A comparison of contextualized, decontextualized and corpus-informed vocabulary instruction: A quasi-experimental study

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Abstract

This experimental study tries to compare the effectiveness of corpus-informed, contextualized and decontextualized vocabulary instruction in an EFL setting. The participants were 69 high school pre-intermediate language learners in a state school. During the 8-week experimentation process, one of the experimental groups was treated with corpus-informed instruction while the other one studied the same target vocabulary through decontextualized vocabulary activities. With the control group, on the other hand, sessions where the learners were exposed to the target words in meaningful reading contexts were carried out. Before these sessions, the corpus group was trained about the rationale behind concordances and how to use them. A multiple-choice vocabulary test which was composed of the target words was administered both before and after the treatments. Because of its convenience in experimental settings, an analysis of covariance (ANCOVA) was performed. The results of the statistical analyses indicated that the group that studied the target words through decontextualized learning activities scored a significantly higher mean in the post-test when compared to the other two groups. The group with corpus-informed instruction also displayed some progress, albeit statistically insignificant. Interestingly, the control group, which was treated with contextualized vocabulary activities, made the least progress.

Key words: corpus, contextualized, decontextualized, vocabulary instruction

Introduction

The importance of vocabulary acquisition in learning another language is emphasized by Wilkins (1972, p. 111) by stating that "without grammar a little communication is possible but without vocabulary it is impossible to communicate verbally". Furthermore, scholars such as Carter & McCarthy, (1988, p. 97) define lexical competence as one of the most crucial indicators of general language ability. Lexical competence has also been identified as one of the biggest challenges of language learning (Coady, 1997 and Cobb, 1999) by most of the

second or foreign language learners. Despite these insights, which make a lot of sense in terms of second/foreign language teaching and learning, it is surprising that it was once an area which had been traditionally overlooked (Meara, 2002) and undervalued (Zimmerman, 1997). Nevertheless, since the late 1980s, there have been important studies trying to come up with a clear understanding of vocabulary acquisition and effective ways of teaching or helping language learners dealing with this problem. EFL teachers have become more aware of the lexical related problems and the focus of language teaching has moved towards the center of the development of language curricula (Nation & Newton, 1997).

In recent years, among the various methods and techniques, the use of decontextualized tasks as well as contextualized tasks has been widely discussed (see Hunt and Beglar, 2005; Nation 1990, 2001; Schmitt 2000, 2008). However, with the rapid development in technology, new trends in language learning and teaching have started to emerge. Computers and software programs have been integrated into language classrooms to facilitate learning. Vocabulary learning in a computer integrated procedure such as corpus informed vocabulary learning has been reported to help learners to gain a better understanding of knowledge about the word frequencies and meanings in context, and the collocational patterns of words (Read, 2004).

Despite the considerable amount of recent studies comparing contextualized and decontextualized vocabulary instruction, there is a lack of research comparing the effectiveness of decontextualized, contextualized and corpus informed vocabulary applications in foreign language learning context. In order to fill this gap to an extent, the current study tries to investigate the efficiency of these three types of vocabulary instruction on Turkish EFL learners.

Review of Literature

In terms of language pedagogy, what is meant by "knowing a word" is a matter which is open to discussion. It is more than just being able to provide a definition or having a vague understanding of its semantic field. In fact, there are numerous related facets of knowledge that can be regarded as "knowing a word". According to Nation (2001, p. 27), form, meaning and use are the necessary domains of vocabulary for a learner in order to claim that he/she has complete knowledge of a word (see Table 1). In addition, there is also a distinction between the lexicon that language learners possess, which is often referred to as receptive vocabulary, and the lexicon used in written or spoken language, which is referred to as productive vocabulary.

Table1. Dimensions of having complete knowledge of a word

Form	Meaning	Use
Spoken	Form and meaning	Grammatical
Written	Concept and	functions
	referents	Collocations
	Associations	Constraints on use

According to Gass & Selinker (2008), productive knowledge of vocabulary includes more precise knowledge of the word such as knowing how to accurately pronounce or correctly

spell it, or knowing the precise meaning in a variety of contexts. On the other hand, receptive vocabulary includes more general and limited information about the word such as knowing the general meaning or knowing the specific meaning in a specific context of use. It is also claimed by Gass & Selinker (2008) that language learners' receptive vocabulary is greater than their productive vocabulary.

Incidental vocabulary learning

The term incidental vocabulary learning, as opposed to intentional vocabulary learning, refers to the process in which learners come across and familiarize with new words as they come up randomly in meaningful contexts over a period of time. However, some researchers like Singleton (1997) suggest intervening the vocabulary learning process at the metacognitive level rather than incidental exposure to target vocabulary. Although it is still a topic of discussion, related studies have shown that EFL learners actually learn vocabulary incidentally but the percentage of learning is between 4 and 25 (Waring and Nation, 2004). Jenkins, Stein and Wysocki (1984) report that only about 25% of the learners in their study could learn a target word after 10 meetings. In another study, Rott (1999) mentions that language learners need at least six encounters with a certain word to learn it. All studies comparing incidental with intentional learning show that intentional learning is more efficient and effective (Waring and Nation, 2004). Furthermore, it seems that intentional vocabulary learning only gets better if it is integrated with incidental vocabulary learning.

