

**The Effects of Using Corpus Tools on EFL
Student Teachers' Learning and Production of
Verb-Noun Collocations**

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Abstract

This study investigated the effects of utilizing corpus tools on university EFL student teachers' learning and production of verb-noun collocations. The participants were 60 first-year student teachers in an English Language Teaching Department of a state university in Turkey. The research followed a pre and post-test quasi-experimental research design in which two classes participated in experimental and control groups. Both quantitative and qualitative research methods were used. Quantitative data were collected via a Collocation Knowledge Test which was administered as a pre and post-test. In addition, student teachers' writings before and after the implementation were investigated for tracking the production of collocations. Moreover, participants'

opinions about the use of corpus tools were collected via a survey. The quantitative data were analyzed by running ANCOVA tests. Though the participants in the experimental group performed slightly better than the ones in the control group on the collocation knowledge test, this difference was found to be statistically non-significant. However, there was a statistically significant difference between the groups in terms of production of the collocations. Almost all of the student teachers found concordancing tools very helpful in learning of collocations. The results were discussed regarding exposure to authentic data and integrating corpus consultation into EFL classrooms.

Keywords: Concordancing, corpus consultation, collocation, COCA, KWIC.

Introduction

Although the authentic items are more helpful to teach the language than the fabricated non-authentic ones (Johns, 1994; Maddalena, 2001), exposure to the authentic linguistic items in non-native speakers' communities is very limited outside of the classroom. Therefore, helping English as a Foreign Language (EFL) learners to reach the authentic use of linguistic items in both inside and outside the classroom is crucial. Recently, corpora, collected for various purposes, are believed to meet this requirement (Breyer, 2008; Varley, 2008). Currently, corpora have also been employed in the process of designing and writing language teaching materials like grammar books or dictionaries. These materials illustrate how language is authentically used and previous research findings have revealed that using corpora in foreign language classes can be an effective tool to teach grammar, vocabulary (Varley, 2008), pragmatics (Simpson & Mendis, 2003), and English for specific purposes (Lee & Swales, 2006; Fuentes & Rokowski, 2002), collocations (Chan & Liou, 2005; Çelik, 2011; Davskalovska, 2013;

Koosha & Jafarpour, 2006). However, due to some challenges like culture and level adjustments, language teachers tend to avoid using corpora in the classrooms (Breyer, 2008).

Unlike idiomatic expressions, collocations, whose meaning can be guessed from their literal concepts, might still cause difficulties for foreign language learners. One of the reasons for this is the effects of the first language on the target language. Foreign language learners from Turkish background, for instance, make a common mistake about 'eating soup' in English, as the soup is used with 'drinking' in Turkish. What is more, previous studies (Laufer & Waldman, 2011; Nesselhauf, 2003; Youmei & Yun, 2005) found that even advanced learners of English have problems with collocations, which require language learners to obtain satisfactory exposure. Collocations also play a significant role in native-like fluency (Bahns & Eldaw, 1993).

This study is motivated by three facts. First, previous studies indicate that both on Turkish English learners (Koç, 2006) and other English language learners face problems with collocations (Daskalovska, 2013, McAlpine & Myles, 2003). Second, studies on corpus tools (Chan & Liou, 2005; Çelik, 2011; Daskalovska, 2013; Sun & Wang, 2003) showed that concordancing could be a useful tool for improving vocabulary and grammar (Varley, 2008), acquiring idioms (Simpson & Mendis, 2003), collocational competence. Last, little research was conducted to examine the effectiveness of concordancing on Turkish EFL student teachers learning and production of verb-noun collocations. By taking these facts into consideration, this study was designed to investigate the effects of utilizing corpus tools on verb-noun collocational knowledge and collocation production of EFL student teachers as well as determining their opinions about using these tools.

Review of the Literature

Collocations

It is possible to define a collocation as “the tendency for lexical items to co-occur in a text, or in a text corpus, whether or not they form a syntactic pattern” (Poulsen, 2005, p.14). Among various definitions of collocations, the words “co-occur” and “frequent” are frequently used. Therefore, it can be concluded that the co-occurrence frequency of two words is the main criteria to call a phrase as a collocation. Hoey (2005) argues that a collocation is a “psychological association between words”. In this study, the definition of collocation is mainly based on frequency-based tradition rather than phraseological tradition. The main difference between these two traditions is that the former reflects the authentic language while the latter one mostly deals with the semantic/syntactic features of word combinations (see Table 1). In the example, “drop a cellphone is considered as “free combination because ‘drop’ and ‘cell phone’ do not call for each other strictly.

