

CROSS-SECTIONAL EVALUATION OF TURKISH  
ELT MAJORS' GENERAL  
AND ACADEMIC LEXICAL COMPETENCE  
AND PERFORMANCE  
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CROSS-SECTIONAL EVALUATION OF TURKISH ELT MAJORS' GENERAL AND  
ACADEMIC LEXICAL COMPETENCE AND PERFORMANCE

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## ABSTRACT

### CROSS-SECTIONAL EVALUATION OF TURKISH ELT MAJORS' GENERAL AND ACADEMIC LEXICAL COMPETENCE AND PERFORMANCE

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The aim of this study was to evaluate the general and academic lexical competence and performance of Turkish ELT majors at Education Faculty at Anadolu University. On this purpose, building on the collective strengths of theoretical and empirical studies in literature, a tentative dimensional framework of second language general and academic lexical competence and performance was developed for the present study, incorporating the receptive (i.e. size; how many words they know, depth; how well they know) and productive vocabulary knowledge measures (lexical use and lexical diversity).

Through multiple test approach, the general and academic lexical competence and performance of 371 students attending to 1<sup>st</sup> year first semester, 1<sup>st</sup> year second semester, 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> year were investigated in a cross-sectional design. A battery of tests was used for general and academic vocabulary knowledge; Vocabulary Level Test, developed by Schmitt et al (2001) was used to measure the participants' receptive general and academic vocabulary size. Additionally, Word Associates Test (Read, 2000) was given to examine the participants' depth of vocabulary knowledge. To determine the participants' general and academic lexical performance, Vocabprofile and WordSmith Tools analyses were employed on the participants' argumentative essays and the lexical frequency profiles and lexical diversity were obtained. In addition, a Test of Academic Vocabulary was developed on the basis of Academic Word List for further analysis on receptive and productive academic vocabulary.

As a result of descriptive analyses, it was found that the ELT majors in this study had large general and academic vocabulary size and depth, which significantly differed in terms of years. However, this vocabulary knowledge appeared to be considerably less in production so it was observed that they could not reflect their receptive vocabulary knowledge in their free production tasks; essay writing.

In terms of developmental patterns, the results confirmed the incremental nature of vocabulary learning due to differing developmental routes of each dimension. Some fluctuation in the size, lexical use and diversity were observed owing to the effect of word frequency level (i.e. high, low frequent and academic) and year of education. The sharp increases from the 1<sup>st</sup> year first semester to 2<sup>nd</sup> year indicated the effect of their education on the participants' lexical competence and performance. Additionally, the fluctuations at the participants' lexical competence and performance in terms of high and low frequent vocabulary showed the effect of word frequency levels.

In the further analysis on the participants' academic lexical competence and performance, it was found that there was a kind of linear development in the size and production of academic vocabulary. Furthermore, the correlation analyses on the sub-dimensions showed that all were interrelated and interdependent. Thus, these results denoted the interdependent developments of the different dimensions of lexical competence and performance.

Consequently, Turkish ELT majors' general and academic vocabulary knowledge differed incrementally across the years and their lexical competence (i.e. receptive dimensions) and performance (i.e. productive dimensions) did not follow the same developmental tracks in this study.

**Keywords:** Academic vocabulary, general vocabulary, lexical competence, lexical performance, cross-sectional evaluation

## ÖZET

# TÜRK İNGİLİZCE ÖĞRETMEN ADAYLARININ GENEL VE AKADEMİK SÖZCÜK BİLGİSİ YETERLİĞİ VE PERFORMANSLARININ ÇAPRAZ KESİŞİMLİ OLARAK İNCELENMESİ

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Bu çalışmanın amacı Türk İngilizce Öğretmen adaylarının genel ve akademik sözcük bilgisi yeterlikleri ve performanslarını çapraz kesişimli olarak incelemektir. Bu amaç doğrultusunda, alan yazındaki teorik ve ampirik çalışmalardan faydalanılarak, bir taslak çerçevesinde ikinci dilde genel ve akademik sözcük bilgisi yeterliği ve performansı, algısal ve üretimsel sözcük bilgisi boyutlarıyla bağdaştırılarak incelenmiştir.

Çoklu test yaklaşımı ile, 1. sınıf birinci ve ikinci dönem, 2.sınıf, 3.sınıf ve 4.sınıfa devam eden 371 öğrencinin sözcük bilgisi yeterlikleri ve performansları, algısal (kaç sözcük biliyorlar; ne kadar iyi biliyorlar) ve üretimsel (sözcük kullanım ve çeşitlilik) boyutları açısından incelenmiştir. Hem genel hem de akademik sözcük bilgisi için, bir dizi test kullanılmıştır; Schmit et al (2001) tarafından geliştirilen, Sözcük Seviye Testi, algısal genel ve akademik sözcük genişliğini ölçme amacıyla uygulanmıştır. Bunun yanı sıra, Sözcük Çağrışım Testi (Read, 2000) katılımcıların sözcük derinliğini incelemek amacıyla verilmiştir. Katılımcıların genel ve akademik sözcük performanslarını belirlemek için, Vocabprofile ve WordSmith Tools programlarıyla toplanılan tartışmalı kompozisyonların analizinde kullanılmış ve katılımcıların sözcük profilleri ve sözcük çeşitlilikleri belirlenmiştir. Ayrıca, algısal ve üretimsel akademik sözcük bilgisinin daha kapsamlı incelenmesi için Akademik Sözcük Bilgisi Testi, ek olarak geliştirilmiş ve kullanılmıştır.

Toplanılan verilerin betimsel analizlerinin sonucunda, öğretmen adaylarının genel ve akademik sözcük boyutlarının ve derinliğinin büyük olduğu görülmüştür ve bu boyutların sınıflar bazında anlamlı olarak farklılaştığı belirlenmiştir. Ancak, bu sözcük bilgisinin üretimde oldukça sınırlı kaldığı; katılımcıların sözcük bilgilerini serbest yazma görevine; kompozisyon yazımına, yansıtamadıkları gözlenmiştir.

Gelişim örüntüleri açısından, sonuçlar sözcük öğreniminin artımlı doğasını, her bir alt boyutun farklılaşan gelişim eğrileriyle desteklemiştir. Sözcük genişliği, derinliği ve kullanımında sözcük sıklığı seviyesine (yüksek sıklıktaki, düşük sıklıktaki sözcükler ve akademik sözcükler) ve eğitim yılına bağlı olarak dalgalanmalar gözlenmiştir. 1. sınıf birinci dönemden 2. sınıfa doğru gözlenen hızlı artış, eğitimin katılımcıların genel ve akademik sözcük bilgisi yeterliği ve performansının üzerindeki etkisini göstermektedir. Buna ek olarak, sözcük bilgisi yeterliği ve performanslarının, yüksek ve düşük sıklıktaki sözcüklere bağlı olarak gösterdiği dalgalanmalarda sözcük sıklık seviyesinin etkisini ortaya koymaktadır.

Ayrıca, katılımcıların akademik sözcük bilgilerine dair yapılan analizler, sözcük bilgisi boyutlarının ve üretimlerinin doğrusal gelişim gösterdiğini ortaya koymuştur. Buna karşın, kompozisyonlardaki akademik sözcük oranları ve Akademik Sözcük Bilgisi testindeki cümle seviyesinde üretim görevine dair sonuçlar, katılımcıların akademik sözcük performansında, özellikle kompozisyon bağlamında zorlandığını göstermiştir.

Son aşama olarak, alt boyutların birbirleriyle olan bağlantıları korelasyon analizleriyle araştırılmış; sonuçlar sözcük bilgisi yeterliği ve performansının farklı boyutlarının birbirine bağımlı değişimini göstermiştir. Dolayısıyla, genel ve akademik sözcük bilgisi yeterliği ve performanslarının çok-boyutlu yapısı onanmıştır.

Sonuç itibarıyla, çalışmaya katılan Türk İngilizce Öğretmen adaylarının hem genel hem de akademik sözcük bilgisi yeterliklerinin ve performanslarının üniversite eğitimleri boyunca artımlı bir gelişim gösterdiği ve sözcük bilgisi yeterlikleri (algısal boyutlar) ve performansları (üretimsel boyutlar) aynı gelişim eğrisini izlemediği belirlenmiştir.

**Anahtar Sözcükler:** Akademik sözcük, Genel sözcük, Sözcük yeterliği, Sözcük performansı, Çapraz kesişimli değerlendirme

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*To my daughter, BAHAR NUR*

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## LIST OF ABBREVIATIONS

ELT	: English Language Teaching
EFL	: English as a Foreign Language
L1	: First Language
L2	: Second Language
VLT	: Vocabulary Level Test
WA	: Word Associates
TAV	: Test of Academic Vocabulary
LFP	: Lexical Frequency Profile
TTR	: Type/Token Ratio
$\bar{X}$	: Mean

## CHAPTER 1

### INTRODUCTION

The prominent role of lexical competence for language proficiency has been recognized after it has been neglected for years, during which grammatical competence was seen as central to learning a foreign language. Wilkins (1972) emphasized such significance of vocabulary knowledge as “without grammar very little can be conveyed, without lexis nothing can be conveyed” (p.111). This idea is shared by Laufer, (1998) who stated that the most striking differences between foreign learners and native speakers are the quantity of words they know. Also, Lewis (2000) argued that the single most important task facing language learners is acquiring sufficient large vocabulary (p. 8). Hunt and Beglar (2005) went even further and claimed that the heart of language comprehension and use is the lexicon.

As a result of this ever-increasing interest on vocabulary, many theoretical and empirical studies have been conducted particularly since the 1990s (e.g. Laufer & Nation, 1995; Wesche & Paribakht, 1996; Cody & Huckin, 1997; Nation, 2001; Meara & Alcoy, 2010; Coxhead, 2011). These studies have shed light on the nature of vocabulary and its relationship with language acquisition, thus, developing lexical competence is now accepted as the crucial factor in language acquisition, and whatever skill is concerned (Henriksen, 1999; Nation, 2001). That is, vocabulary is accepted as a good predictor for reading and listening comprehension (Laufer, 1998; Krashen, 1989; Webb, 2005) and associated with writing quality (Muncie, 2002; Webb, 2005) as well as speaking fluency (Cumming et. al., 2005) and acquisition of grammar patterns (Ellis, 1997).

To understand the nature of vocabulary in-depth and its interplay with other language skills, it is essential to probe what knowing a word entails. The phenomenon of “knowing a word” has been so far defined from different perspectives such as global and trait (Richards, 1976; Nation, 1990) and vocabulary has been categorized in terms of frequency of occurrence in texts or other linguistic variables (Nation, 2001; Henriksen, 1999; Laufer, 1998). The classification of general and academic vocabulary has also been accepted as a result of corpus studies (Nation, 1990; 2001; Biber, 2006; Coxhead, 2000; 2011).

The results of the studies revealed that vocabulary knowledge consists of receptive and productive dimensions (Nation, 2001; Webb, 2005). Thus, vocabulary knowledge is conceptualized not only as the numbers of words learners know (i.e. vocabulary size) but also how well these words are mastered (i.e. depth of vocabulary) and used (i.e. productive vocabulary) (Read, 2000a; Meara, 2002; Schmitt et. al., 2010).

Along with this enhanced understanding and realization of these important dimensions, the concepts of lexical competence and performance in second language have been prominent to describe this multi-dimensional nature of vocabulary knowledge (Meara, 1996; Laufer & Nation, 1999; 1995; Laufer, et. al.. 2004; Nation, 2001). These concepts are accepted as umbrella terms to describe the components of vocabulary knowledge such as size, depth and/or receptive and productive (Henriksen, 1999; Webb, 2005). They enable the global description of separate traits of vocabulary knowledge.

The trend to describe vocabulary knowledge from global perspective, examining different components of vocabulary knowledge and discussing learners' competence and performance in vocabulary knowledge has received considerable interest (Henriksen, 1999; Zareva, 2005). In this way, beyond the size of vocabulary (how many words learners know), different dimensions have been searched within the framework of lexical competence and performance (Zareva, 2005).

In spite of such new perspectives and trends on vocabulary research, there is still paucity in the studies describing second language learners', especially English as a Foreign language learners', competence and performance of both general and academic vocabulary globally. Particularly, the studies on academic vocabulary are limited in literature (Hyland & Tse, 2007; Hancioglu et. al., 2008; Coxhead, 2000). The need for the studies on both general and academic vocabulary from a larger perspective, in relation with various variables and in different language contexts, is emphasized by many researchers (Nation, 2001; Coxhead, 2000; Anderson, 2003; Biber, 2006; Chen & Ge, 2007; Vongpumivitch, Huang, & Chang, 2009).

Addressing to this need of global large-scaled investigation of vocabulary knowledge and based on the premise that vocabulary is a multidimensional concept; the present study aimed to examine the general and academic lexical competence and

performance of English majors in English as a foreign language (EFL) classroom setting at Anadolu University in Turkey. Within a tentative dimensional framework of second language (L2) lexical competence and performance, the learners' vocabulary knowledge profiles as well as the development and relationships of the vocabulary dimensions in the framework are investigated through multiple test approach.

Through this study, it is hoped to get better insight about the multidimensional nature of vocabulary knowledge and thus second language vocabulary learning. In addition, it is hoped to probe the neglected aspects in vocabulary research such as global descriptions of lexical competence and performance, academic vocabulary and dimensions of vocabulary.

The outline of this study is as follows; firstly, the aim of the study and guiding research questions will be explained in detail with the support of statement of the problems addressed in the study and with expected contributions of the study to literature. In the second chapter, the aim of the study will be supported with theoretical background. Then, methodology of the study will be clarified. Then, data collection and analysis procedure will be explained, and then the findings from each instrument will be discussed.

### **1.1. Statement of Problem**

There are four considerations that underline the rationale of the present study. The first one is the fact that vocabulary learning is a big problem for EFL learners especially at advanced level because they need to have a large command of academic vocabulary if they want to read and follow the literature related to their discipline also if they are supposed to write academic texts.

Actually, the need for learning vocabulary continues throughout life for language learners and even for native speakers. Native speakers' language knowledge grows rapidly in their childhood as a response to their experience, social trends and learning opportunities but for foreign language learners, vocabulary acquisition is a more conscious and demanding process starting from the early stages of language learning to the advanced level. Learners tend to experience difficulties due to lexical gaps in second language as they deal with more complicated language materials and authentic texts and

hence they need more diverse and complicated vocabulary to comprehend such texts and use language for academic purposes.

Thus, vocabulary is widely accepted as the most predominant language problem (Nation, 1990; Schmitt, 1997; Crossley & Salsburry, 2010; Mokhtar, 2010). Second language acquisition is usually regarded by many researchers like Read, (2000b); Meara, (1996; 2002); Nation (2001) and Schmitt (2008) as a matter of learning vocabulary. In that sense, any vocabulary research that reveals learners' actual vocabulary knowledge or informs about vocabulary development or acquisition process carries considerable value for teachers, learners, and administrators and certainly for researchers. Through such studies, it is considered that the components of vocabulary knowledge and cognitive processes in its development could be clear and learners' vocabulary needs could be analysed; besides the solutions for any problems in the process could be derived and effective vocabulary learning and teaching environments could be created (Laufer, 1998; Nation, 2001; Beglar, 2010).

The second consideration for the present study is concerned with methodological problems addressed in vocabulary research such as narrow scope, appropriacy of vocabulary measures, limited population and data collection procedures. The most urgent one is the lack of theory on vocabulary knowledge. Although many studies have been conducted, in which different models have been proposed on vocabulary knowledge (e.g. Henriksen, 1999), it is continuously highlighted that there is still no properly worked out theory on vocabulary knowledge (Meara, 1996; Henriksen, 1999; Zareva, 2005, Daller et. al., 2007). It is complained that the proposed models on vocabulary have ignored or overemphasized some dimensions of vocabulary knowledge, so they cannot address to vocabulary development effectively. Thus, the need for clarity and standardization in describing vocabulary knowledge components and dimensions is emphasized considerably to develop a unified theoretical construct of lexical competence and performance, and thus a model of vocabulary knowledge (Henriksen, 1999).

Due to these discrepancies, while some vocabulary dimensions are excessively studied such as size of vocabulary (Laufer, 1998; Laufer & Nation, 1995), some dimensions are neglected. The studies conducted in the literature approached

vocabulary knowledge from a narrow perspective focusing on one or two dimensions, and studying with more or less the same proficiency group. Despite Meara's (1996) emphasis on the significance of depth of vocabulary knowledge and Coxhead's (2000) pioneering corpus study on academic vocabulary, in literature, vocabulary size (i.e. how many word learners know) has been commonly investigated to define learners' vocabulary knowledge (Laufer & Nation, 1995; Nation & Beglar, 2007; ). Yet, as Henriksen (1999) and Nation (2001) pinpointed a large perspective of vocabulary dimensions should be taken into account by including other vocabulary components such as depth (i.e. how well learners know words), and other linguistic features such as syntactic, discourse etc. for the sake of a unified view on vocabulary knowledge. Read (2000a) supported this assumption that the current research frameworks are excessively focused on individual words yet that vocabulary studies need to be complemented by incorporating the individual dimensions of vocabulary knowledge. Thus, the studies investigating vocabulary in terms of individual dimensions of vocabulary knowledge within the framework of lexical competence and performance are required in literature.

Another methodological problem emerging in vocabulary research is related to data collection. To probe vocabulary knowledge comprehensively, suitable measures of vocabulary knowledge should be used. As Bogaards (2000) stated testing vocabulary knowledge in a second or foreign language is not a straightforward issue. Depending on what exactly is intended to find about L2 lexical knowledge, one has to select the appropriate materials and adequate procedures to obtain valid and reliable results. There is not only one single valid way to measure L2 vocabulary knowledge. However, depending on the researchers' understanding of vocabulary knowledge, different vocabulary tests were used for different purposes (Meara, 1996; Paribakht & Wesche, 1997; Chen, 2009). Due to such tendency, vocabulary knowledge has been evaluated through limited measures focusing on certain vocabulary components. It is essential to handle the issue of lexical competence and performance from a larger perspective using different types of tests, covering different dimensions of vocabulary knowledge. Therefore, the vocabulary measures of differing sensitivity could address lexical competence and performance dimensions more effectively (Nation, 2001; Laufer & Nation, 2004; Laufer, 1998).



Moreover, the issue regarding the selection of population is also emphasized. The data in vocabulary research is usually collected from limited population, from certain proficiency levels. However, as Laufer (2005) emphasized vocabulary knowledge has an incremental nature and it gradually changes, thus for more reliable data, it is essential to collect the same data from different levels in a cross-sectional way. Particularly, in the context of higher education, in order to determine the overall growth of academic and general vocabulary knowledge, it is essential to involve more learners attending to different years at higher education such as 1<sup>st</sup> to 4<sup>th</sup> years so that both students' development and gains from academic studies in terms of academic lexical competence and development can be examined more effectively in such a cross-sectional design.

The third consideration to be addressed in this study is that general vocabulary knowledge has been excessively focused in literature (Laufer & Nation, 1995; Paribakht & Wesche, 1997; Qian & Schedl, 2004; Zareva, 2005). Academic vocabulary knowledge, which has been received considerable interest nowadays and which is accepted as the irresistible part of vocabulary knowledge, has been mostly ignored. However, as Hyland and Tse (2007) posited academic vocabulary is the significant part of lexical competence and performance. Students have to possess academic lexical competence and performance to improve their reading comprehension of academic texts and academic writing skills (Nation, 2001; Leki & Carson, 1997). Moreover, it has been agreed that academic vocabulary causes considerable difficulties for the majority of ESL and/or EFL learners (Chung & Nation, 2003; Cobb & Horst, 2004; Coxhead & Nation, 2001; Coxhead, 2000).

Despite this key role of academic vocabulary knowledge in the academic achievement of students and its learning load on students (Nation, 2001), there are very limited studies on academic lexical competence and performance (Hyland & Tse, 2007; Coxhead, 2000; Chen & Ge, 2007; Vongpumivitch et. al., 2009) and these few studies have investigated the academic vocabulary competence and performance from a limited perspective, focusing on only one or two dimensions. Thus, it is essential to handle the academic lexical competence and performance from all main dimensions, namely size (i.e. breadth; how many words), depth (i.e. quality; how well), and productive (use) dimensions in conjunction with general vocabulary knowledge to reveal the vocabulary development of students at higher education in detail.

The fourth consideration underlying the present study is about vocabulary knowledge of EFL learners within Turkish context especially at university level. Like other EFL learners, vocabulary can be a big burden for their academic achievement. In spite of their “advanced” proficiency, as a result of intensive English learning experience and exposure to English when they entered university, they still have difficulty with vocabulary, particularly with academic vocabulary. This problem is emphasized in many studies conducted with Turkish students (Çelik & Toptaş, 2010; Keshavarz & Astaneh, 2004; Erten & Williams, 2008; Atay & Ozbulgan, 2007). However, there is not a detailed study on Turkish university student’s lexical competence and performance, particularly investigating academic vocabulary knowledge. Thus, a study that describing Turkish EFL university students’ vocabulary knowledge is essential to determine their vocabulary needs and lead improvement in vocabulary teaching and learning at universities in Turkey.

To sum up, in literature, the need for significant-scale, principled implementations of the extensive vocabulary research (Read, 2000b; Nation, 2004) including different vocabulary measures has been emphasized to develop a unified theory of lexical competence and performance covering both general and academic vocabulary dimensions. On the basis of this need, the present study is designed to describe Turkish ELT majors’ overall profile of general and academic lexical competence and performance from a larger perspective through a cross-sectional evaluation.

## **1.2. Aim**

The aim of this study is to evaluate cross-sectionally the general and academic lexical competence and performance of Turkish ELT majors at Education Faculty at Anadolu University.

Based on this purpose, building on the collective strengths of theoretical and empirical studies in literature, a tentative dimensional framework, incorporating the receptive (i.e. size; how many words they know, depth; how well they know) and productive vocabulary knowledge measures (lexical use and lexical diversity), for second language general and academic lexical competence and performance is specifically developed for the present study.

In this sense, firstly; a detailed yet holistic picture of the general lexical competence and performance, then academic lexical competence and performance of the students is described in a cross-sectional evaluation and thus it attempts to examine the developmental patterns of the aforementioned vocabulary dimensions through higher education as well as the relationship among them.

### **1.3. Research Question**

Within the context of this aim, this study is guided by the following research questions;

1. What are Turkish ELT majors' general lexical competence and performance?
2. What are Turkish ELT majors' academic lexical competence and performance?

Through cross-sectional evaluation of each dimension for lexical competence (i.e. size, depth of vocabulary knowledge) and performance (i.e. lexical use and diversity), Turkish ELT majors' overall profile of general lexical competence and performance is described through the first research question and academic lexical competence with the second research question.

To define and explain each dimension of vocabulary knowledge focused in the study, sub-research questions are also asked, referring to each dimension.

Firstly, the participants' general lexical competence is investigated with the following sub-research questions addressing to the size and depth of general vocabulary.

- a. What is Turkish ELT majors' size of general vocabulary knowledge?
- b. What is Turkish ELT majors' depth of general vocabulary knowledge?

After defining the participants' competence on general vocabulary, the participants' academic lexical competence and performance are focused with the following research questions;

- c. What is Turkish ELT majors' size of academic vocabulary?

- d. What is Turkish ELT majors' academic vocabulary knowledge in terms of receptive and productive dimensions?

Furthermore, to investigate students' general and academic lexical performance, which refers to students' productive use of general and academic vocabulary while writing as well as lexical diversity of their writings, the following sub-research questions are asked;

- e. What is Turkish ELT majors' general lexical performance?
- f. What is Turkish ELT majors' academic lexical performance?

In addition, the correlation between the results of each vocabulary measure is investigated to ensure whether the utilised vocabulary measures are effective indicators of lexical competence and performance, as well as to examine the interplay among the dimensions. Thus, the following sub-research question is addressed:

- g. Do the dimensions of the participants' lexical competence and performance correlate with each other?

Finally, in order to discuss the growth of general and academic lexical competence and performance of the participants through higher education, the results obtained from students at each year (i.e. 1<sup>st</sup> first semester, 1<sup>st</sup> second semester, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> years) are compared by means of the following sub-research question:

- h. Do the participants' general and academic lexical competence and performance differ during their higher education?

#### **1.4. Significance of the Study**

By addressing to aforementioned considerations about vocabulary research, the findings of the present study are believed to contribute to literature in terms of three main aspects; theoretical, methodological and pedagogical.

Firstly, as a theoretical contribution of the study, the present study approaches vocabulary knowledge with a unified theory, adapting lexical competence and performance with sub-dimensions. In literature, lexical competence and performance have been measured with simple vocabulary measures such as the size of vocabulary knowledge, the frequency of words, or the ability to match dictionary definitions of

strings of letters (Nation, 2006). Such measurements give partial and relatively surface level representation of vocabulary knowledge (Crossely & Salsbury, 2010; Beglar, 2010; Carson, 1997; Laufer & Nation, 1995; Hyland & Tse, 2007; Hancioğlu et. al., 2008). Thus, the present study is considered to contribute to the literature grounding general and academic vocabulary knowledge on a unified construct of lexical competence and performance within a tentative dimensional framework. Besides, examining vocabulary knowledge of university students through cross-sectional evaluation in terms of different dimensions such as size, depth and production can be worthwhile to chart the growth of learners' vocabulary throughout their higher education and to explain vocabulary learning dynamics.

Moreover, it is considered that including academic vocabulary as well as general vocabulary knowledge in the investigation can help to approach vocabulary acquisition more comprehensively. In spite of wide realization that academic vocabulary is crucial for academic achievement, there is not study examining academic vocabulary on the ground of dimensional framework with a large population. Thus, this study could contribute to literature by investigating university students' academic vocabulary knowledge in terms of lexical competence and performance dimensions.

As for methodological contribution, the cross-sectional design and large population and research setting of the present study are hoped to provide new insights about “advanced” level students' general and academic vocabulary development at tertiary education. Involving all years (1<sup>st</sup> first semester, 1<sup>st</sup> second semester, 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup>), it is intended to describe the holistic picture of general and academic vocabulary knowledge of university students. Thus, the findings are believed to yield the foundation for systematic approach to general and academic vocabulary development of Turkish ELT majors at higher education as well as to explain the incremental nature of vocabulary acquisition through cross-sectional evaluation.

Lastly, for pedagogical contribution, it is commonly agreed that a fuller understanding of vocabulary knowledge along with lexical competence and performance would be beneficial to language researchers, language learners, teachers and educational institutions (Crossley et. al., 2010). Thus, it is considered that the findings of vocabulary studies can inform teachers/instructors about vocabulary needs

of students at higher education. On the basis of such a need analysis of general and academic vocabulary, more effective materials, lessons and activities can be designed and this can foster the learners' success. Teachers could evaluate their instruction in terms of students' vocabulary gains. Thus, it would provide empirical ground for enriching teaching and improving vocabulary instruction. Besides, such information on students' vocabulary knowledge can indicate how realistic expectations teachers and administrators have, such assessment within class or institution can point out the necessity of vocabulary instruction embedded within the content lesson or offering academic and/or general vocabulary instruction as compulsory or selective course in the program.

### **1.5. Operational Definitions**

As the first stage of the research, the definition of some terminology used in the study to address and discuss the research issues and processes are provided in this section.

In this study, vocabulary (words) is used to refer to a list of words for English. In the same vein, "lexical knowledge" is used interchangeably with "vocabulary knowledge". Besides, "academic vocabulary" refers to words that are reasonably frequent in a wide range of academic genres but are relatively uncommon in other kinds of texts (Coxhead & Nation, 2001). Specifically, for the current study, the words included in the Academic Word List (AWL) (Coxhead, 2000) are taken into consideration in defining academic vocabulary. AWL is the reference list of the study. On the other hand, "general vocabulary" contains the words, which are not tied with any specific fields and activities and classified as 2000<sup>th</sup>, 3000<sup>th</sup>, 5.000<sup>th</sup> words according to frequency levels (Nation, 2001).

Furthermore, the terms of "lexical competence" and "lexical performance" are used while describing the framework of vocabulary knowledge. Lexical competence is used to refer to the learners' skills to recognize the words and understand the relations between words such as collocations. It is accepted as directly related to how many words the learner knows and how well s/he knows them. On the other hand, "lexical performance" is regarded as the use of vocabulary in written context.

In addition to these terms, the terms of receptive and productive are used. While receptive dimension of lexical knowledge refers to the size (i.e. how many words they know) and depth of vocabulary knowledge (i.e. how well they know the words), productive dimension regards the use of words in context. Receptive dimensions are overarched with lexical competence and productive dimensions (i.e. lexical use and diversity) are under lexical performance.

The basic patterns used in the lexical analysis are tokens and types. The number of tokens refers the total number of word forms. In other words, individual words occurring more than once in the text is counted each time they are used. On the other hand, the number of types is the total number of different word forms so that a word which is repeated many times is counted only once. The relative proportion of types and tokens (known as the type-token ratio) regards to lexical diversity of learners' written products.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1. Introduction

This chapter will present an in-depth discussion of previous theoretical and empirical studies on general and academic lexical competence and performance. Reasoning from the multi-dimensional nature of vocabulary knowledge, the literature review is shaped in the light of a wide array of sources.

Firstly, the historical and theoretical retrospect of second language vocabulary acquisition and research will be presented, touching upon second language vocabulary testing. Secondly, the chapter will shift the focus to the dimensions of vocabulary knowledge so as to discuss the conceptualization of overarching constructs; lexical competence and performance. In constructing the basis, receptive and productive dimensions will be handled referring to the sub-dimensions; namely, size and depth of vocabulary knowledge as well as lexical use and diversity.

