The Effect of Data Driven Learning on Receptive Vocabulary Knowledge of Yemeni University Learners

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ABSTRACT

Vocabulary is of vital importance for EFL learners particularly for its major contribution to reading comprehension. The lack of necessary support for learning vocabulary effectively explains why EFL university learners still have limited vocabulary knowledge. The integration of computer technology has offered language teachers and learners a variety of tools to assist in developing pedagogical practices and language learning. One of these tools is corpora, also known as data-driven learning (DDL). The purpose of this study is to examine whether DDL instruction has a significant effect on developing EFL Yemeni learners' words meaning as well as the collocation of receptive vocabulary knowledge compared to the dictionary use. The participants in this study were 60 female second level English language students who were divided into an experimental group (DDL group) and a control group (dictionary group). The findings from the pretest result demonstrated comparability of the two groups in two aspects of vocabulary knowledge. However, the results from the posttest and the delayed posttest showed that the learning outcomes of the DDL group were significantly higher than the dictionary group. The study findings confirmed the substantial short and long term effects of DDL instructional method on vocabulary learning. Based on the study results, there is a great need for raising teachers' and learners' awareness of the effectiveness of the DDL method particularly in a Yemeni context where corpus use is still a novel method for learning.

Keywords: Receptive vocabulary; meaning; collocation; corpus; data driven learning

INTRODUCTION

Vocabulary is acknowledged to be a central factor in language learning and of great importance for language learning skills (Mirzaii 2012, Sadeghi & Nobakht 2014, Nation 2001). It is generally agreed that for EFL learners to succeed in their academic life, they should have reading comprehension ability (Chen 2011). Vocabulary knowledge is regarded as an essential element for understanding a written text. According to Laufer (1997, p. 20), "no text comprehension is possible either in one's native language or in a foreign language without understanding the text's vocabulary."

The end of the twentieth century witnessed a major change of emphasis from the teaching and learning of grammar to that of vocabulary. The rising interest in vocabulary provided a large body of research and pedagogical materials that posed a fundamental question of, "what does it mean to know a word?" (Decarrico 2001). Nation (2005) has proposed three parts of knowing a word: (1) form includes spoken, written and word parts;

(2) meaning covers form and meaning, concept and referents and associations; and (3) use comprises grammatical functions, collocations and constraints on use. He has also characterized vocabulary knowledge in terms of receptive and productive knowledge, thereby distinguishing between the ability to recognize a word through listening and reading and the ability to produce a word through speaking and writing. Several studies have showed that reading comprehension is considerably facilitated by knowledge of word meanings and collocations (Kameli et al. 2013, Mehrpour et al. 2011, Kameli and Baki 2013). Hence, developing EFL learners' vocabulary knowledge of meanings and collocation is crucial for understanding English texts.

Deficiencies in vocabulary knowledge that undoubtedly impede comprehension, contribute to EFL learners' major difficulties in reading. In the university context, findings by Azman et al. (2013) and Bahooth et al. (2014) found that inadequate vocabulary knowledge of Yemeni EFL learners was the first problem they encounter while reading. The same result was also revealed in a Saudi Arabia context. Nezami (2012) indicated that Saudi Arabian learners' reading comprehension was challenged by insufficient vocabulary knowledge. Vocabulary difficulties while reading was not only limited to the Arabian context. The lack of vocabulary knowledge while reading English texts is also a main problem for Chinese and Iranian EFL learners, revealed in the studies of Lin (2002) and Kheirzadeh and Tavakoli (2012) respectively.

The traditional teaching methods practiced at Yemeni schools in particular, led to inadequate vocabulary knowledge of EFL Yemeni university students. While grammar translation method places a great emphasis on translation using the mother tongue of learners and memorisation of vocabulary in isolation, the audio-lingual method relegates vocabulary to a minor role but with a great focus on pronunciation. When these kinds of students join a university they are not supported by their instructors in using effective methods for learning vocabulary. Vocabulary is not taught as learners are supposed to independently develop their vocabulary knowledge. In learning vocabulary, the dictionary has always been the main source for offering definitions and examples of words that EFL learners have to meet in their reading of English texts. It has been indicated that multiple exposure to a word is indispensable for meaning to be acquired (Nation 2001). To overcome vocabulary difficulties while reading at the university level, Yemeni learners should be instructed in how to develop their vocabulary knowledge as suggested in Azman et al. (2013) and Bahooth et al. (2014).

