

**RECEPTIVE VOCABULARY OF UNIVERSITY STUDENTS IN CLIL
INSTRUCTION**

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ABSTRACT

Content and Language Integrated Learning (CLIL) has recently attracted the attention of practitioners in the language teaching field. As the name suggests, CLIL is an approach built upon teaching content-based area through a language as a medium. For such a language learning process, one of the important language aspects is vocabulary. Regarding vocabulary knowledge, the number of words language learners know - vocabulary size - and how well they know those words - vocabulary depth - (overall, receptive dimension of word knowledge) are crucial foci to consider in language learning. Therefore, the primary concern of the present study is to examine the effects of CLIL approach on receptive vocabulary knowledge of university students in a state university. Accordingly, three levels (2000th, 3000th and Academic levels) of Vocabulary Levels Test (VLT) by Schmitt, Schmitt and Clapham (2001) and Word Association Test (WAT) by Read (2000) are administered to the participants before and after CLIL treatment. The findings indicated that the subjects' size of vocabulary knowledge has significantly differed with CLIL instruction in time, which means that CLIL instruction has been found to be successful for developing both general and academic vocabulary knowledge. In a similar vein, an increase in the depth of vocabulary knowledge of participants alongside with the CLIL instruction has been observed. Within this perspective, it could be asserted that participants' quality of vocabulary knowledge evaluated through WAT seems to have improved with CLIL treatment. Further research including less frequent words as well as the productive aspect of word knowledge might shed light on impacts of CLIL treatment on vocabulary development of language learners, especially university students.

Key Words: CLIL, receptive vocabulary knowledge, size, depth

INTRODUCTION

Content and Language Integrated Learning, henceforth CLIL, has caught the attention of researchers within the field of foreign language teaching in the recent two decades (Alonso, 2013a, 2013b; Fontecha, 2014). This very novel approach adopts a content-based methodology with the focus on both language and content (Zarobe, 2008). Although Cenoz, Genesee and Gorter (2013) believe it is difficult to present an exact definition for CLIL, as an umbrella term, it is an approach combining both content and language, either by focusing on a content-based area via a language as a medium, or learning a language by leaning on a content-based subject (Marsh, 2000; Zarobe, 2008).

When language is concerned with respect to CLIL, vocabulary has an important place during the instruction process. Fernandez (2009) believes in the cruciality of vocabulary instruction in content-based teaching because otherwise, the comprehension of the discourse of the content course is generally hindered (p. 18). In general, vocabulary can be assumed to be among the widely accepted common aspects of language competence (Nation, 1990; Schmitt, 1997; Zareva, 2005). Therefore, vocabulary learning, especially when a language apart from the mother tongue is concerned, is usually believed to provide the basis for language acquisition (Read, 2000b). The growing focus on vocabulary, as a result of its importance, has resulted in an increase in the number of theoretical and empirical research conducted particularly since the 2000s (Meara & Olmos, 2010; Rashidi & Khosravi, 2010; Schmitt, Ching & Garras, 2010; Zhou, 2010; Aziez, 2011; Hellman, 2011; Ho & Lien, 2011; Mehrpour, Razmjoo & Kian, 2011; Ehsanzadeh, 2012; Yuksel & Durmusoglu, 2013). These studies have been developed on the structure of words, and most of them have put forward that vocabulary knowledge includes

different aspects like receptive and productive (Nation, 2001; Webb, 2005; Zhou, 2010; Yuksel & Durmusoglu, 2013). To put it another way, vocabulary knowledge is composed of both how many words learners know (i.e. word size) as well as to what extent learners are proficient in these words (i.e. vocabulary depth) and use of that knowledge in certain contexts (i.e. productive vocabulary) (Read, 2000b; Schmitt et. al., 2010; Yuksel & Durmusoglu, 2013). Keeping these points in mind, lexical knowledge has been identified from a universal viewpoint, scrutinizing various dimensions (Zareva, 2005). Nevertheless, general vocabulary, particularly high frequency words which are more widespread in discourse within the 2000th frequency level, has mostly been the main concern (Laufer et. al., 2004; Webb, 2005; Zareva, 2005).

In line with these assumptions, the current study has as its main purpose to investigate the impact of CLIL instruction on the size and depth of general vocabulary knowledge of learners of English as a foreign language (EFL) majoring in the Engineering Department of a state university in Turkey. The relevant data is collected during a course in which the professor presents the content of a curricular subject via English, in order to relate learners' receptive vocabulary knowledge to their lexical competence with the purpose of high comprehension in written and spoken discourse in subject specific English.

THEORETICAL FRAMEWORK

1. Vocabulary Knowledge

Investigations on receptive vocabulary knowledge: Size (breadth) and depth

According to the literature, while vocabulary breadth is described as the number of words a learner knows, vocabulary depth is defined to be learner's knowledge of different dimensions of the target vocabulary (Yuksel & Durmusoglu, 2013). To give examples on some vocabulary research focusing on size aspect; Aziez (2011) attempted to analyze the corpus of junior and senior high school English National Examination texts from Indonesia in four years of administration. As a corpus based study, the researcher used Web VocabProfilers program built by Cobb (2009). Within the word frequency levels determined, Aziez (2011) scrutinized how many words are required for a reader so as to achieve approximately 95% comprehension of the target text. The results of the analysis showed that, as different tests were analyzed, no systematicity in test construction was found, which suggests that exams administered need to be revised.

Another study focusing on progress in size aspect of vocabulary knowledge belongs to Laufer and Goldstein (2004). With the help of four strength categorization model, researchers focused on the validity of these modalities and analyzed the relationship between each mode and academic success. It became evident that differences in increase of vocabulary breadth might have resulted from either active/passive recall mode or active/passive recognition mode.

Likewise, Laufer et. al. (2004) ran another research with the same aim but different participants and setting. Items were selected from VLT by Schmitt et. al. (2001) and the test was employed to the participants to investigate vocabulary size aspect while four-way categorization model was adopted to scrutinize vocabulary strength. The results revealed that with the test developed by the researchers in order to gauge the number of words a learner obtained, the gains in vocabulary breadth may differ in accordance with the strength mode employed.

As another important dimension of receptive vocabulary knowledge, depth of vocabulary knowledge was investigated by Ho and Lien (2011). Their main goal was to examine participants' test scores on the depth of vocabulary knowledge instrument and a reading comprehension test. Apart from that, the relationship between students' depth of word knowledge and their reading comprehension, the relationship between students' reading speed and their reading comprehension, and the comparison of the high and low achievers' performance were also analyzed and the findings demonstrated that the depth of word knowledge was a good indicator of high success in reading comprehension test. Moreover,

comparisons between the participants with high and low grades showed that their scores of vocabulary depth had a significant impact on their reading performance and speed.