Table 1: An example of frequency-based tradition and phraseological tradition of collocation*

		<u>Frequency-based</u>		<u>Phraseological</u>
drop	— a charge	(1)	Collocation	Collocation
	— a case	(2)	Collocation	Collocation
	— a line	(3)	Collocation	Collocation
	— a cellphone	(4)	Collocation	Free combination

*Excerpted from Vural (2010, p.12)

Collocations hold a significant role in foreign language learning and teaching (McEnery & Xiao, 2011). Wray (2000) believes that foreign language learners need to learn a large number of collocations in order to communicate effectively and speak fluently. In a study, Wang and Shaw (2008) investigated the effects of typological differences between the L1 and L2 on the difficulty level of collocations for foreign language learners by working with

Swedish and Chinese background learners of English. The study found that besides typological differences between the languages, intralingual factors like motivation, overgeneralizations are also important in explaining the difficulties. Similarly, many other previous research findings indicated that collocations are one of the most common errors faced in foreign language learning settings (Koç, 2006; McAlpine & Myles, 2003).

Data-Driven Learning

Data-Driven Learning (DDL) is a pedagogical implementation of the corpus, which helps language learners to observe and detect patterns and make generalizations related to the patterns they identified (Johns, 1991). DDL represents the work done by teachers, learners, and researchers with a corpus. One of the ways of applying DDL is utilizing concordancers, which is described as “the most important computing tool for the data-driven approach, which is able to recover from text all the contexts for a particular item (morpheme, word or phrase) and to print them out in a way which facilitates rapid scanning and comparison” (Johns, 1991, p. 2).

DDL supports teachers to have the role of a facilitator in the classroom (Johns, 1994). Papp (2007) asserts that L2 learners can find out the differences between their usage of English and real patterns in the target language. In DDL learners are given a great number of examples in inductive learning of collocations (Chan & Liou, 2005). Promoting inductive language learning (O’Keeffe, McCarthy, & Carteret, 2007), DDL is a useful way of learning and teaching of collocations (Wang, 2002).

Corpus Tools and Language Teaching

The integration of corpus tools or DDL methods has increased enormously (Bloch, 2009; Chan & Liou, 2005; Schmitt, 2000; Sun & Wang, 2003). As Cobb (2003) argues, this integration, in other words putting the learner at the centre of learning, triggers foreign language learning. The significance of using corpus tools has been well-established in the literature (e.g. Chambers, 2007; Chrostwaite, 2012; O’Keeffe et al., 2007; Sun & Wang, 2003; Yoon

& Hirvela, 2004). It is found that using concordancing as a learning tool helped language learners to developed positive attitudes towards DDL method (e.g., Chambers, 2007; Sun & Wang, 2003). However, few studies reported that because of technical problems (Vannestäl & Lindquist 2007) or some other reasons, students avoided using concordancing programs.

Most of the previous studies were based-on classroom instruction to determine the effectiveness of collocation instruction. However, only a few studies investigated the effects of concordancing on learning of collocations (Sun & Wang, 2003; Chan & Liou, 2005). Sun and Wang compared inductive and deductive teaching approaches regarding the learning of collocations by second-year high students by utilizing a monolingual concordancer. The researchers developed two corresponding online exercise versions in the light of deductive and inductive teaching. The deductive group (control) was provided with only the explanations and example sentences. On the other hand, the inductive (experimental) group prevailed the patterns from the monolingual concordances. Both groups received a one-hour instruction and the researchers conducted pre and post-tests before and after this instruction. The results of the study revealed that inductive group improved statistically significantly more than the deductive group did.