Decontextualized and contextualized vocabulary learning

In decontextualizing, for Oxford and Crookall (1990), the word is removed from any communicative context that might be a clue for the learner to remember and that might make any sense about the actual use of the word as a part of the language. However, Nation (2001) warns that decontextualization does not mean that the word is isolated and is not used in a sentence or any context. Words may occur in a story that the teacher is reading aloud to the class or in a sentence written on the board as a sample. Nation (2001, p. 100) explains decontextualization as "the word is removed from its message context to be focused on as a language item" and gives some examples:

- While listening or reading, the learner notices that a word is a new word, or thinks, "I have seen that word before," or thinks, "That word is used differently from the ways I have seen it used before."
- The teacher highlights a word while writing it on the blackboard.
- The learners negotiate the meaning of a word with each other or with the teacher.
- The teacher explains a word for the learners by giving a definition, a synonym, or a first language translation.

When the concept of decontextualized vocabulary instruction is mentioned, one of the first things to come to mind is the mnemonic technique. The word mnemonic is derived from an ancient Greek word and it means *related to memory* and comes from the name of the goddess of memory in Greek mythology. This memory technique is mostly used while memorizing lists, names, numbers, or vocabulary in a foreign language. The most common way of using it in foreign language pedagogy is most probably *the mnemonic key word* method developed by Atkinson (1975). The learners are required to create sound associations with the target

word and any word in their native language. Later, they are asked to create mental images of the word, thus making the target word supposedly more memorable. There have been numerous studies comparing its effectiveness with other techniques (see Cohen & Aphek, 1980 and Campos & Gonzalez, 2003).

Wordlists, flashcards and dictionaries etc. are also suggested techniques for decontextualized learning. Among the semi-decontextualizing techniques, we can count words grouping, word or concept association, visual imagery, aural imagery, keyword, physical response, physical sensation, and semantic mapping for learning vocabulary (Hague, 1987 and Carrell, 1984). Semantic word mapping is one of the non-mnemonic vocabulary teaching techniques which has been used widely in language teaching classes. In this simple but useful technique, the learners, with the help of the instructor, try to create a network-like image for a target word without referring to a context (see Figure 1). In semantic mapping, contrary to word grouping, words are both put into categories and the conceptual links or paths among the words are presented (Hague, 1987 and Carrell, 1984). Semantic mapping might be suggested to improve comprehension and retention of vocabulary for language learners. Oxford and Crookall (1990) summarize Hague's (1987) six steps for using semantic mapping as follows:

1. Write the target word on the chalkboard or transparency.
2. Have the class members brainstorm words related to the topic.
3. Write/list the words by categories in the form of a map.
4. Have the students provide labels for each category (optional).
5. Discuss the words on the semantic map. Students should be encouraged to discover how the concepts are related to each other.
6. Revise the map after discussion, if necessary. Add new concepts to the map as the lesson progresses.

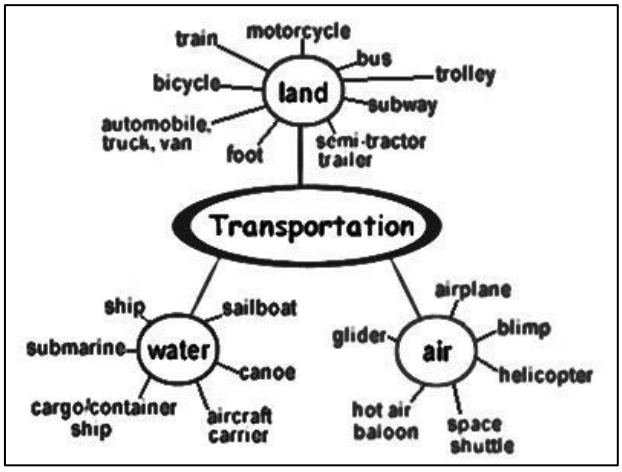


Figure 1. A sample semantic mapping
Retrieved on 03.03.2010 from: *http://www.smekenseducation.com*

In one of the earliest studies, Margosein, Pascarella and Pflaum (1982) found out that semantic mapping has actually a greater effect on vocabulary acquisition compared to the

context clue approach or the traditional dictionary-definition-plus-example approach. It was stated that semantic mapping technique motivates the language learners to connect their prior knowledge to target words and this technique also allowed them to see the lexical relationships among words. In an interesting study, Prince (1996) compared L1–L2 paired-associate learning, which means learning words in pairs so that one of the pairs help recall of the other, and learning an L2 word in sentences in which the participants had to guess the meaning of the target words from context. The results revealed that the paired-associate learning is superior to learning target words in sample sentences. Latsanyphones and Bouangeune (2009), in an empirical study with 169 students of a low proficiency level, found that using learners' native language (L1) to teach English as a foreign language actually improved their retention of new vocabulary items whether in isolation or in context. Moreover, there is an increasing advocacy for explicitly teaching words out of their contexts but at an early stage of learning. Context-based vocabulary learning is thought to be suitable at later stages of language development (Coady, 1997; Nation and Newton, 1997). Similarly, DeCarrico (2001) states that "especially at the beginning levels the teaching of words lists through words association techniques has proven to be successful way to learn a large number of words in a short period and retain them over time" (pp. 288-289).