On the other hand, as for the roles of both vocabulary breadth and depth aspect in vocabulary knowledge, Ehsanzadeh (2012) attempted to scrutinize these dimensions of lexical repertoire in second lexical inferencing performance and incidental vocabulary acquisition with the help of reading tasks. Concerning the testing materials, first, VLT by Schmitt et. al. (2001) and WAT by Read (2004a) were employed together. Two weeks later, three parts of VKS by Paribakht and Wesche (1996, 1997) were applied sequentially. As a result, this study came up with productive outcomes in that the depth of word knowledge was more highly correlated with incidental learning of words and this empowers the views on lexical learning behavior that attached importance to the competency of the language learners' conceptual system. Moreover, when the relation between size and depth of word knowledge and L2 lexical inferencing performance was examined, the results demonstrated that the relation between the depth and L2 lexical inferencing success was higher than that between the size and L2 lexical inferencing success. Furthermore, when size and depth aspects were to be compared in order to determine which one was a better indicator of high L2 inferential success, the analysis indicated that the depth aspect of vocabulary knowledge explained a significant amount of the L2 success in terms of lexical inferencing whereas size was not able to make predictions much more on L2 lexical inferencing success significantly than depth.

Besides, in order to understand the correlation between the size and depth of word knowledge and native like L2 lexical attainment, Hellman (2011) conducted a research with the purpose of evaluating the limits of final L2 word success of adult English language learners. Actually, his main goal was to investigate the features that affect L2 lexical attainment. The overall results showed that final lexical success was revealed among adult-onset L2 learners not paying attention to the age of onset of immersion in English. This means that most of the adult-onset L2 subjects in this study could be approved to have reached the highest level of L2 vocabulary knowledge. Concerning the salient features influencing the native-like lexical attainment, "intellectual and verbal giftedness, educated caregivers, childhood foreign language learning experience, graduate studies, and lifelong intellectual curiosity" were identified as the common features of adult-onset language learners having attained native-like lexical attainment (p. g. 174).

Mehrpour et. al. (2011) designed another study to analyze the correlation between size and depth of vocabulary knowledge and reading comprehension of Iranian EFL learners. As instruments, VLT (Schmitt et. al., 2001), WAT (Read, 2000a) and a reading comprehension test adapted from a version of TOEFL were applied to the participants. The correlation analysis demonstrated that large amount of word knowledge results in better understanding of a reading text. Likewise, the quality of word knowledge is important as it facilitates reading comprehension, as well. As for the relationship between breadth and depth of vocabulary knowledge, it became evident that these two vocabulary aspects were interrelated, indicating that the more words language learners obtain, the more intensified their word association network gets.

In a similar vein, in order to scrutinize the interrelation between two aspects of word knowledge, size and depth, and reading performance, Rashidi and Khosravi (2010) carried out a research with 71 Persian subjects in Iranian context. The findings were in consistency with the results of Mehrpour et. al.'s (2011) study in that this research indicated a significant relationship between size/depth and reading comprehension. Also, depth of word knowledge indicated to be a predictor of better reading comprehension when it is compared to breadth dimension as pointed out by the Mehrpor's (2011) research.

Another crucial point to mention is that the instruments administered so as to examine two important aspects of vocabulary knowledge (breadth and depth) are standardized assessment tools like Vocabulary Level Test by Schmitt et. al. (2001) and Word Associate Test by Read

(2000a). Hence, it is necessary to present the procedures of these instruments in order to provide in-depth understanding of the analysis.

Measurement of Receptive Dimensions

Throughout literature of vocabulary research, not many well-acknowledged assessment tools examining receptive aspect were available. As Yuksel and Durmusoglu (2013) proposed, Vocabulary Levels Test (VLT) is the most well-known tool to investigate the number of words a learner has adopted. Originally, VLT was developed by Nation (1990) but revised four times by Schmitt et. al. (2001). It focuses on word knowledge at five word-frequency levels (2000th, 3000th, 5000th, the academic word level, and 10,000th). Each level has six groups composed of six words and three definitions. The learners are expected to match the words available with their definitions. Word classes of vocabulary in each group are the same and no context for is present for them to exclude the chance of giving hints about their meanings. As responding to the items, test-takers do not need to pay attention to other aspects like grammatical form, collocation, function, etc. As Read and Chapelle (2001) proposed, this test was developed as a scale so as to measure learners' vocabulary size disregarding any specific context, which is why it is a purposefully developed assessment tool.

Nevertheless, depth of word knowledge has been less explored than size dimension. The latest version of Word Associate Test (WAT) was composed by Read (2000a) investigating the "paradigmatic and syntagmatic knowledge" of the words (Yuksel & Durmusoglu, 2013). Target words available in this test are very well-known adjectives. There are two boxes and in each box there are four words provided. The words on the left side may help to explain the meaning of the target word while the words on the right side provide examples on the collocations. Test-takers are to select four words in total in both of the boxes but the number of correct answers on the left or on the right is inconsistent, which is determined in order to avoid systematicity with respect to the responses.

To sum up, the studies conducted on size and depth of vocabulary knowledge highlight that both of these receptive dimensions are prerequisites for academic success and high language proficiency. Furthermore, combination of these two dimensions result in in-depth understanding of word acquisition and fosters the quality of word knowledge (Yuksel & Durmusoglu, 2013).

2. Content and Language Integrated Learning

Content and Language Integrated Learning (CLIL) has caught the attention of researchers within the field of foreign language teaching in the recent two decades (Canga Alonso, 2013a, 2013b; Fontecha, 2014). The term was originally identified in 1994 and Coyle, Hood and Marsh (2010) have provided its definition as 'dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language' (p. 1). The primary concern of CLIL is combining both content and language, either by focusing on a content-based area via a language as a medium, or learning a language by leaning on a content-based subject (Ruiz de Zarobe, 2008). Broadly speaking, CLIL seems to be a practical and sensible approach with respect to content and language teaching/learning alongside of intercultural understanding (Darn, 2006b). According to Coyle et. al. (2010) the intercultural understanding is among the key principles of CLIL because it serves the purpose of responding to some world – wide challenges such as advanced technologies, global changes and adaptability to these changes. As these challenges urge people to be interconnected and therefore communicate with each other especially in different languages, CLIL is a feasible opportunity to be utilized in certain contexts.