A quite recent study was conducted to determine the effects of concordancing tools on learning of collocation of synonyms by university students (Jafarpour, Hashemian, & Alipour, 2013). The study had two groups which were taught with concordancing help and explicit collocation teaching method (traditional) respectively. The results of the study indicated a statistically significant main effect between the mean scores of students who received concordancing activities taken from British National Corpus (BNC) and students who were explicitly taught the meanings of the collocation. This means that using concordancing was more helpful to teach collocation synonymies than the traditional teaching method.

It can be concluded from the above studies that instruction by utilizing concordancing has positive effects on the EFL learners' learning of collocations. Sun and Wang's study (2003) excluded the collocation levels. Chan and Liou's (2005) research covers only verb-noun collocations. The major difference between the two studies is the experimental design. The first study was designed as a control and experiential group's pre-test post-test experiment. Whereas, Chan and Liou's study was in a one-group pre-test post-test experiment design. This study investigated the effects of concordancing on Turkish foreign language learners' learning of collocations. The following specific research questions were constituted:

1. Do corpus tools have any effect on EFL student teachers' verb-noun collocational knowledge?
2. Do corpus tools have any effect on EFL student teachers' verb-noun collocational performance?
3. What are EFL student teachers' opinions about the learning of collocations through the use of corpus tools?

Methodology

Context and Participants

The main aim of this study is to investigate the effects of corpus tools on Turkish EFL student teachers' learning and production of collocations and to detect their perceptions about the process. Therefore, the study is conducted at the English Language Teaching (ELT) program of a state university in Turkey. This program offers a four-year undergraduate study in English Language Teacher Education. Following the concurrent national model, student teachers in this program take basic language development courses such as lexicology, contextual grammar, reading, listening, speaking and writing in the first year. The student teachers of this program also have courses such as introduction to education and educational psychology. From the third semester on, students begin to take field-specific courses such as second language acquisition, linguistics, teaching language skills, teaching English to young learners, language testing, classroom

management, material evaluation and preparation, testing and evaluation. In the last year of the program, student teachers are required to take practicum courses. The study is conducted with first-year students in the compulsory Lexicology course they took in their second semester. The participants were also taking Advanced Reading and Writing, Listening and Pronunciation, Oral Communication Skills, and Lexicology courses. Other than this course, student teachers were taking courses mainly on language skills and educational sciences.

The participants of this study were 60 first-year student teachers studying in the program mentioned above. Although 44 students in the experimental and 43 students in the control group participated in the collocation pre-test, thirty students in each group did all the assignments (collocation pre-post tests and writing before and after the experiment). The age of the participants ranged from 18 to 22.

Data Collection

The data for this study were collected through multiple sources: a) a collocation knowledge test developed by Gylstad (2007), b) students' writings, and c) a survey.

- ***Collocation Knowledge Test (CKT)***: The collocations in the study were only verb-noun collocations because verb-noun collocations are frequent and they constitute a problematic side of collocations (Howarth, 1996). The test used in this study was developed by Gyllstad (2007). During the development process, Howarth administrated the test to learners from various L1 backgrounds and proficiency levels. He concluded that the test could be used for learners with different proficiency levels. The test contained fifty items in which collocations in the test were presented along with two incorrect collocations. The last column, which asks for the Turkish equivalents of the collocations, was not available in the original test. This part, which was added and explained by Vural (2010), aimed to prevent participants from answering the questions correctly by chance.

- ***Pre and Post Writings:*** The participants' writings were taken from the official exam papers of Writing Skills II course, which was another compulsory course in the department. As the treatment was conducted after the mid-term exams and before the final exams, participants' writings in the mid-term exam were used as the pre-test, and the final exam writings were used as their post-test to track their collocation performance. In addition to collocational knowledge, collocational performance was investigated because "while the lack of knowledge of L2 collocations is not so evident in the receptive use of the language, it is in the productive use of the language that it becomes apparent and causes problems for learners" (Davskolavska, 2013, p. 130).

- ***Opinion Survey:*** A survey was prepared to elicit the ideas of participants about using the corpus tools. The survey was given to the participants after the experiment. There were six questions in the survey. The questions were about the experiences and views of students teachers while and after using the corpus tools.