After presenting the basics of vocabulary knowledge in terms of lexical competence and performance, the theoretical background of general service vocabulary and academic vocabulary referring to empirical findings will be presented respectively.

#### 2.2. The Historical and Theoretical Retrospect of L2 Vocabulary Acquisition, Teaching and Research

The significance of vocabulary for second language learning and teaching has been recurrently acknowledged in theoretical and empirical second language acquisition vocabulary research. However, before reaching consensus that “the heart of language comprehension and use is lexicon” (Hunt & Beglar, 2005:2), L2 vocabulary acquisition and research have been neglected for a long time. To comprehend the crucial role of vocabulary for second language competence, a retrospect into second language vocabulary acquisition research within the context of the historical trends of second language acquisition and teaching is essential.

In this sense, when the literature on second language is reviewed it can be seen that there have been numerous different approaches to language learning, each with



different perspectives on vocabulary. At times, vocabulary has been appreciated as a valuable component in teaching methodologies and at other times neglected. From the beginning of the nineteenth century, the main language teaching methodology was Grammar-Translation method in which accuracy and explicit grammar rules were emphasized while vocabulary was just for grammatical rules (Zimmerman, 1997). After years of dominated focus on syntax through Grammar-Translation Method, the Direct Method ensued with the emphasis on language use and exposure to authentic materials as well as vocabulary instruction through pictures or physical demonstrations. This method was based on concrete vocabulary structural patterns and items selected according to their simplicity and familiarity (Zimmerman, 1997; Schmitt, 2000).

As a result of growing interest to teach how to read in a foreign language, the Reading Method was introduced with premise to facilitate reading skills by improving vocabulary. Palmer, West and Faucett's (1936 cited in Schmitt 2000) studies pioneered the Vocabulary Control Movement with Carnegie Report, which is a kind of "vocabulary manifesto" recommending the development of a list of vocabulary useful in the reading materials. The premise underlying the Vocabulary Control movement was to reduce the learning load of the students by controlling the type and amount of vocabulary they were exposed to. As a result of this emerged interest on vocabulary through this movement, General Service List of English Words (West, 1953) was developed through systematic criteria, frequencies to select the most useful words for language learning, which is mostly preferred reference for many vocabulary research.

The popularity of lexical research faded away as American structural linguistics derived a language teaching program to teach soldiers a foreign language quickly. This method, known as Audiolingualism, was based on habit formation with so much emphasis on speaking and listening. Vocabulary was pushed to background since the focus was on teaching structural patterns. Vocabulary was added to drills only if they were familiar and easy (Zimmerman, 1997). The common belief in 1940 to 1960s was that good language habits and exposure to the language would eventually lead to vocabulary development.

Challenging the behaviourist view, which regards language as a set of habits, Chomsky's revolutionary publication *Syntactic Structures* in 1957 triggered a major

transition in linguistic theory. It was based on the assumption that language is represented in the speakers' mental grammar as an abstract set of rules (Zimmerman, 1997).

With the advent of notional/functional syllabus and Communicative Language Teaching, the status of vocabulary learning and teaching became better in 1970s to 1980s. With the emphasis on communication and proposing the functional and notional categories for language teaching, Wilkins (1972) stated that it was useless to learn all structures without grammar. Regarding vocabulary learning, this syllabus suggested to have considerable language exposure to master lexical system of language, as the same for syntactic system (Zimmerman, 1997).

Furthermore, with the concept of communicative competence, propounded by Hymes (1972) as a reaction to the overemphasis of linguistic competence, a shift in the foci of language teaching from the command of structures to communicative proficiency took place. The reflection of this approach to vocabulary learning and teaching was mainly on the incorporation of lexical semantics. However, the significance of vocabulary in second language acquisition was reclaimed with Natural Approach (Krashen, 1989). With the emphasis on comprehensible and meaningful input rather than grammatically correct production, this approach suggested providing interesting and relevant input and reading as an efficient means for vocabulary acquisition.

Accompanying these trends, the Lexical Approach received much attention as an alternative to grammar-based approaches (Lewis, 1993). The idea underlying this approach was that vocabulary is an important part of language acquisition and the ability to comprehend and produce lexical phrases or chunks constitutes the core of language proficiency (Lewis, 1993). Thus, the lexical approach is based on developing learners' proficiency with words and word combinations.

The rediscovery of vocabulary in second language acquisition and teaching also echoed in linguistics and the emphasis on syntax shifted towards lexicon. In this regard, Cook and Newton (1996) argued that the lexicon determines the content of language so the lexicon should be a starting point for the process of forming structures.

Along with the appreciation of vocabulary for second language acquisition and teaching and the innovations at technology, corpus-based studies have recently become widespread. For the sake of more accurate and detailed language description, computer analyses of large corpora have been conducted (Biber, 2006). Such corpus-based studies have provided great amount of linguistic information from word frequency to collocation and to chunks. Additionally, they provided more insights about the multi-faceted nature of vocabulary.

As a result, vocabulary learning is nowadays accepted as fundamental for academic success. Several studies have been conducted to learn more about vocabulary and its interconnection with other language skills. Recurrent research themes over the past two decades are the construct of vocabulary knowledge, e. g. the distinction between receptive and productive knowledge, and between knowledge and use (Henriksen 1999); the relationship between vocabulary knowledge and language proficiency, particularly in respect to reading (Hu & Nation 2000); the role of word frequency in vocabulary learning, e. g. the cost-benefit of learning frequent, infrequent and specialized words (Coxhead 2000, Nation 2001); task effect on learning, e. g. task induced involvement (Laufer & Hulstijn 2001); the use of dictionaries, paper and electronic, (Horst et. al., 2005); explicit versus implicit learning (Ellis 1994); incidental versus intentional learning (Ellis & He 1999); learning new words versus learning new meanings of already known words (Bogaards 2000); patterns of vocabulary development over time (Laufer 1998); strategies used by learners to comprehend and learn new words (Schmitt 1997); and testing vocabulary knowledge: size and depth, receptive and productive (Bogaards 2000, Laufer & Nation 1995, 1999, Nation, 2001, Wesche & Paribakht 1996).

To grasp the scope and findings of these studies and to explore the nature of vocabulary knowledge better, it is essential to review the main processes of vocabulary acquisition and the main enquiries of the researchers so far. Thus, in the following section, the essential dynamics of vocabulary acquisition will be discussed.

### **2.3. Vocabulary Acquisition**

The studies on vocabulary acquisition have so far attempted to probe the dynamics and processes of acquisition (Nation, 1990; 2001; Milton, 2009). The

vocabulary acquisition studies and theories have been mostly on first language acquisition studies (Nagy, 1997) and as a result of renewing interest on L2 vocabulary, the findings of those studies and theories were mostly applied to second language vocabulary acquisition. In spite of different perspectives and foci of the vocabulary acquisition studies so far, there is still lack of global theory that can explain how vocabulary is acquired (Laufer & Nation, 1995; Schmitt, 2000).

Following the tracks of language acquisition theories and studies with L1 learners and focusing on L2 vocabulary itself, many attempts have been done to describe the mechanics of vocabulary acquisition (Schmitt, 2000). The main inquiry of L2 vocabulary researchers has been about how possible to acquire such a big amount of vocabulary. The basic assumption is that vocabulary acquisition is incremental in nature. In other words; words are not instantaneously acquired but gradually grows over a period of time as a result of numerous exposures. Thus, the complete mastery of a word entails a number of component types of word knowledge, not all of which can be completely learned simultaneously. (Schmitt, 2000; Nation, 2001)

The incremental nature of vocabulary prescribes that a learner is firstly able to recognize and understand a word when s/he sees in a text or hears in a conversation, but is not able to use it accurately yet. This situation indicates that there are different degrees of acquiring a word (Schmitt, 2000). Thus, it could be posed that lexical knowledge is not an all-or-nothing phenomenon; it involves degrees of knowledge (Laufer, 2005a). As the first stage of vocabulary acquisition, being able to understand is known as having receptive knowledge, then when a learner is able to produce a word and use it meaningfully while speaking and writing, productive knowledge is achieved as the next stage of vocabulary acquisition (Schmitt, 2000; Nation, 1990; 2001).

These degrees are to be learned in a gradual manner, but some may develop latter than others and at different rates. For instance, a learner will surely know the basic meaning of a word before he has full collocations (Nation & Waring, 1997). Henriksen (1999) proposed three dimensions of knowledge; all of which can be acquired to various degrees. Accordingly, it is suggested that word knowledge ranges on a continuum, rather than being known versus unknown. In detail, it is claimed that the learner's knowledge of certain lexical item moves from word recognition (i.e., acknowledging

that the word exists in the target language) through different degrees of partial knowledge towards precise comprehension. Thus, Henriksen (1999) also highlighted that understanding is gradually changed and increased as experience both of the world and of language is expanded.

Besides, vocabulary acquisition has been explained referring to incidental and intentional learning. The incidental vocabulary learning hypothesis (Nagy & Herman, 1985) is based on research into how children learn vocabulary in their native language. It proposes that the vast majority of vocabulary is learned gradually through repeated exposures in various discourse contexts.

According to Nation (2001), vocabulary acquisition includes three processes, namely noticing, retrieval, and creative (generative) use. The process of noticing involves learner's realization of a given word and marking it as an unknown word. While the noticing directs the learner toward learning the word, the retrieval, the second process of vocabulary acquisition reinforces the meaning of the word in the learner's mind. The frequency of the retrieval of a particular item in a learning process influences its location in the learner's memory. Thus, repetition and retrieval of the word extend its meaning, or definition. Repetitive exposure and its use will help learners acquire this target word. The last process of vocabulary acquisition in this classification is the creative or generative use. It takes place when previously encountered words are subsequently came across or used in different ways.

Different from Nation (2001), Henriksen (1999) explained vocabulary acquisition referring to cognitive processes as two interrelated processes of (a) adding to the lexical store via a process of labelling and packaging (i.e., creating extensional links) and (b) reordering or changing the lexical store via a process of network building.

On the contrary, Ellis (1997) explained vocabulary acquisition in terms of psycholinguistic aspect and stated that vocabulary acquisition is sequential. Lexical phrases are sequences of words, which are learned as wholes and attach a single meaning to. Thus, he claimed that vocabulary is not necessarily learned word by word but in lexical phrases. With this perspective, Ellis (1997) extended Lewis' (1993) argument on the prominence of lexical phrases in language learning and teaching.

Regarding the factors interfering the vocabulary acquisition, Cobb and Horst (2004) drew attention to three factors: First, many learners are unlikely ever to meet a large proportion of the lexicon since the vast majority of English words are found mainly in written texts, while a relatively small amount is encountered in daily conversation. Thus, these words probably remain inaccessible for learning,, in case of naturalistic acquisition without formal learning environment. Second, vocabulary acquisition through exposure to texts is slow and uncertain. The probability that a first language learner recognizes the meaning of a new word after encountering it once incidentally in reading is 7% (Nagy & Herman 1985). The third factor that Cobb and Horst (2004) claimed is the lower probability to learn a word from reading. Although natural acquisition relies on new words being met in environments where most of the surrounding words are known, L2 readers encounter unknown words in clusters. Without inferencing skills, it may become hard to learn new words in context full of unknown words. As an evidence for this claim, Cobb and Horst (2004) referred to Nation (2001) and pointed out vocabulary research has shown that the minimal ratio of known to unknown words for both reliable comprehension and new acquisition is at least 20: 1, or in other words when at least 95% of the running words in the environment are known.

To advance the understanding about the processes of vocabulary acquisition and the nature of vocabulary knowledge, it is crucial to review the insights about vocabulary assessment. In this sense, the theoretical and empirical perspectives on vocabulary testing will be dealt in the following as guiding about the foci and design of the present study.

#### **2.4. Vocabulary Testing**

In parallel with interest to second language vocabulary research, vocabulary testing has recently drawn attention, with a wide range of instructional and research purposes; Read (2000b) depicted the major aim of vocabulary testing as “to monitor the learner’s progress in vocabulary learning and to assess how adequate their vocabulary knowledge is to meet their communication needs” (p.2). Additionally, it is widely agreed that vocabulary tests can be used to assess whether learners have acquired the words they were taught (i.e. achievement testing), they can also help to detect whether there are gaps in the vocabulary knowledge of learners (i.e. diagnostic testing), and

they can aim to place students in the appropriate language class level (i.e. placement testing), or they can form part of a more global language proficiency test in order to arrive at an estimate of the learner's skills to perform in the target language (i.e. proficiency testing) (Nation, 2001; Read, 2000b; Read & Chapelle, 2001).

Read and Chapelle (2001) discussed different vocabulary tests referring to their foci, within a framework of second language vocabulary assessment and categorizing them according to test designs proposed by Read (2000b). The first category consists of the distinction between discrete vs. embedded tests. Discrete tests are related to the vocabulary tests that are widely used by researchers and teachers to measure some aspect of learners' vocabulary knowledge. These tests measure vocabulary knowledge as an independent construct. The best known example is Vocabulary Level Test (VLT) developed by Nation (1990). VLT estimates the size of a learner's vocabulary using a sample of high-frequency English words. This test is assessing vocabulary knowledge rather than grammatical knowledge or reading comprehension ability. It represents the traditional conception of what a vocabulary test is like (Read & Chapelle, 2001).

On the other hand, vocabulary test may also be embedded as part of the measurement of a larger construct. ESL Composition Profile (Jacobs et. al., 1981) is a good example for this types since an instrument to measure the construct of writing proficiency in English by means of five rating scales, one of which focuses on the range and appropriateness of the test-takers' vocabulary use. In this case, vocabulary is separately rated as in discrete tests but then the rating is combined with those from the other four scales to evaluate the learners' writing performance.

The second distinction is between selective and comprehensive tests. The selective tests focus on specific lexical items that are selected by the researcher as in the Vocabulary Knowledge Scale (VKS) of Paribakht and Wesche (1997). In this test the students were presented with the words in isolation and prompted to show how much they could recall the meaning and use each one. In contrary, comprehensive tests assess the whole vocabulary content of material (reading, listening tasks) or the learners' responses (speaking, writing tasks), rather than focusing on specific vocabulary (Read & Chapelle, 2001). The popular measure, Lexical Frequency Profile (Laufer & Nation,

1995) is a good example for this test design, as it analyses the whole vocabulary in the given texts and reports the distribution and density of words.

Read's (2000b) last distinction is regarding the role of context in a vocabulary test. A context-independent test like the Vocabulary Levels Test presents words to the test-takers in isolation and requires them to select meanings for the words without reference to any linguistic context. However, the measures that the learners need to use contextual clues to complete or use the words in them are defined as context-dependent. Read and Chapelle (2001) posited the ESL Composition Profile (Jacobs et. al., 1981) as an example of context-dependent tests since in for this measurement; the test-takers are assessed on their ability to use lexical items correctly and appropriately in the context defined by a text that they themselves create.

The question of how to test the lexical knowledge, or the development over time effectively and reliably is at the heart of vocabulary testing (Segler et. al., 2002). Different researchers approached this issue from different perspectives, with a variety of assumptions about the nature and scope of the vocabulary dimensions of learners' language. Some tests are more concerned with measuring the learners' size of vocabulary, that is how many words they know, and the depth of knowledge, which is the quality of their vocabulary knowledge or how well they know particular words (Laufer & Nation, 1995; Wesche & Paribakht, 1996; Vermeer, 2001; Wolter, 2001; Xing & Fulcher, 2007).

With the realization that vocabulary knowledge has multi-faceted nature (Laufer & Nation, 1999), it has become widespread to use different measures including different test designs and test focus, in cooperation. In this respect, Laufer (1998) proposed multiple-test approach as using a battery of tests each of which could measure a different dimension of vocabulary knowledge. Laufer (1998) explained the advantages of multiple test approach that the results of all tests can provide a comprehensive picture of learners' vocabulary at different stages of language development, and by comparing the results of each participant the relationship among different aspects of lexical knowledge in the same learners could be detected.

As a consequence of the controversies on the nature of vocabulary knowledge and the multi-dimensional vocabulary assessment, the need for the vocabulary studies



addressing to different dimensions of vocabulary knowledge, integrating a set of measures, is widely emphasized (Laufer & Paribakht, 1998; Laufer & Nation, 2004). However, to design such a comprehensive multi-dimensional vocabulary research incorporating different measures, it is important to clarify what “knowing a word” constitutes and what aspects it includes. In the following section, the different perspectives on the definition of knowing word will be discussed referring to types of word and the discussions on the threshold vocabulary for other language skills.

## **2.5. Knowing a word**

Words are generally defined as the basic building blocks of language, the units of meaning from which larger structures such as sentences, paragraphs and whole texts are formed (Read, 2000b). Thus, traditionally, people claim to know a word when they are able to recognize its form and understand its meaning. However, knowing a word entails more than just familiarity. In that context, Richards (1976) claimed that there are various kinds of word knowledge necessary to master a word completely, including knowledge of its orthographical and phonological form, meanings, grammatical behaviour, associations, collocations, frequency and register. The eight assumptions listed by Richards (1976) defining the nature of vocabulary knowledge are as follows:

1. The vocabulary knowledge of native speakers continues to expand in adult life, in contrast to the relative stability of their grammatical competence.
2. Knowing a word means knowing the degree of probability of encountering that word in spoken or written discourse. For many words we also know the sorts of words most likely to be found associated with the word.
3. Knowing a word implies knowing the limitations on use according to variations of function and situation
4. Knowing a word means knowing the syntactic behaviour associated with the word
5. Knowing a word entails knowledge of the underlying form of a word and the derivations that can be made from it
6. Knowing a word entails knowledge of the network of associations between that word and other words in the language

7. Knowing a word means the semantic values of a word
8. Knowing a word means knowing many of the different meanings associated with a word.

Richard's definition not only incorporates morphological and syntactic properties but also involves frequency and register. However, pronunciation and spelling are the aspects missing in Richard's view. Considering the gaps in Richard's definition, Nation (1990) extended the definition of 'knowing a word' by adding a receptive/productive distinction. Nation (1990) categorized the main aspects of vocabulary knowledge under four dimensions; namely form (oral or written), position (grammar and collocations), function (frequency and appropriateness) and meaning (conceptual and associative). Within this context, word knowledge is defined on the basis of combination of all elements and each aspect has its own independent function in its own right. Nation (1990) defined each dimension referring to receptive and productive knowledge frameworks and asking explanatory questions as follows:

Table 1

*Dimensions of Knowing a Word*

		<b>Receptive</b>	<b>Productive</b>
<b>Form</b>	Spoken Form	What does the word sound like?	How is the word pronounced?
	Written Form	What does the word look like?	How is the word written and spelled?
<b>Position</b>	Grammatical Patterns	In which pattern does the word occur?	In which patterns must we use the word?
	Collocations	What words or types of words can be expected before and after the word?	What words or types of words must we use with this word?
<b>Function</b>	Frequency	How common is the word?	How often should the word be used?
	Appropriateness	Where would we expect to meet this word?	Where can this word be used?
<b>Meaning</b>	Concepts	What does the word mean?	What word should be used to express this meaning?
	Associations	What other words does this word make us think of?	What other words could we use instead of this one?

(Nation, 2001:31)

In this regard, Nation (2001: 23) pointed out that “words are not isolated units of language”. Hancioglu et. al. (2008) extended Nation's definition as vocabulary

knowledge is a complex phenomenon involving multiple interlocking systems and levels. It ranges from surface recognition only, to detailed knowledge of forms, derivations, synonyms, antonyms, hyponyms, collocations etc.

Rather than examining properties of words individually, some researchers opted to examine the learners' general state of the vocabulary as a whole, which is called as global trait model. It covers the overall state of learners' vocabulary such as in two broader dimensions; size and depth of lexical knowledge rather than 'sub-knowledge' of words such as collocations, semantics (Qian & Schedl, 2004; Webb, 2005; Laufer, 1998; Laufer & Nation, 1999). The studies on the dimension of vocabulary size deals with the number of words in the learner's mental lexicon; in other words, how many words are known (Laufer and Nation, 1995). On the other hand, the research on vocabulary depth focuses on the quality of word knowledge. (Read, 2000a) In this point, it was generally agreed that learners with large vocabularies tend to be more capable in broader range of language skills than learners with smaller vocabulary size. Furthermore, as a learner becomes more proficient in the language, the dimension of size becomes less important as the dimension of quality becomes more important (Meara, 1996; Laufer, 1998).

Different from global trait model, some researchers preferred to examine many separate traits including aspects of word knowledge (e.g., the aspects included in the lists mentioned above (Nation, 1990; Richards, 1976). However, Meara (1996) argued that separate trait model is impracticable because more traits are continually added, and he therefore proposed a model of lexical competence with only two dimensions: size and organization.

Similarly, Henriksen (1999) classified lexical knowledge into three categories: partial vs. precise, shallow vs. deep and receptive vs. productive, with the use of word being an overriding control process. Zareva, Schwanenflugel and Nikolov (2005) investigated this three dimensional model to see which dimension(s) was (were) more revealing of the overall state of learner's vocabulary knowledge at different proficiency levels. They found vocabulary size, word frequency effects, number of associations, and within-group consistency of participants' associative domain to be better predictors of language proficiency than native like commonality of associations. In another study, Zareva (2005) tried to identify the smallest set of variables that could most efficiently

predict lexical knowledge and determine the extent to which this three-dimensional model could account for the variance in word knowledge. She found that verifiable self-report could account for much of the variance in vocabulary knowledge and could be taken as its single best predictor. Moreover, the results showed that the model as a whole could virtually explain all the variance in the vocabulary knowledge of learners at different levels of language proficiency.

Daller et. al. (2007) also attempted to explain vocabulary knowledge in a theoretical three-dimensional model that contrasts size and depth against a quality of fluency. Fluency is to discriminate the ease, speed of access and use of the words that a learner knows from recognition and/or knowing about how to use the words. Daller et. al. (2007) stated that some learners have high fluency and they can use vocabulary without hesitation but some learners may have difficulty in accessing the words they know. Thus, in this model, fluency refers to the productive vocabulary knowledge while size and depth are aspects of receptive (i.e. recognition; passive) vocabulary knowledge.

On the other hand, vocabulary knowledge was also defined as a continuum consisting of several levels, starting with superficial familiarity with the word and ending with the ability to use the word correctly in free production. Laufer (1998) explained this process as the learners' progress along the interlanguage continuum from a non-existent knowledge towards native-like competence. The fundamental idea is that as a learner acquires more knowledge of a given word, and s/he will move along the continuum of knowledge.

In addition to the definition of knowing a word, the classification of words also carries importance to grasp the essence of lexical competence and performance. In literature, the issue of how to classify the words to be learned has been a fevered controversy in second language vocabulary research. (Nation, 2001; Laufer & Nation, 1999). In the following section, certain criteria for the classification and related studies will be discussed.

### 2.5.1. Types of Words

Some linguistic criteria have been proposed such as semantic and syntactic classifications, yet the most common categorization has been done in terms of word frequency (Nation, 1990; 2001). Word frequency is defined as a measure of usefulness, in other words, how often the word occurs in normal use of the language (Read, 2004; Nation, 2001). Frequency is related with the number of times that learners encounter the target words. In this context, the duration of contact with a word facilitates its acquisition since it enhances learners' attention to the word (Godev, 2009). Crossley et. al. (2010) also supported the assumption that word frequency is one of a determinant factor for vocabulary acquisition. They claimed that once learners are exposed to frequent words more, the processing time reduces with more opportunities to practice with the word. Thus, it is generally assumed that there is a strong relationship between the frequency of a word and the likelihood that a learner will encounter and even learn that word. This assumption was supported with the frequency profile studies that beginning L2 learners are more likely to comprehend; process and produce higher frequency words since they encounter and use these words more (Crossley & Salsbury, 2010; Ellis, 2002; Meara, 1996; Milton, 2009).

The concept of word frequency is commonly associated with the size of vocabulary, that is, learners' size of vocabulary has been mostly discussed in terms of the frequency levels of words they know (Nation, 1990; Laufer, 1998). However, recently it is also argued that the word frequency has effect on the production and comprehension of words since the learners tend to use higher frequency word more than low frequency words (Ellis, 2002; Laufer, 1998; Nation & Laufer, 1995).

Considering the significance of word frequency to explain the processes of vocabulary acquisition and to conceptualize the learners' command of vocabulary, Nation (1990) proposed to classify words on the basis of frequency indices with 1000 intervals. Accordingly, Nation (1990; 2001) classified vocabulary as:

- high frequency words
- low frequency words
- technical words
- academic words

Using the percentage of text coverage as the indicator for this classification, Nation (1990; 2001) identified the words that occur frequently, that is the 80% of the running words in a common text as high-frequent words while less frequent words with a small coverage, are labelled as low frequent words. Milton (2009) also characterized these two word types that the high frequent words are almost always function words, which are crucial to making grammatical and meaningful language while less frequent words are content words, nouns, main verbs and adjectives that are crucial for the meaning in any sentence. Another characteristic of these words is interconnectivity. The high frequent words tend to interconnect with other words. For instance; a very frequent word *get* links with pronouns (e.g. *I get you, she gets him*), with prepositions for making phrasal verbs (e.g. *get up, get on*), also with noun phrases (e.g. *get divorced, get a take-away meal*). However, less frequent words do not collocate so widely, their interconnected uses are more restricted (Milton, 2009: 23).

In addition, Nation (1990) defined the categories for specialized words which provides coverage for certain kinds of texts; namely technical and academic words. On the basis of frequency counts in the specialized corpus, technical words are defined as the ones which are highly frequent in the special areas. Such words carry specialized, jargonized meanings.

The other category of specialized vocabulary is academic vocabulary, as focused in the present study. Academic vocabulary does not involve within the 2000<sup>th</sup> high frequent words but which occur reasonably frequent over a wide range of academic texts (Nation, 2001; Coxhead, 2000)

Nation (2001) explained the motivation to classify the types of words in this way that it will be particularly useful for learners with their learning goals in language use. Word frequency is put forth as an effective way to predict vocabulary knowledge of a learner. Moreover, Laufer and Nation (1999) defined such frequency based categorization as a cost-benefit distinction. That is, the cost is the time and effort to teach and learn the words. The benefit is the number of opportunities to use the words as represented by the frequency of the words. In terms of pedagogical implication of these frequency bands, it is highlighted that the most frequent 2000<sup>th</sup> words (i.e. high frequency words) deserve individual attention, however, beyond that level, 3000<sup>th</sup>,

5000<sup>th</sup> , 10000<sup>th</sup> (i.e. low frequency words) and technical and academic words, the strategies should be paid attention for learning and coping with these words such as guessing from the context, memorisation techniques and learning parts of the words (Laufer & Nation, 1999).

Classifying the types of words on the basis of frequency counts, coverage and quantity of words has gained wide acceptance as an effective criterion for the exploration of the complex nature of vocabulary knowledge in literature (Laufer et. al., 2004; Coniam, 2007; Chung & Nation, 2003). The issue of how many words a learner should know is one of the important debates guiding vocabulary research. In the following section, this inquiry is discussed referring to theoretical and empirical issues on the frequency criterion and related studies.

### **2.5.2. How many words should be known?**

The frequently asked question that inquiries the complex nature of vocabulary knowledge is “how many words a second language learner must know in order to be able to use the target language effectively?” or as Laufer (1997) reworded “how many words one must be able to recognize automatically irrespective of context in order to be able to use the higher level processing strategies with success (p.23). Nation & Waring (1997) answered this question through three challenging complementary questions as “How many words are there in the target language?” and “How many words do native speakers know?”, lastly “How many words are needed to do things that a language learner needs to do?”

Then, for the answer to the first question, Nation and Waring (1997) referred to dictionary studies (Goulden, Nation & Read, 1990) which examined the vocabulary of *Webster’s Third International Dictionary*, the largest non-historical dictionary of English when it was published. It was underlined that when compound words, archaic words, abbreviations, proper names, alternative spellings and dialect forms are excluded, and when words are classified into word families consisting of a base word, inflected forms, and transparent derivations, *Webster’s Third* has a vocabulary around 54,000 word families. Moreover, Gouldenet. al. (1990) have determined that the vocabulary size of an average native-English-speaking university student is about 17,000 word families (a word family being a base word together with its derived forms,

e.g. happy, unhappy, happiness), or as many as 40,000 different word types. Nation and Waring (1997) exclaimed that this is a learning goal far beyond what second language learners achieve, and even for many native speakers.

For the second question, “How many words do native speakers know?”, Nation and Waring (1997) claimed that it is up to a vocabulary size of around 20,000 word families, and it is expected that native speakers will add roughly 1000 word families a year to their vocabulary size. That means that a five year old beginning school student will have a vocabulary of around 4000 to 5000 word families. A university graduate will have a vocabulary of around 20,000 word families (Goulden, et. al., 1990). Schmitt (2010) drew attention to the fact that these figures are very rough and native speakers have varying size of vocabulary depending on the amount and manner in which they use their language. Nevertheless, he claims that a range of 16,000 – 20,000 word families is a fair estimate for an educated native speaker

Lastly, for the question “How many words are needed to do things that a language learner needs to do?”, Schmitt (2010) emphasized that it is not realistic to evaluate the non-native speakers’ size of vocabulary knowledge considering the figures for native speakers. According to Schmitt, a more reasonable vocabulary goal for language learners is the amount of lexis necessary to enable the various forms of communication in English (p.7).