THEORETICAL FRAMEWORK

This study is grounded in social constructivism theory, which draws heavily on the work of Vygotsky (1978). The theory is based on the premise that knowledge is not transmitted to the learners rather it should be constructed by them (Ayas 2006). It put learners in the center of the learning process with the dramatically changed role of receivers of knowledge to seekers and constructors of knowledge. Thus, learning is an active process that encourages learners to be highly active participants in building their own understanding and construction of knowledge. The great role that learners have does not diminish the role of instructors. Instead of being "sage on the stage", teachers are "guides on the side" (Mvududu & Thiel- Burgess 2012). They become less authoritative and play the role of facilitators. An essential principle of Vygotsky's (1978) theory is the zone of proximal development (ZPD). Swan (2005, p. 4) succinctly describes ZPD as "the gap between what is known and what can be known, through adult/instructor guidance". Thus, learning within ZPD entails that learners' active constructing of knowledge is achieved through working on challenging activities beyond the limits of their potentials. The notion of ZPD also suggests that learning is not only active but

a social process as well. It places a great emphasis on the interaction between learners and their teacher or other knowledgeable ones for sharing mutual problem-solving activities which, in turn, contributes to the development of learners' cognition. For successful learning development within a ZPD, teachers should provide suitable scaffolding for learners to progress from their actual level to potential level.

Social constructivism theory was a strong basis for many educational practices to promote effective learning (Woo & Reeves 2007) one of which is DDL. DDL approach reinforces an active and discovery learning environment where learners are not giving the correct answers but have to explore knowledge by themselves. It is a student-centered environment where learners are exposed to different language input extracted from a technology tool known as a concordance program that support their active learning. A teacher is never replaced by the concordance program in DDL classroom. There is only a changing of role from being transmitter to assistor in constructing knowledge.

DATA DRIVEN LEARNING (DDL)

Vocabulary learning has always been one of the fields that computer-assisted language learning (CALL) programs focus on since its application in the 1980s (Ma & Kelly 2006). The use of corpus is one of the CALL applications that was made manifest in the area of vocabulary language teaching and learning. A corpus is a large collection of electronically written or spoken texts that represents authentic language. An essential tool to gain access to a corpus is concordancer, a computer program utilized for searching and analyzing a particular word or phrase. Johns (1991) introduced the integration of corpus in the language classroom and termed the corpus approach as data-driven learning (DDL). DDL is a method of discovery learning, to adopt Bernardini's term (2004, p. 22), where language learners are highly engaged in problem solving corpus activities. Learners can search for a target word or phrase in a corpus by typing that word in a concordance program. The concordancer output displays the selected word in concordance lines. The most common format of concordance lines appears in a Keyword in Context (KWIC) format where the target word presented in the center of each line is surrounded by alphabetically stored contexts to the right and the left. Accordingly, the use of corpus and concordance offers learners ample examples to deduce the meanings and the patterns of a target word or a phrase. To put it differently, in the DDL classroom, the PPP model (presentation, practice, production) that prevailed as the traditional method of learning transmission was completely replaced by John's (1991) new trilogy of identification (observing authentic language), classification (identifying of language features) and generalisation (formulating rules) that enhance learners' roles as researchers and thus encourages learners to be more active and more responsible for their learning. Moreover, instead of the direct transmition of information, the teacher is "the director and coordinator of student-initiated research" (Johns 1991, p. 3) who guides learners through their analysis of corpus examples and provides intervention or suitable scaffolding.