On the other hand, the assumption underpinning contextualized vocabulary instruction is the common sense that when learners put enough effort in order to make some sense out of a new word in its own context, this effort will somehow pay off and after several other encounters with the new word, it will be learned and retained. This point of view about vocabulary acquisition/learning is probably one of the most well-established issues after decades of discussions (see Craik and Tulving, 1975; Jacoby, Craik and Begg, 1979 for the early discussions; and Nation, 2011 for more recent ones). Theoretically speaking, there seems to be nothing wrong with this insight; however, the merits of spending too much time to learn just one word from a context by trying to make guesses with an instructor in the class knowing the answer but not telling it have been questioned and criticized by many EFL learners in quite a few anecdotes.

There have been many studies suggesting better vocabulary learning and retaining results when the target words are presented in texts and the learners try to infer the meaning of these words from their contexts (Nation, 1982; Nation and Coady, 1988). McCarthy (1990) claimed that a lexical item which is learned in a meaningful context is best assimilated and remembered. Oxford and Scarcella (1994) also mentioned that while decontexutalized vocabulary learning may help language learners memorize vocabulary for tests, students are likely to rapidly forget words memorized from lists. These ideas seem to be widely accepted by language teaching practitioners. Very few language teachers would find the idea of writing down the target words on the board and teaching them without contexts attractive.

Whether the vocabulary instruction should be carried out in or out of context seems to be an existing debate among language professionals. In context-based learning, both the linguistic features of a word, such as phonetic, syntactic and semantic rules and the knowledge of how to use the word properly in a context is acquired (Lu-Fang Lin, 2010, p.63). They also argue that in decontextualized learning, the learner acquires just one definition or synonym or a translation of the word in the native language. Therefore, this leads a depthless world

knowledge without the comprehension of the various usages of the word in the context. Even if most vocabulary is learned from context, which would involve the presentation of the word within a sentence, it cannot be concluded that it "is the fastest or most efficient way of learning specific vocabulary" (Sternberg 1987: 94).

Corpus-informed vocabulary learning

A corpus is defined as "a collection of texts, written or spoken, which is stored on a computer" (O'Keeffe, McCarthy & Carter, 2007). Previously, the term 'corpus' was generally used to describe a body of work such as all the writings of an author. Today the huge capacity of computers makes it possible to store and analyze large amounts of texts using analytical software. It could also be used for qualitative and quantitative analysis as it is a principled collection of texts (O'Keeffe, McCarthy & Carter, 2007).

Corpus linguistics deals with digitally collected and stored written or spoken language. Although it is possible to collect data in any language, the largest corpus datasets have been composed from different varieties of English language like British National Corpus (BNC) or the Corpus of Contemporary American English (COCA), and they contain literally hundreds of millions of words. Naturally, these colossal corpora have become fruitful resources for English language researchers and instructors. They have been used for a number of purposes like determining the frequency and collocational structures of lexical items or phrases. The computerized corpus analysis can effectively be used in teaching vocabulary (Read, 2004) since word frequency (Schmitt, 2000), word meanings in context, and the collocational patterns of words are readily identifiable in digital environment. Integration of course books, dictionaries, and reference works and the availability of learners' direct access make the corpus evidence a new and dynamic way of vocabulary learning. The term collocation generally refers to the restrictions on how words can be used together, for example which prepositions are used with particular verbs, or which verbs and nouns are used together (Richards & Schmidt, 2002). It also refers to the tendency of certain words to co-occur with other certain words mostly as a result of semantic bindings. Most scholars divide collocation systematically into two major groups: grammatical/ syntactic collocations and semantic/lexical collocations (Benson, 1985 and Gabrys-Biskup, 1992). A grammatical collocation is a phrase in which a main word "fits together" with a grammatical word, typically a noun, verb, or adjective followed by a preposition or a structural pattern like an infinitive or a clause. On the other hand, lexical collocations consist only of lexical words like adjectives, nouns, verbs, or adverbs.

Recently, studies of corpus based analysis have attempted to shed light on the complicated issue of collocation instruction since it includes not only the knowledge of word frequency or word meanings in context but also knowledge of the collocational patterns (Schmitt, 2000). These patterns are generally analyzed in concordancing lines which could briefly be defined as a section of occurrences of a lexical item presented in multiple contexts provided by computer software. Figure 2 presents a sample set of concordancing lines for the word 'create'.