To estimate this amount of vocabulary, Nation and Waring (1997) used the concept of word frequency as a measure of useful words, considering the fact that language has a large number of words, but not all of these words are equally useful. Referring to the categorization of the words as high and low frequent (Nation, 1990); they discussed the necessary words for second language learners. For instance, the word the is a very useful word in English. It occurs so frequently that about 7% of the words on a page of written English and the same proportion of the words in a conversation are repetitions of the word the. Thus, it is claimed that with a vocabulary size of 2,000 words, a learner knows 80% of the words in a text which means that 1 word in every 5 (approximately 2 words in every line) are unknown. Nation and Waring (1997) concluded that the learner needs to know the 3,000 or so high frequency words of the language. These words have high priority and before these are learned,



other words are not focused so much. Nation (1990) argued that after these high frequency words are learned, the next focus for the teacher is on helping the learners develop strategies to comprehend and learn the low frequency words of the language.

On the other hand, Laufer (1991) associated the concept of threshold vocabulary with the concept of sight vocabulary, and she defined it as how many words a learner must know (be able to recognize automatically irrespective of context) in order to be able to use the higher level processing strategies. On the basis of this definition, Laufer (1991) investigated the adult EFL learners' vocabulary threshold in relation with reading comprehension. The subjects were divided into five different vocabulary levels: those whose vocabulary was below 2,000 word families, those with 3,000, those with 4,000, and those with 5,000. The reading scores of these five groups were then compared. The difference between the means was found to be significant at the transition from the 2,000 to the 3,000 vocabulary level. The reading scores of the 4,000 level learners were higher than those 3,000 level learners, but not so significant. The same was valid for the 5,000 level vis-à-vis 4,000 and 5,000 vis-à-vis 3,000. The difference in reading scores was not significant. Thus, she suggested that the turning point of vocabulary size for reading comprehension is about 3,000 word families.

Furthermore, Laufer (1992) supported her findings for 3,000 word families through her further study conducted with again EFL students by comparing the learners' vocabulary level, reading comprehension in EFL, and this time the general academic ability as well. Consequently, it was obtained that learners below the 3,000 vocabulary level did poorly on the reading test regardless of how high their academic ability was.

Hazenberg and Hulstijn (1996) inquired whether the threshold in range of 3000-5000 is a realistic learning goal for the university students who deal with academic texts. In this respect, a vocabulary size and reading comprehension tests were given to a large population involving native speakers, non-native graduate students and non-native prospective students. The findings highlighted the importance of 5000 most frequency words as the learning goal for non-native university students, irrespective of field of study. Nation (2007) recently extended this discussion that a vocabulary size of between 8000-9000 word families is necessary to comprehend a variety of authentic texts.

These claims on the threshold vocabulary for both native and non-native speakers mostly depend on the data provided with the word lists which compile the vocabulary in a language on the basis of frequency counts and in terms of certain categorizations. In the following, a general description of word lists, their underlying rationale will be given with much emphasis on the General Service List, which is one of the reference word list in this study.

### **2.5.3. Word lists**

The debates on non-native learners' vocabulary knowledge and how to learn/teach vocabulary have inspired the development of word lists; listing the vocabulary in terms of certain criteria. Vocabulary studies suggested that some words are more frequent than others, therefore more useful for second language learners (West, 1953; Nation, 1990). Decades of corpus research and the advent of online text databases motivated some researchers to focus on identifying the most frequent words that are necessary to understand a written text (Biber, 2006). Thus, as well as teaching materials, the word lists constitute important sources for vocabulary research.

One of the oldest and well-known word lists is the General Service List (GSL) by West (1953). The criteria used to compile the GSL include word frequency, structural value, universality, subject range (i.e. no specialist items are involved), definition words, word-building capacity and style (i.e. colloquial or slang words are excluded) (Schmitt, 2010). Adapting these criteria, GSL contains about 2000 base words. These words were called as general vocabulary since West (1953) wished to compile general vocabulary with high frequency that are necessary to achieve basic functions with a language, rather than for any specific purpose. In GSL, about 165 word families in the lists are function words and the rest are content words. A key feature of the GSL is that each word's different parts-of-speech and different meaning senses are listed. This feature makes this list more useful than a simple frequency count. In fact, the primary motivation lying under this list was to provide practical resource for compiling simplified reading texts into stages. In spite of its age and some doubts about its coverage, this list still remains the best available and referred lists.

Along with the corpus studies supported with the advent of technology (e.g. Biber, 2006), many different word lists derived from student corpus and/or different

field sources have been developed. A more up-to-date source of word frequency data is Brown Corpus of American English, which was the first major corpus developed as a result of computerized analysis. In addition, Corpus of Contemporary American English with 385 million words is constructed. Another corpus representing general English is British National Corpus (BNC) with 100 million word including 10 million words of unscripted spoken discourse.

These new word lists have caused wide echoes in literature; however, the GSL is still appreciated and used as a reference list in many recent studies (e.g. Beglar & Hunt, 1999) in spite of many critics about out-dated entries and lack of modern terms. Nation (2004), who questioned the coverage of the GSL against the BNC, confessed that in spite of its age, the GSL has still valid coverage and learners of English in primary and secondary school would benefit from the materials designed with the GSL. Read (2007) suggested that any more up-to-date compilation should still retain the GSL's selection criteria of frequency, range, familiarity and pedagogical value

In addition to pedagogical and structural practicality, the GSL has become a main resource for the development of the special purpose corpora in vocabulary research. For instance, Xue and Nation (1984) constructed the University Word List and Coxhead (2000) developed the Academic Vocabulary (AWL) on the basis of the words in the GSL, involving the words that are not in the 2000<sup>th</sup> words of the GSL.

With the pioneering role of the GSL and contributions of other word lists, new insights about the nature of vocabulary knowledge have been gained. In that way, the interconnected components of vocabulary could be investigated more comprehensively referring to the types of words and considering the native and non-native learners' vocabulary knowledge. Two basic constructs, lexical competence and performance, have been recently propounded to grasp these interconnected components and dimensions of vocabulary knowledge (Webb, 2005; Meara, 2005; Milton, 2009). It can be considered that within the framework of these main constructs integrating all other vocabulary dimensions, different word types, namely general and academic vocabulary could be investigated comprehensively. The theoretical and empirical explorations regarding these constructs are presented in the following section to clarify the underlying structure of the present study.

## **2.6. Theoretical and Empirical Explorations into General Lexical Competence and Performance**

Through discussions of the components of knowing a word and threshold vocabulary, the vocabulary knowledge is mostly associated with native-like word knowledge (Laufer, 1998; Nation, 2001). However, as Henriksen (1999) pinpointed such word-centred definitions could fail to address the “nature of and interrelationship among various aspects of lexical competence” (p.304). Thus, the dimensions of vocabulary knowledge should come to fore while exploring into the nature of vocabulary knowledge. Considering this, these dimensions and their interrelationships will be discussed within the constructs of lexical competence and performance in the following section.

### **2.6.1. Conceptualization of Lexical Competence and Performance**

As a result of growing awareness that vocabulary knowledge is a multidimensional phenomenon (Laufer & Nation, 1995; Nation, 2001; Milton, 2009), several attempts have been done to redefine vocabulary knowledge in terms of more comprehensive framework, integrating the dimensions of vocabulary. Thus, the terms “vocabulary knowledge”, “lexical knowledge”, “vocabulary ability” and “lexical competence and performance” have been propounded and adapted widely in the second language acquisition literature (Henriksen, 1999; Read, 2000; 2004; Meara, 2005; Qian& Schedl, 2004; Webb, 2005). In spite of several attempts to band together the dimensions of vocabulary and to develop overall vocabulary framework, neither a common definition has been agreed nor has a framework of lexical competence and performance been accepted and established so far.

Up to this point, it has been debated that lexical competence is not just a component of grammatical competence but the two are interconnected elements of language proficiency (Schmitt, 2000). Once it is accepted that vocabulary is essential in L2 since it carries “the basic information load” (Read, 2004: 153) and “lexical competence is at the heart of communicative competence” (Meara, 1996: 36), the amount of vocabulary research has increased focusing on the different dimensions of vocabulary (e.g. Laufer, 1991). Owing to global and/or macro perspectives of these

studies, vocabulary knowledge, thus, lexical competence has been examined in terms of limited aspects, mostly in terms of vocabulary size, and/or depth.

Due to such restricted perspectives, lexical competence has primarily been defined as the number of words in lexicon since a large vocabulary with knowledge of lexical items across a range of frequency bands has been accepted as a hallmark of good lexical knowledge (Henriksen, 1999). However, Meara (2005) detailed the definition of lexical competence as vocabulary size, depth of vocabulary knowledge and the accessibility of core lexical items.

The use of vocabulary or productive vocabulary size (Laufer, 1991; 1998) has been included mostly within the scope of lexical competence, albeit, it is widely agreed that the cognitive processes and dynamics of productive dimension, that is, lexical performance is quite different from the lexical performance (Nation, 1990; Schmitt et. al. 2001). Thus, the necessity to handle and evaluate the productive dimensions separately is considered to be more effective to discuss the vocabulary knowledge. In that sense, the present study conceptualizes the productive dimensions of vocabulary knowledge under lexical performance and approaches the second language vocabulary knowledge in terms of lexical competence and performance as the overarching constructs.

These two constructs have received acceptance as explaining the complex nature of vocabulary knowledge (Henriksen, 1999; Zareva et. al., 2005; Webb, 2005). By means of these two overarching constructs, it is considered that a framework that could explain the interrelated dimensions of vocabulary knowledge could be established. However, firstly, it is essential to clarify and probe the theories on what knowing a word means, in order to conceptualize lexical competence and performance.

### **2.6.2. Interconnected Dimensions of Lexical Competence and Performance**

In order to conceptualize the framework of lexical competence and performance, the dimensions that have been examined in the vocabulary studies so far should be pieced together and establish a comprehensive picture of general and academic vocabulary knowledge. Thus, in this section, the various findings from the different sources related to the umbrella terms of lexical competence and performance; receptive and productive dimensions will be discussed covering all sub-dimensions; namely

vocabulary size, depth of vocabulary knowledge, lexical use and lexical diversity, from theoretical and empirical perspectives considering the aims of the study.

### **2.6.2.1. Receptive vs. Productive Dimensions**

Regarding the receptive-productive continuum in vocabulary knowledge, L2 researchers agree that there is a difference between vocabulary for comprehension and vocabulary for production. Thus, it can be generally defined that receptive knowledge involves recognizing a word while listening or reading and then accessing its meaning from one's internal lexicon (Anderson, 2003). In other words, receptive knowledge contains size and depth of vocabulary knowledge. In detail, the size of vocabulary knowledge is defined as the number of words and meanings of which a learner has at least the minimum knowledge (Qian, 1999). On the contrary, the depth of vocabulary knowledge refers to how well a particular word is known (Nation, 2001).

Nation (2001) classified specific aspects of receptive lexical knowledge as;

- the ability to recognize a given word sounds and looks like
- the ability to recognize that many words can contain parts such as inter-, -nation; being able to relate these parts to the word's meaning
- understanding words in particular contexts in which they appear and knowledge of the concepts behind words that make them appear in a variety of contexts
- knowledge of other words that are semantically related to a given lexical item
- knowledge of which grammatical patterns the word appears in
- knowledge of frequent collocations of a given word
- knowledge of where, when and how often a word appears in conversation or reading (p: 26)

On the other hand, the productive dimension covers expressing a word meaning through speech or writing, accessing it from lexicon and finally producing the proper spoken or written form (Anderson, 2003; Zareva, 2005, Henriksen, 1999; Laufer, 1998).

In line with this definition, Nation (2001) explained the features of productive knowledge as:

- working knowledge of how to pronounce and spell a given word
- the ability to construct a word using the right word parts in their appropriate forms
- the ability to express the correct grammatical form and meaning of a word
- the ability to generate synonyms and antonyms of a given word
- the ability to use the word correctly in an original sentence
- the ability to produce collocations of a given word
- knowledge of where, when and how often to use a given word in terms of formal context (p: 26).

According to Nation and Waring (1997), the receptive knowledge of word comes from the productive and essentially it is a requirement of productive words. In other words, it reflects the idea that ‘one has to meet a word in reception before it can be produced’; a word passes a threshold from receptive into productive use.

Receptive-productive dimension of vocabulary knowledge was measured by participants’ ability to recognize a word and explain its meaning by providing a brief explanation, suitable synonym or translation of the target word. This particular task involves several sequential steps, i.e., word recognition, word recall (for the L2 learners), as well as production of a brief explanation of the target word. (Wesche & Paribakht, 1996; Zareva, 2005)

On the other hand, it is also underlined in literature that word comprehension does not automatically predict its use (production). Laufer (1998) thus acknowledged that mere memorization of a word form in a given context without understanding its meaning cannot be called productive vocabulary. The learners’ active involvement into the production activity and use of word in a context is essential for productive vocabulary learning.

Rather than classifying the vocabulary knowledge as receptive and productive, a bi-polar continuum with increasing degrees of word familiarity is used to identify vocabulary knowledge (Laufer & Goldstein, 2004). In the studies on the development of standardized computerized test of vocabulary size (Laufer & Goldstein, 2004; Laufer, Elder, Hill and Congdon, 2004); four form-meaning stages along the receptive-productive continuum were proposed. This categorization can be illustrated as in the following:

R		P	
Meaning recognition	Form recall	Meaning recall	Form recognition

Figure 1: Four-way categorization of different degrees of vocabulary knowledge

(Laufer & Goldstein, 2004)

With respect to the continuum explaining the degrees of vocabulary knowledge, Laufer (1991) suggested the ability to understand what a word means in a given context and the free use of a word in the discourse as the receptive and productive polar points.

Melka (1997) put forth the notion of familiarity as a measurement criterion for the degree of knowledge on the continuum. Starting from the first encounter with a word, which constitutes the visual recognition, it continues to the higher degrees of familiarity, which is close to productive knowledge containing the various meanings of the word and related collocations. Thus, it is claimed that such degree of knowledge in terms of familiarity could yield the distinction between receptive and productive dimension but it is urgently emphasized that there is no clear cut between the stages, that is word recognition is possible even when the words is stored incompletely or even when a learner could not produce the word appropriately, many of its features may be productively known.

However, Meara (1997) propounded the threshold effect, that is, words are receptively known until they reach a point or a threshold where they become fully productive. Thus, the move from receptive to productive mastery is the result of a fundamental change in the way a lexical item is integrated in the mental lexicon. Rather



than a continuum, Meara (1997) explained the receptive and productive vocabulary in terms of lexical organization perspective, that is, different types of connection between lexical items. When a word connected to a productive item becomes active, it becomes accessible to use. Meara (1997) claimed that this perspective could explain how students learn some words productively with very little input in a short of time. Additionally, it could also clarify why words sometimes seem to be known but at other time they do not: if the words connected to the item are activated, it will become accessible. However, if the connected words are not activated, it will not be used.

In spite of some differences in the structures propounded in these receptive-productive perspectives, it is commonly agreed that learners do not acquire all of the vocabulary knowledge components in a uniform manner (Schmitt, 2010; Henriksen, 199; Laufer, 1998; Waring, 1997; Nation, 2001). Additionally, productive vocabulary is more elusive, more difficult to learn and possibly more fragile (Waring, 1997). Besides, it is assumed that receptive vocabulary always precedes productive vocabulary. In spite of different assumptions on the receptive-productive dimension, it has been commonly agreed that learners are able to demonstrate more receptive than productive knowledge (Schmitt, 2000), yet, it has been insistently emphasized that a generalization on vocabulary knowledge either receptively or productively could be misleading. For example, a learner can produce a word orally without any problems but cannot read it receptively, or a learner may recognize the word in isolation but cannot use in a context. Thus, it has been drawn attention that the boundaries between the receptive and productive dimensions are not easy to distinguish (Laufer, 1991; Nation, 2001). Receptive and productive dimensions could overlap each other and the relationship between two is not static; they have different systems depending on different cognitive processes (Melka, 1997; Nation, 1990). Considering this fragile balance, it can be suggested to realize and adapt the receptive-productive distinction only for systematic investigation of vocabulary knowledge and the interrelationship between these dimensions should be always kept in mind.

To clarify this distinction and the constructs of lexical competence and performance, which overarch over the receptive and productive dimensions in the following, sub-dimensions as the components of vocabulary knowledge will be detailed.

### 2.6.2.1.1. *Receptive Dimensions*

#### 2.6.2.1.1.1. *Size and Depth of Vocabulary Knowledge*

Anderson and Freebody (1981) stated that measures of vocabulary knowledge are potent predictors of a variety of indices of linguistic ability. Size and depth of vocabulary knowledge are the mostly referred predictors in literature. While vocabulary size is defined as the number of words known by a learner, the depth of vocabulary refers to the quality of learners' vocabulary knowledge (Read, 2000a; Nation, 1990; 2001).

Various vocabulary research has agreed on the potential of vocabulary size to predict success in language skills such as reading, writing and general language proficiency as well as academic achievement (Laufer, 1997; Laufer & Goldstein, 2004) since it is accepted as the basic dimension of lexical competence. Thus, it is assumed that all other things being equal, learners with big vocabularies are more proficient in a wide range of language skills than learners with smaller vocabularies (Meara, 1996). Moreover, vocabulary size tests are considered to allow more efficient placement than other vocabulary tests. Besides, it is believed that vocabulary size tests could function as relatively simple and efficient research instruments charting the growth of vocabulary knowledge after certain instruction or treatment (Laufer & Goldstein, 2004). In this regard, Laufer (1998) stated that the progress in language learning can be associated with an increase in the number of words learners know.

On the other hand, depth of vocabulary knowledge is mostly used to convey various aspects of word knowledge such as different meanings, appropriate uses, syntactic properties, underlying forms and derivations (Nation 2001; Qian, 1999; 2002; 2004). In other words, the depth of a learner's vocabulary knowledge is determined by his or her knowledge of various aspects of a given word, such as its meaning, especially polysemy and synonyms, and its sensitivity to collocations and associations (Qian, 2004). Lee (2003) defined the depth of word knowledge as a prerequisite for vocabulary learning and use. Thus, depth of vocabulary knowledge is accepted as a higher step of vocabulary knowledge (Read, 2000b).

Although both size and depth of vocabulary knowledge are considered important since vocabulary knowledge progresses from superficial to deep at various stages of

learning (Read, 2000; Nation, 2001), many of vocabulary research so far has focused on vocabulary size. However, with the realization of multi-dimensional nature of vocabulary knowledge, the urgency to incorporate both size and depth of vocabulary knowledge while investigating the receptive dimension of vocabulary knowledge has been emphasized (Henriksen, 1999; Zareva, 2005). The studies that have focused on these sub-dimensions of receptive vocabulary knowledge either separately or together are presented in the following section in order to clarify the empirical anchorage of the present study.

#### *2.6.2.1.1.2. Measurement of Receptive Dimensions*

In vocabulary research literature, there are a few well-acknowledged tests for receptive measurement. Vocabulary Levels Test (VLT) developed by Nation (1990) is the best known instrument to assess how many words the learner knows receptively (Meara, 1996; Read, 2004). According to Schmitt (2000: 58), VLT "provides a profile of a learner's vocabulary, rather than a single figure estimate of overall vocabulary size." This test measures vocabulary knowledge at 5 word-frequency levels (2000<sup>th</sup>, 3000<sup>th</sup>, 5000<sup>th</sup>, the university word list, and 10,000<sup>th</sup>). Each level has 6 clusters including 6 words and 3 definitions. The testees are required to match the words and the definitions. The words in each cluster are from the same part of speech and are de-contextualized so that no clues to the meaning are provided by form. Also, the words in each cluster are semantically distinct to make the test a sensitive test of vocabulary knowledge; that is, the format is sensitive to partial word knowledge (Nation & Waring, 1997). To answer the test, learners do not need to have knowledge about other aspects of the word such as its grammatical form, collocation, function, and so on. If a learner reaches the criterion at a lower level, for example, the 5000-word level, s/he has most probably mastered the 2000 and 3000 levels as well (Read, 1988). Read and Chapelle (2001) consider this test as a discrete, selective, context-independent test which is "designed to measure learners' vocabulary size as a trait without any reference to any particular context of use" (p. 8). VLT has been used as an effective and appropriate measure of vocabulary size in various studies in literature (Cobb, 1997; Laufer & Nation, 1995; Laufer & Paribakht, 1998; Qian 2002; 2004). In spite of such widespread use, many validation and modification studies on this measurement have been conducted. For instance, Beglar and Hunt (1999) revised the 2000 and University Word

List sections of VLT and concluded that the items within the section are strongly related to one another. Moreover, Schmitt, et. al. (2001) developed four revised versions of VLT with reliability and validity studies and both the old and new versions have been accepted and used.

The vocabulary size tests, however, have been criticized by the researchers (Laufer and Goldstein 2004; Zareva, 2005) as being uni-dimensional and ignoring other aspects of lexical knowledge. Thus, Laufer and Goldstein (2004) for instance tried a computer adaptive version of the test, which could measure active and passive recall and recognition of vocabulary items. They found the four strengths of knowledge to be implicationally scaled, with the active recall being the most difficult and the passive recognition the easiest. They also noticed that the passive recall test was the best predictor of academic achievement, accounting for 42.6% of the total variance in the students' years. They claimed that this test could refer to the incremental nature of vocabulary knowledge and could be more efficiently used for placement and research purposes than the depth tests.

On contrary to the vast amount of vocabulary size research, the depth of vocabulary knowledge has been moderately examined in literature. Emphasizing the need for more study on the depth of vocabulary knowledge, Read (1993) pioneered the studies to develop measures for vocabulary depth. As a result of exploratory research, Read (1993; 1998) developed word association format measuring both paradigmatic and syntagmatic knowledge of the target words. This format was modified and applied to advanced foreign language learners by (Bogaards, 2000; Greidanus & Nienhuis, 2001). With the development of these measures, the vocabulary depth has been the variable of the studies and thus the scope of vocabulary research has been extended. For instance; Qian (2002; 2004) used the word association test while investigating the relationship between L2 vocabulary knowledge and reading comprehension ability. The results indicated that vocabulary depth could account for a significant amount of the variance in the reading scores as more than a vocabulary size test could provide.

Moreover, Read (2000b) introduced the checklist method of measuring vocabulary knowledge (also called the yes/no method), which simply presents the learners with a list of words and asks them to check the words they know. He claimed

that, although the test is not useful for assessment purposes, it can be used for research as it is an "economical way of surveying knowledge of a large number of words" (p. 21). Furthermore, Wesche and Paribakht (1996) developed the Vocabulary Knowledge Scale, which assesses the learners' depth of vocabulary knowledge. This scale was subsequently used in many studies to determine students' vocabulary knowledge (e.g., Nassaji, 2004; Zareva, 2005).

In the following, the studies which used the aforementioned measurements to evaluate the learners' receptive vocabulary knowledge will be presented to intensify the debates on the receptive command of second language.

#### *2.6.2.1.1.3. Empirical Studies on Second Language Receptive Vocabulary*

The second language vocabulary research has examined vocabulary knowledge mostly in terms of receptive and productive dimensions and their interconnection with other language skills (Waring, 1997; Webb, 2005; 2008; Lee & Muncie, 2006). The main focus of these studies has been receptive dimension, particularly, vocabulary size. It has been emphasized that knowing a large number of words is an extremely important factor in L2 learning (Nation, 1990; Meara, 1996; Laufer, 1998).

For instance, Henriksen (2008) measured the L2 vocabulary size of Danish EFL learners at grade 7, 10 and 13 through Vocabulary Level Test. She also examined their L1 size as well. The findings indicated that there was a consistent improvement in vocabulary size of both L1 and L2 across increasing grades. Besides, through the examination of vocabulary size in terms of frequency bands, the gradual growth of vocabulary through the various frequency levels was also emphasized. Thus, the findings on vocabulary size were accepted as the indicator of incremental nature of vocabulary and an effective way to evaluate the education for vocabulary growth.

Another study that examined the learners' language growth in terms of their gains in vocabulary size is Llach and Terrazas (2009). They examined the Spanish students' receptive vocabulary knowledge in terms of size. The results indicated the participants' satisfactory size of the 2000<sup>th</sup> words. Based on the findings, Llach and Terrazas (2009) suggested that the receptive dimension of vocabulary knowledge could be an effective indicator of learners' language growth.

The studies on vocabulary size discussed their findings mostly either in comparison with native speakers' vocabulary knowledge or with reference to the concept of threshold. Approving the significance of high frequent vocabulary for basic language skills (Nation, 1990; Laufer, 1992; 1998), the research mostly focused on the words beyond 3000, which are labelled as low frequent words (Nation, 2001). In this respect, the 3000 word has been accepted as the minimum threshold for reading comprehension (Laufer, 1997) whereas for reading academic texts, 5000 word level is admitted (Nation, 2006).

In that sense, the results of the studies on university students' general service vocabulary knowledge suggested 3000-5000 interval as the reference point, however this figure was estimated according to the learning goals of curriculum and native speakers' predicted vocabulary knowledge (Nurweni & Read, 1999; Tschirner, 2004; Nation, 2006). However, when Nurweni and Read (1999) investigated the Indonesian university students' vocabulary knowledge in terms of 2000 most frequent words and University Word List, they realized that the learners' absolute size of general vocabulary was 1, 226 word families, thus they fell short of the targeted 3000-5000 interval. In the same vein, Tschirner's (2004) study revealed that this target interval for general service vocabulary could not be reached by German university students, either. In that study, only 30% of the German university students were found to master the 5000 word level.

Moreover, Alberschtein et. al. (2008) obtained that 10 out 19 Danish first year university students could master 5000 word level. On the basis of this finding, Alberschtein et. al. (2008) drew attention to the significance of having a well-established sight vocabulary at the level 5000 for efficient language proficiency.

On the other hand, Zareva et. al. (2005) reported high size of general vocabulary. As a result of study with Bulgarian adult EFL learners at intermediate and advanced levels, the vocabulary sizes of the intermediate participants were found as 6000 while the advanced group had 8500 word families. The high estimates in their findings caused some controversies, then considering that the participants in this study attended to a certificate program, their motivation and exposure to the vocabulary were claimed as possible explanations.

Regarding the high estimates of vocabulary size, Cameron (2002) emphasized that a learner with larger general vocabulary size may not master all frequency levels within the frequency range. Although the participants in Cameron's (2002) study were found to have the vocabulary size of 7000 word family, they still did not perform well with the word at 5000 word level. Thus, Cameron (2002) concluded that students required to pay attention to academic and low frequency vocabulary but such advanced vocabulary development require different vocabulary profile and thus vocabulary instruction strategies.

Nemati (2010) examined the relationship between proficiency and size of vocabulary in two ESL/EFL environments, adapting Nation's (1990) different frequency band classification. The results supported the findings of Zareva (2005) that there is direct relationship between these variables and vocabulary knowledge is an important factor in language proficiency.

The shared points that suggested with the findings of these studies are that the learners, particularly at advanced level had limited size of low frequent words, considering the 5000 word level, which is referred as the cut-off point for academic reading (Nation, 2006). The studies on the general service vocabulary have pointed the necessity to further examination of academic vocabulary for academic achievement.

As another important dimension of lexical competence, depth of vocabulary knowledge has been studied to learn more about vocabulary acquisition; how words are stored and associated in the mental lexicon (Meara, 1996; Qian, 2004; Cui, 2009). The association studies in L2 were pioneered by Meara (1996) with the word association tests in the Birkbeck Vocabulary Projects. As a result of several investigations on L2 associations, Meara (1996) stated that L2 learners' associations are unstable and much less regular. Besides, L2 learners tend to produce more syntagmatic responses in comparison with L1 learners. Considering these results, Meara (1996) concluded that the lexical organization, depth of vocabulary knowledge, of L2 learners is quite different from that of native speakers. Zareva's (2007) study also supported Meara's conclusion about the differences between the L2 learners and native speakers and suggested that these differences are quantitative rather than qualitative.

Regarding the development of association through the proficiency levels, Söderman (1993) studied with four groups of EFL learners at different levels of proficiency. The findings indicated a causal relationship between increased proficiency and lexical associational organisation. Cui (2009) recently confirmed Söderman's this finding when she explored the development of L2 university students' lexical organization through a word association test. The results showed that the learners at higher learning stages produced more semantic associations than the ones at lower stages.

Söderman's (1993) another assumption that triggered the controversies on the word association is that a word can elicit different associations depending on the context and familiarity, regardless of proficiency. Wolter (2001) supported this assumption through word association tasks on stimulus words with varying familiarity. As a result, it was claimed that words in the mind are not in the same state and words are known at varying degrees.

To undergird the assumptions on the associational links of lexicon and probe the relationship between the depth of word knowledge and other language skills, particularly reading, several studies have been conducted. For instance; Qian (1999; 2002; 2004) used the depth-of-vocabulary-knowledge (DVKT) measure in his investigation of the relationship between L2 vocabulary knowledge and reading comprehension ability.

The results of the word association studies pointed out that L2 mental lexicons are structured semantically and semantic links of a word with other words depends on how well the word is integrated into the lexicon (Qian, 2002; 2004; Cui, 2009). Additionally, the studies revealed that depth of vocabulary knowledge is interrelated with the size of vocabulary knowledge (e.g. Qian, 1999). Vermeer (2001) explained this relationship in her study with monolingual and bilingual students as there was no conceptual distinction between size and depth, the same factors for both monolingual and bilingual speakers influence these two receptive dimensions.