The integration of DDL into language learning can be achieved using the hard version or soft version. The hard version involves learners' direct access to a corpus via computer aiming, for example, to find out the meaning of vocabulary. The soft version, on the other hand, requires students' working on printed out corpus material produced by their teacher. Using a computer based corpus is a great motivator and gives learners a sense of autonomy and control over learning. However, not all classrooms are equipped with computers and have access to the Internet (Boulton 2009a). As this reason might deter learners from using DDL in their learning process, computers should be taken "out of the equation at first" (Boulton 2010, p. 5) and learners can instead be given paper-based materials. Previous

research revealed that the use of paper-based corpus is as effective as the use of computer-based corpus to improve students' performance (Chujo et al. 2012) and promote learning retention (Liu and Ma 2011). Therefore, printed materials can be used to achieve learning in a DDL classroom, albeit in an environment that is not technologically rich.

Al Saeed and Waly (2010) pointed out that designing DDL activities that suit language learners is not an easy task. In order to meet challenges in creating classroom activities, identifying multiple intelligences of learners helps in designing learning tasks that accommodate their needs (Saeidi 2009). Thus, the DDL activities designed in this study were based on the concept of multiple intelligences proposed by Gardner (1983). According to Gardner, multiple intelligences include: verbal-linguistic intelligence, mathematical-logical intelligence, visual-spatial intelligence, bodily-kinesthetic intelligence, intrapersonal intelligence, interpersonal intelligence, naturalist intelligence and musical intelligence.

PREVIOUS STUDIES

A number of researchers have examined the impact of the DDL method on EFL learners' vocabulary learning. Poole (2012) compared the effectiveness of using concordance line glosses with the use of dictionary definition glosses for learning the definition of fifteen academic words. The participants were U.S. university students from different L1 languages including Arabic. Participants were divided into three groups, two experimental and one control group. The experimental groups were corpus-based gloss and dictionary-based gloss while no glosses were provided for the control group. The findings showed that the corpus groups showed more improvement than the dictionary group and the control group. In addition, a one-way ANOVA test revealed that there was a significant difference between the corpus group and the control group. However, there was no significant difference between the two experimental groups. Jalilifar et al. (2014) reported different findings by examining differences in achievement and retention outcomes after the implementation of corpus printed materials for learning the definition of selected words among Iranian EFL students. The findings revealed that corpus based instruction was significantly more effective than conventional modes of instruction in enhancing EFL Iranian learning of vocabulary and promoted the retention of vocabulary knowledge.

Other researchers were also interested in integrating DDL instruction into collocation learning. In a large sample for an experimental study, Jafarpour and Koosha (2006) investigated the effect of DDL instruction on learning collocation of prepositions. The control group was exposed to an explicit traditional teaching method. On the other hand, the experimental group worked with printed out concordances. The result proved that the experimental group performed significantly higher than the control group. Furthermore, a study conducted by Ucar and Yukselir (2015) demonstrated that the use of the DDL method was significantly more effective than dictionary use in developing EFL learners' verb-noun collocations knowledge.

The impact of DDL instruction as an effective learning tool requires more empirical evidence. While most of the empirical studies in the field of corpus language learning suggest the effect use of corpora as a reference tool such as in writing, translation and error correction, little empirical attention has been paid to the use of corpora as a learning tool Boulton (2009b). , this study examines the effectiveness of DDL method in developing Yemeni EFL learners' receptive vocabulary knowledge.

METHODOLOGY

CONTEXT OF THE STUDY

The study was conducted at the Educational Faculty in the Department of English, Sana'a University. The faculty adopted a modular system in which the academic year is divided into two semesters or modules with each module lasting for fifteen weeks. The study was carried out during the first module in 2014-2015. All the study procedures were performed in a second year reading course classroom that met twice a week for two hours. The choices made by that class had two purposes. First, the treatment of DDL and dictionary use was provided in the regular class as it could guarantee the participation of both groups in the experiment. Moreover, the reading course provided students with many paragraphs through which they could learn vocabulary. Thus, choosing the target words of the study from the course would be related totally to the participants' needs and that would subsequently increase their learning motivation and interest.