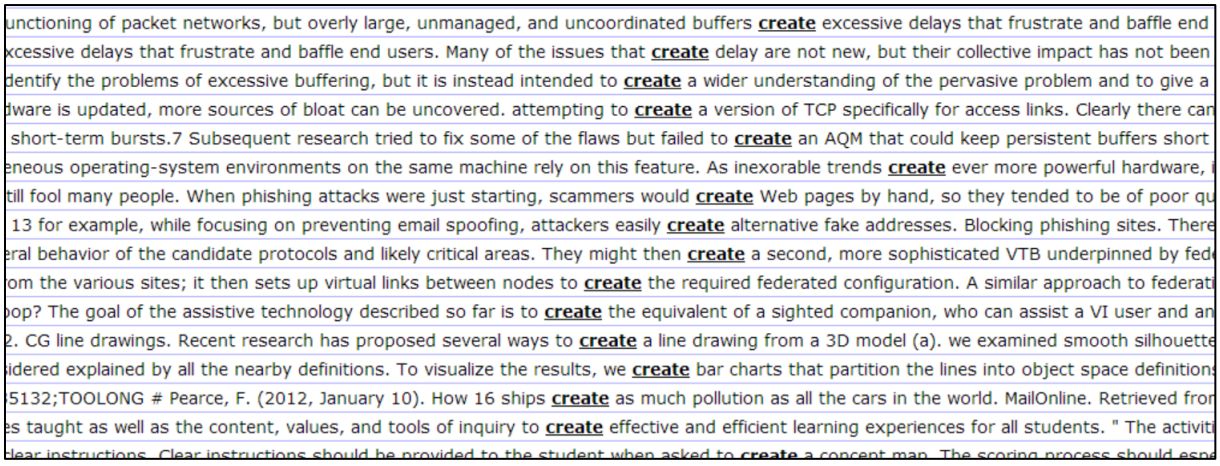

unctioning of packet networks, but overly large, unmanaged, and uncoordinated buffers **create** excessive delays that frustrate and baffle end
xcessive delays that frustrate and baffle end users. Many of the issues that **create** delay are not new, but their collective impact has not been
dentify the problems of excessive buffering, but it is instead intended to **create** a wider understanding of the pervasive problem and to give a
dware is updated, more sources of bloat can be uncovered. attempting to **create** a version of TCP specifically for access links. Clearly there can
short-term bursts.7 Subsequent research tried to fix some of the flaws but failed to **create** an AQM that could keep persistent buffers short
eneous operating-system environments on the same machine rely on this feature. As inexorable trends **create** ever more powerful hardware,
till fool many people. When phishing attacks were just starting, scammers would **create** Web pages by hand, so they tended to be of poor qu
13 for example, while focusing on preventing email spoofing, attackers easily **create** alternative fake addresses. Blocking phishing sites. There
eral behavior of the candidate protocols and likely critical areas. They might then **create** a second, more sophisticated VTB underpinned by fed
om the various sites; it then sets up virtual links between nodes to **create** the required federated configuration. A similar approach to federati
oop? The goal of the assistive technology described so far is to **create** the equivalent of a sighted companion, who can assist a VI user and an
2. CG line drawings. Recent research has proposed several ways to **create** a line drawing from a 3D model (a). we examined smooth silhouette
idered explained by all the nearby definitions. To visualize the results, we **create** bar charts that partition the lines into object space definitions
5132;TOOLONG # Pearce, F. (2012, January 10). How 16 ships **create** as much pollution as all the cars in the world. MailOnline. Retrieved fro
es taught as well as the content, values, and tools of inquiry to **create** effective and efficient learning experiences for all students. " The activiti
lear instructions. Clear instructions should be provided to the student when asked to **create** a concept map. The scoring process should espe

Figure 2. A concordancing screen for the verb *create*

Related literature abounds with details about the general theory and applications of collocations (see Mackin, 1978; Sinclair, 1991; Bahns & Eldaw, 1993; Farghal & Obiedat, 1995 and McCarthy, O'Dell, 2005). There are also studies reporting positive or potentially positive results of using collocations in specific language pedagogy topics such as writing, reading, grammar or vocabulary (Gabrys-Biskup, 1992; Hill, 2000; Nesselhauf, 2003; Laufer, 2003; Sun, & Wang, 2003; Chan & Liou, 2005 and Unaldi, 2011). In one of these studies, Thurstun & Candlin (1998) trying to show the important aspects of academic English vocabulary, prepared teaching materials developed through Microconcord, one of the software used to create concordancing lines, and these materials were put into a series of simple but systematic vocabulary activities as follows;

> *Look* – Screening for the key words to learn and the other words surrounding it
> *Familiarize* – Referring to the concordances to familiarization with the target word
> *Practice* – Trying to remember the target word without referring to the concordances
> *Create* – Trying to create a piece of writing

The learners who participated in the study, along with their instructors, thought that this innovative approach to vocabulary learning was in line with their needs. These simple steps could promise a lot to EFL learners while studying new vocabulary as long as they are modified by the instructor according to the teaching context.