To sum up, the studies on size and depth of vocabulary knowledge have emphasized that each of these receptive dimensions are critical for academic achievement and language proficiency, besides, the integration of these two dimension



could shed more lights on the vocabulary acquisition and nature of vocabulary knowledge. In addition, these studies have guided the explorations into the productive dimension, which is more neglected in comparison with receptive dimension. The sub-dimensions that have received more attention along with growing realization about the significance of productive vocabulary knowledge are discussed in the following.

#### *2.6.2.1.2. Productive Dimensions*

The distinction between receptive and productive vocabulary is commonly accepted in literature. The majority of vocabulary research so far has been conducted on receptive dimension, particularly size of vocabulary, because receptive vocabulary knowledge is considered as prior to producing vocabulary. That is, some levels of receptive vocabulary knowledge is necessary for production so the receptive vocabulary knowledge tends to be larger than productive vocabulary (Nation, 2001; Lee & Muncie, 2006). However, productive dimension carries great importance as learners could prove their vocabulary knowledge by using it productively. Owing to different cognitive processes and extra output patterns required for the productive vocabulary, this dimension distinguishes from receptive vocabulary (Nation, 2001).

In order to grasp the complicated nature of productive dimension, some complementary indicators have been examined. Most common of them are lexical use and lexical diversity. In the present study, these two indicators are adapted as two sub-dimensions embodying the productive dimension. In the following, the dynamics of these two indicators will be explained respectively anchoring with theoretical and empirical studies.

##### *2.6.2.1.2.1. Lexical Use and Diversity*

The productive dimension of vocabulary knowledge can be generally defined as knowing how to express a meaning through speaking and writing and retrieving and producing the appropriate spoken and written form (Nation, 2001).

The productive dimension has been mostly associated with the size of productive vocabulary in learners' written and spoken discourse (Laufer, 1995; Laufer & Nation, 1999; Laufer & Paribakht, 1998). On the bases of frequency bands categorizing the word families ranging from high frequent to low frequent as well as specialized vocabulary, the total number of vocabulary uses have been calculated through some

programs calculating the distribution of the word families according to frequencies such RANGE (Nation, 1990) and Vocabprofile (Laufer, 1995). The idea underlying the lexical use as investigated so far is that learners could produce high frequent vocabulary more than the low frequent ones (Nation, 2001). For the use of specialized vocabulary, Nation (1990) emphasized the learners' field-specific needs and goals. In this respect, the use of academic vocabulary can be predicted for the formal context while high frequency vocabulary is mostly used in more informal contexts. Regarding the effect of context for lexical use, Chapelle (1998) associated the issue of context with the natural language use rather than linguistic context. Accordingly, lexical use is affected by the social and cultural situation, in other word context can influence lexical meaning. For instance, the academic learning context has higher demands upon learners' vocabulary knowledge and it reflects on the learners' use of academic vocabulary.

As complementary indicator of productive dimension, lexical diversity has received attention as one measure of vocabulary growth. Lexical diversity refers to the availability of a wide variety of basic and sophisticated words (Wesche & Paribakht, 1996). Schmitt (2000) explained the simple logic underlying the lexical diversity that if most of the words is repeated several times then fewer different words (i.e. types) need to be known. On the contrary, if few words are repeated then more types are to be included in the text. Thus, the lower type-token ratio is, the more repetition there is and the fewer types need to be known to understand the text. Another measure of lexical diversity is the presence of content versus grammatical words. In this regard, texts with a higher proportion of content words are said to be lexically diverse whereas few content words in the text are labelled as low diverse (Laufer & Nation, 1995). Johansson (2008) summarized the concept of lexical diversity as the more varied a vocabulary a text possesses, the higher lexical diversity. Thus, for a text to be highly lexically diverse, the writer has to use many different words, with little repetition of the words already used (p.62). On the contrary to the analysis of size of productive vocabulary, the analysis of lexical diversity is not concerned with how many words or word types are used in writing but how varied or sophisticated the words or word types are utilised. The traditional lexical diversity measure is the ratio of different words (types) to the total number of words (tokens), which is called type-token ratio or TTR.

The formula for this analysis is (Number of different words (types) / Total number of words in the text (tokens) ) x 100 (Laufer & Nation, 1995; Johansson, 2008).

Using this formula, lexical diversity has been used as an important index to measure the vocabulary growth in speaking and writing. For instance, Johansson (2008) ensured that lexical diversity is a better measure to detect differences between age groups. In the same way, Lenko-Szymanska (2002) compared the type/token ratio versus lexical frequency profile and suggested this ratio as the beneficial complement of lexical frequency profile analysis.

As a consequence of increasing studies on lexical use, two types of vocabulary has been defined; namely active and passive vocabulary. Passive vocabulary generally refers to understanding most frequent meanings of words (Laufer & Paribakht, 1998). Thus, passive vocabulary involves recognition of vocabulary with the form of word and its meaning, in this sense; passive vocabulary knowledge is also one of the components of lexical competence as addressing to receptive dimension. On the other hand, active vocabulary, is identified as “the retrieval of words from memory by using them in appropriate situations” (Nattinger, 1988: 62). Laufer and Paribakht (1998) defined active vocabulary as free active vocabulary, described it as use of a word in a context produced by learner, generally in response to writing assignment. In this respect, Nation (1990) explained that active vocabulary knowledge is the ability to write the needed vocabulary at the appropriate time.

The controversies on the relationship between passive/receptive and active/productive still continues due to inconclusive findings about how much larger active vocabulary is, or whether growth in passive vocabulary automatically results in growth in active vocabulary, or whether the gap between the two remains stable or changes over time (Laufer & Paribakht, 1998). Further, Waring (2002) explained the activation process of passive vocabulary as transferring passive vocabulary store to active vocabulary store as a result of prompted use. In case of not using for a long time, these active vocabulary moves back to passive vocabulary store.

Some empirical studies that could shed light on these issues regarding the productive dimension of vocabulary knowledge are presented in the following.

#### 2.6.2.1.2.2. *Measurements of Productive Dimensions*

As a result of such in-depth studies on second language vocabulary knowledge, researchers began to realize that measuring receptive knowledge, particularly vocabulary size, alone can no longer provide a satisfactory description of L2 learners' lexical knowledge because knowledge of words is multidimensional (Zareva, 2005). Thus, the necessity to probe the productive vocabulary ability of learners has received attention (Laufer & Nation, 1999). Nonetheless, there is a paucity of vocabulary research focusing on the productive dimension. The reason for the paucity of the studies on productive vocabulary is explained with the context-specific nature of productive vocabulary (Lee & Muncie, 2006). In this point, Meara and Fitzpatrick (2000) stated that calculating the size or range of productive vocabulary from a small sample is quite difficult.

Once the productive version of the Vocabulary Levels Test was proposed by Laufer and Nation (1995), it has made all difference to the measurement of productive dimension. It has the same word levels and number of items. Each item in this productive version consists of a sentence with a missing word whose initial letters are provided. The letters are given to prevent the learners from producing an alternative form which might fit the context and to restrict them to producing the desired item (Waring, 1997). This productive version has also been reported to be a valid measure of vocabulary size and can discriminate among learners of different proficiency levels (Laufer, 1998; Laufer & Nation, 1995).

Moreover, Laufer and Nation (1995) presented another new test, the Lexical Frequency Profile, which measures the proportion of high frequency general service and academic words in learners' writing. This test has been referred and used in many vocabulary researches as measure of how vocabulary size is reflected in use. For instance, Lee and Muncie (2006) investigated the secondary school students' productive vocabulary through Lexical Frequency Profile program in context of post reading composition task. The results revealed that teacher elicitation, explicit explanation, discussion and negotiation and multimode exposure to target vocabulary promoted the learners' use of target vocabulary and in turn the increase in recognition of vocabulary.

Lexical Frequency Profile (Laufer & Nation, 1995) and Productive Vocabulary Level Test (PVLТ) (Laufer & Nation, 1999) were developed to assess learners' lexical performance. In PVLТ, learners are given a sentence where the first few letters of the target word are provided and the learners have to complete the word. In the Lexical Frequency Profile, the written or spoken discourse are analysed and the vocabulary use is classified into frequent and infrequent words. Both PVLТ and LFP have been used in literature widely (Fan, 2000; Laufer, 1998; Laufer & Paribakht, 1998).

Webb (2008) preferred to use a different measure to assess lexical performance. Translation test, providing the L2 word for a given meaning in the participants' L1 was utilised. Webb (2008) explained the reason why the PVLТ was not used as that test is a recall format and it is not exactly the productive test but a kind of receptive test because few letters are given so learners complete the letters since they recognize the word.

Meara and Fitzpatrick (2000) criticized both the PVLТ and LFP and noted that the PVLТ is basically effective at low levels. They also doubted about LFP since it is not cost effective, it requires a lot of time to create texts containing infrequent words. They alternatively propounded Lex30. Although the aim of this measurement is to assess the productive vocabulary, it is basically a word association test in which the learners are given a list of stimulus words and asked to produce responses to the stimuli. As advantages of Lex30, they claimed that Lex30 is very easy to administer and little time is required to finish. However, the Lex30 has been criticized since the profiles provided by this instrument do not give the proper estimates of productive vocabulary size (Meara & Alcoy, 2010). To overcome the drawbacks of the Lex30, Meara and Miralpeix (2007) attempted to estimate productive vocabulary directly by looking at the frequency distribution of words used by L2 learners, then comparing these profiles to a set of theoretical profiles derived from Zipf's law. Although this approach seemed to distinguish between advanced and less advanced students, its results depends on a number of assumptions rather than exact justified proportions.

In spite of these alternative measures, the utility of LFP for estimating productive vocabulary sizes of L2 learners have been confirmed in different studies (Laufer, 2005a; Edwards & Collins, 2011). It is most commonly adapted in vocabulary research to analyse the productive vocabulary used in learners' writings. Lee and Muncie (2006)

investigated the secondary school multi-L1 intermediate ESL learners' vocabulary use through LFP. They stated that this instrument could track the learners' development of productive vocabulary effectively.

#### 2.6.2.1.2.3. *Empirical Studies on Second Language Productive Vocabulary*

Vocabulary studies have traditionally focused on receptive vocabulary. However, recently the significance to measure the productive vocabulary has been realized and different measurements, as mentioned above, have been developed and validated (Laufer, 2005a; Meara & Fritzpatrick, 2000). The studies on productive dimension mostly examined vocabulary used in essays. For example, Morris and Cobb (2004) analysed the learners' entrance exam essays through Vocabprofile. They claimed that the findings on the use of vocabulary in the essays could distinguish between the successful native and non-native TESL trainers.

In addition, the studies on productive dimensions guide the explorations into active-passive vocabulary use, in other words productive -receptive. One of the interesting questions triggers the studies is related to free active vocabulary (i.e., words learners voluntarily choose) as opposed to controlled active vocabulary (i.e., words learners can use if required), because in free expression learners can avoid words that they consider problematic or about whose use they feel uncertain. Laufer (1998) was one of the pioneers, who addressed this issue investigating passive, controlled active and free active vocabulary knowledge of EFL students. Her findings revealed that the learners with additional year of instruction had both much larger passive and controlled active vocabulary. The low passive-active vocabulary ratio indicated the gap between the two vocabularies.

Laufer and Paribakht (1998) extended their research involving the learners with diverse levels of proficiency and in different learning environments (i.e. ESL vs. EFL). They investigated the relationship among the three types of vocabulary knowledge (passive, controlled active and free active) again with one group of Israeli students and another group of Canadian students. The results indicated that these three dimensions of vocabulary developed at different rates. Particularly free active vocabulary developed more slowly and less predictably than did passive vocabulary. Regarding two learning contexts, it was obtained that the relationships among the dimensions differed in terms

of learning contexts. As consistent with the similar findings, it was observed that passive vocabulary was always significantly larger than controlled active and free active vocabulary; however, it was strikingly found that the gap between passive-active vocabulary was smaller in the EFL context than the ESL.

Moreover, Fan (2000) investigated the relationship between the active and passive vocabulary. Her findings indicated a complicated relationship; more proficient L2 students were found to have larger passive vocabulary, yet, their ability to use the words they recognized was low. This perplexing finding indicated the inconsistent ratio between the two types and the students' tendency to avoid using some of the words.

Regarding the productive/receptive (i.e. active/passive) ratio, Laufer (2005a) compared learners' productive test scores on L2-L1 recall tests as a percentage of their receptive test scores on L2-L1 translation tests. Different from Fan (2000), who found 53% to 81% for words taken from 2.000, 3000 and UWL, Laufer (2005a) found productive/receptive ratios ranging from 16% at the 5000 frequency level and 35% at the 2.000 level. Although as Laufer and Goldstein (2004) and Waring (1997) emphasized that these ratios are highly dependent on the types of tests, the findings on the receptive-productive dimensions showed that learners' receptive lexicon is likely to be larger than their productive vocabulary.

The consensus reached by the vocabulary research studies is that through integration of receptive and productive vocabulary measures as well as free active productive vocabulary measure as such Lexical Frequency Profile, the researcher could ascertain what developments occurs in the different types of vocabulary knowledge over a period of time; how the different types of vocabulary knowledge are related to one another in the same student and how the relationships between the different types of knowledge change over time.

After defining the essential dimensions of vocabulary knowledge that could be overarched with the constructs of lexical competence and performance, in the following section, the frameworks on lexical competence and performance that have been proposed in literature to undergird the structure and aims of the present study.

### 2.6.3. Models of Lexical Competence and Performance

Along with the realization that vocabulary knowledge is a multi-dimensional phenomenon and lexical competence and performance are the two constructs that could explain the complex nature of vocabulary knowledge and its interconnected dimensions, different models conveying these constructs have been proposed (e.g. Henriksen, 1999; Meara, 1996; Zareva, 2005).

As a result of the studies on the different dimensions of vocabulary knowledge, it has been discerned that vocabulary knowledge is the combination of several global characteristics (Meara, 1996; Henriksen, 1999; Webb, 2005) rather than focusing on the knowledge of individual words (Laufer, 1998; Nation, 1990; 2001). In that sense, Meara (1996) attempted to define learners' L2 lexical competence through a three-dimensional framework consisting of vocabulary size, lexical organization and speed of access. These dimensions cover the properties addressing to vocabulary knowledge as a whole. In Meara's framework, automaticity is important, that is, lexical competence is seen as having an automatic access of words for recognition and production. There is great emphasis on the size of vocabulary rather than on depth and use. It is claimed that after crossing the threshold of 5000 words, lexical organization becomes more important; people whose vocabulary is highly structured would be better performers. Meara (2005) then developed this model and summarized the construct of lexical competence as the combination of vocabulary size, depth of vocabulary knowledge and the accessibility of core lexical items.

Similar to Meara (1996; 2005), Chapelle (1998) included vocabulary size as the number of words a learner knows and lexical organization as the way that words are stored in the mental lexicon. Besides, Chapelle involved word characteristics, which are graphemic, morphemic, syntactic, semantic and collocational features in his trait-framework of lexical competence. However, different from Meara (1996), the fourth dimension of Chapelle's view; lexical access was handled in terms of processes as attending to the word form, encoding phonological and orthographic information into short-term memory and finally accessing semantic and structural properties of the lexicon. Chapelle's (1998) model captures to a greater extent the communicative aspect of vocabulary ability by positing a dimension of context and metacognitive processes of



use, which both interact with learners' vocabulary knowledge and fundamental processes. Furthermore, Chapelle (1998) emphasized knowledge in language use in context.

In Meara's (1996) and Chapelle's (1998) frameworks, the receptive and productive distinction is mostly ignored, in this respect, Henriksen's (1999) global tri-dimensional model compensates this limitation. In this model, the construct of lexical competence comprises knowledge of partial to precise knowledge of word meaning, depth of knowledge and receptive to productive use ability on a continuum. The two underlying ideas in Henriksen's (1999) model are that of interdependency of the described dimensions and conceptualization of vocabulary knowledge as a continuum in which knowledge moves along different interrelated continua.

The first polar of the continuum involves the partial-precise dimension, which refers to the development of learners' word meaning knowledge. It progresses from a broad knowledge of meaning to a more precise understanding of the meaning of a word. It involves item learning, namely adding new items to the lexicon by creating extensional links. An item is pushed along the partial-precise continuum by a process of building a network. On the other hand, the second dimension covers the depth of vocabulary knowledge, which is equated with knowledge degree of this network. As a learner develops a word's paradigmatic and syntagmatic relations to other words in the lexicon, more and more meaning characteristics become known, which leads to the given word moving along the partial-precise continuum. The third polar of the continuum is the receptive-productive, as it involves procedural knowledge as opposed to the two other continua which relate to declarative knowledge. It refers to the degree to which words can be used productively and it is posited that words move along this continuum as a word becomes more and more entrenched in the mental lexicon. Hence, the dimension denotes the extent to which a word is available for use or in other words the degree to which it has become automatized. Also, this dimension is closely related to the other two declarative dimensions in that development in them is seen as a crucial prerequisite for a word becoming productively known.

The models of both Chapelle and Henriksen stress the interconnectivity of different components of vocabulary knowledge and ability. Moreover, Henriksen's

(1999) model can be distinguished from the other two in that her model focuses on the developmental aspect of vocabulary ability.

Zareva (2005) tested the practical effectiveness of Henriksen's theoretical framework by examining the applicability of five common predictors of lexical competence, namely self-reported knowledge of words, vocabulary size, knowledge of words from various frequency bands, native-like commonality of associations and number of associations. As a result, he proposed a two-predictor model consisting of verifiable self-report and vocabulary size as the smallest and practically most efficient set of predictors for both native speakers and L2 learners' lexical competence.

Different from other models on vocabulary knowledge, Daller et. al. (2007), propounded a three-dimensional space covering lexical performance as well as competence facets of vocabulary knowledge. This model is based on the premise that some learners may have large vocabulary but it is very limited in the speed and ease with which they can recall these words and put them to use communicatively. It is suggested that learners should be placed well along the size axis but less far along the fluency or depth axes. Other learners may appear to have different characteristics and possess comparatively few vocabulary resources but considerable fluency in calling these to mind and using them in communication. These learners would occupy a different location in the lexical space, less far along the size axis but further along the depth axes. (Daller et. al. 2007). Thus, it is insistently focused that among some learners there might be an imbalance between the proposed fluency axis and the size axis.

The consensus among these frameworks is that developing vocabulary knowledge does not only involve the process of adding new words to lexical store and expanding vocabulary knowledge. It also includes the important process of developing "network" knowledge constructing links between the lexical items found in the mental lexicon (Albrechsten et. al. 2008; Read, 2000). The constructs of lexical competence and performance could be used as a global concept overarching the dimensions of vocabulary knowledge, namely size, depth, in other words; the receptive dimensions, which are accepted as central properties of the mental lexicon both in L1 and L2

(Henriksen, 1999; Read, 2004) as well lexical use and diversity for the productive dimension (Daller et, 2007).

The main contribution of these frameworks is to provide insights and opportunities to navigate between and define the different components of a very rich and complex construct of lexical competence and performance. In order to formulate a more detailed model of vocabulary knowledge, strengths of these models can be used to piece together the dimensions of vocabulary as well as to learn about the operationalization and measurement of these construct (Henriksen, 1999).

#### **2.6.4. The Interplay between Lexical Competence and Performance and Language Skills**

When language learners read or listen, they often encounter unknown words in the input. As well as drawing on their world knowledge, they must rely on lexical cues in the surrounding co-text in order to reach a qualified guess about the meaning of unfamiliar lexical items. While writing or speaking, learners cannot often find the appropriate word immediately to express the intended meaning, thus they must then rely on either an imprecise word or they search their lexical memory or they look up a dictionary (Albrechsten et. al., 2008).

Lexical knowledge both in the form of vocabulary store and in terms of a well-organized lexical network plays a crucial role in coping with real communication. Many studies indicated that vocabulary size correlates with language learners' reading abilities (Henriksen et. al., 2004). It has been shown that learners below a certain threshold of L2 vocabulary knowledge are unable to transfer the higher order skills they may have developed in their L1 to L2 tasks (Bossers, 1991) As Laufer (1997) argued learners probably need a threshold vocabulary of about 5000 words to be able to read effortlessly in L2 and to achieve adequate text comprehension.

Not only do language learners need a vocabulary of certain size, but also the organization of their lexicon must be of a certain quality in order to ensure efficient language use. Lexical items are not stored randomly in the mental lexicon but are linked together in a network structure; this provides access to lexical items in the process of language use. (Albrechsten et. al., 2008) In that context the studies investigating the reading and listening skills in correlation with vocabulary knowledge posited that there

is a strong relationship between quality of vocabulary network and language use (Qian, 1999, 2002) Furthermore, Nassaji (2004) found a strong relationship between ESL learners' depth of vocabulary knowledge and the types of strategies they employed when guessing unknown words in a text. Thus, it was greed that that the learners' degree of vocabulary network influenced their ability to achieve inferencing success, that is, to comprehend the meaning of a word. Depth of vocabulary knowledge was found to be a much stronger predictor of inferencing success than the types of strategies used (Nassaji, 2004).

To sum up, the studies on second language vocabulary have highlighted the importance of vocabulary and new research perspective have provided more insights about the multidimensional nature of vocabulary knowledge; touching upon each dimension and their interconnected effects on other language skills. The discussions on these vocabulary dimensions yield the necessity to evaluate vocabulary knowledge from more comprehensive framework integrating all sub-dimension overarched with global constructs. With this premise, the present study aimed to handle the second language vocabulary knowledge of university students in terms of lexical competence and performance as overarching constructs. As emphasized in literature (Carson, 1997; Coxhead, 2000), to evaluate the university students' vocabulary knowledge, their academic vocabulary knowledge should be particularly involved in this evaluation. The underlying rationale of such evaluation will be explained in the following through definition of academic vocabulary, description of its significance and the findings of related studies.

## 2.7. Neglected Aspect: Academic Lexical Competence and Performance

### 2.7.1. Theoretical Framework of Academic Vocabulary

In vocabulary research, a growing number of studies within applied linguistics have pointed out the importance of academic words (Corson, 1997; Horst, Cobb, & Nicolae, 2005; Chen & Ge, 2007). These words are variously known as *sub-technical vocabulary*, *semi technical vocabulary*, or *specialized nontechnical lexis*. (Nation, 2001; Hyland & Tse, 2007) The term is used to refer to items which are reasonably frequent in a wide range of academic genres but relatively uncommon in other kinds of texts (Coxhead & Nation, 2001).

In that sense, academic vocabulary can be defined, in general terms, as the word for speaking, for reading academic texts, or for academic writing (Nation & Coxhead, 2001). Particularly, it is defined as the vocabulary critical to understanding the concepts of the content taught in schools. These words represent kinds of concepts which reflect the philosophy and methodology of academic research (Coxhead & Nation, 2001). Bauman and Graves (2010) extended this definition involving domain-specific academic vocabulary and general academic vocabulary. Domain-specific academic vocabulary is described as the most common type in academic texts. They are the content-specific words used in disciplines like biology, geography, teaching etc. that appear in content area textbooks and other technical writing (Harmon, Wood and Medina, 2009). On the other hand, general academic vocabulary covers the words in the texts across several disciplines. Coxhead (2000) defined academic vocabulary as the words which occur frequently and uniformly across wide range of academic materials comprising some 8%–10% of running words in academic texts (Nation and Coxhead, 2001).

These words are used to define, delineate, advance, and assess abstract entities such as theories, arguments and hypotheses (Cobb & Horst, 2004). In that point, Townsend (2009) emphasized that academic vocabulary have abstract definitions and are a challenge to master. Thus, they are widely considered to cause difficulties for ESL and/or EFL learners (Chung & Nation, 2003; Cobb & Horst, 2004; Coxhead & Nation, 2001; Coxhead, 2000). The features of academic vocabulary, such as abstractness, polysemy (i.e. one form can have several meanings), and homonymy, (i.e. one meaning

can be represented by different forms) (Nation, 2001) can cause troubles for L2 learners to learn and use the academic vocabulary. Especially, abstractness and polysemic nature of academic vocabulary can be problems. Specifically, regarding abstractness, the problem occurs when the meanings of new academic words do not match with the ones in L1, for which semantic representations have already developed. Additionally, the learners can have difficult to learn and use the academic words due to polysemy and homonymy (Schmitt, 1997). In spite of all these probable difficulties, learners attempt to build a repertoire of specialized academic words in addition to their existing basic or general service vocabulary for their academic achievement (Hyland & Tse, 2007).

Referring the crucial role of academic vocabulary knowledge, variety of vocabulary lists have been compiled from corpora, or collections, of academic texts to identify the most valuable words in academic contexts. For decades, University Word List (Xue & Nation, 1984) has been cited and then the Academic Word List (AWL) (Coxhead, 2000) has been used as the most popular compilation in literature. In addition, as a result of recent computerized corpus studies, The TOEFL 2000 Spoken and Written Academic Language Corpus with 2.7 million words is constructed with written and spoken data from U.S universities. As well as written English corpus, corpuses on spoken language have been widespread; the Michigan Corpus of Academic Spoken English (MICASE-1.7 million words) and British Academic Spoken English corpus ; (BASE-1.6 million words) have been developed. In spite of high coverage of these corpora, the AWL is accepted as contributory and even authoritative in academic vocabulary research and teaching.

Along with the compilation of academic words in lists like the AWL and the wide spreading English for Academic Purposes (EAP), the significance of academic vocabulary, particularly for academic achievement, has been realized and become the topic of many studies (Coxhead, 2000; Zhou, 2010). In the following, why academic vocabulary is important for academic success will be explained.

### **2.7.2. The Significance of Academic Vocabulary**

Students mostly require academic vocabulary at higher education, regardless of discipline. Without academic vocabulary, learners' ability to comprehend academic discourse in general could be hampered so there is an even greater need for them to

control academic vocabulary. It crosses disciplinary boundaries and is the foundation on which ideas are expressed in academic settings and texts (Donley and Reppen, 2001). Additionally, Cobb and Horst (2004) explained that these words are important due to the role they play in *defining, delineating, advancing* and *assessing abstract entities* such as *theories, arguments* and *hypotheses* (the italicized words are AWL words). Thus, learners attempt to build a repertoire of specialized academic words in addition to their existing basic or general service vocabulary (Hyland & Tse, 2007).

Nation (2001) summarized why academic vocabulary is important for students with academic purposes. Firstly, he mentioned that academic vocabulary is common to a wide range of academic texts and generally not so common in academic texts. Secondly, he pointed out academic vocabulary accounts for a substantial number of words in academic texts. Coxhead (2000) found that academic word list (AWL) covered 10% of the tokens in her 3,500,000 running word academic corpus and around 8.5% in an independent corpus.

Thirdly, according to Nation (2001) academic vocabulary is important because academic vocabulary is generally not as well-known as technical vocabulary. Learners are not aware that such vocabulary is sometimes used with technical meaning and sometimes not. Moreover, learners are often not aware of related terms being used to refer to the same thing. Thus, Nation (2001) stated that teachers can help learners develop control over such vocabulary.

The main points that teachers should do are to raise learners' awareness about the importance of academic vocabulary and most importantly to teach how to cope with the challenges of these words since academic vocabulary poses particular difficulties for learners. The possible challenges of academic vocabulary are its complex and often abstract nature. Carson (1997) claimed that academic vocabulary is usually non-concrete, low in imagery, low in frequency and semantically opaque. For the reason of these challenges, Carson (1997) stated that academic words are mostly Greco-Latin in origin and it makes academic words difficult to learn. Hyland and Tse (2007) drew attention to the limited exposure of academic vocabulary in the class environment since this vocabulary is not likely to be glossed by the content teacher, thus learners have difficulty to learn these words. Moreover, Hyland and Tse (2009) claimed that there is

not a common core of academic vocabulary which is frequent across an academic register. According to their analyses on the range, frequency, collocation and meaning of items in the AWL in a large multidisciplinary corpus, they stated that individual lexical items on the list often occur and behave in different ways across disciplines. Thus, learners could have difficulty to learn and use all academic words. They suggested that teachers should help learners develop a more restricted, disciplinary-based academic lexical repertoire.

In brief, it is all agreed that vocabulary knowledge has many interrelated aspects and it has a crucial role on second language acquisition of learners. Particularly, academic lexical competence and performance, which have been the focus of many studies, has gained importance for the advanced learners' academic achievement.

### **2.7.3. Academic Word List**

Referring these crucial roles of academic vocabulary knowledge in academic success a variety of vocabulary lists have been compiled from *corpora*, or collections, of academic texts to identify the most valuable words in academic contexts. The most recent compilation is the AWL (Coxhead, 2000), which contains 570 word families. This list is believed to be essential for students pursuing higher education irrespective of their chosen field of specialization (Coxhead, 2000; Cobb & Horst, 2004; Hyland & Tse, 2007; 2009).

The AWL is made up of word families. Each family contains a headword and its closely related inflected and derived forms. These headwords were selected on the basis of occurring at least 100 times in an academic corpus of 3,600,000 words of varied genres and in at least 15 of the 28 disciplines within the four broad subject groupings of the corpus: arts, commerce, law, and science (Coxhead, 2000; p. 221), thus the AWL is considered to give reliable coverage of about 90% of the running words in an academic or quality newspaper text (Ming-Tzu & Nation, 2004; Coxhead, 2000).