THE SAMPLE OF THE STUDY

The study participants were 60 female students ranging in age from twenty-one to twenty-five. The faculty randomly assigned the students into two groups of 30 each. The first group represented the control group (dictionary group (DG)) and the second group formed the experimental group (DDL group). The two groups were comparable in their English proficiency level. The students had already passed the entry assessment required by the faculty which parallels the intermediate level of proficiency.

RESEARCH INSTRUMENTS

CORPUS

The Corpus of Contemporary American English (COCA) developed by Davies (2008) was the main resource in designing the DDL activities for the experimental group. The advantages of using COCA include free online usage where participants register only by writing their names and their email addresses, public accessibility to the corpus that allows students to use COCA outside of the classroom, available help guides to explain how to use COCA features and easy search for different aspects of vocabulary as collocation.

PRE- POSTTEST- DELAYED POSTTEST

The target words utilized in this study were drawn from the Academic Vocabulary List (AVL) developed by Gardner and Davis (2014) that can be found online at http://www.wordandphrase.info/academic/. The instruments used for gathering the study data were pretest, posttest and delayed posttest. The first step of developing the pretest was to identify the academic words selected from passages assigned in the participants' reading book. Four passages were selected from the second unit of the reading book. The reason for this was to follow the teaching schedule of the course so that the pretest was corrected so as to find out the target vocabulary. Simultaneously, the first unit was taught to participants. After selecting the passages, each passage was entered into the second part of the AVL site http://www.wordandphrase.info/academic/analyseText.asp to help analyse a text to discover the academic vocabulary. From the four passages, fifty words with a frequency ranging from 1 to 500 were chosen as words that belong to a list considered as the most frequent academic words. The fifty-identified words were associated with their two most frequent collocations and were selected based on their high frequency determined in COCA. For example, the

collocations of the word "employ" as found in the Oxford collocation dictionary are *commonly, extensively, frequently, often* and *widely*. Based on the frequency of those adverbial collocations in COCA, *frequently* and *often* are the most frequent words collocated with *employ* that were then selected in the pretest.

The first part of the pretest examined the participants' word meaning knowledge with two statements from which participants had to choose one. The first statement, '*I do not know what this word means*' was adopted from Horst et al. (2005) test. The second statement was a combination of statements 2 and 3 in Horst et al. (2005) test in which the phrase, '*I am not sure*,' was deleted, and the sentence of '*I can use it in a sentence*' was not included for the reason that developing participants' productive knowledge was not the focus of the study. Therefore, the second statement in the current study was '*I know this word. It means*… (give the meaning in English or in Arabic)'. The participants who knew the meaning of the words and chose the second statement were asked to answer the second part of the test that dealt with examining the word collocation. Collocation knowledge was tested by asking the participants to choose the correct collocation of a word from three alternatives. An example of one of the examined words can be seen below.

Read the following words and circle (A) or (B). If your answer is (B), do number C.

Condition

A. I do not know the meaning.
B. I know the meaning. It means ……..
(Give the synonym or the definition in English or in Arabic).
C. Choose the correct collocations:
   - A player, whose …. condition is good, has the best actions in match. (natural- physical- body)
   - Without this treatment, her condition will not … (improve- develop- progress).

The posttest and delayed test had the same structure as the pretest. Both tests were identical in the number of examined words except for an order change of words in the delayed test.

INSTRUCTIONAL MATERIALS

As the computer lab of the faculty was not equipped with a sufficient number of computers and lacked high-speed Internet access, vocabulary corpus materials were developed for the experimental group as printed worksheets. The corpus materials covered four printed out activities. Each activity involved working on two parts: word meaning and word collocation. Moreover, in order to prevent the development of negative attitudes by participants toward the DDL method using truncated sentences (Sripicharn 2003); the target words were presented with five complete sentences of concordance lines.