The effectiveness of all these three approaches to vocabulary teaching mentioned so far seems to be based on strong empirical data. As usual, curiosity sets in as to their comparison, and by taking the literature reviewed thus far into consideration, the following research question is the main concern of the current study:

When compared in terms of receptive vocabulary skills, which one is more effective for Turkish EFL learners: contextualized, decontextualized or corpus-informed vocabulary instruction?

Methodology

The current study has a quasi-experimental design with two treatment and one control group. Only one instructor is responsible from the groups and the experimentation process. When the topic is a quasi-experimental study, the process might seem quite straightforward: a control and an experimental group with a manipulation over an independent variable. However, since the experiment is carried out on humans, there are many concerns that needs considering. First of all, non-random selection of group members is one of these issues. Actually, this is the core difference between a true experimental study and a quasi-experimental one. In a true experimental study, the participants are randomly selected and placed in groups whereas in a quasi-experimental study, mostly for technical reasons, a non-random selection is performed. Another issue is the *confounds,* which refers to factors available in the groups that might have the potential to influence the results. For example, the control group might score higher in a test merely because of higher IQs of the participants compared to the experimental group, or vice versa. In the current study, the biases which are brought by non-random selection are accepted and obviously, either minor or major, they have some effects over the results. In order to deal with this problem, in the data analysis process, ANCOVA (analysis of covariance) was used as the statistical technique. Field (2009: 396-397) explains the need and the rationale for ANCOVA as follows:

> *To reduce within-group error variance*: … If we can explain some of this 'unexplained' variance (SSR) in terms of other variables (covariates), then we reduce the error variance, allowing us to more accurately assess the effect of the independent variable (SSM).
>
> *Elimination of confounds:* In any experiment, there may be unmeasured variables that confound the results (i.e. variables that vary systematically with the experimental manipulation). If any variables are known to influence the dependent variable being measured, then ANCOVA is ideally suited to remove the bias of these variables. Once a possible confounding variable has been identified, it can be measured and entered into the analysis as a covariate.

The participants

The setting of the current study is a five-year secondary level school which has one-year English preparatory classes. The participants are 10th graders who are mostly around the ages of 14 or 15. There are 69 participants in total with 25 females and 44 males. After an 8-year primary school period, the students have to pass an exam in order to be accepted to this state school. In the first year, they have 20 hours of English and 4 hours of German lessons in a week. Taking Common European Framework of Reference (CEFR) into consideration, the institution aims at helping students to reach to a pre-intermediate proficiency level.

Since the setting was a state school, the researcher didn't have the chance to randomly select participants and group them accordingly, but rather carry out the study with the participants already divided into three groups (see Table 2), which gives the current study its quasi-experimental aspect.

Table 2. Descriptive statistics about the groups

Group	Treatment	N	%
Group A (experimental)	Decontextualized	24	34,8
Group B (experimental)	Corpus-informed	24	34,8
Group C (control)	Contextualized	21	30,4
Total		69	100

Group A (N=24) was the decontextualized vocabulary instruction group; Group B (N=24) was treated with corpus-informed vocabulary instruction, and the control group, Group C (N=21), studied the target words in meaningful reading contexts.

Classroom procedures and data collection

The allocated period for the treatments was two hours of instruction which comes to 90-minute sessions per week, and the total treatment lasted about eight weeks. After the three groups were chosen, the vocabulary items to be thought were decided on. In the process, a reading material prepared for the control group was used. Lexically oriented lesson plans were made for eight reading passages from this reading course book prepared for pre-intermediate learners of English. On average, nine new words per week were included into the lesson plans. The same target words were also included into the lesson plans for the two experimental groups. Before beginning the treatments, a pre-test was composed, it was piloted with a separate group and the reliability of the test was measured through Cronbach alpha which yielded a score of 0.93 revealing a high reliability.

The 10th grade classes were determined as Group A, B and C. They were given the Oxford placement test (Allen, 1992) in order to determine their English proficiency levels. The results of the placement test indicated that most of the participants were at a pre-intermediate level of English. In order to test their receptive vocabulary levels, one of the well-known receptive versions of vocabulary level tests (Nation & Beglar, 2007) was used. This version consists of four equivalent forms of six Word Levels i.e. 1000, 2000, 3000, 5000, 10000 and University Word Levels. The first 1000 Word Level Test consists of 39 questions each of which has three options for test takers to decide whether a particular statement is true, false, or not understood as in the following examples.