Coxhead (2000) developed this list according to three criteria. The first criterion was range. The AWL families had to occur in the Arts, Commerce, Law and Science faculty sections of the Academic Corpus. The word families also had to occur in over half of the 28 subject areas of the Academic Corpus (see Table 2 below). Just over 94% of the words in the AWL occur in 20 or more subject areas. This principle ensures that the



words in the AWL are useful for all learners, no matter what their area of study or what combination of subjects they take at university level. (Coxhead & Nation, 2001)

Table 2

Subject areas in the Faculty Sections of the Academic Corpus

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Arts	Commerce	Law	Science
Education	Accounting	Constitutional Law	Biology
History	Economics	Criminal Law	Chemistry
Linguistics	Finance	Family Law and Medico-Legal	Computer Science
Philosophy	Industrial Relations	International Law	Geography
Politics	Management	Pure Commercial Law	Geology
Psychology	Marketing	Quasi-Commercial Law	Mathematics
Sociology	Public Policy	Rights and Remedies	Physics

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The second principle was frequency. The AWL families had to occur over 100 times in the 3,500,000 word Academic Corpus in order to be considered for inclusion in the list. This principle ensures that the words will be met for a reasonable number of times in academic texts. (Coxhead, 2000)

The last principle was uniformity of frequency: The AWL families had to occur for a minimum of 10 times in each faculty of the Academic Corpus to be considered for inclusion in the list. This principle ensures that the vocabulary is useful for all learners. (Coxhead & Nation, 2001)

Coxhead (2000) stated that the AWL covered 10% of the words in her corpus and only 1.4% of a similar-sized corpus of fiction, suggesting that the items are more relevant for learners with academic purposes.

Additionally, the AWL has been divided into 10 sub-lists based on the frequency of occurrence of the words in the Academic Corpus (see Appendix 1). The words in Sub-list 1 occur more frequently in the corpus than the other words in the list. Sub-list 2 occurs with the next highest frequency. The more frequent the words in the list, the more likely they are to occur in academic texts. When the frequencies of the words in

the Academic Corpus are added together, the percentage of coverage of the words in the corpus can be obtained. Words with higher frequency cover more of the corpus. Table 3 below shows the coverage of each of the sub-list of the Academic Word List. It is clear that the coverage of the sub-lists starts from very high with Sub-list 1 (3.6%) and drops quite quickly to Sub-list 9 (0.2%). The figures in column 3 indicate how many pages on average a learner would need to read in order to meet each word again. It is assumed that there are 400 running words on a page. The figures are only averages.

Table 3

*Coverage and pages per repetition of the items in the Sub-lists of Academic Word List in the Academic Corpus*

<b>AWL sub-list</b>	<b>Coverage of the Academic Corpus (%)</b>	<b>Pages per repetition in the Academic Corpus</b>
<b>1 (60 families)</b>	3.6%	4
<b>2 (60 families)</b>	1.8%	8
<b>3 (60 families)</b>	1.2%	12
<b>4 (60 families)</b>	0.9%	15
<b>5 (60 families)</b>	0.8%	19
<b>6 (60 families)</b>	0.6%	24
<b>7 (60 families)</b>	0.5%	30
<b>8 (60 families)</b>	0.3%	49
<b>9 (60 families)</b>	0.2%	67
<b>10(30 families)</b>	0.1%	82

The major aim of developing this list was to provide an explicitly described, feasible, vocabulary learning goal for students with academic purposes (Coxhead, 2000). Moreover, the AWL is regarded as reliable and comprehensive list in vocabulary research and it has been used in many studies as a reference list while defining the lexical competence of learners. (Hyland & Tse, 2007; Muncie, 2002) Cobb and Horst (2004) explained that the role of the AWL is to provide a reliable bridge between the words that are frequent in the language at large and the words that are frequent within a specific domain of study. In addition, Ming-Tzu and Nation (2004) defined this list as a

valuable source for direct learning and teaching as well as in the choice and design of teaching materials for both learners and teachers at higher education.

The AWL has been used as a reference list in many studies to measure the learners' academic vocabulary knowledge. In the following, these studies will be presented to intensify the significance of academic vocabulary for students and its interrelated components. Besides, through the results of the studies, reliability and validity of the AWL could be discussed.

#### **2.7.4. Empirical Studies on Academic Lexical Competence and Performance**

Santos (2010) investigated the language minority college students' depth of L2 academic vocabulary knowledge in terms of its relationship with their size of L2 academic vocabulary knowledge and their L1 skills. The findings of the studies revealed that the academic vocabulary was problematic for these students and there were direct relationship between the learners' size and depth of academic vocabulary and L1 skills. The students with weak L1 and L2 academic skills demonstrated particularly weak academic vocabulary knowledge. Zhou (2010) investigated the receptive and productive academic vocabulary knowledge of Chinese EFL learners. It was found that the students knew more academic vocabulary receptively than they did productively. Thus, this study supported that the assumption that the development of productive vocabulary knowledge remains behind that of receptive knowledge (Nation, 2001; Schmitt, 2000; 2010) is valid for academic vocabulary as well.

Another study that reported the learners' problems with the academic vocabulary is Lam (2001). That study revealed that Computer Science students had difficulty with understanding academic vocabulary in technical texts. Lam (2001) emphasized that the learners were familiar with the academic vocabulary in field specific texts but they could not understand when they appeared in general texts.

Many studies agreed on the key role of academic vocabulary, specifically the ones from the AWL, on the academic achievement for L2 students at the tertiary level (Morris & Cobb, 2004; Coxhead & Nation, 2001; Cobb & Horst, 2000; Laufer & Nation, 1995; Laufer & Paribakht, 1998). The findings of these studies commonly pointed out that the students who could use academic vocabulary effectively, achieved good academic performance.

The issue of academic vocabulary has been also examined through the validation studies of the AWL. It been investigated from different aspects such as the features, distributions and functions (Murphy & Kandil, 2003; Hyland & Tse, 2007; Vongpumivitch et. al., 2009). For instance; Ming-Tzu and Nation (2004) analysed the AWL in terms of homography, which is the existence of unrelated meanings for the same form. In detail, they examined the proportion of word families containing homographs in the AWL. As a result of examining 570 word families in the AWL with systematic dictionary analysis, it was obtained that there is a small proportion of word families with homographs, thus they concluded that homography is not a major factor influencing the words in the AWL. Ming-Tzu and Nation's distribution analysis of the AWL ensured its reliability to some extent. However, Hyland and Tse's (2007) study indicated that the coverage of AWL items in a corpus of 3.6 million words from a range of academic disciplines is not evenly distributed. Individual lexical items on the list often occur and behave in different ways across disciplines in terms of range, frequency, collocation, and meaning. Of the 570 AWL families, 534 (94%) have irregular distributions across three field-specific sub-corpora (engineering, sciences and social sciences). This result suggested that the AWL might not be as general as it was intended to be. Referring to this finding, Hyland and Tse argued that attempts to develop only one core vocabulary list are useless, even the AWL, which is accepted as the nest practiced and researched list, has deficiencies. Thus, they argued that the different practices and discourses of disciplinary communities undermine the usefulness of such lists and recommend that teachers help students develop a more restricted, discipline-based lexical repertoire.

Furthermore, students' academic vocabulary knowledge and the relationship with academic achievement and comprehension have been recently examined referring to the AWL. For instance, Anderson (2003) investigated the relationship between ESL/EFL students' academic vocabulary knowledge and academic achievements. Using the AWL as a reference list, the students' vocabulary knowledge was analysed through a test, which categorized academic words as receptive and productive and their test scores were correlated with their academic achievements, GPA marks. The findings indicated negative correlation between these two variables, thus Anderson (2003)

concluded that the direct relationship between academic knowledge and achievement could not be determined.

Moreover, the applicability of AWL to specific fields has been examined, emphasizing the significance of academic vocabulary. For instance; Chen and Ge (2007) conducted a lexical study on the word frequency and the text coverage of Coxhead's Academic Word List (AWL) in medical research articles based on a corpus of 50 medical research articles written in English with 190425 running words. As a result, they concluded that the AWL has rather high text coverage (around 10%) in medical research articles demonstrating that academic words are indeed a set of important word items in medical research articles. Besides, it was suggested that the AWL words in medical research articles might help learners, especially EMP (English for medical purpose) learners/users, to improve their performance in fulfilling academic tasks in English. Likewise, Millar and Budgell (2008) analysed the lexical features of the public health journals. As reference lists, the AWL and the GSL were used in order to identify words and phrases which were relatively over-represented in the field of public health and whose meanings might not be readily accessible outside of public health. Emphasizing the role of technical words to comprehend the health journal articles, Millar and Budgell concluded that the GSL and the AWL enabled identification of words that constitute a core vocabulary for general and academic English, even in health journals. Inspired by these studies, Wang, Liang and Ge (2008) developed a medical academic word list through a corpus-based lexical study of the most frequently used medical academic vocabulary in the research articles. Their study also confirmed that academic vocabulary plays an important role for comprehension of the research articles in medicine also.

Through the same methods, Mudraya (2006) examined engineering English; Chung and Nation (2003) conducted the lexical analysis of anatomy and applied linguistics texts, and Chen, Hu and Ho (2009) explored the abstracts of business and management journal articles. In a similar way, Li and Qian (2010) profiled the presence of the AWL words in the Hong Kong Financial Service Corpus. As a result of these studies, it is widely accepted that the AWL basically comprises vocabulary that is common across a range of different academic fields also the applicability of AWL to variety of disciplines has been confirmed to a large extent.

These AWL studies have inspired some researchers to investigate academic vocabulary comparing word lists from specific fields and genres (Tsubaki, 2004; Hyland & Tse, 2007; Billuroglu & Neufeld, 2005; Hancioglu et. al., 2008). Tsubaki (2004) investigated the percentages of coverage by the GSL and the AWL in journal articles. The articles from TESOL quarterly were selected for the analysis and using Vocabprofile and Range programs, the coverage of the GSL and AWL were examined. The results indicated that the AWL has larger coverage than the GSL. Thus, Tsubaki (2004) emphasized the importance of the AWL in comprehending the content of journals, particularly English Teaching principles.

Another study that questioned the coverage of the AWL was Billuroglu and Neufeld's (2005) which analysed the words in the General Service List and Academic Word List, as well as other word lists such as British National Corpus, Brown Corpus etc. The result of this corpus analysis indicated that the AWL covers the words given other word lists but the combination of GSL and AWL has more coverage in academic texts. Thus, Billuroglu and Neufeld (2005) posited analysing the academic vocabulary on the basis of both GSL and AWL.

Similarly, Hancioglu et. al. (2008) conducted a genre-based corpus study, comparing the learner corpora developed from post-graduate students' academic writings with the combination of word lists. They reached the same conclusion that combination of both GSL and AWL can be more comprehensive resource for both teachers and students while evaluating their academic vocabulary needs. These studies which evaluated the effectiveness and coverage of the AWL and GSL highlighted the fact that the AWL is a valid and reliable word list covering a range of academic disciplines and they emphasized that rather than separating the AWL as discrete-item lists, it is better to analyse the academic texts in combination with GSL. Such a cooperative analysis is available with Lexical Frequency Profile analysis (Cobb & Horst, 2004) and in the present study; the participants' academic writings will be analysed in terms of the proportion of both 1000<sup>th</sup> and 2000<sup>nd</sup> (1k+2k) words from GSL and AWL words. It is attempted to evaluate the learners' academic lexical competence from more comprehensive and reliable way as Hancioglu et. al. (2008) posited.

Investigating the AWL from different aspects such as lexical and corpus analysis, coverage and applicability tests, and effects on skills, the reliability and validity of the AWL have been questioned for many times. Different from such studies, Cobb and Horst (2004) validated the AWL by means of a computer program; Vocabprofile. To demonstrate the AWL's reliability and coverage, a set of seven 2000+ word text segments from the *Learned* section of the Brown corpus were submitted to Vocabprofile. The texts represent a range of disciplines; coverage percentages are remarkably similar to the main corpus of the AWL. Mean AWL coverage was found as 11.60%, while the coverage provided by the 1000 and 2000 was reasonably reliable; 90%. *Chi-square* comparisons showed no significant differences across disciplines. Additionally, the AWL was tested by cross-genre comparison, again through Vocabprofile analysis. For this analysis, popular expository writing samples from *Reading Digest* were analysed in terms of coverage of the AWL. As predicted, it was found that texts of this genre also provided consistent lexical profiles but with smaller contributions from the AWL.

As well as written discourse, the presence of the AWL in spoken discourse has been investigated. For instance, Hincks (2003) analysed the students' L2 presentations on technical topics and found that the AWL covers 2.4.% of the tokens. Thomson (2006) examined the lectures in economics at undergraduate and graduate levels. It was observed that 340 of the 570 word families in the AWL occur less than once every two lectures.

The development of the AWL and the studies on this list had a great impact on academic vocabulary research. Pioneered with the AWL, many other corpora studies have been conducted. Paquot (2007) developed a productively-oriented academic word list to gain more insights about the learners' difficulties in using the academic words.

Regarding the pedagogical implications of the academic vocabulary from the AWL, different applications involving on-line treatments and concordances are receiving interest. In this sense; Kaur and Hegelheimer (2005) examined the effectiveness of using an online concordance and dictionary in acquiring new vocabulary from the AWL. On the premise that non-native ESL or EFL learners lack of authentic context or interaction that will foster their language exposure and use, thus

concordancers could provide this authentic, systematic and rich context for learners to help students transfer their receptive academic vocabulary knowledge to productive knowledge, Kaur et. al. (2005) designed an experimental writing course with concordance to provide an authentic context and availability of dictionary. As a result, it was seen that the students managed to transfer the academic words effectively to their writing task. Thus, it was concluded that that the application of the concordance program together with the online dictionary while completing the vocabulary tasks did have some impact in the transfer of academic word knowledge.

Likewise, Horstet. al. (2005) designed an experimental course proving a range of resources such as concordance, dictionary, cloze-builder, hypertext and an interactive database with self-quizzing features. The target vocabulary was mostly chosen from the AWL. As a result of experimental treatment, the interactive on-line activities were found as useful since they provided rich input while promoting deeper processing. Thus, the findings indicated the promise of using interactive tools for acquisition of academic vocabulary.

## **2.8. Conclusion**

After years of neglect, L2 vocabulary research has received considerable interest and recently much vocabulary research has been conducted. However, the controversies on lexical knowledge have not yet ended up. The reason for these ongoing controversies is the variety on definitions of lexical knowledge, depending on different research aims and settings as well as adapting either global or trait based perspectives. The common point that all researchers have agreed is that vocabulary is a multi-dimensional phenomenon with different but interconnected dimensions. In addition to the multi-faceted nature of vocabulary knowledge, the significance of types of words, namely high and low frequent, technical and academic words, have become the research focus in literature. It has been generally stated that the word frequency level is an important factor in vocabulary learning. Among these word types, academic vocabulary knowledge has been emphasized recently since it is mostly accepted as important for academic achievement. These recent research trends and focus in vocabulary literature has provided grounds for the present study. On the basis of theoretical and empirical studies on vocabulary knowledge, the present study aimed to investigate the Turkish



ELT majors' general and academic vocabulary knowledge in terms of lexical competence and performance dimensions.

## CHAPTER 3.

### METHOD

#### 3.1. Introduction

In this chapter, the research design and the operationalization of the theoretical framework will be presented. Firstly, the tentative dimensional framework of lexical competence and performance, which was adapted specifically for the present study, will be introduced. Thereafter, methodology of the study will be explained with respect to the nature and details of research design, participants, and variables to be tested. The details on the data collection instruments will be given and justified to pinpoint the foci of the study. The data collection and analysis procedures will finally be explained.

#### 3.2. A Tentative Dimensional Framework of General and Academic Lexical Competence and Performance

For the present study, a dimensional approach was adapted to characterize general and academic lexical competence and performance from a macro perspective, that is, to describe vocabulary knowledge as a whole rather than focusing on individual words. Taking into consideration that L2 lexical competence and performance are multidimensional constructs rather than monolithic concepts (Zareva, 2005; Nation, 2001; Henriksen, 1999), the framework proposed in this study attempted to incorporate all the main dimensions of L2 lexical competence and performance, by being structured on the collective strengths of the related studies in literature (Henriksen, 1999; Meara, 1996; Nation, 1990;2001; Qian, 2002; 2004; Zareva, 2005).

In this tentative dimensional framework, the general and academic vocabulary knowledge are overarched with the constructs of lexical competence and performance. It consists of the following four dimensions embodied under receptive and productive dimensions for each construct respectively: (1) vocabulary size, (2) depth of vocabulary knowledge for lexical competence and (3) lexical use, (4) lexical diversity for lexical performance. In addition to basic dimensions of vocabulary knowledge, a supplementary dimension was reserved for the further exploration of academic lexical competence and performance specifically.

The diagram illustrating the interconnections among these dimensions in the framework is as follows:

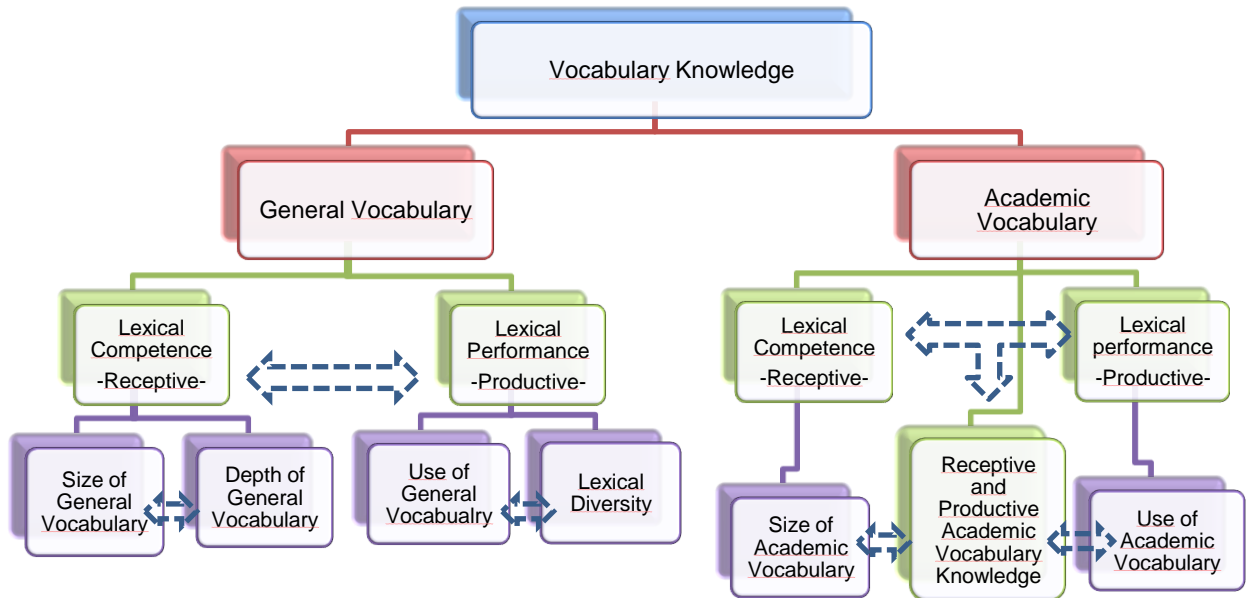


Figure 2: The Tentative Dimensional Framework of General and Academic Vocabulary Knowledge overarching with Lexical Competence and Performance

Through the distinction between the receptive and productive dimensions, the indices that address and measure the specific sub-dimensions of vocabulary knowledge; namely size and depth of vocabulary knowledge, lexical use and diversity, were characterized. This distinction between receptive and productive dimensions in the framework is also consistent with literature (Laufer, 1998; Laufer & Paribakht, 1998). To this respect, this dimensional framework aims at examining the general and academic vocabulary knowledge with regard to the learners' ability to recognize a word as well as with respect to their ability to use it productively.

The first sub-dimension of receptive dimension, as the initial index of lexical competence, is vocabulary size, which refers to the number of words a learner knows in the target language. This component can be called as the magnitude of an L2 learner's vocabulary knowledge since it is regarded as the basic of L2 lexical competence, contributing to almost all aspects of L2 proficiency (Meara, 1996). In literature, this index has been largely used to evaluate the learners' vocabulary knowledge (Laufer, 1998) and many different measurements were developed and validated to investigate L2 learners' vocabulary knowledge (Nation, 1990; 2001; Schmitt et. al., 2001). In this sense, this sub-dimension of the proposed framework in this study would stand for the base of lexical competence as the subset of receptive dimension.

Depth of vocabulary knowledge, which refers to the quality of word knowledge, is the second sub-dimension of receptive dimension and hence the other index of lexical competence. This index includes all lexical characteristics, such as morphemic, syntactic, semantic, collocational and phraseological properties, as consistent with Nation's (1990; 2001) and Read's (2000a) definitions.

Different from other lexical models proposed in literature (Meara, 1996; Chapelle, 1998; Henriksen, 1999; Zareva, 2005), the dimensional framework developed specifically in this study involves the construct of lexical performance separately. Lexical use and diversity were adapted as two indices under productive dimension addressing to lexical performance.

To this respect, the third sub-dimension, as the index of lexical performance, lexical use refers to the productive vocabulary used in participants' essays. As

congruent with Laufer's (1992; 1998) definition, total number of vocabulary in terms of frequency bands was taken into consideration while evaluating the lexical use of the participants.

In addition, the lexical richness, which is characterized with the lexical diversity of the learners' writing through type/token ratio, is the last dimension in this dimensional framework. In spite of criticisms about its sensitivity to the length of writings (Schmitt, 2010), this dimension is widely used in literature to discuss the ratio of different words used in writings (e.g. Paribakht & Wesche, 1996). Considering its popularity and taking cautions against its weakness by equating the length of participants' essays, this dimension is involved as the sub-dimension of productive dimension and thus the indicator of lexical performance.

Through this framework, it was attempted to examine general and academic vocabulary knowledge on a multi-dimensional model overarched with lexical competence and performance. Nevertheless, these dimensions are viewed as constantly interacting rather than being independent of each other. The reasons for adopting such a dimensional framework are twofold; the first one is to allocate the complex nature of vocabulary knowledge into more manageable dimensions for analysis. Owing to the flexibility of the framework, the dimensions of both general and academic vocabulary could be examined in an interconnected framework. Different from other related studies in literature (e.g. Henriksen, 1999; Zareva, 2005), a supplementary dimension was also offered for further analysis of academic vocabulary in terms of receptive and productive dimensions. In that way, the students' academic vocabulary knowledge, which has recently received considerable attention as an important component of L2 academic achievement (Coxhead, 2001), can be measured either separately or in interaction with other dimensions. It can provide practicality for the researchers to involve the dimensions into the investigation and track the interrelationship among dimensions.

The other reason is to provide guidelines for choosing the key dimensions to be investigated for both general and academic vocabulary as well as for revealing the interrelationships between the dimensions. In addition to the methodological advantages of this dimensional framework, for instructional view; embodying different facets of

vocabulary knowledge can provide invaluable insights into what kind of vocabulary learning and instruction is required for learners.

As the end product of the present study, it is attempted to discuss the development of the participants' general and academic vocabulary in terms of competence and performance dimensions. As consistent with the assumption that the goal of development of L2 lexical competence [and lexical performance] is to enable an L2 learner to comprehend and produce L2 words fluently, accurately and effortlessly (Henriksen, 1999; Zareva, 2005; Nation, 2001; 2006), through the dimensional framework developed in this study, it can be possible to trace the development process of Turkish ELT majors' general and academic lexical competence and performance.

### **3.3. Research Design**

The present study attempted to describe the overall state of Turkish ELT majors' general and academic lexical competence and performance. In line with this aim of the study, the quantitative research design was used. In this design, the researcher decides what to study, asks specific, narrow questions, collects numeric data from participants, analyses these numbers using statistics, and conducts the inquiry in an unbiased, objective manner. (Creswell, 2005)

Particularly, this study was designed as a descriptive study since the aim was to describe and determine the overall state of general and academic lexical competence and performance of the participants within a proposed framework in this study, without any intervening, or modifications in variables, and research settings. Additionally, within the scope of this study, it is of interest to find out whether each of the variables is correlated or not, in order to ensure these dimensions represent academic lexical competence and performance together. Thus, the present study can be described as a correlation study as well as a descriptive study.

To obtain the best data that can address each research question, under the principles of descriptive and correlation research methods, cross-sectional design is preferred. This design is considered as appropriate to the scope of the present study since lexical competence and performance are apt to develop over a period of time

across varying L2 learning stages. Moreover, through cross-sectional data collection procedure, different learners can be studied at different stages of development, different points of progression through time, which can be considered as if they were cross-sections of the same learners spread out through time. Besides, this design has the advantage of involving a large scale efficiently and thus increases the generalizability of the results (Creswell, 2005). In the following, within the context of this research design, the participants and instruments will be explained as well as data collection and data analysis procedures.

### **3.4. Participants and Research Setting**

The population of this study consists of Turkish university students attending to 1<sup>st</sup> year first semester, 1<sup>st</sup> year second semester, 2<sup>nd</sup> year, 3<sup>rd</sup> year and 4<sup>th</sup> years at Education Faculty, at the Department of English Language Teaching at Anadolu University in Eskisehir. These students were the candidates of English teachers and they had been learning English as a Foreign Language. Although there was no explicit vocabulary teaching program through their education, the medium of instruction is English thus the new vocabulary input was received mainly through listening to lectures and reading the course materials assigned by the instructors. Moreover, the students entered this department through an advanced university placement test. Owing to the requirements of their courses; they have learned and used academic vocabulary actively in their education.

Using nonprobability sampling method, in which the researcher chooses the participants since they are available, convenient and represent the characteristics of the target group (Cresswell, 2005), the data collection instruments were given to all classes from the 1<sup>st</sup> year first and second semester to 4<sup>th</sup> year. Since the present study investigates the general and academic vocabulary knowledge of the participants on the basis of a specific dimensional framework, it was essential to collect all instruments that measure each of the determined dimensions from each participant. Thus, some students who did not complete the instruments were excluded from the analysis. The distribution of the number of participants explaining the collected data and the ones involved in the analysis are given in the Table 4.

Table 4

*Distribution of the Participants in terms of Years and Collected Instruments*

	VLT	WA	TAV	ESSAY	In the Analysis
1 <sup>st</sup> year first sem	49	55	52	50	49
1 <sup>st</sup> year second sem	70	75	75	78	70
2 <sup>nd</sup> year	83	86	84	83	83
3 <sup>rd</sup> year	89	95	95	89	89
4 <sup>th</sup> year	80	83	86	83	80
<b>TOTAL</b>	322	325	323	326	371

Including two semesters from the 1<sup>st</sup> year, it was aimed to reveal the development of the participants' general and academic lexical competence and performance from the very beginning to the end of their higher education. It was considered that the findings obtained from the students who just enrolled to the university can reveal the Turkish ELT majors' starting vocabulary knowledge level before university education and make sense of any possible vocabulary development till the 4<sup>th</sup> year throughout education.

### 3.5. Instruments

As emphasized so far, the specific focus of this study is the general and academic lexical competence and performance. To explain this, different dimensions for each of variables were under investigation. Particular different instruments to measure these dimensions were used for both the constructs of lexical competence and performance.

It is widely agreed that to have a better insights of interrelated dimensions of lexical knowledge, it is essential to use different measures of vocabulary knowledge. Furthermore, it is emphasized that vocabulary knowledge is not an all-or-nothing phenomenon and no single test, combining both vocabulary size and depth is available (Laufer & Paribakht, 1998; Laufer & Nation, 2004), thus, 'multiple test approach', which was proposed by Laufer (1998), were used in this study. Using a battery of tests,



each test measured a different aspect of vocabulary knowledge. Laufer (1998) explained the advantages of ‘multiple test approach’ that the results of all tests can provide a comprehensive picture of learners’ vocabulary at different stages of language development, and by comparing the results of each participant, the relationship among different aspects of lexical knowledge in the same learners could be detected. Multiple measures; different tests are essential to collect data that could characterise a learner’s vocabulary knowledge comprehensively (Nation, 2007).

Additionally, diversity in data collection instruments is also preferred to ensure the validity and reliability of the study. Data triangulation by using different instruments in a research helps to cover the issue under investigation in more detailed and reliable way (Creswell, 2005).

Regarding to these, four different instruments were used to address to the research questions on the basis of dimensional framework of the study. The measurements of each dimension embodied under the overarching constructs of lexical competence and performance are explained in Table 5below:

Table 5

*The Instruments used in the Study*

	<i>Instrument</i>	<i>Which dimension to be measured?</i>	<i>What does it evaluate?</i>	<i>What is expected from the participants?</i>
LEXICAL COMPETENCE	Vocabulary Level Test (Schmitt et. al., 2001)	Size of Vocabulary Knowledge	How many words a learner knows	to match the vocabulary, which were chosen from 2000 <sup>th</sup> , 3000 <sup>th</sup> , 5000 <sup>th</sup> , AWL and 10000 <sup>th</sup> frequency levels, with three definitions
	Word Association Test (Read, 2000)	Depth of Vocabulary Knowledge	How well a learner knows the word	To find the semantically related words with the target words
LEXICAL PERFORMANCE	Lexical Frequency Profile (Laufer & Nation, 1995) + Argumentative Essays	Lexical use	The number of productive vocabulary used in writing	To write argumentative essays with at least 200 words related to the given prompt
	Wordsmith tools + Type/token ratio	Lexical diversity	The richness of written products	To write argumentative essays with at least 200 words related to the given prompt
FURTHER ANALYSIS ON ACADEMIC VOCABULARY	Academic Vocabulary Section of Vocabulary Level Test (Schmitt et. al., 2001)	Size of Academic Vocabulary	How many academic words a learner knows	to match the vocabulary, which were chosen from AWL with three definitions
	Test of Academic Vocabulary	Receptive and Productive Dimensions of Academic Vocabulary	Recognition and Production of Academic Vocabulary	To define the target academic vocabulary and use it in a sentence
	Lexical Frequency Profile (Laufer & Nation, 1995) + Argumentative Essays	Lexical use	The number of productive academic vocabulary used in writing	To write argumentative essays with at least 200 words related to the given prompt

The instruments listed in Table 5 will be explained under the title of each overarched construct in the following:

### 3.5.1. Measurements for the Dimensions of Lexical Competence

To measure the receptive dimensions of lexical competence, namely the size and depth of vocabulary knowledge, two different tests were applied. The details about the purpose and format of the tests are explained in the following.