Procedure

Although there are numerous corpora available online the participants were told to work only with the Corpus of Contemporary American English (COCA). It is a contemporary, genre-based corpus and covers the years between 1990 and 2017. COCA was used for this research because it is free to access, and it is a mega corpus which includes over 570 million words as well as comprehensive and representative data. British National Corpus (BNC), created by Oxford University Press in the 1980s and 1990s, uses the same interface. So, the participants were asked to use the BNC as well. BNC is also a mega corpus which contains more than 100 million words. Both corpora consist of genres such as spoken, fiction, magazines, newspapers, and academic.

In the experimental group, the web-based concordancing activities were designed to be taught for four weeks. The participants were provided with a guideline about the usage of the concordancing before the experiment. In the first week,

experimental group student teachers were administered the CKT. The test took about 30 minutes. On the next day, in session two, students were asked to sign up for Corpus of Contemporary American English web page. Students were told about the corpus and then introduced to the web-based concordancing tool of COCA. The participants studied the words in their contexts. Many examples are conducted with student teachers (see Figure 1). The participants were given the list of the collocations they should study. The students were required to do various online tasks (searching the collocations in COCA) after class. Similarly, in the other three weeks, the participants were given guidelines which describe what the learners were supposed to do during the session. The participants were given the list of the words they should study. Some of the words were already asked in the pre-test. The students were required to do various online tasks after the session. After the fourth week, participants were given the same CKT as a post-test. Figure 1 below shows some of the example sentences in which *do* and *damage* as a collocation. When students enter “run damage” or “make damage” no results are shown.

sides . Some of the flashing beaks were beginning to	do damage	along the entire length	of his body . Frightened , he managed
and he might tell you . Senator , leaks do	do damage	and certainly whether	this was one of those cases or not you
: Well , it was obviously intended to -- to	do damage	and it did damage .	And I think there 'll be some
in and start working with the local emergency managers to	do damage	assessments	But it 's a little early yet to decide what
settings were a complicated business . And she might	do damage	by arriving somewhere-some	year-she was not supposed to . On the
'm not going to do that . But you can	do damage	by not doing anything .	'That 's vote suppression . Is
he 'll learn a lesson . white square C)	do damage	control and buy	a gift yourself . white square D) ask
the fact that the White House has been trying to	do damage	control from day	one and they have been responsible largely for
on Democrats . And Justice Department officials trying to	do damage	control have provided	a dazzling array of explanations for why
into this world how government works behind the scenes to	do damage	control how	the media tries to figure out what 's going
diplomats are going out to different cities , trying to	do damage	control trying	to reassure the world that this is a statement
" Sorry , " she said . Had to	do damage	control David	Fullbright heard that Sean had checked in , and
The defense is almost always playing catch-up and trying to	do damage	control spoke	to Michael Jackson 's attorney last night ,
very limited potential to punch through windows and walls to	do damage	elsewhere	Such loads have been used by law-enforcement
and flailing his limbs , pounding fists too small to	do damage	except to himself .	" No ! " He screams . "
: Greenhouse gases already in the atmosphere will continue to	do damage	for years to come	, and damage from gases will be added
they are denied credit . Yet even correct data can	do damage	if it falls into	the wrong hands . Many banks , for
, non-institutional voice , said the hearings could	do damage	if they create	a sense that there is a divide between Muslim
roots and clumps of sod and rocks large enough to	do damage	in small hands	. Back home after a stop at the swimming
Internet -- or worse . like computer networks to	do damage	in the online world	(for instance , by hijacking systems that

Figure 1: A screenshot from COCA for “do” and “damage” collocation

In the control group, traditional exercises for learning the verb collocates of the collocations were conducted. These were:

matching the definition with the collocation, finding the collocations in a text, using a dictionary to find the meaning of the collocation and filling in the missing part of the collocation.

Data Analysis

The quantitative data, collected from student teachers' pre and post-test scores on the CKT, were analyzed by ANCOVA. For the analysis, numbers of the correct and incorrect verb-noun collocations in the essays were counted. Each learner's wrongly used collocations were removed from the correct answers, and another ANCOVA was conducted.

The findings from the survey were analyzed via content analysis (open, axial and selective coding were conducted). Strauss and Corbin (1999, as cited in Yıldırım and Şimşek, 2011, p. 261) put coding into three types; 1) Coding according to the previously identified theoretical framework of the study, 2) Coding according to the concepts identified from the data (inductive coding), 3) Coding according to mixing type one and type two above. In this study, mixing type coding was conducted.