> Instructions: Write T if a sentence is true. Write N if it is not true. Write X if you do not understand the sentence. The first one has been answered for you.
>
> 1. We cut time into minutes, hours and days. T .
> 2. Some children call their mother Mama. _____
> 3. *Show me the way to do it* means 'show me how to do it'. _____

The way to interpret the result is in percentage. Beglar (2000, p.2) exemplifies, "If learner A scores 9 out of 12 (75%) on the 2000 word level, s/he probably knows approximately 75% (1,500) of the first 2000 words of English. And this logic can be applied to the results of the rest of the tests". Nation (2001) suggests that a score of at least 25 out of 30 (or over 80%) is

desirable for each level. In the present study, the design format of these vocabulary level tests is adapted to develop the measures of learners' vocabulary size or receptive knowledge. As is clear in Table 3, the test results revealed that the scores clustered around 50 % for the first 1000 list.

Table 3. The results of the receptive vocabulary test

Group	N. of the test	$\bar{x}$ (correct)	%
Group A		21	53,85
Group B	39	21	53,85
Group C		20	51,28

After the administration of this test, a multiple-choice vocabulary test was composed by taking into account the target vocabulary items. Before composing the test, which would be used as pre-test and post-test, the target words were processed through Vocabprofiler. Vocabprofiler is an online database which breaks texts down by word frequencies in English. These frequency levels are: first and second thousand levels, academic words, and the remainder 'off-list,' or the BNC based 20 levels plus off-list. By taking into account the participants' needs and proficiency levels, some items were distracted and some others were added. After these modifications, all of the target words, 71 in total, were processed in Vocabprofiler and the related results are exhibited in Table 4.

Table 4. Level categories of the target words

Word category	N	%
K1 Words (1-1000):	23	32.39
K2 Words (1001-2000):	18	25.35
AWL Words (academic):	21	29.58
Off-List Words:	9	12.68
Total	71	100%

Vocabprofiler (Retrieved on 2.10.2013 from *http://www.lextutor.ca*)

It is clear from Table 4 that 32.39 % of the target words is from the first 1000, and 25.35 % belongs to the next 1000. In addition, 29.58 % of these words is from the Academic Word List (see Coxhead, 2000 for details.). The rest of the target words doesn't belong to any of these lists. The rationale behind this categorization is that since most of the students appeared to be below the first thousand threshold, words from the second thousand and AWL along with off-list words were chosen so as to increase the chance for the participants to encounter words that they are not familiar with.

Group A (experimental) - Decontextualized vocabulary instruction

In the sessions with Group A, the target vocabulary items determined as was mentioned above, were instructed to the participants without any meaningful broad context and through non-mnemonic techniques. During the sessions, in line with the six steps of semantic mapping mentioned earlier, first the learners were introduced with the target words as isolated units with their Turkish translations. Then the learners were asked to create semantic maps for the word given. The target word was written on the board, it was

circled and the learners were instructed to join this word with related words or phrases (see Figure 1). In the process, they were allowed to refer to dictionaries, either bilingual or monolingual. They were also encouraged to construct sentences by using the words they are trying to learn. Group discussions concerning the meaning, form, or the parts of speech were also carried out. Each lesson started with a systematic recycling of the words which had been covered in the previous session.

Group B (experimental) - Corpus-informed vocabulary instruction
With the second control group, a corpus-informed vocabulary instruction was performed for eight weeks. Before beginning the treatment, the group was trained about the rationale behind corpora and concordancing lines for five sessions through illustrations, hand-outs, or real corpus inquiries. All the target words were introduced to the learners in concordancing lines taken from very different contexts. The activities were in line with the steps proposed by Thurstun & Candlin (1998). The learners in this group were also encouraged to discuss about the forms and parts of speech of the target words in small groups. While doing so, they were instructed to refer to the concordancing lines after the related lead-ins from the instructor. For example, in order to make interpretations about parts of speech, the learners' attention were drawn onto the immediate surroundings of the target words. Each lesson started with discussions about the words and contexts covered in previous lesson.

Group C (control) - Contextualized vocabulary instruction
The control group was instructed in line with what has been mostly accepted as the proper way of teaching vocabulary. All of the target words were presented in meaningful and coherent contexts with *pre, while*, and *post* reading activities. Before vocabulary instruction, discussions about the topics were made to activate learners' schemata. Skimming and scanning activities were carried out. The target words were highlighted in their own contexts, and the learners were allowed to negotiate on the meaning through group discussions. Guessing the new word from the context was demonstrated by the instructor, and then the learners were encouraged to make guesses and share their ideas with the whole class. Multiple-choice and open-ended comprehension questions were discussed and answered. At the beginning of each session, the previous reading passage and the target words in it were summarized.

Results and discussion

In order to determine the recognition levels of the groups, the participants were given the list of the target words and were asked to write their Turkish equivalents. In this way, the percentage of the target words familiar to the participants was also made clear. The same procedure with the same target words was performed after the experimental process and the related results are given in Table 5. According to the results of the recognition test, there seems to be some progress in all of the three groups. Group B and C achieved greater scores in the post-test compared to Group A.