When the benefits of CLIL are concerned, first, it helps improving intercultural communication skills as it is based on interaction and mutual relation. Thanks to this development it prepares students for internationalization. Linguistically, CLIL facilitates overall language competence with respect to language awareness – of both mother tongue and target language – and multilingual manners. Apart from that, learners get much more informed about

content-specific terminology regarding the target language. Last but not least, learners acquire necessary adaptation strategies and get flexible enough to comply with the conditions in differing classroom settings (Darn, 2006b).

2.1. CLIL and ELT

CLIL is an approach which is similar to ELT methodology with the purpose of guiding language processing and facilitating language production (Darn, 2006b). Generally, CLIL is composed of various aspect of language instruction and builds upon both communicative language teaching and content-based teaching doctrines which propose language becomes meaningful when introduced in certain contexts (Darn, 2006; Coyle et. al., 2010). It seems evident that CLIL and ELT meet on common grounds. As an example, communication is the key element in language learning (Richard & Schmidt, eds.) and CLIL focuses on a content-subject by means of a language, which serves a real need for learners to actively interact with either teacher or their peers. This real-life situation appears to facilitate natural and communicative language learning fostering fluency, and then accuracy, which is adopted by Natural Approach in ELT (Darn, 2006b). Apart from that, motivation is another concern of language teaching and according to Darn (2006a) via CLIL, learners get much more motivated as they are stimulated by the content-based subject either out of interest or of obligation.

All in all, there is an obvious relationship between CLIL and ELT especially with respect to main aims, which appears to be crucial for the good of language learners.

2.2. CLIL in Turkey

CLIL is a brand-new approach in language teaching in Turkey although there have been many high schools adopting the idea of teaching the content-subject through English (Darn, 2006a). Regarding university education, it has recently forged ahead with English being the lingua franca all around the world (Darn, 2006b). Keeping the reality that students graduate from high schools not being proficient enough in language in spite of several years wasted in mind, Darn (2006a) expresses the need for language competent instructors as follows:

While Turkey remains committed to membership of the EU, it may be well to remember that the demand for a mobile labor force may be largely confined to language competent skilled labor rather than the academically adept. (p. 5)

2.3. Empirical Studies on Language Learning of CLIL Learners

In the literature, it seems obvious that CLIL research has started to take place in Spain because it has become a reality in their educational system. Therefore, a number of studies encountered are carried out in Spanish context. Their main purpose is determining the salient effects of CLIL on language learning, and analyzing the advantages of this approach by comparing CLIL students and non-CLIL students.

Ruiz de Zarobe (2008) examined the differences between CLIL and non-CLIL students with respect to speech production. His main emphases were on different language components such as pronunciation, vocabulary, grammar, fluency and content. The results indicated that CLIL learners outperformed non-CLIL students in each category.

Agustin Llach (2009) has focused on the transfer between mother tongue and target language of students by comparing CLIL and non-CLIL students. To be able to analyze the differences between two groups, she has taken the hours of exposure as her main focus. Subjects were asked to write a composition in English and lexical transfer occurrences found in these compositions were analyzed. The findings revealed that non-CLIL subjects make more transfer errors than CLIL learners.

Apart from that, a number of other researchers focused on only the effect of CLIL on vocabulary development. Jimenez Catalan and Ruiz de Zarobe (2009) have made a comparison between CLIL and non-CLIL learners with respect to vocabulary size. They administered the

lowest levels of Vocabulary Level Test by Nation (1983) to the subjects and concluded that CLIL fosters vocabulary size level of students. In a similar vein, Agustín Llach and Canga Alonso (2014) carried out a three-year longitudinal study by comparing CLIL learners and traditional learners with regard to their receptive vocabulary size and lexical growth. The 2,000 word frequency-band (2k) from the receptive version of the Vocabulary Levels Test (VLT) by Schmitt et. al. (2001) was administered to 58 CLIL and 49 traditional EFL subjects. The findings demonstrated that traditional EFL learners fell in 1000-word band whereas CLIL learners got much higher scores in vocabulary level test.

Castellano Risco (2015) has designed a MA thesis on comparison of CLIL and non-CLIL learners in terms of vocabulary learning strategies and their relationship to the receptive vocabulary size of learners. The Yes/No test developed by Meara (2010) and the vocabulary learning strategy questionnaire by Schmitt (1997) were administered to 24 CLIL and 20 non-CLIL secondary school students. The results of receptive vocabulary knowledge test were proved to be in favor of CLIL group. That is to say, when the vocabulary levels of both groups were compared, CLIL group outperformed the other group. Regarding the vocabulary learning strategies, both groups were observed to utilize the strategies in many different ways. As an example, discovery strategies were used more regularly by non-CLIL learners whereas consolidation strategies were encountered much more frequently with CLIL learners, which seems - according to Castellano Risco (2015) - strictly related to receptive vocabulary knowledge of these students.

STATEMENT OF PROBLEM

Vocabulary is regarded as among the crucial aspects of language competence (Nation, 1990; Schmitt, 1997) and it is a widespread view that as the learners get more and more experienced with the target language, their lexicon gets wider (Vermeer, 2001). CLIL supports language learning, especially vocabulary acquisition, through frequent presentation of language in meaningful contexts, which fosters learning, either implicitly or explicitly (Canga Alonso, 2013b).

When the relationship between CLIL and vocabulary knowledge is concerned and after reviewing the literature, it has become obvious that there is a limited number of studies investigating this relationship as CLIL is a brand-new approach in the field. Studies encountered in the literature have been carried out in Spain since CLIL is a part of their educational system. Apart from that, these studies have generally taken primary and secondary school EFL learners as their participants; thus research carried out in university settings seems to be another need.

Keeping all these in mind, the primary concern of the present study is to examine the effect of CLIL approach on receptive vocabulary knowledge of fourth grade university students majoring in Engineering Department of a state university in Turkey. With this purpose, this study is going to address the following research question:

- What is the effect of CLIL approach on receptive vocabulary knowledge of university students?

METHODOLOGY

1. Research Design

The current study attempted to investigate the impact of CLIL approach on the overall state of fourth grade university students majoring in Engineering Department of a state university in Turkey in terms of receptive vocabulary knowledge. With this purpose, a quantitative research designed was adopted.