#### 3.5.1.1. Vocabulary Level Test

The new version of Vocabulary Level Test developed by Schmitt et. al. (2001) was applied to measure the participants' size of general and academic vocabulary knowledge in the present study. The reason why this test was preferred among other alternative vocabulary size tests is the coverage of this test as involving all five word frequency levels ranging 2000<sup>th</sup>, 3000<sup>th</sup>, 5000<sup>th</sup>, 10000<sup>th</sup> as well as academic vocabulary. In this sense, this test could reveal the participants' developmental pattern of high frequent and low frequent general vocabulary as well as academic vocabulary.

This test indicates whether the examinees have an initial knowledge of the meaning sense for each word in the test. The frequency levels of vocabulary in the test are based on West's (1953) General Service List, which categorizes, in groups of thousands, the most frequent words in English. Different from other vocabulary tests, this test consists of a special section for academic vocabulary. The academic words have been selected from the AWL, which was compiled according to criteria of coverage and range across a variety of academic texts (Coxhead, 2001). Frequency was included as part of the criteria, but was not the dominant consideration. Thus, the words in the Academic Vocabulary section are not primarily frequency driven.

The Vocabulary Levels Test (VLT) was originally designed by Paul Nation as a diagnostic vocabulary test for students of all ages and provides information about their levels of both general and academic vocabulary knowledge in English (Nation, 1990). Through some changes on the format of the test, it was widely used in vocabulary research (Cobb, 1997; Laufer and Paribakht, 1998). The test was validated by different researchers in different context through different methods (Beglar & Hunt, 1999; Schmitt et. al., 2001). Schmitt et. al. (2001) explored the validity of the last version of the test with 810 native and non-native students through retrospective methods and in-

depth statistical analysis. The results indicated that the individual items in the test appeared to work well, and the supplied a profile of vocabulary frequency levels which are highly scalable. Moreover, factor analysis suggested that the test was essentially one-dimensional. In the same vein, personal interviews indicated that examinees accept the test as reliable and that answers on the test do reflect underlying lexical knowledge. Thus, the test is accepted as reliable with Cronbach alpha indices above .90 (Schmitt et. al., 2001: p.62) and valid according to the item and factor analysis.

In the test, the students are to match the vocabulary with three definitions using the following format:

1 coffee	
2 disease	___money for work
3 justice	___a piece of clothing
4 skirt	___using the law in the
5 stage	right way
6 wage	

The test items are arranged into clusters as shown above and each cluster contains six words and three definitions to be matched. (see Appendix 3 for the whole test) Schmitt et. al. (2001) explained the three main considerations for this format: First, target words are to be typically in base forms. Second, the words used in the definitions are always more frequent than the target words and the definitions are short and easy to read. Third, to minimize wild guessing, the target words to be defined are selected randomly and in alphabetical order in each cluster with the definitions in most of the clusters in order of length.

For scoring the VLT, each correct definition is scored as one point. Each of the four frequency level section and academic vocabulary section contain 30 target items. Therefore, the maximum score is 150 (i.e. 30 x 5). Moreover, it should be underlined that the proportion of the correct answers reflects the size of total word families recognized at that level. As Schmitt et. al. (2001) emphasized that rather than just a single estimate of overall vocabulary size, the VLT can provide a profile of a learner's

receptive vocabulary size owing to the direct measurement of recognition of a word through definition matching format.

### 3.5.1.2. Word Association Test

Addressing the need to test vocabulary knowledge from different perspectives, particularly to test the quality of word knowledge, rather than to test only the size of vocabulary, Read (1998) developed a deep-word knowledge test based on word associations in order to find a reliable task format to measure learners' receptive network knowledge.

In this test, lexical quality is assessed on the basis of the number of 'correct' associational links identified by test taker. Three types of associations were defined within the context of this test as paradigmatic (i.e. the two words are synonymous or at least similar in meaning, perhaps with one being more general than other), also as syntagmatic (i.e. the two words are collocates that often occur together in a sentence), and lastly as analytic (i.e. the associates represents one aspect, or component, of the meaning of the stimulus word and is likely to form a part of its dictionary definition). The target words involved in the test are all adjectives which have more than one meaning and a range of use. Two aspects of vocabulary knowledge; namely meaning and collocation are asked in the test. One sample item is presented in the following:

1. beautiful

<input type="checkbox"/> enjoyable <input type="checkbox"/> expensive <input type="checkbox"/> free <input type="checkbox"/> loud	<input type="checkbox"/> education <input type="checkbox"/> face <input type="checkbox"/> music <input type="checkbox"/> weather
---	--

The test consists of a target word followed by eight other words, four of which are semantically related to the target word, and four of which are not. The L2 learner has to find which are related. Each item always has four correct choices that can be distributed randomly across the boxes. While scoring the items, one point for each correct association is given. Considering the number of items in the test, the maximum score that can be taken from the test is 160 (i.e. 40 x 4).

The validation studies on this test have been conducted thoroughly, so the test format was evaluated as well-structured with high internal reliability ( $K-R_{20} = .92$ ) (Read, 2000a). Related to this Word Association (WA) test, Read (2000) stated that the test format has potential as a tool in research in organization of the mental lexicon and the processes by which word knowledge is acquired.

### **3.5.2. Measurements of the Dimensions of Lexical Performance**

To determine the participants' lexical performance, argumentative writing task was employed and through the analysis of the collected essays, two indices addressing to productive dimension of general and academic vocabulary knowledge were investigated. The following sections explain about the content of writing task and analyses.

#### **3.5.2.1. Academic Writing Task**

To investigate the productive dimension of vocabulary knowledge, writing tasks have been mainly used in many studies so far (e.g. Muncie, 2002). Particularly, academic writing is the most frequent task that university students encounter during their education. Among different genres of academic writing, for the present study, argumentative writing is chosen to determine the participants' academic lexical performance.

Argumentative writing is considered to activate complex cognitive ability since the learners identify an issue, consider different views, form and defend a viewpoint, and consider and respond to counterarguments in a cohesive manner (Muncie, 2002). To attain all these, depending on the topic and context of the tasks, the learners need a large and qualified academic vocabulary. With effective use of academic vocabulary, the learners can express their ideas and write their arguments effectively. Thus, argumentative writing tasks are considered as the appropriate genre to measure the participants' academic productive vocabulary.

The nature of the task that the learners are given is very important for the validity of the writing measure since tasks vary in the demands that they make on learners' vocabulary resources. If the task is intended to elicit a fluent sample of writing

under test conditions without advance preparation it makes sense to set a familiar topic (Schmitt, 2000). Thus, the selection of topic is important to have reliable and valid results. Thus, the topic of the academic writing tasks of the present study was chosen from the prompts of TOEFL writing since these prompts have been asked to a large population, and they are considered as valid and reliable (Cumming et. al., 2002). Out of these prompts, the proposed topic is;

“Do you agree or disagree with the following statement? Children should begin learning a foreign language as soon as they start school. Use specific reasons and examples to support your position.”

This writing prompt was chosen as a result of negotiation with the expert considering the general nature of topic and appealing to the participants’ interests and professions.

During this writing task, students were allowed for 40 minutes to get ready and brainstorm on the writing task, then to write the essay. They were asked to write an essay at least in 200 words. This word limit was decided since any writings less than 200 could not indicate the participants’ lexical use effectively (Laufer & Nation, 1995). For the ones who wrote more than this word limit, the first 200 words were selected and analysed. The details about the analysis of these written data are presented in the following.

### **3.5.2.2. Lexical Frequency Profile for the Analysis of Lexical Performance**

The measurement of productive vocabulary in compositions causes many controversies since there is a disagreement on measuring which aspects of vocabulary use (Muncie, 2002). Although some aspects such as lexical originality, lexical diversity and lexical variations have been analysed in writings through different measures, they have been criticized due to their drawbacks in reliability and validity (Muncie, 2002; Laufer and Nation, 1995). Thus, to counter any disadvantages, Laufer and Nation (1995) developed their own productive vocabulary measurement, Lexical Frequency Profile (LFP). They used Nation’s Range Program, which is also known as

Vocabprofile, to produce a Lexical Frequency Profile (LFP) of student compositions. LFP is a computer program that performs lexical text analysis. It can compare the words used in a text with the lists of the first 2000 most frequent words of English. A ratio is then produced showing the percentage of words used in the text in these two categories, and the percentage of words which are in the level of above the 2000 most frequently used words in English. To operate the LFP, a text containing at least 200 tokens is typed into the program, and then word forms are recognized as members of word families. Within the context of this test, the word family here includes the base form plus the inflections and affixes –able, -er, -ish (Laufer & Nation, 1995; pp.266). Then, the program compares the word families used in the text to the word frequencylist to produce the productive vocabulary profile. While typing the text onto the program, it is important to ensure that proper nouns are deleted.

Laufer and Nation (1995)’s study received considerable interest in the vocabulary development research and LFP has been used by many researchers to determine the productive vocabulary use of the learners. (Morris & Cobb, 2004; Muncie, 2002) It is defined as an effective measure that can discriminate between different proficiency levels of learners and correlate highly with other vocabulary tests (Coniam, 2007). Furthermore, Vocabulary profiles can also serve to establish target vocabulary lists for ESP and EAP programs, providing field-specific vocabulary lists (Cobb & Horst, 2001; Coxhead & Nation, 2001; Morris & Cobb, 2004).

LFP has the potential to compensate the lack of measure of vocabulary use in writing. Morris & Cobb (2004) described LFP as a measure that can reflect linguistic and academic ability of the learners and easy to administer via computer-based analysis of vocabulary proficiency. Besides, Laufer (2005) conducted a study with LFP to assure the reliability of this instrument and she stated that LFP provided the similar results for different proficiency levels. Additionally, Coniam (2007) argued that the validity of LFP is determined by the coverage of words in the word-lists. Using 3000 “head words” grouped into “word families” will increase the potential for larger coverage which increases its validity.



Considering the operability, functionality, practicality of Lexical Frequency Profile and accounting of the findings related to its reliability and validity, in this study, Vocabprofile, which is available on [www.lextutor.ca/](http://www.lextutor.ca/) was used to determine the participants' lexical use. To operate the LFP test, Vocabprofile, a text were typed into the computer program and text analysis, consisting the percentages of type/token ratio and word families, were supplied according to four frequency levels, according to 1k (1 to 1000), 2k (1001 to 2000), off-list and AWL words.

### **3.5.2.3. WordSmith Tools**

WordSmith tools are a package program that provides a set of tools for analysing texts. The tools have been used by Oxford University Press for their own lexicographic work in preparing dictionaries, by language teachers and students, and by researchers investigating language patterns in lots of different languages in many countries world-wide. It is distributed via Internet. For the present study, this program was purchased with fund of Scientific Project Unit that supported the present study financially.

In application, Wordsmith tools calculates the absolute number of occurrences of each word in the text files and then this number is converted into percentage of running words, and the number of text files the words occur in. Among different tools that this package offers such as Concord tool, Keyword tool, the Wordlist tool was used to determine the lexical diversity of the participants' essays in the present study. This tool generates word lists in alphabetical and frequency order, enabling the comparison of the texts lexically. It also provides statistics such as total number of words, length of words, number of sentences, etc. It determines the lexical diversity of the texts through type/token ration across the groups of participants.

For the present study, the participants' argumentative essays were analysed through Wordlist tools of WordSmith program and the lexical diversities of the essays across five participant groups were calculated. This analysis was used to provide additional and in-depth information about the participants' lexical performance. The findings were evaluated together with the findings of Lexical Frequency Profile, which reveals the proportion of participants' lexical use of both general and academic vocabulary.

### **3.5.3. Measurement for Further Analysis on Academic Vocabulary Knowledge**

Through the dimensional framework of lexical competence and performance developed specifically in the present study, it was attempted to investigate the academic vocabulary as well as general vocabulary. The measurements that are explained above have specific sections addressing to the academic vocabulary. For instance; Vocabulary Level Test has a section for academic vocabulary and Lexical Frequency Profile analysis provided the proportion of academic vocabulary use in the essays. However, considering the significance of academic vocabulary for university students as emphasized in literature so far (Coxhead, 2000; Chen & Ge, 2007; Hancıoğlu et. al., 2008), further analysis on academic vocabulary was considered as essential to discuss the developmental pattern of the participants' academic vocabulary throughout higher education. On the basis of this necessity, a supplementary dimension was added in the dimensional framework, allowing the researchers to use it optionally for the further analysis on academic vocabulary. Together with the results on the size, lexical use of academic vocabulary, the findings of this test could chart the participants' academic lexical competence and performance.

As a measurement for this dimension, an adaptation study was conducted to develop a test for the analysis of academic vocabulary in terms of receptive and productive dimensions. The test adaptation procedure and the details about the format of the test are explained in the following.

#### **3.5.3.1. Test of Academic Vocabulary (TAV)**

To develop a test that can measure and address both receptive and productive dimension of academic vocabulary, at the first phase, related literature was reviewed and alternative formats were examined. Among the different test formats (e.g. Laufer, 1998), the format of the Vocabulary Knowledge Scale developed by Wesche and Paribakht in 1996 was found as appropriate to measure the academic vocabulary receptively and productively.

The Vocabulary Knowledge Scale (henceforth VKS) is a self-report vocabulary test that was designed to measure the different levels of lexical knowledge of specific target words. As Wesche and Paribakht (1996) declared VKS aims "to capture initial

stages or levels in word learning that are subject to accurate self-report or efficient demonstration, and that are precise enough to reflect gains during a relatively brief instructional period" (p. 33). Moreover, this scale was claimed to measure different levels of lexical knowledge, ranging from "complete unfamiliarity, through recognition of the word and some idea of its meaning, to the ability to use the word with grammatical and semantic accuracy in a sentence" (Wesche & Paribakht, 1996: 29). Thus, the test format measures the learners' command of a target lexical item in relation to receptive versus productive control.

It uses a 5-point scale combining self-report and performance items to elicit self-perceived and demonstrated knowledge of specific words. The scale ratings range from unfamiliarity, through recognition of the word and definition, to the ability to use the word with grammatical and semantic accuracy in a sentence. This test differs from the other vocabulary scales because it requires verifiable evidence of knowledge held at higher levels. Thus, it is a control scale of how well words are known and what control one has over them (Paribakht & Wesche, 1997). The test format of the scale is illustrated in the following:

- I. I don't remember having seen this word before
- II. I have seen this word before but I don't know what it means
- III. I have seen this word before and I think it means \_\_\_\_\_  
(synonym or translation)
- IV. I know this word. It means \_\_\_\_\_ (synonym or translation)
- V. I can use this word in a sentence. e.g.: \_\_\_\_\_ (if  
you do this section, please also do section IV)

In detail, the basic idea of the scale is to measure progressive degrees of word knowledge. Level I is not really a level at all, but reflects what the subject does not know. Levels II, III and IV are measures of recognition vocabulary (receptive) and Level V is for productive vocabulary. (Nation & Waring, 1997) Paribakht and Wesche (1997) proposed a special scoring scale for this instrument:

0=no recognition of word

1= familiarity with but no knowledge of word

2= partial definition of word OR partial accuracy in sentence

3= accurate definition of word OR partial definition and partial accuracy in sentence

4= accurate definition of word and partial accuracy in sentence OR partial accuracy in definition and accurate sentence

5= accurate definition and accurate sentence

However, for this study, a different scoring scale (ranging as 0, 1, 2) were used to determine the academic lexical competence and performance in terms of receptive and productive dimensions. Accordingly;

0 = no recognition and use of word

1= definition but no use

2 = accurate definition and accurate sentence

By means of this scoring scale, it is aimed to have more straight-forward evaluation omitting partial knowledge evaluation which could cause ambiguity in scores (Read 2000a). In detail, the score 0 is for no vocabulary knowledge, 1 is for accurate definition but not use as an indicator of receptive knowledge since giving definition indicates that the learner recognizes and knows the word, thus has receptive vocabulary knowledge (Henriksen, 1999; Webb, 2005) On the other hand, 2 is for productive knowledge by evaluating accurate use of vocabulary in a sentence as well as accurate definition. Any kind of partial use or definitions will not be evaluated and scored as 0 since accuracy in definition and use is accepted as having the indicators of competence and performance (Nation, 2001; Paribakht & Wesche, 1997).

The reliability level for this test was reported as .82 by Paribakht and Wesche, (1997) which shows that this format is a reliable way to measure the vocabulary knowledge of the students both receptively and productively.

This test and adapted versions have been commonly used in different studies (e.g. Townsend, 2007) to investigate the students' vocabulary knowledge specifically since it can avoid the drawbacks of recall, multiple-choice or cloze test which usually neglect the multidimensional nature of lexical knowledge (Segler et. al., 2002). Additionally, VKS-type scales are claimed to measure all dimensions of lexical knowledge and pursue the early development of specific words in an instructional or experimental situation (Paribakht & Wesche, 1997).

Referring to these studies, and considering the high reliability and practicality of the test format, for the present study, the test of academic vocabulary was designed modifying this format through three phases. Firstly, target words were selected from the reference list, Academic Word List (Coxhead, 2000). Instead of selecting the target words randomly, it was preferred to choose them systematically to avoid any subjective selection. Thus, totally 57 words were chosen by picking up every tenth word and counting the next tenth starting from the second word in each sub-list of AWL. In this way, equal number of words was selected from each sub-list of AWL (except the last sub-list, due to fewer numbers of words) and the selected words were thus to represent overall list effectively. Moreover, while selecting the target words, the words which are cognate in Turkish such as *parallel*, *phenomenon*, *alternative*, *academic* were eliminated and the words above these cognates in the list were included. Field experts' ideas were asked during the procedure of selecting these target words. The selected academic vocabulary is presented in the following:

Table 6

*The Academic Vocabulary Selected at the First Phase*

Analysis	Ensure	perspective	Abandon	Odd
Constitutional	justification	substitution	Clarity	Whereby
Established	proportion	abstract	Deviation	
Indicate	Shift	capable	Induced	
Occur	Access	exceed	Practitioners	
Role	commitment	incidence	Tension	
Achieve	emerged	migration	accommodation	
Community	internal	recovery	Commenced	
Design	Overall	adaptation	Duration	
Investment	resolution	contrary	Mature	
Previous	adjustment	empirical	Preliminary	
Restricted	Contact	identical	Sphere	
Circumstances	expansion	priority	Adjacent	
Coordination	Logic	submitted	Enormous	

After selecting the target words, a test of academic vocabulary was designed according to the format of VKS. In the following, a sample item from the test is given:

**e.g... constitutional**

- a. I have **never** seen this word before \_\_\_\_\_
- b. I have seen this word before but I **don't know** what it means \_\_\_\_\_
- c. I have seen this word before and I think it means  
\_\_\_\_\_
- d. I can use this word in a sentence (if you answer this part, also answer part c)  
\_\_\_\_\_

The second phase of test development was to guarantee the meaningfulness and fairness of items in the test. In other words, in order to ensure that the written items in the test can measure knowledge effectively and discriminate between the learners who know and do not know, a quality control procedure was applied. As McNamara (2000) pointed out it is usually necessary to check how well each item in the test is working, or the contribution of each item to the test takers' overall ability measured in test. This

Careful analysis of score patterns on each of test items is called item analysis. Item analysis is a usual part of test development. Before a test is introduced in its final form, a pilot version of the test is developed. This pilot version often contains a number of draft items so that only the best ones will remain after the piloting. The pilot version is usually distributed to a group of individuals with the same learner profile. As a result of this procedure, the results are evaluated and item facility, which explains whether test items are at the right level for the target group or not, and item discrimination, which indicates whether individual items are providing information on target groups' abilities consistent with that provided by the other items on the test, are determined (McNamara, 2000: 60).

Thus, the adapted test of academic vocabulary was piloted with 25 students attending to the second year of ELT department. This group was chosen because the second year students are parts of target population in this study, and the selected group represents the features of target group effectively.

The test was distributed to the students in a class hour and it took 45 minutes to complete. After data collection, each item in the test was scored in order to calculate item facility: To see whether the items were too easy or too difficult and whether they can distinguish between learners or not, each item was evaluated according to the scale from 0 (no-one got the item right) to 1 (everybody got it right) (McNamara, 2000; 61). For example an item facility of 0.37 means that %37 of the participants got it right. Ideal item facility was defined as 0.5 but a range of item facilities from 0.32 to 0.67 was usually accepted (McNamara, 2000).

For the Test of Academic Vocabulary (TAV) in this study, the items which were defined and used in the sentence received 1 while the ones who were not recognized, defined or used in the sentence got 0 according to item facility scale. As a result, out of 58 items involved in the pilot version of test of academic vocabulary, the ones who were scored below or above the accepted range (i.e. from 0.32 to 0.67) were excluded since these items could not distinguish between participants effectively. 30 items remained after item facility analysis and a final version of test of academic vocabulary

was developed with these items. The items selected for the final version were listed below:

Table 7

*The Academic Words selected for the Final Version of TAV*

Constitutional	overall	Induced
Established	resolution	practitioners
Justification	expansion	Tension
Proportion	substitution	commenced
Shift	incidence	Duration
Coordination	identical	Mature
Access	submitted	preliminary
Commitment	empirical	Sphere
Emerge	clarity	Adjacent
Internal	deviation	Whereby

The last phase of test development was reliability study. To ensure that the adapted test can provide reliable information about the participants' lexical knowledge, a reliability study was conducted for the test of academic vocabulary. Thus, the developed final version was given to 46 students including both second and fourth year at ELT Department. This group is selected as they represent the target group in the study. Then, the obtained data were entered into SPSS 15.0 package program and a statistical index known as reliability coefficient was calculated by analysing the correlation of each item with each other. According to the analysis, the reliability coefficient was obtained as .80. This value indicates that the adapted test of academic vocabulary is a reliable instrument to measure the receptive and productive dimensions of academic vocabulary. Thus, it can be claimed that the test format was reliably adapted for academic vocabulary in this study.

### **3.6.Pilot Study**

Before collecting the main data for the present study, all instruments were conducted as a pilot study to assure their reliability of the instruments and to check



whether the instruments can address the aims and research questions of the study. Thus, a group of 21 students at ELT Department participated in the pilot study. Data was collected through three phases.

At the first phase, the Vocabulary Level Test and Word Associate Test were given to the participants in a class hour. It took 25 minutes to complete both tests. Then, at the second phase, the students were asked to complete the test of academic vocabulary in 20 minutes. Lastly, in another class hour, the participants wrote the argumentative essays. The collected data was analysed in line with the purposes of the study.

After data collection, each instrument was scored according to the certain scoring scales explained above. In data analysis procedure, firstly descriptive statistics for the findings of each instrument was calculated to explain the overall profile of the participants' general and academic lexical knowledge. While interpreting the scores the participants got from each instrument, considering the distribution of the scores from 1 to 100, the range for evaluation were statistically calculated as 0-35= low, 35,01-70=average, 70,01-100=high. Hereby, it was attempted to interpret the findings more objectively. Afterwards, correlation between the instruments was calculated to check the consistency among them and the reliability of the study. The findings obtained from these analyses were explained below.

### ***Participants' Size of Vocabulary Knowledge***

The Vocabulary Level Test was distributed to determine the participants' size of vocabulary (i.e. how many words they know). The obtained scores were analysed and the participants' performance in both overall test and special sections of the test.

Thus, firstly descriptive statistics were calculated for the overall scores of the participants in order to reach the general profile of the participants in terms of overall size of vocabulary. In addition to the participants' overall performance in this test, their scores obtained from each section, namely 2.000<sup>th</sup>, 3.000<sup>th</sup>, AWL, 5.000<sup>th</sup>, and 10.000<sup>th</sup>, were analysed through descriptive statistics. The findings were presented in Table 8 and Figure 3.

Table 8

Descriptive Statistics of VLT in the Pilot Study

	N	Min.	Max.	Mean	SD
Overall Size	21	62	87	77,23	8,582
2.000 <sup>th</sup>	21	26	30	28,81	1,250
3.000 <sup>th</sup>	21	22	29	26,71	2,194
AWL	21	26	30	28,71	1,454
5.000 <sup>th</sup>	21	10	29	23,67	3,877
10.000 <sup>th</sup>	21	3	15	7,95	3,383

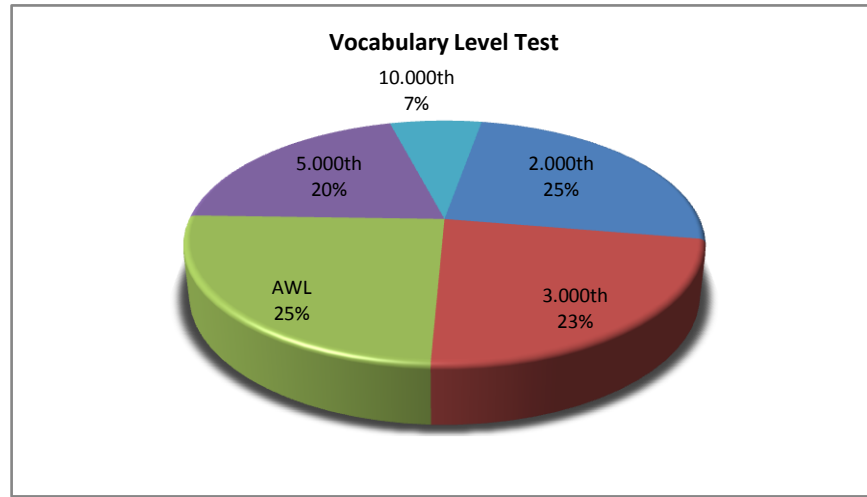


Figure 3: The Distribution of the Scores from Each Frequency Band in VLT in the Pilot Study

According to the findings illustrated in Table 8 and Figure 3 above, the minimum score that the participants got in this pilot study, was 62 out of 100, while they could get 87 out of 100 as a maximum score. The mean value of overall scores was 77, 23, which indicates that the participants knew the majority of the words in this test. Likewise, the analysis of the scores from each frequency band showed that out of 30 words at each section, the participants knew most of the words from the frequency of 2.000<sup>th</sup> ( $\bar{X} = 28,8095$ ), while they failed at the section containing words from 10.000<sup>th</sup> ( $\bar{X} = 7,9524$ ). Moreover, it should be emphasized that the participants' performance at academic vocabulary section was as high as 2.000<sup>th</sup>. Thus, it was observed that the participants knew most of the academic words ( $\bar{X} = 28, 7143$ ) tested in this instrument. The 2.000<sup>th</sup>

and Academic Vocabulary sections were followed by 3.000<sup>th</sup>, 5.000<sup>th</sup> and lastly 10.000<sup>th</sup> respectively, consistent with the assumption that the students will have difficulty with words from lower frequency (Nation, 1990; Laufer & Nation, 1999).

### ***Participants' Depth of Vocabulary Knowledge***

The Word Associate (WA) test was given to the participants to examine the depth of their overall lexical knowledge. The findings of the analysis on the participants' scores from the WA are given in the following;

Table 9

#### *Descriptive Statistics on Word Associate Test in the Pilot Study*

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>SD</b>
<b>WA</b>	21	44,38	81,88	72,65	8,538

As indicated in Table9, out of 100, the maximum score that the participants got from this test was 81, 88 while the minimum score was 44, 38. The mean of overall scores was 72, 65, considering the range for evaluation explained above, it can be claimed that the participants' quality of vocabulary was high (since 70, 01-100= high). In other words, the participants could associate most of the words with the options in the test.

The findings of this Vocabulary Level Test and Word Associate Test revealed that the receptive dimension of the participants' general lexical knowledge was high. Accordingly, it might be claimed that they both knew and associate most of the words at test effectively.

### ***Participants' Academic Vocabulary Knowledge***

Then, the Test of Academic Vocabulary was employed to determine the participants' academic lexical knowledge both receptively and productively. The participants' recognition and production of the words were scored at this test. The findings were presented in Table 10, below:

Table 10

## Descriptive Statistics on Test of Academic Vocabulary in the Pilot Study

	N	Minimum	Maximum	Mean	SD
<b>TAV</b>	21	48,00	79,30	65,84	9,828

When the scores were analysed, the results of the analyses on the test of academic vocabulary showed that out of 100, the participants received 79,30 as a maximum score while 48,00 was the minimum score. The mean value of overall scores was 65, 83 which indicate that majority of the words at the test was defined and used in a sentence accurately by most of the participants.

***Productive Academic Vocabulary Knowledge***

When it was checked whether the participants used academic words while writing argumentative essays, the participants' academic writings were analysed through Vocabprofile 2.9 on [www.lextutor.ca](http://www.lextutor.ca) the proportions of 1.000<sup>th</sup> (1k), 2000<sup>th</sup>(2k) words, the words from AWL and off-list words, which contains words from 3.000<sup>th</sup> to 10.000<sup>th</sup>, were obtained for each participant.

