做紀
錄 | and she takes the minutes ⁵ at the meetings. Bella is a very well-organized person. | |
| 6. 保存
紀錄 | She keeps a record ⁶ of everything she does at work and sets herself targets ⁷ . She does her best to achieve her goals ⁸ . Every morning she makes a list of everything she needs to do. Today the first thing on her list is ' Hand in my | 7. 設定
目標
8. 達成
目標 |
| 9. 遞交
辭呈 | notice ⁹ ! But she's not going to take early retirement ¹⁰ . She's got a new job and she will be the boss and will have her own PA. | 10. 提
早退休 |