2. Participants and Research Setting

This study was conducted at Mining Engineering Department of a state university in Turkey. The university is a Turkish - medium university, thus lessons are generally carried out in Turkish except a number of elective courses with English as the medium language. Actually, the relevant data is collected during such a course in which the professor presents the content of a curricular subject via English in order to relate learners' receptive vocabulary size and depth to their competence to be able to comprehend written and spoken discourse in subject specific English.

The participants of this study consist of 11 students in total. Following the convenience sampling procedures, since a pre-test and post-test design was to be employed, the data collection instruments were distributed to the subjects first at the beginning of the semester; and after 12 - week CLIL instruction was completed. Since the present study examines the general vocabulary knowledge of the subjects in terms of a specific dimensional framework, it is necessary to collect all instruments measuring each of the determined dimensions from each participant. However, because of the nature of the pre-test / post-test design, some students who were not able to complete all the tests had to be excluded from the analysis.

2.1. Instruments

Within the perspective of the purpose of the study, "Multiple Test Approach" has been resorted so as to meet the requirements of analyzing related aspects of lexical knowledge. Keeping this in mind, differing instruments were employed in order to carry out in-depth examination on language learners' vocabulary profile.

Two different assessment tools were administered to the participants to examine their receptive word knowledge. In order to scrutinize the size dimension of general word knowledge, the latest version of Vocabulary Levels Test (VLT) developed by Schmitt et al. (2001) was employed to the subjects. Normally, this test includes four word frequency bands as 2000th, 3000th, 5000th, 10000th as well as Academic Word Level. However, since the participants were not proficient enough to complete the last word levels – 5000th, 10000th – only 2000th, 3000th and Academic Word Level (AWL) word bands were administered. As for the scoring, subjects acquired one point for each correct answer. 2000th and 3000th sections were composed of 30 target items while AWL section constitutes 36 items, resulting in the maximum score of 96.

On the other hand, in order to make analysis on the depth dimension of lexical knowledge, Word Association Test (WAT) by Read (2000) was utilized. For grading WAT, participants' responses were entered on "<http://www.lex tutor.ca/tests/associates/>" website individually. According to this scoring procedure, the maximum score for WAT is 160.

Hereunder, these two measurements are demonstrated in Table 1 below:

Table 1. The instruments used in the study

	Instrument	Dimension measured	What is assessed	Expectations from Ss
Size	Vocabulary Level Test (Schmitt et. al., 2001)	Size of Vocabulary Knowledge	Number of words a learner knows	To match the vocabulary, selected from 2000 th , 3000 th frequency and Academic word levels with three definitions
Depth	Word Association Test (Read, 2000)	Depth of Vocabulary Knowledge	How well a learner knows the word	To find the semantically related words

2.2. Data collection procedure

The name of the course in which the relevant data was collected was 'Technical Language on Mining'. A course book on technical terms of Mining Engineering is used during lessons.

The course is built upon the elements of mining, the materials and tools used during mining activities and the processes run in mine shaft sinking. The instructor presents the lesson by using the medium of English. From the informal conversation carried out with the instructor, it is understood that when a misunderstanding occurs about the issues or technical terms within the lessons, the instructor focuses on the grammatical forms and structures of English in order to get the record straight.

The instruction took 12 weeks. At the beginning of the semester, in the second week, the instruments were passed out to the participants during their regular class hour with the permission of the class teacher by the researcher. First, subjects completed the VLT and then WAT at the same class hour. At the end of the 12 – week period, both these tests were administered again so as to investigate the impact of CLIL instruction on vocabulary knowledge of participants.

2.3. *Data preparation and analysis*

After the data was gathered, both of the instruments were matched together for each participant. By matching the test, the subjects not having completed both tests were excluded. As a consequence, 4 cases were eliminated from the total sample of 15 test-takers; hence, the instruments collected from 11 participants were investigated in this research.

For grading the instruments, VLT was scored according to the two frequency levels plus the scores taken from AWL in addition to the total score whereas WAT was graded by entering the responses on “<http://www.lexutor.ca/tests/associates/>” website individually.

The data gathered was analyzed via 20.0 version of Statistical Package of Social Science (SPSS). Via descriptive statistics, a general view of participants’ vocabulary size (VLT) and depth (WAT) were identified, then independent samples t-test analysis were carried out for the comparison of pre-test and post-test results so as to reveal the impact of CLIL.

FINDINGS

1. Findings on Size of Vocabulary Knowledge (VLT)

To reveal the participants’ size of vocabulary, that is to say the number of words they know, Vocabulary Level Test (VLT) developed by Schmitt et. al. (2001) was administered. Based on the mean scores and standard deviation values of the participants, firstly the subjects’ pre-test and post test scores from the VLT are discussed. The related findings are presented in Table 2:

Table 2. Descriptive statistics of vocabulary level test scores

VLT	N	Mean*	SD	Min.	Max.
Pre-test	11	21, 55	15, 996	4	60
Post-test	11	32, 18	14, 845	15	67

* The values are taken out of 96, which is the maximum score that can be obtained from the test.

As represented in Table 2, it was revealed in the pre-test that participants knew approximately 20 percent of the words in VLT ($X = 21, 55$ out of 96). The average mean scores increased in the post-test ($X = 32, 18$ out of 96), which means that CLIL instruction has a positive impact on the participants’ vocabulary knowledge. In other words, it is implied with the findings that subjects have acquired new vocabulary thanks to the exposure to vocabulary via CLIL instruction.

To justify this interpretation and to check whether the difference between the mean scores of pre-test and post-test is statistically significant, paired samples t-test analysis has been run on the overall mean scores of VLT. The obtained results are presented in the following Table 3:

Table 3. The results of paired samples t-test on the total mean scores of VLT

Paired Samples Test								
Paired Differences						T	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Er. M.	95% Conf. Inter. of the Dif.				
				Lower	Upper			
VLT_Pre - VLT_Post	-10,636	6,153	1,855	-14,770	-6,503	-5,734	10	,000

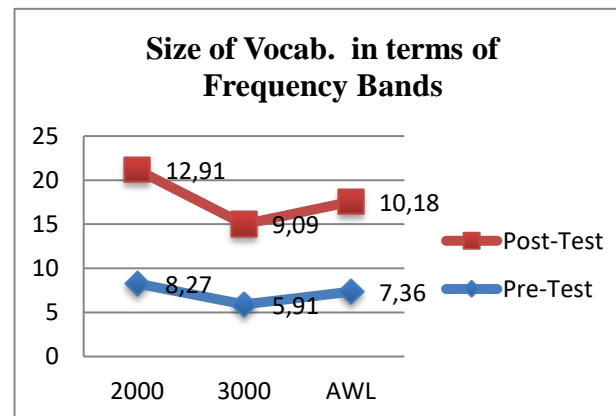
*significance level is .001

The results of the paired samples t-test indicated that there is a statistically significant difference between the mean scores of pre-test ($X = 21,55$, $SD = 15,996$) and post-test ($X = 32,18$, $SD = 14,845$), $t(10) = -5,734$, $p < .001$. Therefore, it could be asserted that the participants' size of vocabulary knowledge differed in time with CLIL instruction. In other words, Table 3 implies that as learners are exposed to CLIL instruction, acquisition of new vocabulary takes place.