On the other hand, a dictionary was provided for the control group to use in order to learn the meaning of the target words. The dictionary that was used by most of the participants was Oxford Word Power. Other participants used the Longman dictionary downloaded on their mobile phone. For each target word that was not offered with an example, the participants were asked to use the passages from which target words were extracted to see these words in context. To learn collocations, the Oxford collocation dictionary was used by all of the participants. As the dictionary does not provide examples for each collocated word, four printed materials were prepared covering an example for each collocation. In addition, an activity for each set of the target collocation words was designed.

DATA ANALYSIS

The quantitative data collected from the three tests were analysed descriptively. The use of standard deviation (SD) and the mean (M) were applied to compare vocabulary knowledge gains of participants in each of the two groups from the pretest to the posttest and the delayed test. Additionally, inferential statistics from an independent sample t-test was conducted to determine if the difference in test results between the two groups was found to be significant. The level of significance was determined to be at the level of .05 and below.

PROCEDURE

Prior to the experiment, two procedures were conducted with the control group and the experimental group while another procedure was implemented only with the experimental group. Both groups were introduced to the meanings and the types of collocations. The purpose of the collocation introductory was to make sure that all the participants possessed a basic knowledge of collocation before being asked to answer the collocation task section in the pretest. The next step involved administering the pretest. The results from this test revealed that twenty-eight words out of the fifty words were unknown to the students in both groups. Five of the unknown words were chosen to train experimental group participants using concordance lines. The other twenty-three words were used to design the posttest and were also used in the instructional material. Moreover, seven words were added that participants knew the definitions of but did not know the collocations. In other words, the DDL instructional material included thirty words that were used by which the two groups were tested in the posttest and delayed test.

With regard to the procedures applied only to the experimental group, two training sessions were required that included working on an activity to train the participants in observing the context of the target words in the concordance lines.

During the treatments, the experimental group participants were asked to work on DDL activities that covered meaning and collocation vocabulary knowledge. Those activities were designed based on the participants' dominant intelligences namely logical, visual-spatial and interpersonal intelligences that were revealed in a study by Al-mahbashi, et al (2015). The DDL group participants worked under the support and guidance of the researcher. The dictionary group was taught the same vocabulary with the same two aspects using only the dictionary and the designed collocation materials. After four weeks of instruction using corpus and dictionary, participants in both groups took the posttest. The participants were then given the delayed test one month after the treatment.

RESULTS

VOCABULARY LEARNING OUTCOME

The first part of the vocabulary test was used to measure the participants' definition vocabulary knowledge. The mean scores for the two groups for this first part are shown in Table 1.

TABLE 1. Comparison of the two groups pre-test meaning scores

Treatment group	Mean	Std. Deviation	t-test	P
DG	9.26	4.00	.028	.97
DDLG	9.30	4.76		

Table 1 shows that the mean score for the dictionary use participants was slightly lower than the DDL group. An independent t-test was then used to assess whether the mean test scores for the DDL group differed significantly from the mean score of the dictionary group. The output from the t-test as presented in the table above revealed that the difference between the pretest mean scores of the two groups was not significant as the *p* value was (.97 >.05). The result suggests that the two groups had the same level of vocabulary knowledge before the treatments manipulation.

The dictionary and DDL groups' posttest results revealed great improvement compared to the pretest results. However, there was a significant difference in gain scores between the two groups. The t-test result reported that the DDL group performed significantly higher than the dictionary group. The t-test *p* value was (*.004* >.05). Therefore, it can be claimed that the difference in performance for the posttest scores was not a random chance. Rather, the difference was a result made possible by the DDL method improving the experimental group performance. The posttest mean scores for the two groups with the results of the t-test are displayed in Table 2.