Findings

The findings of the study are presented in three parts: a) Quantitative findings (the analysis of students' scores from collocational knowledge test via ANCOVA), b) Analysis of students' writings for the production of collocations via ANCOVA, c) Content analysis of opinions.

Findings related to Research Question 1: Do corpus tools have any effect on EFL student teachers' verb-noun collocational knowledge?

A one-way ANCOVA, taking the "pre-test scores of the CKT" as the covariate, the "post-test scores of the CKT" as the dependent variable, was used. After finding satisfactory results for the assumptions of linearity, the normality of sampling distributions, homogeneity of variance and regression, and reliability of covariates, between subjects effects were calculated. Table 2 shows

the results of the ANCOVA on whether the difference between groups' CKT post-test mean scores is statistically significant or not. The findings revealed that using corpus tools had a statistically significant effect on adjusted collocation mean scores. In other words, controlling for the pre-test mean scores of CKT, there was not a statistically significant difference between control and experimental groups regarding adjusted CKT mean scores.

Table 2: Analysis of Covariance Findings Regarding CKT Scores

Source	Sum of Squares	df	Mean Square	F	Sig.
CNT Pre-test Group	217.931	1	217.931	7.926	
Error	63.067	1	63.067	2.294	.135
	1567.302	57	27.497		

Findings related to research question 2: Do corpus tools have any effect on EFL student teachers' verb-noun collocational performance?

The verb-noun collocations that were used by the participants in their writing exams were counted as their collocation production scores (Number of collocation in writings before the experiment was considered as the pre-test, and the number of collocations in the post-test in the writings after the experiment was considered as the production post-test). A one-way ANCOVA (Table 3) was computed to determine whether using corpus tools affected the production of the student teachers by taking pre-test mean scores as the covariate variable. The findings revealed that using corpus tools had a statistically significant effect on adjusted collocation production mean scores. In other words, controlling for the pre-test mean scores of collocation production mean scores, there was a statistically significant difference between control and experimental groups regarding the post-test adjusted collocation production mean scores. After finding a statistically significant difference, the effect size was also calculated. According to Cohen (1962), the effect size correlation means are as follows: <.10: trivial, .10 - .30: small to medium, .30 - .50, medium to large, >.50: large to

very large. Hence, the analysis revealed a medium to large effect size ($r=.418$, adjusted $r= .397$).

Table 3: Analysis of Covariance Findings Regarding Production of Collocation Scores

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Production Pre-test	4538.93	1	.764	61.785*	.000	.418
Group	429.124	1	429.124	40.070*	.000	.413
Error	610.436	57	10.709			

* $p < 0.05$

Findings related to research question 3: What are university first-year EFL student teachers' opinions about the learning of collocations through the use of corpus tools?

The analysis of the answers to the survey showed that students' views on concordancing could be sorted into these categories: overall learning, collocation learning, comparison to dictionaries, future use and motivation, and drawbacks.

- ***Overall learning, Collocation Learning, and Comparison to Dictionary Use***

Student teachers believe that they experienced personal and professional improvement by using the corpus tools. In other words, student teachers believe that they developed themselves professionally via corpus tools.

“...Recently I was introduced to COCA and its KWIC feature. I understood that I missed lots of points when I only look up in the dictionary. This corpus helped me to see a word in almost every context.”

“We can find every word and its context in the corpus. I can see the correct use of a phrase or collocation. It will really help me as a future English teacher.”

“Corpus is more practical than a dictionary. Also, you can see the context of the word or collocation.”

A few student teachers believe that you can look for only the predetermined word in the corpus. One participant commented:

“While using dictionaries, on the other hand, one can come across and learn new words.”

- ***Future Use and Motivation***

All of the surveyed student teachers used concordancing for the first time in this study, and excluding four, twenty-six of them are willing to use it in the future. Some representative thoughts are:

“After graduating from this faculty, I will be an English teacher. I need to teach the correct collocates to my students. I will use corpus tools to teach correct collocations.”

“COCA can be used to find example sentences”.
 “When I become a teacher I will ask collocation questions from the corpus.”