In addition to the overall vocabulary size, subjects' size of general and academic vocabulary was evaluated in terms of frequency bands. The findings of the frequency band analyses are presented below:

Table 4. Descriptive statistics of the three frequency bands, pre-test and post-test

	Pre-Test (n = 11)		Post-Test (n = 11)	
	Mean	SD	Mean	SD
2000	8,27	6,278	12,91	5,718
3000	5,91	4,415	9,09	4,847
AWL	7,36	6,185	10,18	5,564


Figure 1: The distribution of size in terms of frequency bands in VLT for both tests

As demonstrated in Table 4 and Figure 1, the learners' vocabulary breadth was different with regard to the frequency bands posed in the VLT. In more detail; for 2000th word band, identified as the high frequent vocabulary, in the pre-test, participants received a low mean score ($X = 8,27$) compared to post-test ($X = 12,91$). Considering the maximum score (30) that can be taken from 2000th word band in the VLT, it can be asserted that subjects knew approximately one third of the all the words provided at the beginning of the semester. With CLIL instruction, the number of words subjects know increased about fifty percent.

As for 3000th word band, participants got much lower scores compared to 2000th level as the words got less frequent, which indicates participants' size of vocabulary decreased. However, it is evident from the comparison of mean scores of pre-test ($X = 5, 91$ out of 30) and post-test ($X = 9, 09$ out of 30) that CLIL approach fostered the acquisition of new vocabulary.

Regarding academic word level, a similar change is observed. From the mean score in pre-test ($X = 7, 36$ out of 36), it is clear that subjects knew only one fifth of the words present in academic word level at the beginning of the semester. However, after CLIL instruction, the mean score increased in post-test ($X = 10, 18$ out of 36).

To further investigate whether the differences at these word levels are statistically significant, three paired samples t-tests were carried out. The results of t-tests on three word bands are presented in Table 5:

Table 5. The results of t-tests indicating the differences of pre-test and post-test for the frequency bands at VLT

Paired Samples Test								
	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Er. M.	95% Conf. Inter. of the Dif.				
				Lower	Upper			
2000 th _Pre - 2000 th _Post	-4, 636	2, 873	, 866	-6, 567	-2, 706	-5, 352	10	, 000
3000 th _Pre - 3000 th _Post	-3, 182	3, 250	, 980	-5, 365	-, 998	-3, 247	10	, 009
AWL_Pre - AWL_Post	-2, 818	3, 790	1, 143	-5, 364	-, 272	-2, 466	10	, 033

*significance level is .05

The findings of paired t-test analyses, as presented in Table 5 above, illustrate that there are significant differences between pre-tests and post-tests in terms of the mean scores on the three word levels. Specifically, for 2000th frequency level, a statistically significant difference has been observed between pre-test ($M=8, 27$, $SD=6, 278$) and post-test ($M=12, 91$, $SD=5, 718$) scores with regard to CLIL instruction ($t(10) = -5, 352$, $p = , 000 < ,05$). Likewise, there is a statistically significant difference pre-test ($M=5, 91$, $SD=4, 415$) and post-test ($M=9, 09$, $SD=4, 847$) scores of 3000th word band, as well ($t(10) = -3, 247$, $p = , 009 < ,05$), which means that CLIL instruction was found to be useful for facilitating vocabulary acquisition of language learner in. Finally, the differences between mean scores of pre-test ($M=7, 36$, $SD=6, 185$) and post-test ($M=10, 18$, $SD=5, 564$) for academic word level also proved to be statistically significant ($t(10) = -2, 466$, $p = , 033 < ,05$).

All in all, the analyses on the scores of the VLT concerning frequency bands demonstrated that participants' size of vocabulary knowledge was limited at the beginning of the semester. That is to say, they had difficulty in recognizing the words even in high frequency bands. However, the statistical analyses indicated that the subjects' vocabulary knowledge differed significantly with CLIL instruction in time. This means that, CLIL instruction has been found to be successful for developing both general and academic vocabulary knowledge.

To understand these findings better and make further guesses about the participants' receptive word knowledge, the depth of lexical repertoire, which is identified as learner's knowledge of different aspects of a target word, was also investigated.

2. Findings on Depth of Vocabulary Knowledge (WAT)

Depth of vocabulary knowledge, which refers to how well learners know the words, was evaluated via Word Association Test (Read, 2000a) in the current study. The value of depth aspect was analyzed under the effect of CLIL instruction. The results acquired from the analysis of this test are presented in the following Table 6:

Table 6. Means and SDs of WAT

WAT	N	Mean*	SD	Min.	Max.
Pre-test	11	45, 64	31, 088	16	104
Post-test	11	80, 64	13, 485	57	105

The descriptive data in Table 6 presented that there is a difference between pre-test ($X = 45, 64$ out of 160) and post-test ($X = 80, 64$ out of 160) mean scores, indicating that CLIL instruction has influenced participants' depth of vocabulary knowledge.

In accordance with VLT results, the findings of the WAT illustrated an improvement in participants' quality of vocabulary knowledge with CLIL instruction. At this point, it should be underlined that subjects' depth of vocabulary knowledge was not so high at the beginning of the semester; it ranged between 16 (as the minimum score) and 104 (as the maximum score) and concerning the maximum score of the test (160), this situation might be explained as above average. However, after CLIL instruction, although maximum score taken did not change so drastically (105), a striking change was observed with the minimum score obtained (57). Within this perspective, it could be asserted that participants' quality of vocabulary knowledge evaluated through WAT seems to have improved.