TABLE 2. Comparison of the two groups post –test meaning scores

Treatment group	Mean	Std. Deviation	t-test	P
DG	12.56	4.62	3.155	.004
DDLG	17.63	6.84		

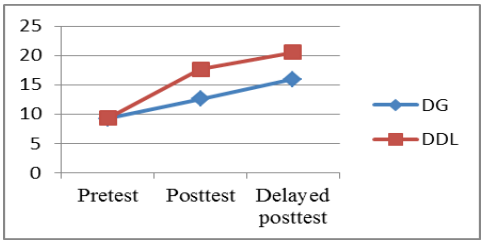
An improvement in performance for the two groups after a month from the treatment was achieved in the delayed test result. Usually the performance of the participants would be expected to decrease after a period of time. However, administering the test after the midterm exam gave participants the opportunity to review the vocabulary after the treatments so that the delayed posttest result for the two groups was not surprising. Although participants might have revised the vocabulary before receiving the delayed posttest, the gain by the DDL group was still higher than the dictionary group. The difference between the two groups proved statistically significant as revealed from the independent t-test p value (*.006* >.05). The delayed posttest score as well as the t-test result for the two treatments groups is shown in Table 3.

TABLE 3. Comparison of the two groups delayed meaning test scores

Treatment group	Mean	Std. Deviation	t-test	P
DG	15.96	5.83	2.97	.006
DDLG	20.56	5.05		

The overall meaning performance of the two groups in the three tests is displayed in Figure 1.

FIGURE 1. Meaning performance by the two groups



The second part of the test was utilized in order to examine the collocation knowledge of participants. Before the treatment although the dictionary group's mean score of the pretest was slightly higher than the DDL group, the t-test result in Table 4 indicated insignificant

differences between the mean scores achieved by the two groups as the *p* value was (.77>.05). In other words, the two groups appeared to demonstrate comparable knowledge of collocation.

TABLE 4. Comparison of the two groups pretest collocation test scores

Treatment group	Mean	Std. Deviation	t-test	P
DG	5.40	1.9	283	.779
DDLG	5.23	2.78		

Dictionary use and the DDL method created a positive effect on the performance of participants in the posttest showing improvement from the pretest to the posttest. However, the mean score for the DDL group was higher than the dictionary group. The value of significance was (.001>.05), indicating that the use of the dictionary was significantly less effective than the DDL method. Table 5 summarizes the analysis of the means scores of both groups and the t-test result.

TABLE 5. Comparison of the two groups post- test collocation scores

Treatment group	Mean	Std. Deviation	t-test	P
DG	10.80	4.83	3.71	.001
DDLG	16.70	6.56		

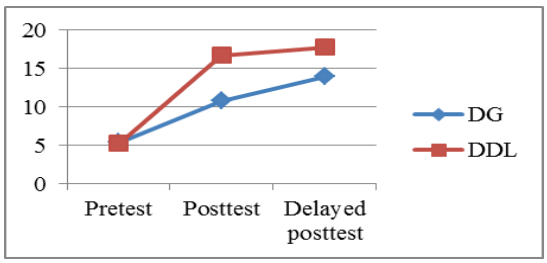
Similar to the posttest finding, Table 6 suggests that the DDL groups showed more improvement than the dictionary group. A significant difference between the scores for the two groups was found using an independent t-test. The p-value of gains by the two groups presented in the table below was (02 >.05)

TABLE 6. Comparison of the two groups delayed- test collocation scores

Treatment group	Mean	Std. Deviation	t-test	P
DG	13.93	5.61	2.443	.021
DDLG	17.80	5.69		

The collocation performance of participants is clearly displayed in Figure 2.

FIGURE 2. Collocation performance by the two groups



DISCUSSION

The aim of the study was to compare the use of DDL instruction versus dictionary usage in order to determine each method's effectiveness for developing EFL Yemeni learners' receptive vocabulary knowledge for word meanings and collocations at the tertiary level. The study findings are discussed from two aspects: the immediate effect of DDL and the retention effect of DDL. Starting with the DDL immediate effect, the result of the pretest scores demonstrated similarity between the experimental and control groups with regard to their

knowledge of meaning and collocation vocabulary prior to the experiment. The posttest results revealed that using the dictionary and the DDL method could be effective in learning the definition of words. The scores of the two groups increased from the pretest to the posttest. Nevertheless, learning vocabulary meaning using DDL method improved significantly more than using the dictionary. This finding is similar to findings by Jalilifar et al. (2014) in which the use of DDL vocabulary instruction method proved to significantly enhance the learning of vocabulary meanings. However, the study finding was not consistent with Poole's (2012) study that proved the insignificant effect of using DDL vocabulary instruction. Different from the experimental procedure applied in this study, insufficient instruction given to the participants learning the target words in Pole's research (2012) could be account for the insignificant difference effect between the DDL group and the dictionary group.