Student teachers reported an increase in interest in using corpus consultation as a learning strategy in the future. The following quotations show how participants developed positive views on concordancing tools:

“I will teach this to my friends and my students”.

“I learned how to use corpus tools very well. I will use it in the future. Thanks to corpus tools I can improve my English.”

As for the motivation of future use of corpus tools, a few participants mentioned their advantages while using for writing. These students believe that it is especially useful for both academic and free writing.

- ***Drawbacks***

A few students think that there are some disadvantages of using corpus tools. The drawbacks related to concordancing use

encountered in the study were generally caused by problems familiarity with concordancing, its interface, and previous learning habits. The following excerpts summarize their ideas:

“I had to spend too much time searching for collocations. It was time-consuming.”

“Many results appear, and this makes it a little bit complex.”

One of the participants believes that it is not useful.

“I do not like looking at a screen and learning something. I did not find it useful or practical. I will not use it with my students.

Discussion

Overall, this study had three aims. First, its aim was to find out if using a corpus is more effective for the teaching of verb-noun collocations than the traditional teaching of collocations. Second, it aimed at investigating the effectiveness of using corpus tools on the production of verb-noun collocations. The third aim was exploring the participants' views on using corpus tools for the learning of verb-noun collocations.

Although there was not a statistically significant difference between the control and experimental groups regarding their collocation knowledge, there was a statistically significant difference between the groups regarding collocation production. Several previous studies explored the impact of using corpus tools on collocation knowledge and found that learners who used online corpus tools made significant collocation improvement (Chan & Liou, 2005; Çelik, 2011; Davskalovska, 2013; Jafarpour et al., 2013). On the other hand, as previous research (Lin, 2002; Sun & Wang, 2003; Tseng, 2002) has found, explicit collocation teaching is effective on the learning of collocations. As the control group has received explicit instruction, it could have affected the same level of improvement in both groups, which resulted in non-significant results regarding collocation knowledge. This was also supported by

Çelik (2011), who conducted a study in which a quasi-experimental research design was used with two experimental groups (online concordancing and online dictionary groups). Although both groups increased their collocational competence, the findings yielded no significant difference between these two experimental groups regarding the post-test scores.

It is not surprising that the experimental was more successful in producing the collocations. The participants in the experimental group were required to do various online tasks (searching the collocations in COCA and BNC) after class. The control group participants, on the other hand, were asked to match or choose the nouns that go with the verbs. This suggests that making use of corpus tools is more effective than the typical exercises in helping EFL learners to use more correct collocations in their writings. This is about “spending time on the word; explicitly exploring several aspects of what is involved in knowing a word; and involving the learners in thoughtfully and actively processing the word” (Nation, 2001, p. 95).

Both this study and previous research (Ang, 2006; Çelik, 2011; Jafarpour & Koosha, 2006; Supatranont, 2005) have shown the valuable contribution of using corpus-tools in collocational development. Bahns and Eldaw (1993) argue that collocational knowledge is necessary for fluent speech and writing, but it is difficult for second language learners to develop this aspect of language. When the difference between the groups regarding the production of collocations in the writings, it can be concluded that using corpus-tools was effective in improving the quality of participants’ writings. Previous studies found a positive relationship between collocational knowledge and writing proficiency (Mounya, 2010; Ying & Hendricks, 2005; Zhang, 1993). The novelty of the corpus for the participants might have played another role in the positive effects of using corpus tools, which is also discussed by Daskalovska (2013). The effectiveness of corpus tools should not lead language teachers to disregard other ways of teaching collocations. Thus, one of the implications of this study is that learners should be helped to use their full potential by providing

them with different approaches, various possibilities, and supplementary course book activities.

The participants viewed the collocation learning via the corpus as helpful, which is parallel to previous research findings (Chan & Liou, 2005). The survey findings revealed that participants found the use of concordancing confidence building as they discovered the proper use of collocation without hearing from a native speaker. The findings demonstrate that using a corpus is useful for in improving their overall learning of collocations. When compared to dictionaries the participants found corpus use more practical than the dictionaries. Johns (1990) stressed the functions of a concordance to reach the authentic use of vocabulary, collocation, and grammar. According to the participants of Johns, looking up certain linguistic issues in the corpus was much easier than grammar books and dictionaries. Observing an ESP course, Lee and Swales (2006) received similar feedback from students. In their research, the participants complained about the difficulty of finding the correct usage of certain linguistic items in the target language, English. They found corpus consultation particularly useful in solving this problem. The students participating in the current study said their major problem was similar to that of Lee and Swales' participants. This shows that utilizing corpus as a reference grammar book or dictionary may be very useful in EFL settings.