Table 5. Results of the recognition test

Group	Pre-test (%)	Post-test (%)
Group A	30	77

Group B	22	94
Group C	19	92

Before the beginning of the treatments, the multiple-choice pre-test was administered to the groups. After the administration, in order to determine whether there are any differences in groups' pre-test scores, one-way ANOVA test was employed. Before this calculation, to determine whether the error variance of the pre-test is equal across groups, Levene's test was performed, and the result showed that the difference was not statistically significant ($F_{(2-66)}$= 2.241, p>.05). Accordingly, the results of one-way ANOVA test are given in Table 6.

Table 6. Pre-test score comparison of the three groups through one-way ANOVA

	Sum of	df	Mean Square	F	*p*	Scheffe
Between	229.381	2	114.691	5.222	.008	C>A>B
Within Groups	1449.488	66	21.962			
Total	1678.870	68				

According to the figures displayed in Table 6, there is a statistically significant difference among group mean scores ($F_{(2-66)}$=5.222, p< .05). In addition, the result of the Scheffe test indicates that Group B has the lowest and Group C has the highest mean scores. For a better comparison of these groups, Table 7 can be analyzed.

Table 7. Pre-test mean scores of the groups

Group	N	$\bar{x}$	sd
Group A	24	11.71	4.96
Group B	24	8.54	3.90
Group C	21	12.86	5.16
Total	**69**	**10.96**	**4.97**

Group mean scores for the pre-test are displayed in Table 7 ($\bar{x}_{Group\ A}$=*11.71*, $\bar{x}_{Group\ B}$=*8.54*, $\bar{x}_{Group\ C}$=*12.86*). The statistically significant difference becomes obvious with these figures. The mean differences among groups mean that the groups aren't equal in terms vocabulary level. This significant difference among groups creates a confound as was explained in the methodology part. In order for the results to be valid, this confound has to be eliminated. For this purpose, a covariance analysis (ANCOVA) is needed. However, the process is not as straightforward as it might seem to be. Before going on with ANCOVA, the equality of regression slopes also must be tested, which is a prerequisite for ANCOVA Field (2009: 399). Table 8 displays the results of the ANOVA test whose results also reveal the equality of regression slopes.

Table 8. ANOVA test results revealing the equality of regression slopes

Source	Sum of Squares	df	Mean Square	F	*p*
Corrected Model	611.447	5	122.289	7.614	.000
Intercept	1540.808	1	1540.808	95.931	.000
Group	114.986	2	57.493	3.580	.034
Pre-test	168.091	1	168.091	10.465	.002

Group x pre-test	15.580	2	7.790	.485	.618
Error	1011.886	63	16.062		
Total	20031	69			
Corrected Total	1623.333	68			

According to the results of the ANOVA test displayed in Table 8, the common effect of group x pre-test over post-test results isn't statistically significant ($F_{(2-63)}$=.485, p> .05). This means that the regression slopes, showing the relationship between the pre-test and post-test mean scores of the groups, are homogeneous, which also means that an analysis of covariance can be performed. Before analyzing the ANCOVA results, descriptive results of group mean scores and the corrected means can be examined in Table 9.

Table 9. Mean and corrected post-test mean scores of the groups

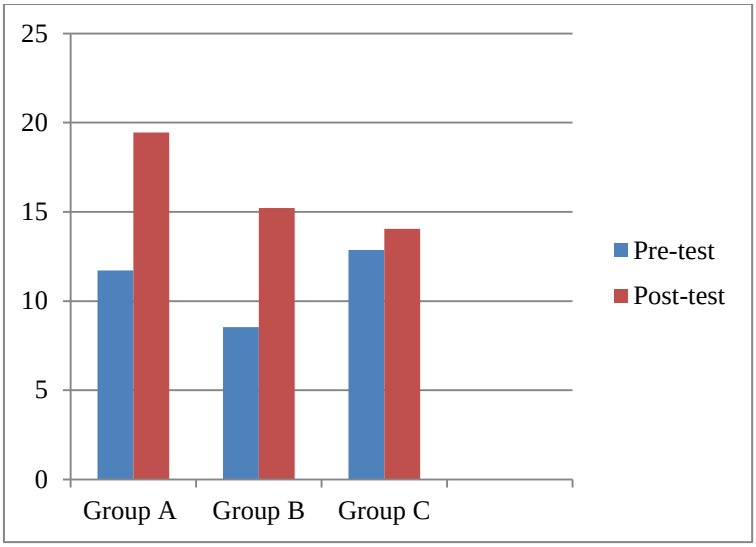
Group	N	$\bar{x}$	Corrected means
A (decontextualized)	24	19.71	19.45
B (corpus-informed)	24	14.38	15.22
C (contextualized)	21	14.71	14.05

Group mean scores for the post-test along with their corrections are presented in Table 9. It is obvious that the mean and the corrected mean scores for the three groups seem to be different. In order to check if this difference is statistically significant, after the equality of error variances were tested through Levene's test and the difference was determined to be insignificant ($F_{(2-66)}$= 2.1, p>.05), a covariance analysis was carried out and the related results are exhibited in Table 10.