Similar to its effect on the meaning performance, DDL instruction was significantly more effective than the use of the dictionary in enhancing the learning of collocations. It was evident from the comparison of the collocation outcomes obtained from the two groups that the experimental group performed better than the control group. This result was consistent with the findings of Jafarpour et al. (2013) and Ucar and Yukselir (2015) that showed that learners who received DDL activities for collocation learning improved significantly more than those who were taught using a traditional method.

The DDL retention effect was revealed from the analysis of the delayed posttest scores. Based on the reported delayed post-test findings, the experimental and control groups could retain word meanings and their collocations a month after the experiment. In fact, the effect of DDL instruction and the dictionary on the retention knowledge of the two groups was higher than the immediate effect via the two methods, on the participants' posttest performance. As explained previously, the higher retention rate was expected as the delayed posttest was administered after the mid-term examination allowing students to review the target vocabulary. Though the test was administered during the same period of time, the t-test result analysis proved that the DDL participants had a significantly higher retention rate for target meanings and collocations words than the dictionary group. The results obtained by this study are consistent with the results of a study conducted by Jalilifar et al. (2014). In the Jalilifar study, DDL group participants were found to significantly retain the meanings of taught vocabulary more than the conventional instruction group. This finding suggested that the DDL method made a significant effect on the retention knowledge of learners.

The long and short-term impact of DDL method could be attributed to learning the target words in rich contexts through numerous exposures to them that would subsequently lead to vocabulary acquisition (Nation 2001). Moreover, the significant retention gains made on the delayed posttest by the DDL group learners are much influenced by the high cognitive demands involved in the active discovery learning process they were engaged in (Thornbury 2002).

CONCLUSION

The findings of the study suggest the significant role DDL can play in vocabulary learning. The integration of the DDL method as a learning vocabulary tool has been proven to not only develop definition and collocation knowledge of EFL learners but also enhances retention rates of these types of knowledge. The findings of the study are anticipated to be significant from the aspect of learning and teaching vocabulary in foreign language (FL) contexts. For all FL teachers who aim to develop their students' vocabulary learning particularly when reading English texts, the integration of a productive method beyond traditional techniques is

essential. Thus, the data obtained by the study would be of valuable significance to teachers since it will provide teachers with a clear insight into how the use of the DDL method can contribute effectively to the teaching of vocabulary. Language teachers and material designers can adapt the use of concordance output to design motivating materials and activities that can enhance the lexical competence of learners, help to expand their vocabulary knowledge and encourages students to be more self-dependent. For EFL learners, study findings can help them be aware of using DDL as a tool to acquire and overcome the difficulties and insufficient learning conditions in learning target vocabulary inside and outside classroom. In other words, student use of DDL is a step towards autonomous learning so that students take responsibility for their learning in order to become active learners.

By acknowledging the limitations of this research, recommendations for future research are suggested. First, the experiment of this study lasted for four weeks in which thirty academic words with their collocations were targeted. Thus, it would be fruitful to pursue longitudinal research with a greater number of examined words so as to provide a better understanding of the effectiveness of the DDL method in helping EFL learners develop receptive vocabulary knowledge. Secondly, the sample size was 60 female students recruited for this study. Another recommendation is that both females and males be targeted in further research for generalisation of findings. Finally, the current study did not investigate the attitudes of DDL group participants toward the DDL method. Future research should also explore the attitudes of learners toward DDL and whether using multiple intelligences in creating the activities would make participants more receptive to the DDL method.

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