From these outputs, the proportions of 1k+2k, AWL words and off-list words from each participant were analysed to determine the overall profile of participants' academic lexical performance in writing tasks.

Table 11

*Lexical Use at Essays in the Pilot Study*

	N	Min	Max	Mean	SD
<b>1k+2k</b>	21	90,33	94,67	92,93	1,297
<b>AWL</b>	21	3,31	6,31	4,55	,907
<b>Off-list</b>	21	,33	5,32	2,52	1,265

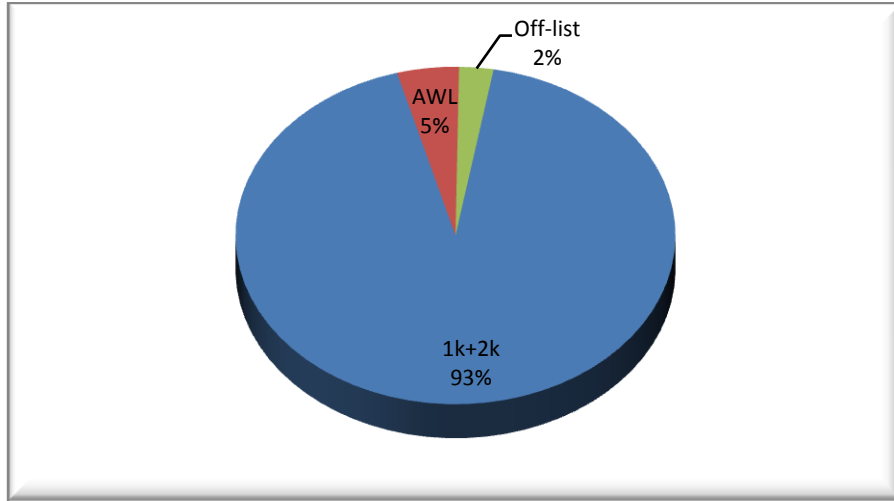


Figure 4: Descriptive Statistics of Vocabulary Used at Essays in the Pilot Study

As indicated in Table 11 in participants' essays, the words from 1.000<sup>th</sup> and 2.000<sup>th</sup> frequency bands were mostly used ( $\bar{X} = 92, 93$ ). On the other hand, the overall use of academic words in essays was very limited since mean value was only 4, 54 for AWL words. According to the findings, the participants used some low frequency words which are called off list words in Vocabprofile, yet the proportion for the use of these words was very low as  $\bar{X} = 2,51$ . In Figure 4, the distribution of these proportions was also illustrated.

The distribution of academic vocabulary use at argumentative essays was also analysed in terms of each student's performance.

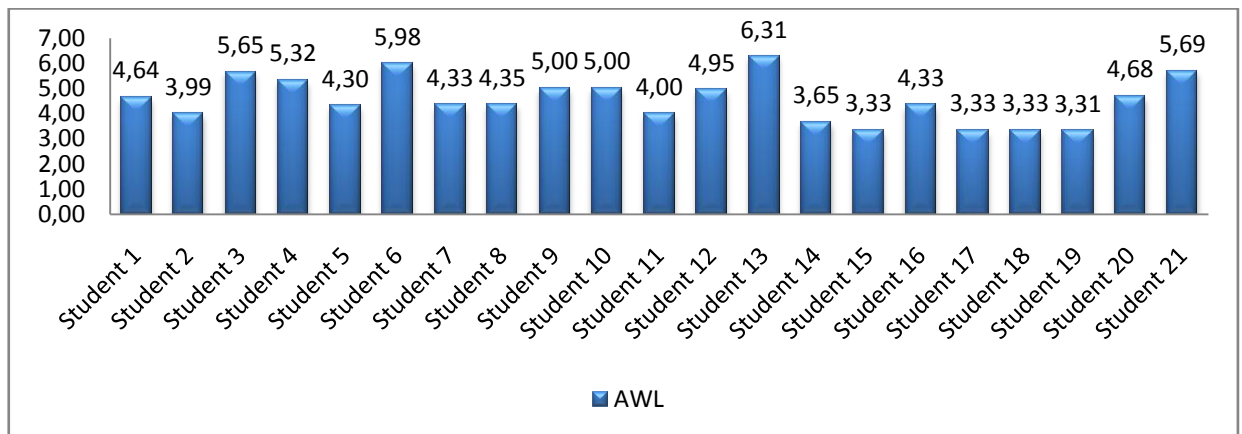


Figure 5: Distribution of Each Student's Use of Academic Vocabulary at Their Essays in the Pilot Study

As seen in Figure 5, most of the students used the academic words at almost same range. There were only few students (n=10) who used academic words more than average. Considering this finding, it can be interpreted that in this pilot study, the participants' academic lexical performance was at almost same range.

### ***Participants Overall Profile of Lexical Competence and Performance***

Considering all findings from all four instruments; Vocabulary Level Test, Word Associate Test, Test of Academic Vocabulary and Lexical Frequency Analysis of essays, the participants' profile of both general and academic lexical competence and performance were revealed. Accordingly, the participants' performance at Vocabulary Level Test (VLT) and Word Associate Test (WA) could be regarded as high, considering the score ranges explained above (70,01-100=high). Thus, it may be interpreted that the participants know most of the words at these tests. On the other hand, the students' performance at test of Academic Vocabulary (TAV) was average (considering the range of 35, 01-70= average), in other words the participants know and use almost half of the academic words at this test. Finally, the participants' performance in argumentative essays in terms of academic word use was very low (range; 0-35= low), the participants used limited number of academic words while writing.

The findings so far indicated that the instruments selected for this study, respectively Vocabulary Level Test (Schmitt et. al., 2001), Word Associate Test (Read, 1998), Test of Academic Vocabulary (adapted from Paribakht & Wesche, 1997) can address the research questions of the study and they can define the dimension of lexical knowledge effectively. As the last step of the pilot study, the correlation between the findings of instruments was examined to assure the reliability of these instruments.

### ***Correlation between Instruments***

To investigate the interrelationships between the dimensions, Pearson Correlation Test was applied to test the correlation between the scores from each instrument. The findings obtained from this analysis were figured in Table 12.

Table 12

*The Results of Correlation Analysis in the Pilot Study*

		WA	TAV	VLT	AWL
WA	Pearson Correlation	1	,275	,401	,405
	Sig. (2-tailed)		,227	,071	,069
	N	21	21	21	21
TAV	Pearson Correlation	,275	1	<b>,670**</b>	<b>,674**</b>
	Sig. (2-tailed)	,227		,001	,001
	N	21	21	21	21
VLT	Pearson Correlation	,401	<b>,670**</b>	1	<b>,531*</b>
	Sig. (2-tailed)	,071	,001		,013
	N	21	21	21	21
AWL words at essays	Pearson Correlation	,405	<b>,674**</b>	<b>,531*</b>	1
	Sig. (2-tailed)	,069	,001	,013	
	N	21	21	21	21

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

The results of correlation analysis indicated that there is a positive correlation between the test of academic vocabulary (TAV) and Vocabulary Level Test (VLT) [ $r_{(21)}=0.670$ ,  $p<.01$ ] and use of Academic Words at essays [ $r_{(21)}=0.674$ ,  $p<.01$ ]. In other words, the participants who got a high score at the Test of Academic Vocabulary scored high at Vocabulary Level Test and used more academic words while writing. In the same way, there is a positive correlation between VLT and use of Academic Words at essay [ $r_{(21)}=0.531$ ,  $p<.05$ ]. Thus, it may be claimed that the students with higher size of vocabulary knowledge would use more academic words while writing or the students

with more academic vocabulary knowledge would score high at VLT. Considering the significant relationship between these instruments, it may be claimed that there was consistency among VLT, TAV, and distribution of AWL words at essays.

Although no correlation was obtained between Word Associate Test and other instruments, considering the findings of the previous studies, which indicated the high reliability of the instrument ( $K-R 20 = .92$ ) (Read, 2000) and high correlation with other vocabulary measures for size and productive dimensions (Zareva, 2005), it was decided to involve Word Associate Test as an instrument in the main study.

As a result of pilot study, it can be claimed that the selected instruments; namely the Vocabulary Level Test, Word Association Test, Lexical Frequency Profile for the analysis of writing task could address the aims and research questions of the present study. Moreover, the findings of the pilot study and reliability study indicated that the Test of Academic Vocabulary, which was adapted from Vocabulary Knowledge Scale of Paribakht and Wesche (1997), can be accepted as a reliable instrument to measure the academic knowledge of the students receptively and productively.

### **3.7. Data Collection Procedure**

After pilot study, the final versions of the instruments were distributed to all of the students attending to the 1<sup>st</sup> year first semester, 1<sup>st</sup> year second semester, 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> class of the Department of English Language Teaching at Education Faculty. Except the 1<sup>st</sup> year first semester group, the data was collected at the spring semester (.e. second semester) of 2009-2010 academic years. For 1<sup>st</sup> year first semester group, the data was collected at the fall term of 2010-2011 academic years.

The tests were applied at a regular class time with the permission of the class teacher by the researcher. Before the applications, the aim and content of the study were explained and the students were asked to sign the consent form to participate in the study voluntarily.

During the applications, to avoid any researcher-bias, the students were not allowed to ask the researcher the meaning of any unknown words. Additionally, to



prevent any transfer between the tests, the Vocabulary Level Test and Word Association Test were given at the same class hour while Test of Academic Vocabulary was distributed at a different class hour one week later. Then, students were asked to write argumentative essay at a different class hour. In that way, it was aimed to prevent students not only transferring the words from one test to another but also using the words they saw in the tests in their essays.

### **3.8. Data Preparation**

After all instruments were collected, the data preparation procedure was started. Firstly, all collected data was classified into five groups according to the year the participants attend. Then, all four instruments were matched together for each participant. In this way, the missing cases; the one who did not complete all four instruments and/or wrongly completed, were extracted. As a result, 29 cases were discarded from the total sample of 400 students so the instruments collected from 371 students were analysed in the present study.

When the year-based classification was over, the scoring procedure was then started. Firstly, the VLT was marked, and five separate scores were given to each participant on the five frequency bands as well as the total score indicating the overall size of vocabulary knowledge. This total score was found by adding up the scores from 2000<sup>th</sup>, 3000<sup>th</sup>, AWL and 10000<sup>th</sup> levels, the maximum total score that a participant can get is 150. Afterwards, the WA test was scored according to the key provided by Read (1998) and the total score was given to each participant. In the same way, TAV was marked according to the scoring criteria.

For the analysis of the participants' essays, all texts were typed into the computer. Each essay from each participant was saved as a separate text file to analyse. As a result, all data got ready for the statistical and lexical analysis.

### **3.9. Data Analysis Procedure**

The collected data was analysed through 15.0 version of Statistical Package of Social Science (SPSS). By means of descriptive statistics, a general picture of the participants' vocabulary size (VLT), vocabulary depth (WA), academic vocabulary

knowledge (TAV), lexical use and diversity were determined, then one-way ANOVA analysis was used for between and within group comparisons. As a post hoc test to determine the group causing any significance, Tukey HD test was employed. For the correlation analysis among the instruments, Pearson correlation test was used. The significance level taken for granted is ,05.

The analysis performed for each research question was listed below as a guideline for the discussions of the findings:

Table 13

*The Data Analysis Procedure according to Research Questions*

Research Question	Instrument	Analysis
What is Turkish ELT majors' size of general vocabulary knowledge?	Vocabulary Level Test (VLT)	Descriptive Statics for total score and for each frequency band in terms of years
What is Turkish ELT majors' depth of general vocabulary knowledge?	Word Association Test (WA)	Descriptive Statistics for total score in terms of years
What is Turkish ELT majors' size of academic vocabulary?	Academic Vocabulary Section of VLT	Descriptive Statistics for the total score in terms of years
<i>lexical competence</i>	VLT +WA	Descriptive Statistics on the addition of the total scores of VLT and WA
What is Turkish ELT majors' academic vocabulary knowledge in terms of receptive and productive dimensions?	Test of Academic Vocabulary	Descriptive Statistics for total score in terms of years
What is Turkish ELT majors' general lexical performance?	Argumentative Essays, Lexical Frequency Profile (Vocabprofile) + Wordsmith Tools	Descriptive Statistics about general vocabulary use at the output of Vocabprofile + Type/token ratio calculated with Wordsmith Tools in terms of years
What is Turkish ELT majors' academic lexical performance?	Argumentative Essays, Lexical Frequency Profile (Vocabprofile) + Wordsmith Tools	Descriptive Statistics about academic vocabulary use at the output of Vocabprofile + Type/token ratio calculated with Wordsmith Tools in terms of years
Do the dimensions of the participants' lexical competence and performance correlate with each other?	All instruments	Pearson Correlation test
Do the participants' general and academic lexical competence and performance differ in their higher education?	All instruments	one-way ANOVA on all instruments in terms of years

## CHAPTER 4

### RESULTS

#### 4.1. Introduction

This section reports the results obtained from the data analysis procedure. In line with the aim of the study, two main research questions were posed to evaluate Turkish ELT majors' general and academic lexical competence and performance. Besides, the sub-research questions for each were addressed for each sub-dimension of lexical competence and performance, which are propounded within the tentative dimensional framework of general and academic vocabulary knowledge in the present study.

In that sense, firstly the sub-dimensions of the lexical competence, which are overarched with the receptive dimension; the participants' size and depth of general service vocabulary knowledge will be discussed respectively. Then, the results yielded with the analysis of both of these sub-dimensions together will be presented to discuss the participants' overall lexical competence. In pursuit of this, the participants' academic lexical competence and performance will be further discussed with the results of the test of academic vocabulary.. In addition, the participants' general and academic lexical performance will be detailed through the results on their lexical use and lexical diversity of their written products, which are two other sub-dimensions under productive dimension. Lastly, the results on the correlation between these indices of general and academic vocabulary and the development of the participants' general and academic vocabulary knowledge throughout their higher education in terms of these indices will be reported successively.

#### 4.2. Results on Lexical Competence

To address the first research question of the study, which is “What are Turkish ELT majors' general lexical competence and performance?”, initially, the participants' lexical competence was investigated through the analysis of the sub dimensions of size and depth of vocabulary knowledge.

#### 4.2.1. Size of Vocabulary Knowledge

To detect the participants' size of vocabulary, in other words how many words they know, Vocabulary Level Test (VLT) developed by Schmitt (2000) were used. Referring to the mean scores and standard deviation values of the participants, firstly the participants' overall scores from the VLT is discussed in terms of years. The related findings are presented in Table 14 and illustrated in Figure 6 in the following:

Table 14

Descriptive Statistics of Vocabulary Level Test Scores in terms of Years

Vocabulary Level Test	N	Mean*	SD	Min	Max
1 <sup>st</sup> year first sem.	49	99,16	19,921	33	125
1 <sup>st</sup> year second sem.	70	105,34	15,740	72	137
2 <sup>nd</sup> year	83	110,82	13,833	78	130
3 <sup>rd</sup> year	89	108,76	15,865	55	140
4 <sup>th</sup> year	80	109,80	14,204	76	140
TOTAL	322	107,53	16,034	33	140

\*the values are taken out of 150, which is the maximum score that can be obtained from the test

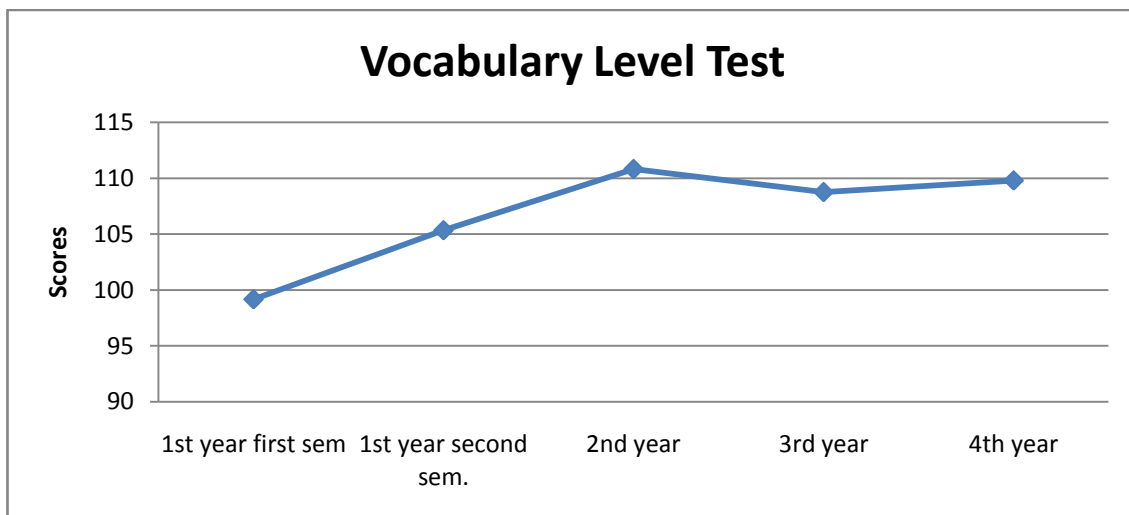


Figure 6: Distribution of the Mean Scores of VLT in terms of Years

As seen in Table 14 and Figure 6, the participants in all classes knew most of the words in the VLT ( $\bar{X} = 107,53$  out of 150). However, a fluctuation among the classes draws attention. Specifically, while the students attending to the first semester of 1<sup>st</sup> year got the lowest mean score ( $\bar{X} = 99,16$ ), the 2<sup>nd</sup> year students received the highest mean score ( $\bar{X} = 110,82$ ). After such a jump, a decrease at 3<sup>rd</sup> year is observed ( $\bar{X} = 108,76$ ) and it is followed with 4<sup>th</sup> year (109, 80). Such fluctuation among the classes can be observed clearly in Figure 6. These findings imply that the participants' vocabulary knowledge increased during the first two years of their education. They tend to learn new vocabulary through the exposure and/or instruction in their courses at the 1<sup>st</sup> and 2<sup>nd</sup> years. Yet, this increase in vocabulary knowledge was interrupted at the 3<sup>rd</sup> year; the participants did not enhance their vocabulary knowledge, even they regressed to some extent. Although at the 4<sup>th</sup> year, the participants' size of vocabulary knowledge seemed to recover and increase again, they still fell behind the 2<sup>nd</sup> year. Thus, it could be interpreted that the participants' size of vocabulary knowledge did not show a constant progress during their education. The 4<sup>th</sup> year students' size of vocabulary remained limited in comparison with the earlier grades.

To make sense of this interpretation and to check whether these slight differences in the participants' size of vocabulary knowledge are statistically significant,

One-way ANOVA analysis was performed on the overall mean scores of VLT as the dependent variable and the five different groups as the independent variable. The obtained findings are provided in the following Table 15:

Table 15

*The Results of One-way ANOVA on the Total Mean Scores of VLT*

	Sums of Square	df	Mean Square	F	Sig.
Between Groups	5210,729	4	1302,682	5,302	,000*
Within Groups	89923,599	366	245,693		
Total	95134,329	370			

\*significance level is .05

As Table 15 shows that the differences among the total mean scores of the five participant groups are statistically significant,  $F = 5,302$ ,  $P = ,000 < ,05$ . Thus, it could be claimed that the participants' vocabulary knowledge differed in terms of years. It implies that as their learning stages increase, their vocabulary knowledge differs. Till the 2<sup>nd</sup> year, their vocabulary knowledge showed a linear progress, yet at the 3<sup>rd</sup> and 4<sup>th</sup> year, it varied and regressed.

In order to define which group caused this significant difference, further analysis employed on the mean score. The results of Tukey HD post hoc test is given in Table 16:

Table 16

*The Results of Tukey HD on the Differences at VLT across the Five Participants Groups*

	1 <sup>st</sup> year first sem.	1 <sup>st</sup> year second sem.	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
1 <sup>st</sup> year first sem.	---*	,215	,000*	,006	,002
1 <sup>st</sup> year sec. sem.	---	---	,200	,650	,412
2 <sup>nd</sup> year	---	---	---	,911	,994
3 <sup>rd</sup> year	---	---	---	---	,993
4 <sup>th</sup> year	---	---	---	---	---

\* stands for the same value given for the other groups

The results of post hoc analysis showed that the 1<sup>st</sup> year first semester students and 2<sup>nd</sup> year students are the two groups caused the differences. Specifically, the mean scores of the 1<sup>st</sup> year first semester were lower than those of the other four groups while the 2<sup>nd</sup> year students had the highest scores. Thus, the participants' overall size of vocabulary knowledge differed significantly in terms of years, due to the low performance of the 1<sup>st</sup> year first semester students or higher performance of the 2<sup>nd</sup> year students.

To sum up, the findings related to the overall size of vocabulary knowledge indicated that there is a salient increase in the vocabulary size from the 1<sup>st</sup> year first semester to the 2<sup>nd</sup> year, yet a decrease occurred at the 3<sup>rd</sup> year and followed with a plateau at the 4<sup>th</sup> year. The increase in the size of vocabulary knowledge showed fluctuation.

In addition to the overall vocabulary size, the participants' size of general and academic vocabulary was examined in terms of frequency bands. In that way, it was attempted to address the sub- research questions of "What is Turkish ELT majors' size of general vocabulary knowledge?" and "What is Turkish ELT majors' size of academic vocabulary knowledge?". The findings of the frequency band analyses are presented below:

Table 17

*Descriptive Statistics of the Five Frequency Bands for all Groups of the Participants*

	1 <sup>st</sup> year first sem. (n=49)		1 <sup>st</sup> year second sem (n=70)		2 <sup>nd</sup> year (n=83)		3 <sup>rd</sup> year (n=89)		4 <sup>th</sup> year (n=80)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
2000	27,86	3,851	28,97	1,362	28,67	1,499	28,41	2,240	28,99	1,355
3000	23,37	5,207	24,16	3,783	26,20	3,181	25,57	4,282	25,41	3,733
AWL	24,71	5,362	26,91	3,082	27,90	3,055	26,96	3,766	27,40	2,791
5000	18,18	6,689	18,96	4,944	22,11	4,770	21,61	5,134	20,90	5,010
10000	5,04	3,565	6,34	4,946	5,93	4,355	6,21	4,358	7,10	4,408

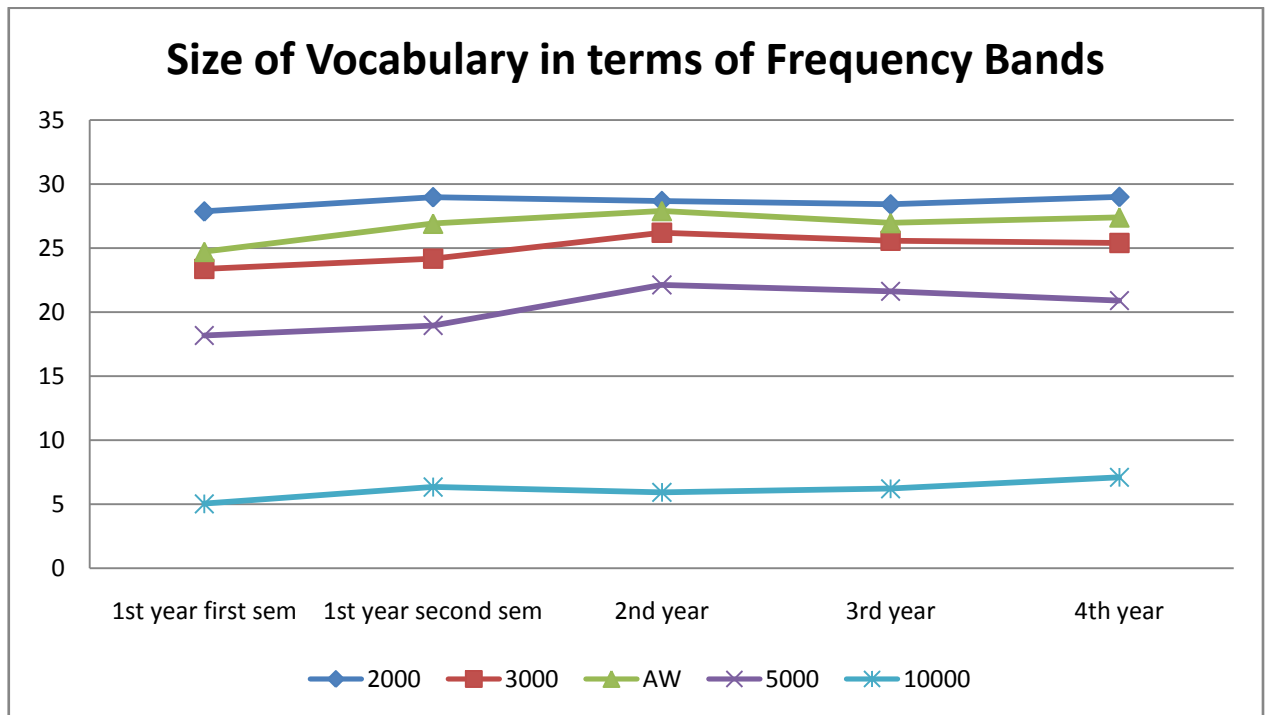


Figure 7: The Distribution of Size of Vocabulary in terms of Frequency Bands in VLT for all groups

As illustrated in Table 17 and Figure 7, the participants' size of vocabulary differed in terms of the frequency bands posed in the VLT. In detail; for 2000<sup>th</sup> words, which are labelled as the high frequent vocabulary, the 1<sup>st</sup> year first semester students received the



lowest mean ( $\bar{X} = 27, 86$ ) while the 4<sup>th</sup> year students got the highest score. It was followed with the 1<sup>st</sup> year mean ( $\bar{X} = 28, 97$ ), 2<sup>nd</sup> year mean ( $\bar{X} = 28, 67$ ) and 3<sup>rd</sup> year mean ( $\bar{X} = 28, 41$ ). Considering the maximum score (30) that can be taken from the each frequency section in the VLT, it can be interpreted that the participants knew almost all of the 2000<sup>th</sup> words in the test. Except the mean value of the 1<sup>st</sup> year first semester, other groups' mean values are almost in the same range, thus, it can be claimed that the students attending to the 1<sup>st</sup> to 4<sup>th</sup> years had the same range of size of 2000<sup>th</sup> vocabulary knowledge and they knew most of the high frequent words.

On the other hand, for 3000<sup>th</sup> words, the 2<sup>nd</sup> year students outperformed other groups ( $\bar{X} = 26, 20$ ), and again the 1<sup>st</sup> year first semester students got the lowest mean score ( $\bar{X} = 23, 37$ ). The 4<sup>th</sup> year students fell behind the 1<sup>st</sup> and 3<sup>rd</sup> year students.

For the size of academic vocabulary, the outperformance of the 2<sup>nd</sup> year students ( $\bar{X} = 27, 90$ ) was again observed and with slight difference it was followed by the 4<sup>th</sup> year students ( $\bar{X} = 27, 40$ ). With close values, the 3<sup>rd</sup> year ( $\bar{X} = 26, 96$ ) and the 1<sup>st</sup> year ( $\bar{X} = 26, 91$ ) students were in pursuit of these two groups. Among these groups, the 1<sup>st</sup> year first semester students were detected to know few academic words in the test.

Likewise, the distribution of the mean scores for 5000<sup>th</sup> words indicated that the 2<sup>nd</sup> year students recognized more words ( $\bar{X} = 22, 11$ ) and followed with the 3<sup>th</sup> year students ( $\bar{X} = 21, 61$ ). The performance of 4<sup>th</sup> year students at this low frequency word level ( $\bar{X} = 20, 90$ ) was less than the groups of 2<sup>nd</sup> and 3<sup>rd</sup> year. The mean values of the 1<sup>st</sup> year students, both the first and second semesters were close, but the 1<sup>st</sup> year first semester students got the lowest score ( $\bar{X} = 18, 18$ ). The findings on the 5000<sup>th</sup> frequency level indicated that the participants' size of vocabulary generally decreased for this level, but the 2<sup>nd</sup> year students still continued their outperformance for this level.

Lastly, for the 10000<sup>th</sup> frequency level that contains the lowest frequency words in the test, the findings pointed out that in comparison with the other frequency levels, the participants' size of vocabulary knowledge for this frequency level decreased sharply

regardless of the years. Among the groups, 4th year students received the highest mean value ( $\bar{X} = 7,10$ ) and followed with the 1st year second semester ( $\bar{X} = 6,34$ ), 3<sup>rd</sup> year ( $\bar{X} = 6,21$ ), and 2<sup>nd</sup> year ( $\bar{X} = 5,93$ ) students respectively. The lowest mean score was obtained by the 1<sup>st</sup> year first semester students ( $\bar{X} = 5,04$ ). The possible explanations can be that this frequency level (10000<sup>th</sup>) contains the words that can be hardly ever encountered in daily texts (Nation, 2001). Thus, the performance at this section of the text mostly depends on the students' success at guessing strategies and their interest in vocabulary learning (Schmitt 2000). In this respect, it can be claimed that the 4<sup>th</sup> year students used their vocabulary learning and guessing strategies effectively while the 1<sup>st</sup> year first semester fell behind other groups since they were not trained about these strategies yet. The variance among other classes could be interpreted as the results of individual differences and interests.