Table 10. ANCOVA results with corrected post-test mean scores taking the pre-test mean scores as the covariate

Source of variance	Sum of Squares	df	Mean Square	F	*p*
Pre-test	175.403	1	175.403	11.096	.001
Group	371.313	2	185.657	11.745	.000
Error	1027.466	65	15.807		
Total	20031	69			

According to the ANCOVA results calculated by taking the pre-test results as the covariant, it is clear from the table that there is a statistically significant difference among groups ($F_{(2-65)}$= p< .05). When the corrected mean scores of the groups exhibited in Table 9 are compared ($\bar{x}_{Group\ A}$=19.45; $\bar{x}_{Group\ B}$= 15.22; $\bar{x}_{Group\ C}$=14.05) this significant difference appears to be in favor of Group A, the experimental group which was treated with decontextualized vocabulary instruction. In order to get a clearer picture of the results, Figure 3 can be analyzed.



Pre-test mean scores: ($\bar{x}_{Group\ A}$=11.71; $\bar{x}_{Group\ B}$= 8.54; $\bar{x}_{Group\ C}$=12.86)
Corrected post-test mean scores: ($\bar{x}_{Group\ A}$=19.45; $\bar{x}_{Group\ B}$= 15.22; $\bar{x}_{Group\ C}$=14.05)
Figure 3. The comparison of pre-test and post-test of group mean scores

In Figure 3, pre-test and post-test results of the three groups are presented in a bar chart. When the pre-test scores are compared, Group B, which was treated with corpus-informed vocabulary activities, has the lowest score. On the other hand, Group C, the control group, has the highest score. The corrected post-test mean scores reveal a significant difference among groups; Group A has the highest mean score followed by Group B and C respectively. It is quite clear that decontextualized vocabulary instruction was much more effective than both corpus-informed and the contextualized instruction. It is worth mentioning that the corpus-informed group, Group B, made almost as much progress as Group A while the control group, which was instructed with contextualized vocabulary activities, displayed the least progress.

As was mentioned before, no matter how rigorous one might try to regulate the process, an experimental setting where the treatment is directly related with human beings might bring about complications which cannot be controlled by the researchers. In this study, the expected result was that the contextualized instruction group would outscore the other two inasmuch as the treatment actually involved all the vocabulary teaching/learning techniques that are promoted by the related literature, old and new (Nation, 1982; Nation and Coady, 1988; McCarthy, 1990; Oxford and Scarcella, 1994; Snow, Griffin, & Burns, 2005 and Graves, 2006 along with many others). However, the results of the statistical analyses explained so far actually contradict with the common idea claiming that teaching vocabulary in meaningful contexts yields better results and the results are actually in line with the studies claiming superiority to decontextualized vocabulary instruction (Margosein, Pascarella and Pflaum, 1982; DeCarrico, 2001). This contradiction sure could have been resulted from several factors like differences among groups, which is nearly always the case with experimental studies. Also, during the experimentation process, varying or unstable teaching orientations from the teacher's side in different groups might have created different learning atmospheres leading to unexpected results. There is, of course, no reason to consider the process and the results of this study as intact with minimum level of human error. After all, the insight that supports explicitly teaching words out of context at an early stage of

language acquisition, and context-based vocabulary instructions at later stages of language development (Coady, 1997; Nation & Newton, 1997) makes enough sense. In further studies, the same design could be used to compare the effectiveness of the same vocabulary instructions with EFL learners at advanced level. In addition, as is stated in the corpus-related literature, "in order to obtain effective results from corpus-based activities, training the participants beforehand is more than necessary" (Unaldi 2011: 141). However, it is hard to find a corpus training model for EFL learners in the related literature. A focus on such a need could be the topic of another study.

Conclusion

The disagreement as to the most effective way of vocabulary instruction stems from the fact that there are too many variables to consider in the process. Using mnemonics to teach/learn new words without any contexts looks like a new fad which is slowly turning into a commercial gimmick. What most people ignore is the fact that this way of learning new words is only possible with certain words that have some distinguishing aspects like catchy sound patterns or suitableness to make up stories about. In other words, there are words that are very suitable for mnemonics, but generally their frequencies in the real language in use are really low and the corresponding meanings created in this way are often single and one-dimensional.

Corpus-informed vocabulary instruction sure is a promising approach to the matter. However, compared to the other approaches, a certain level of technicality sets in as a serious matter. All the software and datasets widely available might seem really complicated not only for EFL learners but also for their instructors. The merits of spending considerable amount of time training first the instructors and then the learners could be easily questioned.

It seems that there is no easy or tricky way of building second/foreign language lexicon. There are many parameters that must be considered before asking about the most effective ways of vocabulary instruction. The proficiency levels, ages, needs, and even the native cultures of the learners are among these parameters.

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