To investigate this difference between the test scores, mean scores of WAT were compared via paired samples t-test analysis. The findings are provided in Table 7:

Table 7. The results of paired samples t-test on WAT scores

Paired Samples Test								
	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Er. M.	95% Conf. Inter. of the Dif.				
				Lower	Upper			
WAT_Pre - WAT_Post	-35,000	25,655	7,735	-52,236	-17,764	-4,552	10	,001

*significance level is .01

The findings of paired samples t-test indicated that there is a statistically significant difference between pre-test ($M=45, 64$, $SD=31, 088$) and post-test ($M=80, 64$, $SD=13, 485$) scores with respect to CLIL instruction ($t(10) = -4, 552$, $p = ,001 < ,01$). Therefore, it can be concluded that CLIL instruction has been found to be effective for facilitating improvement of participants' quality of vocabulary knowledge.

The findings of both size and depth analyses have shed light on the participants' receptive vocabulary knowledge. As these aspects are considered to be the sub-dimensions of overall receptive word knowledge, they may together provide a much in-depth understanding on the analysis of learners' receptive vocabulary knowledge (Zareva, 2005). Therefore, participants' overall receptive word knowledge was reanalyzed in terms of the compilation of both scores taken from VLT and WAT in the following section.

3. Overall Receptive Vocabulary Knowledge (VLT + WAT)

To investigate the participants' overall receptive vocabulary knowledge, the findings on the size and depth of word knowledge were re-examined by adding up the total scores of the VLT and WAT. The distribution of these statistics is demonstrated in Table 8:

Table 8. Descriptive statistics on the participants' lexical competence

VLT + WAT	N	Mean*	SD
Pre-test	11	67, 18	43, 097
Post-test	11	113, 73	22, 468

*Mean values were calculated out of 256, maximum value of the addition of VLT (96) and WAT (160)

Table 8 illustrates that at the beginning of the semester, participants' overall receptive vocabulary knowledge seemed to be limited considering the mean value of 67, 18 out of 256. However, after CLIL instruction the mean scores appeared to have increased (M=113, 73).

To examine whether this difference at the mean values of pre-test and post-test was significant or not, a paired samples t-test analysis was run comparing pre-test and post-test. The obtained findings are illustrated in the following table:

Table 9. The results of paired samples t-test on VLT+WAT scores

Paired Samples Test								
	Paired Differences					T	Df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Er. M.	95% Conf. Inter. of the Dif.				
				Lower	Upper			
Both_Pre - Both_Post	-46, 545	27, 504	8, 293	-65, 023	-28, 068	-5, 613	10	,000

*significance level is .001

The results presented in Table 9 revealed that there is a statistically significant difference between pre-test (M=67, 18, SD=43, 097) and post-test (M=113, 73, SD=22, 468) scores when CLIL instruction is concerned ($t(10) = -5,613, p = ,000 < ,001$). Hence, it can be concluded that CLIL instruction has been found to be efficacious for expediting development of participants' overall receptive vocabulary knowledge.

All in all, as all the analyses carried out have revealed, CLIL instruction has a positive impact on both the size and the depth of word knowledge. In other words, with CLIL instruction, not only the number of vocabulary language learners know increases but also the quality of their word knowledge improves. The reason lying behind these findings is discussed in the following section.

DISCUSSION

In this section, the findings of the present study will be discussed with reference to the related literature. This discussion will be carried out by tracing the same route with the design of the study. Therefore, firstly the findings on size of vocabulary knowledge will be negotiated in relation to previous studies on CLIL approach. It will continue with the discussion of participants' depth of vocabulary knowledge in terms of CLIL instruction. Finally, the overall receptive vocabulary knowledge with respect to CLIL treatment will be evaluated by highlighting the factors behind the current findings.

In order to investigate participants' size of vocabulary knowledge, a three-section VLT test composed of 2000th, 3000th frequency levels and Academic word level was administered to the subjects before and after CLIL treatment. The examination on the scores of the VLT concerning frequency bands demonstrated that participants' size of vocabulary knowledge was limited at the beginning of the semester. That is to say, they had difficulty in recognizing the words even in high frequency bands. However, the statistical analyses indicated that the subjects' vocabulary knowledge differed significantly with CLIL instruction in time. This means that, CLIL instruction has been found to be successful for developing general vocabulary

knowledge. This growth in vocabulary size concords with the assertions of some other researchers in the literature such as Dalton-Puffer (2006, 2007), Jimenez Catalan and Ruiz de Zarobe (2009), Canga Alonso (2013a, b) Agustin Llach and Canga Alonso (2014), Castellano Risco (2015), Canga Alonso (2015) in that receptive size of vocabulary knowledge is favored by CLIL instruction.

As for the participants' scores taken from each frequency level in the VLT, their lexical competencies were not proved to be similar in terms word frequency levels. More specifically, it was indicated that subjects were relatively successful at the levels of 2000th and AWL; however, not at 3000th level in both pre-test and post-test, indicating that learners were within the limits of 2000th word level as revealed in both administrations of tests. This means that language learners are much more skillful at recognizing the high frequent words more than low frequent ones when two frequency bands are concerned (Yuksel and Durmusoglu; 2013). These findings also suggest that although there is a statistically significant increase at the end of the CLIL treatment in the size of vocabulary knowledge of learners, the instruction seems to be not satisfactory when individual scores of word bands are compared (Alonso, 2015). Herein, the time spent with CLIL instruction may be important with the amount of exposure to the target language. Subjects in the present study obtained only 4 hours of CLIL instruction every week for 12 weeks. From the literature, it is understood that benefits of CLIL treatment start cropping up after some time (Celaya & Ruiz de Zarobe, 2010, Agustin Llach and Canga Alonso, 2014; Canga Alonso, 2015; Juan-Garau & Salazar-Noguera, 2015). That is to say, more time with CLIL instruction might have been required for a big leap between the vocabulary size scores of participants before and after treatment.

Regarding the other dimension of lexical competence, participants' depth of word knowledge was analyzed, as well. The findings indicated an increase alongside with the CLIL instruction in time. Within this perspective, it could be asserted that participants' quality of vocabulary knowledge evaluated through WAT seems to have improved with CLIL treatment. When the literature is concerned, to the best of researchers' knowledge, just one study present has focused on the impact of the CLIL approach on depth of vocabulary knowledge, which is carried out by Moreno Espinoza (2009). The findings of this study were in line with the results of the present study in that CLIL instruction proved significant gains on vocabulary depth. The other studies on the relationship between CLIL approach and vocabulary knowledge generally presented the concern of vocabulary depth analysis in the further research section (Agustin Llach and Canga Alonso, 2014; Merikivi & Pietila 2014; Canga Alonso, 2015), which indicates that the present research can be accepted among the preliminary studies on this analysis in the field.