Conclusions and Suggestions

This paper has focused on the significance of corpus-based vocabulary instruction with a specific focus on collocation teaching. Although there was not a statistically significant difference between the control and experimental groups regarding CKT scores, there was a statistically significant difference regarding their collocation production. Therefore, it can be concluded that the corpus-based instruction of collocations may serve as a supplementary method for teaching and learning collocations in English language instruction, especially in ELT teacher training programs.

This study proved that students had positive views on using concordancing, leading us to make some suggestions regarding both student teachers and teacher trainers. Teacher trainers can integrate corpus consultation into the teaching process. The attractiveness of computers can be used as a tool to teach collocations. Student teachers are increasingly able to access the Internet with frequent advances in technology and infrastructure. They can learn collocations on their own without access to a native speaker or use a cumbersome dictionary. Furthermore, the findings of this study have pedagogical implications for teaching collocations to EFL learners. First, instead of memorizing the collocation of a word, students can see authentic examples by referencing the corpus. Second, teachers can prepare vocabulary and grammar teaching materials according to DDL approaches. Vocabulary teaching materials designed in line with the DDL approach should be incorporated into foreign language classrooms. Finally, a learner corpus can be compiled and—after detecting students' problems with collocations—the problematic ones can be studied more closely via corpus tools. Moreover, the activity and material design processes shown in this paper could be used in foreign language classrooms by language teachers to help their students to use the language authentically. Moreover, language learners might reach authentic language materials both in and outside of the classroom.

Foreign language teachers' decisions to use different materials, activities, or methodologies are shaped by their beliefs and their experiences in the classroom. According to Carter and Elseth (2009), experiences shape language teachers' teaching, and when they are introduced to new tools or methods, they feel uneasy. Teachers should be confident about using technological tools and should learn the benefits of new tools (Hong, 2010). Therefore, the introduction of corpus tools for learning and production of verb-noun collocations was important for shaping the beliefs of student teachers as beliefs are affected by second language teacher education programs (Özmen, 2012). As Prensky (2004) pointed out, most teachers would be considered digital immigrants to the latest technologies. Teaching English as a foreign language to today's

digital natives, teachers of future must understand the variety of programs that future language learners will be using in order to teach them effectively. As a result, it is necessary to train both teachers and learners to enable them to make use of corpus technology to teach lexical items in English. As Breyer (2008) argues “in order to enable language teachers to use corpora, it is important for them to gain a thorough understanding of corpus analysis, as their own insecurity may have a negative influence on their decision to apply it in their classroom” (p. 167).

There are some limitations to this study. First, it was conducted in one setting (ELT department of a state university in Turkey) with a limited number of participants. Therefore, it is difficult to reach firm conclusions and it is necessary to conduct more longitudinal studies that explore the effects of using corpus tools on the learning and production of collocations. Further, the participants’ capabilities in using computers and the Internet might have affected the easiness of using the corpus. Finally, this study dealt with only verb-noun collocations. The results may not apply to other types of collocations (e.g. adjective-noun, noun-noun, and verb-adverb collocations).

Meaningful further research may also be conducted that will build upon this study. First, further studies are needed that would be conducted in other settings. Second, utilizing different corpora would be of great to compare results. Third, other researchers can use different types of collocations, which will show the overall effectiveness of corpus tools on different types of collocations. The production of verb-noun collocations was collected via student teachers’ writings. Hopefully, others who conduct a similar study will create a learner corpora which enable them to make comparisons between native and learner corpora regarding the use of collocations by native and non-native users of English. Finally, the participants of the study were student teachers of English, so they were proficient enough to understand the authentic sentences from the COCA corpus used in the study. Therefore, the findings can be compared with the findings of future research that will be conducted with participants from different proficiency levels.

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