Finally, in order to investigate the participants' overall receptive vocabulary knowledge, the findings on the size and depth of lexical knowledge – which also approves, according to Zareva (2005), the competency of vocabulary knowledge – were re-examined by adding up the total scores of the VLT and WAT. Thorough investigation indicated that subjects' receptive vocabulary knowledge differed significantly with CLIL instruction in time. In other words, CLIL approach has proved to have a significant impact on overall vocabulary competence of language learners.

All in all, putting the findings on vocabulary size and depth together, it can be concluded with Zareva's (2005) assertion in that as the number of vocabulary that language learners know gets higher, they become more prone to develop a well-established and interrelated lexicon; which means that with an increase in the degree of lexical competence, an opportunity for language learners to build an important network within the lexicon arises. These associational links make awareness process much stronger, resulting in learners being able to recognize and use more words in an efficient way. Altogether, when the overall investigation is concerned, CLIL approach has proved not only to foster the amount of vocabulary obtained but also to facilitate the aforementioned associational links within network of the lexicon.

CONCLUSION AND SUGGESTIONS

The primary concern of the present study was to investigate the effect of CLIL approach on receptive vocabulary knowledge of 4th grade Turkish university students in a state university. Concerning the findings, it could be acknowledged that CLIL tuition with its contextualized and meaningful foreign language teaching proved to be an effective approach for overall receptive vocabulary learning.

All in all, it should be remarked that this study was just an attempt to provide insight on the impact of CLIL instruction on receptive vocabulary knowledge of language learners. Further studies, by including lexical knowledge of less frequent words and/or investigating the productive aspect of word knowledge might shed light on effects of CLIL treatment on vocabulary development of learners, particularly university students.

REFERENCES

- Agustín Llach, M. P. (2009). The role of Spanish L1 in the vocabulary use of CLIL and non-CLIL EFL learners. In Y. Ruiz de Zarobe & R. M. Jiménez Catalán (Eds.), *Content and language integrated learning: Evidence from research in Europe* (pp. 112-129). Bristol: Multilingual Matters.
- Agustín-Llach, M. P. & Canga Alonso, A. (2014). Vocabulary Growth in Young CLIL and Traditional EFL Learners: Evidence From Research and Implications for Education. *International Journal of Applied Linguistics*. doi: 10.1111/ijal.12090
- Aziez, F., (2011). Examining the Vocabulary Levels of Indonesia's English National Examination Texts. *Asian EFL Journal*, Vol. 51, 1-14.
- Canga Alonso, A. (2013a). Receptive Vocabulary Size of Secondary Spanish EFL Learners. *Revista de Lingüística y Lenguas Aplicadas*, Vol. 8, 2013, 66-75, EISSN 1886-6298. <http://dx.doi.org/10.4995/rlyla.2013.1180>
- Canga Alonso, A. (2013b). The Receptive Vocabulary of Spanish 6th-Grade Primary-School Students in CLIL Instruction: A Preliminary Study. *Latin American Journal of Content and Language Integrated Learning*, 6(2), 22-41. doi:10.5294/lacil.2013.6.2.2, EISSN 2322-9721.
- Canga Alonso, A. & Arribas Garcia, M. (2013). Productive Vocabulary Knowledge of Spanish EFL Learners. *Revista Electrónica De Lingüística Aplicada* (ISSN 1885-9089), 2014, Número 1, páginas: 39-56.
- Canga Alonso, A. (2015). Receptive Vocabulary of CLIL and Non-CLIL Primary and Secondary School Learners. *Complutense Journal of English Studies*, 2015, vol. 23, 59-77.
- Castellano Risco, I., O. (2015). *How a CLIL Approach May Affect the Size of Receptive Vocabulary and the Use of Vocabulary Learning Strategies: An Empirical Study Focused on Extremaduran Secondary Learners*. Unpublished MA Thesis in Badajoz, 2014/2015.
- Catalán, R. M.J., Ruiz de Zarobe Y., & Cenoz, J. (2006). Vocabulary Profiles in English as a Subject and as a Vehicular Language. *VIEWZ*, 15(3), 23-27. Retrieved from http://anglistik.univie.ac.at/fileadmin/user_upload/dep_anglist/weitere_Uploads/Views/views15_3_clil_special.pdf.
- Catalán, R. M. J., & Gallego, M. T. (2008). The receptive vocabulary of English foreign language young learners. *Journal of English Studies*, 5, 173-191.
- Catalán, R. M. J. & Ruiz de Zarobe, Y. (2009). The Receptive Vocabulary of EFL Learners in Two Instructional Contexts: CLIL versus non-CLIL. In R. Mª Jiménez Catalán & Ruiz de Zarobe, Y. (Eds.), *Content and language integrated learning. Evidence from research in Europe* (pp. 81-92). Bristol, England: Multilingual Matters.
- Celaya, M.^a Luz & Yolanda Ruiz de Zarobe (2010). First languages and age in CLIL and non-CLIL contexts. *International CLIL Research Journal*, 1.3. <<http://www.icrj.eu/13/article6.html>> (Accessed November 6 2015).
- Cenoz, J., Genesee, F. and D. Gorter (2013). Critical Analysis of CLIL: Taking Stock and Looking Forward. *Applied Linguistics*, 13: 1-21.
- Coyle, D., Hood, P., & Marsh, D. (2010). *CLIL: Content and language integrated learning*. Cambridge, England: Cambridge University Press.

- Dalton-Puffer, Christiane (2007). *Discourse in Content and Language Integrated Learning (CLIL)*. Amsterdam and Philadelphia: John Benjamins.
- Dalton-Puffer, Christiane (2008). Outcomes and processes in Content and Language Integrated Learning (CLIL): Current research from Europe. In Werner Delanoy and Laurenz Volkmann, eds., 139-157.
- Darn, S. (2006a). CLIL: A Way Forward For Turkey. *INGED News Online*, Issue 1, 05.06.
- Darn, S. (2006b). CLIL: A European Overview. *INGED News Online*, Issue 2, 06. 06.
- Ehsanzadeh, I., S., (2012). Depth versus Breadth of Lexical Repertoire: Assessing Their Roles in EFL Students' Incidental Vocabulary Acquisition. *TESL Canada Journal/Revue TESL Du Canada*, Vol. 29, No 2, Spring 2012.
- Fan, M., (2000). How Big is the Gap and How to Narrow it? An Investigation into Active and Passive Vocabulary Knowledge of Learners. *RELC Journal*, Vol. 31(2), pp. 105-119.
- Fernández, D. J. (2009). CLIL at the university level: Relating language teaching with and through content teaching. *Latin American Journal of Content & Language Integrated Learning*, 2(2), 10-26. doi:10.5294/lacil.2009.2.2.11
- Fontecha, A., F. (2014). Receptive Vocabulary Knowledge and Motivation in CLIL and EFL. *Revista de Lingüística y Lenguas Aplicadas*, Vol. 9, 2014, 23-32. EISSN 1886-6298. <http://dx.doi.org/10.4995/rlyla.2014.2077>.
- Hellman, A., B., (2011). Vocabulary Size and Depth of Word Knowledge in Adult-Onset Second Language Acquisition. *International Journal of Applied Linguistics*, Vol. 21, No. 2, 2011.
- Ho, Ming-Ju, A. & Lien, Hsin-Yi, (2011). The Correlation between Vocabulary Knowledge Depth and Reading Comprehension. *DHU-TESOL Research Institute, Journal* 2011. Retrieved from: <http://www.tesolreview.org/down/Ming.pdf>.
- Juan-Garau, M., & Salazar-Noguera, J. (2015). *Content-based language learning in multilingual educational environments*. Springer.
- Laufer, B., Elder, C., Hill, K. & Congdon, P., (2004). Size and Strength: Do We Need Both to Measure Vocabulary Knowledge?. *Language Testing*, 21 (2): 201 - 226.
- Laufer, B. & Goldstein, Z., (2004). Testing Vocabulary Knowledge: Size, Strength and Computer Adaptiveness. *Language Learning*, 54 (3), 399 - 436.
- Laufer, B. & Nation, P. (1999). A vocabulary size test of controlled productive ability. *Language Testing* 16(1), 33-51.
- Laufer, B., & Paribakht, T. S. (1998). The Relationship Between Passive and Active Vocabularies: Effects of Language Learning Context. *Language Learning*, 48, 365-391.
- Marsh, D. (2000). Using Languages to Learn and Learning to Use Languages; An Introduction to CLIL for Parents and Young People, TIE-CLIL. [Available online at <http://archive.ecml.at/mtp2/clilmatrix/pdf/1UK.pdf>], Retrieved on February 18, 2017.
- Meara, P., M., & Olmos Alcoy, J. C., (2010). Words as Species: An Alternative Approach to Estimating Productive Vocabulary Size. *Reading in a Foreign Language*, 22(1), 222-236.
- Mehrpour, S., Razmjoo, S., A. & Kian, P., (2011). The Relationship between Depth and Breadth of Vocabulary Knowledge and Reading Comprehension among Iranian EFL Learners. *Journal of English Language Teaching and Learning*, No.222, Year: 53/Autumn-Winter, 2011.
- Merikivi, R., & Pietilä, P. (2014). Vocabulary in CLIL and in Mainstream Education. *Journal of Language Teaching and Research*, 5(3), 487-497. <http://dx.doi.org/10.4304/jltr.5.3.487-497>.
- Moreno Espinosa, S. (2009) 'Young Learners' L2 word association responses in two different learning contexts', in Content and Language Integrated Learning in Europe. In Juan-Garau, M., & Salazar-Noguera, J. (2015). *Content-based language learning in multilingual educational environments*. Springer.
- Nation, P. (1990). *Teaching and Learning Vocabulary*. Boston: Heinle & Heinle.
- Nation, I. S. P. (2001). *Learning Vocabulary in Another Language*. Cambridge: Cambridge University Press.
- Rashidi, N. & Khosravi, N., (2010). Assessing the Role of Depth and Breadth of Vocabulary Knowledge in Reading Comprehension of Iranian EFL Learners. *Journal of Pan-Pacific Association of Applied Linguistics*, 14(1), 81-108
- Read, J. (2000a). Word Associates Test, retrieved from www.lexutor.ca. In March, 2017.
- Read, J. (2000b). *Assessing Vocabulary*, Cambridge: CUP.

- Read, J. & Chapelle, C., A. (2001). A Framework for Second Language Vocabulary Assessment. *Language Testing*, 18 (1), pp. 1-32.
- Richards, J. and Schmidt, R. (eds.) *Language and Communication*. London: Longman.
- Ruiz de Zarobe, Y. (2008). CLIL and Foreign Language Learning: A Longitudinal Study in the Basque Country. *International CLIL Research Journal*, Vol 1 (1) 2008.
- Schmitt, N. (1997). 'Vocabulary learning strategies.' In N. Schmitt and M. McCarthy, (Eds.), *Vocabulary: Description, Acquisition and Pedagogy*, 199-227. Cambridge University Press, Cambridge.
- Schmitt, N., Schmitt, D. & Clapham, C. (2001). Developing and Exploring the Behaviour of Two New Versions of the Vocabulary Levels Test. *Language Testing*, 18 (1): pp. 55-88.
- Schmitt, N., Ching, Ng, J. W & Garras, J., (2010). The Word Association Format: Validation Evidence. *Language Testing*, Online. 1-22.
- Vermeer, A. (2001). Breadth and Depth of Vocabulary in Relation to L1/L2 Acquisition and Frequency of Input. *Applied Psycholinguistics*, 22, 217-34.
- Webb, S., (2005). Receptive and Productive Vocabulary Learning: The Effects of Reading and Writing on Word Knowledge. *Studies in Second Language Acquisition*, 27: 33-52.
- Xanthou, M. (2010). Current Trends in L2 Vocabulary Learning and Instruction. Is CLIL the right approach? In A. Psaltou-Joycey & M Mattheoudakis (Eds.), *14th International Conference: Advances in Research on Language Acquisition and Teaching*, pp. 459-471. Thessaloniki, Greece: Greek Applied Linguistics Association (GALA). Retrieved from <http://www.enl.auth.gr/gala/14th/Papers/English%20papers/Xanthou.pdf>.
- Yuksel, I. & Durmusoglu Kose, G., (2013). 'ELT Majors' Cross Sectional Evaluation of Academic Lexical Competence and Performance'. *Journal of Language Teaching and Research*, Vol. 4, No. 2, pp. 244 - 252, March 2013.
- Zareva, A., (2005). Models of Lexical Knowledge Assessment of Second Language Learners of English of Higher Levels of Language Proficiency. *System*, 33: 547-562.
- Zhou, S., (2010). Comparing Receptive and Productive Academic Vocabulary Knowledge of Chinese EFL Learners. *Asian Social Science*, Vol. 6, No. 10. pp. 14-19.