To further examine whether the differences at the five word levels are statistically significant, five one-way ANOVA analyses were employed with the mean scores of VLT in 2000<sup>th</sup>, 3000<sup>th</sup>, Academic Vocabulary, 5000<sup>th</sup> and 10000<sup>th</sup> frequency bands in terms of all five participant groups. Tukey HD test was also applied as post hoc analysis in order to make comparisons across the five groups to detect the source of significant difference. The results of one-way ANOVA on five word levels for all five participant groups and Tukey HD post hoc tests are presented in Table 18 and Table 19 in the following:

Table 18

*The results of One-way ANOVAs indicating the Differences of the Five Participant Groups for the Frequency Bands at VLT*

		Sums of Square	df	Mean Square	F	Sig.
	Between Groups	51,903	4	12,976	2,948	,020*
2000	Within Groups	1610,765	366	4,401		
	Total	1662,668	370			
	Between Groups	338,202	4	84,550	5,305	,000*
3000	Within Groups	5833,340	366	15,938		
	Total	6171,542	370			
	Between Groups	336,659	4	84,165	6,605	,000*
Academic	Within Groups	4663,735	366	12,742		
	Total	5000,394	370			
	Between Groups	761,203	4	190,301	6,963	,000*
5000	Within Groups	10002,678	366	27,330		
	Total	10763,881	370			
	Between Groups	138,201	4	34,550	1,491	,130
10000	Within Groups	7059,400	366	19,288		
	Total	7197,601	370			

\*significance level is .05

The findings of one-way ANOVA analyses, as given in Table 18 above, point out that there are significant differences among the five groups of participants regarding the mean scores on the four word levels. Specifically, for 2000<sup>th</sup> frequency level,  $P = ,020 < ,05$ , and for 3000<sup>th</sup>, Academic and 5000<sup>th</sup>,  $P = ,000 < ,05$ . These results implied that the participants' vocabulary size differed significantly at the 2000<sup>th</sup>, 3000<sup>th</sup>, Academic vocabulary and 5000<sup>th</sup> frequency bands in terms of years. However, for 10000<sup>th</sup>, it was

found that the differences at the mean values of the participant groups were not statistically significant since  $F=1,491$ ,  $P=,130>,05$ . Thus, it could be claimed that the five participant groups' size of vocabulary knowledge at 10000<sup>th</sup> level was the same, it did not differ in terms of years.

To detect which group(s) caused the differences for 2000<sup>th</sup>, 3000<sup>th</sup>, Academic, and 5000<sup>th</sup> word levels, Tukey HD post hoc test was employed:

Table 19

*The Results of Tukey HD post hoc test on the Differences of the Five Participant Groups for the Frequency Bands at VLT*

		1 <sup>st</sup> year first sem.	1 <sup>st</sup> year second sem.	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
2000	1 <sup>st</sup> year fist sem.	---	,037*	,196	,565	,026*
	1 <sup>st</sup> year second sem.	---	---	,907	,461	1
	2 <sup>nd</sup> year	---	---	---	,928	,876
	3 <sup>rd</sup> year	---	---	---	---	,393
	4 <sup>th</sup> year	---	---	---	---	---
3000	1 <sup>st</sup> year fist sem.	---	,826	,001*	,017*	,040*
	1 <sup>st</sup> year second sem.	---	---	,015	,175	,308
	2 <sup>nd</sup> year	---	---	---	,838	,712
	3 <sup>rd</sup> year	---	---	---	---	,999
	4 <sup>th</sup> year	---	---	---	---	---
Academic	1 <sup>st</sup> year fist sem.	---	,009*	,000*	,004*	,000*
	1 <sup>st</sup> year second sem.	---	---	,430	1	,921
	2 <sup>nd</sup> year	---	---	---	,410	,897
	3 <sup>rd</sup> year	---	---	---	---	,928
	4 <sup>th</sup> year	---	---	---	---	---
5000	1 <sup>st</sup> year fist sem.	---	,932	,000*	,002*	,036*
	1 <sup>st</sup> year second sem.	---	---	,002*	,014*	,157
	2 <sup>nd</sup> year	---	---	---	,970	,579
	3 <sup>rd</sup> year	---	---	---	---	,905
	4 <sup>th</sup> year	---	---	---	---	---

\*significance level is .05

The results of post hoc test indicated that again the outperformance of 2<sup>nd</sup> year students as well as low performance of 1<sup>st</sup> year first semester students caused the significant differences at the mean scores of frequency bands among groups.

Overall, the analyses on the scores of the VLT in terms of frequency bands indicated that the participants' sizes of high frequency and academic vocabulary were high in comparison to lower frequency words (3000<sup>th</sup>, 5000<sup>th</sup> and 10000<sup>th</sup>). The statistical analyses also showed that the participants' vocabulary knowledge differed significantly in terms of frequency bands. The participants knew more words that they encountered frequently; as the frequency of words decreases the participants' recognition regressed.

In addition to the effect of frequency, the effect of years for the frequency bands was also observed in the analyses. The participants' sizes of vocabulary knowledge for each frequency band differ in terms of years they attend. While there was a linear progress for high frequent word (i.e. 2000<sup>th</sup>) from the 1<sup>st</sup> year first semester to 4<sup>th</sup> year, the fluctuation in the size of low frequency words (i.e. 3000<sup>th</sup> and 5000<sup>th</sup>) as well as of academic words was detected. Similar to the overall size of vocabulary knowledge, a jump from the 1<sup>st</sup> year first semester to the 2<sup>nd</sup> year was seen for these low frequency and academic words. With slight differences in the mean values, the 2<sup>nd</sup> year students outperformed the 3<sup>rd</sup> and 4<sup>th</sup> year students. Thus, it could be claimed that the 2<sup>nd</sup> year group had larger size of low frequency and academic vocabulary in comparison to other groups. The increase in the size of vocabulary knowledge in terms of frequency bands up to the 2<sup>nd</sup> year somehow stopped and even regressed at the 3<sup>rd</sup> and 4<sup>th</sup> years. This finding implies that the students' exposure to low frequent and academic words continued growingly till the 2<sup>nd</sup> year but this exposure was somehow decreased or stopped at the 3<sup>rd</sup> year so the participants' size of low frequent and academic vocabulary decreased.

However, for the 10000<sup>th</sup> frequency bands, which covers the lowest frequency words, an instable distribution was observed; the 4<sup>th</sup> year group outperformed all groups but there was not a linear progress throughout years. While the 1<sup>st</sup> year first semester students got the lowest scores, the scores showed ups and downs for the groups at 1<sup>st</sup>,

2<sup>nd</sup> and 3<sup>rd</sup> years. This instability implies that guessing strategies were effective for this band and the 4<sup>th</sup> year students, who trained on these strategies through their education, scored best at this section.

As the first index of the lexical competence, the participants' sizes of vocabulary knowledge were analysed in terms of both overall knowledge and frequency bands. The results pointed out a varied distribution throughout the years. As well as years, the frequency of words was found as effective on the vocabulary size. To make sense of these findings and to interpret about the participants' lexical competence, the depth of vocabulary knowledge, which is adapted as the second index of lexical competence, was also investigated. The findings will be discussed in the following section.

#### 4.2.2. Depth of Vocabulary Knowledge

Depth of vocabulary knowledge, which refers to how well learners know the words, was examined through Word Association Test (Read, 2000a) in the present study. Through associational links (i.e. paradigmatic, syntagmatic and analytic associations) in the test, the quality of vocabulary knowledge was examined in terms of the years they attend. The findings obtained from the analysis of this test are given in the following Table 20 and illustrated in Figure 8.

Table 20

*Means and SDs of Word Association Test*

Word Association Test	N	Mean*	SD	Min	Max
1 <sup>st</sup> year first sem.	49	83,96	28,913	9	123
1 <sup>st</sup> year second sem.	70	117,39	8,672	100	132
2 <sup>nd</sup> year	83	117,76	9,611	101	137
3 <sup>rd</sup> year	89	118,36	11,011	100	140
4 <sup>th</sup> year	80	119,47	11,158	89	137
TOTAL	371	113,74	18,281	9	140

\*the mean values were taken out of 160 that is the maximum score of WA test

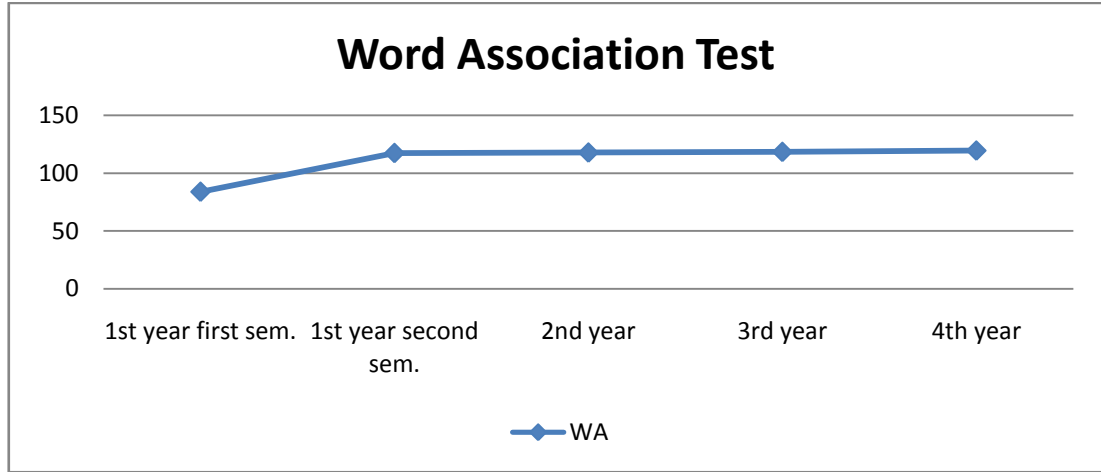


Figure 8: Development of Depth of Vocabulary Knowledge across the Five Groups

The descriptive data in Table 20 and the distribution illustrated in Figure 8 indicate that the 4<sup>th</sup> year students got the highest mean score ( $\bar{X} = 119,47$  out of 160) while 1<sup>st</sup> year first semester students had the lowest mean score of 83,96. Then, the 3<sup>rd</sup> year ( $\bar{X} = 118,36$ ) students followed this group and the 2<sup>nd</sup> year students ( $\bar{X} = 117,76$ ) and 1<sup>st</sup> year second semester ( $\bar{X} = 117,39$ ) came with very close mean scores afterwards. These findings implied that the participants' quality of vocabulary knowledge gradually developed throughout their education. Besides, the standard deviation values of the groups indicated that there were individual differences among the groups. Although these differences seemed to decrease from the 1<sup>st</sup> year first semester ( $SD = 83,960$ ) to 4<sup>th</sup> year ( $SD = 11,157$ ), this decline did not follow a gradually decreasing sequence throughout all years. It changed according to years. For instance, the 1<sup>st</sup> year second semester students had the lowest SD values (8,672).

On contrary to the fluctuation at the findings of the VLT, the findings of the WA showed more continuous flow as increasing from the 1<sup>st</sup> year first semester to the 4<sup>th</sup> year. This implies that the participants' quality of vocabulary knowledge or associational links, improved as the participants moved from lower learning stages to higher ones. Nevertheless, it should be emphasized that the development of the participants' depth of vocabulary knowledge was not so high; it ranged between 9 (as the minimum score) and 137 (as the maximum score) and considering the maximum

score of the test (160), this figure could be interpreted as the above average but not so high. In that point, it could be claimed that although the participants showed a kind of gradual linear development, their quality of vocabulary knowledge measured with the WA remained limited; not so salient increases, excepts from the 1<sup>st</sup> year first semester to the 1<sup>st</sup> year were observed.

To examine this developmental pattern, the mean scores of the WA test for all five groups were compared through one-way ANOVA analysis in terms of years. The obtained findings are presented in Table 21.

Table 21

*The Results of One-way ANOVA on the Differences at WA test*

	Sums of Square	df	Mean Square	F	Sig.
Between Groups	50259,510	4	12564,877	62,600	,000*
Within Groups	73392,129	366	200,525		
Total	123651,639	370			

\*significance level is .05

The results in Table 21 show that the five groups of participants differed significantly in terms of their depth of vocabulary knowledge since  $F=62,600$ ,  $P=,000 < ,05$ . This finding indicated that the participants' depth of vocabulary knowledge changed throughout their education. The slight differences in the mean scores were found as statistically significant. Tukey HD post hoc test was employed to the scores of five groups to detect which group(s) caused this difference. The results are given in Table 22 below.



Table 22

*The Results of Tukey HD on the Differences at WA test across the Five Participant Groups*

	1 <sup>st</sup> year first sem.	1 <sup>st</sup> year second sem.	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
1 <sup>st</sup> year first sem.	---	,000*	,000*	,000*	,000*
1 <sup>st</sup> year second sem.	---	---	1	,993	,896
2 <sup>nd</sup> year	---	---	---	,999	,938
3 <sup>rd</sup> year	---	---	---	---	,986
4 <sup>th</sup> year	---	---	---	---	---

\*significance level is .05

As indicated in Table 22, the 1<sup>st</sup> year first semester was the group that caused difference ( $P = ,000 < ,05$  in comparison with all years). In other words, considering the mean score of the 1<sup>st</sup> year first semester students, the low performance of this group at the test caused the significant difference.

Overall, the findings of Word Association test revealed a promising developmental pattern of quality of vocabulary knowledge throughout their university education. Starting from the very beginning of their education, the students gradually increased their associational links up to the 4<sup>th</sup> year. This finding implied that the participants tend to build associational links between words as their proficiency increases. Although this development is very slight in the means and the distribution of the means in terms of years (in Figure 8) seems like a plateau rather than sharp increasing progress, the scores implied that the participants became more aware of collocations and chunks when they came to the last year of their education in comparison with their early years.

These word association findings as well as the ones related to the vocabulary size provided insights about the participants' lexical competence. In the present study,

these indices are adapted as two receptive sub-dimensions of lexical competence in the tentative dimensional vocabulary knowledge framework. It was considered that each of these indices addresses to the certain components of vocabulary knowledge; the compilation of these indices, as the receptive aspects, could give the learners' competence in vocabulary. On this premise, the participants' overall lexical competence was examined through the reanalysis of these indices in the following section.

#### 4.2.3. Overall Picture of Lexical Competence

To probe the participants' overall general lexical competence, the findings related to the size and depth of vocabulary knowledge were reanalysed by adding up the total scores of the VLT and WA. The distribution of these statistics in terms of years is presented in Table 23, Figure 9.

Table 23

##### *Descriptive Statistics on the Participants' Lexical Competence*

<b>Lexical Competence</b>	<b>N</b>	<b>Mean*</b>	<b>SD</b>
1 <sup>st</sup> year first sem.	49	183,12	43,788
1 <sup>st</sup> year second sem.	70	222,73	21,155
2 <sup>nd</sup> year	83	228,58	21,146
3 <sup>rd</sup> year	89	227,12	21,701
4 <sup>th</sup> year	80	229,28	22,718
<b>TOTAL</b>	<b>371</b>	<b>221,27</b>	<b>29,677</b>

\*mean values were calculated out of 310 which is the maximum value of the addition of VLT (150) and WA (160)

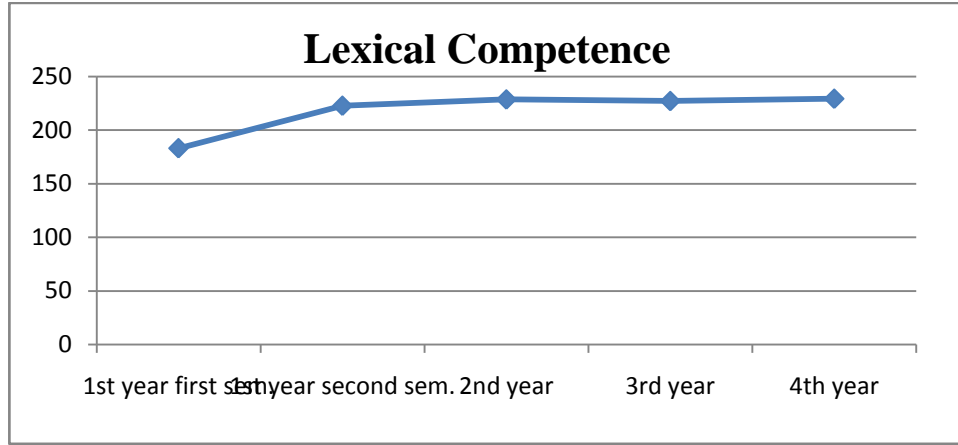


Figure 9: Distribution of the Participants' Lexical Competence

As illustrated in Table 23 and Figure 9, the participants in the study had high lexical competence considering the mean value of 221,27 out of 310. An increasing flow of lexical competence in Figure 9 also pointed out that the participants' competence was improved as they moved to higher learning stage since the 1<sup>st</sup> year firsts semester students got the lowest mean score ( $\bar{X} = 183,12$ ) while the 4<sup>th</sup> year students had the highest mean ( $\bar{X} = 229,28$ ). However, the difference between the 2<sup>nd</sup> and 3<sup>rd</sup> year drew attention as the 2<sup>nd</sup> year students had higher mean score ( $\bar{X} = 228,58$ ) than the 3<sup>rd</sup> year students ( $\bar{X} = 227,12$ ). The difference between these two groups is slight; nonetheless, this finding implied a kind of decrease in lexical competence at the 3<sup>rd</sup> year. Similar decrease at the 3<sup>rd</sup> year was also observed for the size and depth of vocabulary knowledge analysis separately. It could be claimed that the 3<sup>rd</sup> year students' competence in vocabulary in terms of size and depth was regressed to some extent. Yet, it was recovered and even culminated at the 4<sup>th</sup> year with the mean value of 229,27. In spite of a fluctuation with slight decrease, the distribution of lexical competence from the 1<sup>st</sup> year first semester to the 4<sup>th</sup> year implies a kind of progress through the higher education.

When the SD values were examined to learn more about the participants' lexical competence, it was seen that the individual differences at lexical competence decreased throughout university education. The 1<sup>st</sup> year first semester group had the highest SD values (43, 788) and then these values decreased through the years. The 4<sup>th</sup> year had

higher SD value (22,718) than other groups (i.e. 1<sup>st</sup> year second sem., 2<sup>nd</sup>, 3<sup>rd</sup>), this finding can be interpreted that the 1<sup>st</sup> year second semester, 2<sup>nd</sup> year and 3<sup>rd</sup> year students were more homogenous than the 1<sup>st</sup> year first semester and 4<sup>th</sup> year students.

To examine whether the differences at the mean values of lexical competence were significant or not, again one-way ANOVA was conducted comparing all five groups. The obtained findings are presented in the following.

Table 24

*The Results of One-way ANOVA on the Differences at Lexical Competence*

	Sums of Square	df	Mean Square	F	Sig.
Between Groups	84064,564	4	21016,141	31,811	,000*
Within Groups	241798,940	366	660,653		
Total	325863,504	370			

\*significance level is .05

As can be seen in Table 24, all five groups of participants were found to be different from each other in terms of lexical competence ( $F=31,811$ ,  $P=,000 < ,05$ ). This finding showed that the participants' lexical competence differed in terms of years they attend. Thus, it can be claimed that the participants' lexical competence changes as their learning stages progresses. The year that the participants attend was found as an influential factor on their lexical competence covering size and depth of vocabulary knowledge.

To further analyse which group caused this difference, Tukey HD test was applied accordingly;

Table 25

*The Results of Tukey HD on the Differences at Lexical Competence across the Five Participant Groups*

	1 <sup>st</sup> year first sem.	1 <sup>st</sup> year second sem.	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
1 <sup>st</sup> year first sem.	---	,000*	,000*	,000*	,000*
1 <sup>st</sup> year second sem.	---	---	,626	,822	,527
2 <sup>nd</sup> year	---	---	---	,996	1
3 <sup>rd</sup> year	---	---	---	---	,983
4 <sup>th</sup> year	---	---	---	---	---

\*significance level is .05

The 1<sup>st</sup> year first semester group was again obtained as the source of difference. Considering the mean value of their lexical competence, it can be stated that low performance of this group in comparison with others caused the significant difference at lexical competence. The sharp increase from the 1<sup>st</sup> year first semester to the 2<sup>nd</sup> year caused significant difference in the distribution of lexical competence in terms of the years.

As a result of the analyses of the participants' lexical competence in terms of size and depth of vocabulary knowledge as the sub-dimensions, it was observed that there was a sharp increase from the 1<sup>st</sup> year first semester to 2<sup>nd</sup> year. However, a decrease was also observed at 3<sup>rd</sup> year in comparison to 2<sup>nd</sup> year. Nonetheless, the performance of the 4<sup>th</sup> year was relatively better. Thus, it can be claimed that the participants' lexical competence tend to increase through their university education. A salient developmental pattern was observed from the 1<sup>st</sup> year first semester, however, the decrease at 3<sup>rd</sup> year was revealed as a challenging finding to be considered in terms of research setting specific factors.

After the analyses on the receptive dimensions overarched with the construct of lexical competence, the participants' performance while using general and academic vocabulary in an academic writing task was examined. The obtained findings of this investigation are presented in the following section.

### **4.3. Results on Lexical Performance**

Under the guidance of the research questions of “What is Turkish ELT majors' general lexical performance?” and “What is Turkish ELT majors' academic lexical performance?”, the proportions of vocabulary use and lexical diversity were taken under investigation. In the tentative dimensional framework, these two productive indices were adapted as the sub-dimensions of the second pillar, lexical performance. In that way, it was aimed to examine the participants' lexical performance and to track its development across the all five groups. The first sub-dimension, lexical use, was determined through the students' lexical frequency profiles and the second on, lexical diversity, was analysed with type-token ratio calculations. Compiling the results of these two performance sub-dimensions, the students' lexical performance and its development as well as the interrelationship with the lexical competence are discussed in the following sections respectively.

#### **4.3.1. Use of General and Academic Vocabulary**

As the first sub-dimension of lexical performance of the participants, the proportions of the first 2000 high frequent vocabulary, academic vocabulary and off-list vocabulary use, were examined through Vocabprofile. In data analysis, after all essays were submitted to the Vocabprofile program, the mean values for lexical frequency profile of each participant were noted down and an overall mean values for each year were calculated. The obtained findings are presented in Table 26 in the following.

Table 26

*Descriptive Statistics for Lexical Use of all Groups of the Participants*

	1 <sup>st</sup> year first sem. (n=49)		1 <sup>st</sup> year sec. sem. (n=70)		2 <sup>nd</sup> year (n=83)		3 <sup>rd</sup> year (n=89)		4 <sup>th</sup> year (n=80)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
K1_K2	87,30	29,797	95,18	1,788	95,10	2,534	94,65	2,184	94,93	2,137
ESSAY_AW	1,50	1,181	2,79	1,131	3,27	1,879	3,68	1,710	3,73	1,646
OFF_LIST	,86	,786	2,09	1,165	1,44	1,212	1,79	1,161	1,67	1,245

When the mean and standard deviation values in Table 26 were examined, it can be roughly stated that there is an almost gradual increase in the use of all vocabulary types across the years. There was an overwhelming use of high frequent vocabulary in the essays, nonetheless the increase in academic and off-list vocabulary was observed, yet in very small proportion.

Considering that each vocabulary type under investigation has special characteristics in use and it is not realistic to expect the use all these vocabulary types at the same and/or equal proportions, the proportions and development of lexical use for each type are discussed within itself across all participants.

To visualize the findings, the figures illustrating the developmental pattern of use of each vocabulary type are provided respectively. Firstly, the participants' use of high frequent vocabulary (i.e. K1\_K2) is illustrated in Figure 10:

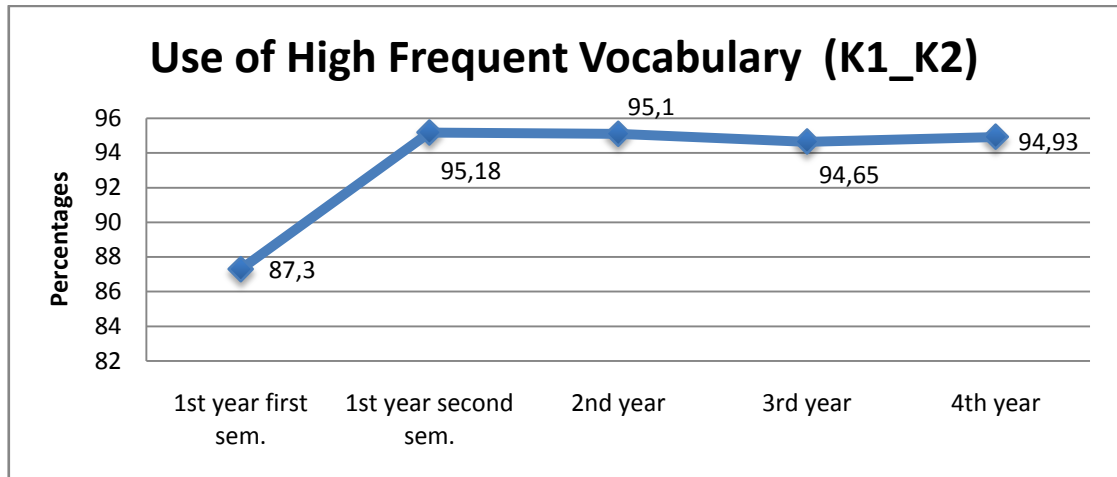


Figure 10: Development of Use of High Frequent Words in the Essays across Five Participant Groups

The line graph in Figure 10 and mean values in Table 26 indicate that there was again a big jump in the use of high frequent words from the 1<sup>st</sup> year first semester ( $\bar{X} = 87,30$ ) to 1<sup>st</sup> year second semester ( $\bar{X} = 95,18$ ). This finding implies that as the participants engaged in the courses and got exposed and used the language, their productive vocabulary increased. Put differently, it could be claimed that the participants learned how to write at the second semester at their course on academic writing and they might be enthusiastic about writing on the strength of their fresh knowledge, thus they produced vocabulary more easily. This finding sounds meaningful considering that the 1<sup>st</sup> year second semester students outperformed other groups.

After the 1<sup>st</sup> year second semester, there was a fluctuation both increasing and decreasing with slight differences. While the 2<sup>nd</sup> year students followed the 1<sup>st</sup> year second semester students with 95,10 mean values, a decline at 3<sup>rd</sup> year students was observed ( $\bar{X} = 94,65$ ), then with a slight increase the 4<sup>th</sup> year students came ( $\bar{X} = 94,93$ ). These findings showed consistency with the ones on lexical competence. Thus, it can be stated that the decline at the 3<sup>rd</sup> year implies more specific reasons that are directly related to the dynamics of this group and the academic load of the courses. Apart from the slight decline at the 3<sup>rd</sup> year, it was observed that the participants could



not sustain the increase in the use of vocabulary but they produced more or less the same amount of vocabulary in spite of their increasing learning stages.

To examine the other research focus of the study, academic lexical performance, the participants' academic lexical frequency profiles were examined. The illustration regarding this is given in Figure 11:

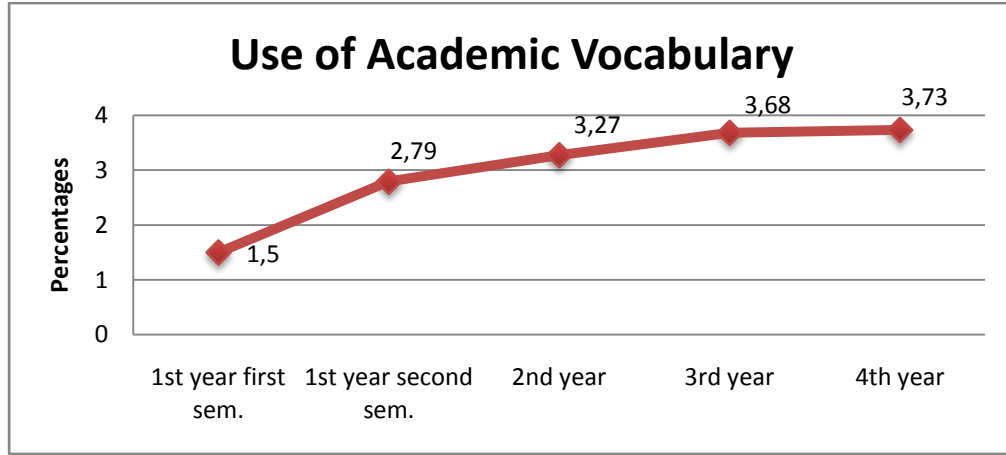


Figure 11: Development of Academic Vocabulary Use across Five Participant Groups

The results in Table 26 and Figure 11 are more promising with regards to progress in comparison with the use of high frequent words since there was a constant increase in the use of academic vocabulary across the years. Starting from the very low proportion at the 1<sup>st</sup> year first semester ( $\bar{X} = 1,50$ ), it increased incrementally at 1<sup>st</sup> year second semester ( $\bar{X} = 2,79$ ), 2<sup>nd</sup> year ( $\bar{X} = 3,27$ ), 3<sup>rd</sup> year ( $\bar{X} = 3,68$ ) respectively and received the peak at the 4<sup>th</sup> year with 3,73.

Thus, it can be claimed that the participants tend to improve their productive abilities for academic vocabulary. Additionally, the increase in the productive academic vocabulary might be interpreted as the reflection of the language improvement and academic vocabulary knowledge. Throughout their education and changing courses contents and the amount of exposure to the vocabulary, their performance in using academic vocabulary tend to develop incrementally across the years and reached the top

at the 4<sup>th</sup> year but their general lexical performance seem to remain almost the same after certain rate (95, 18 – 94, 93).

On the other hand, a more challenging picture appeared as a result of the analysis on the use of off-list words in the essays.

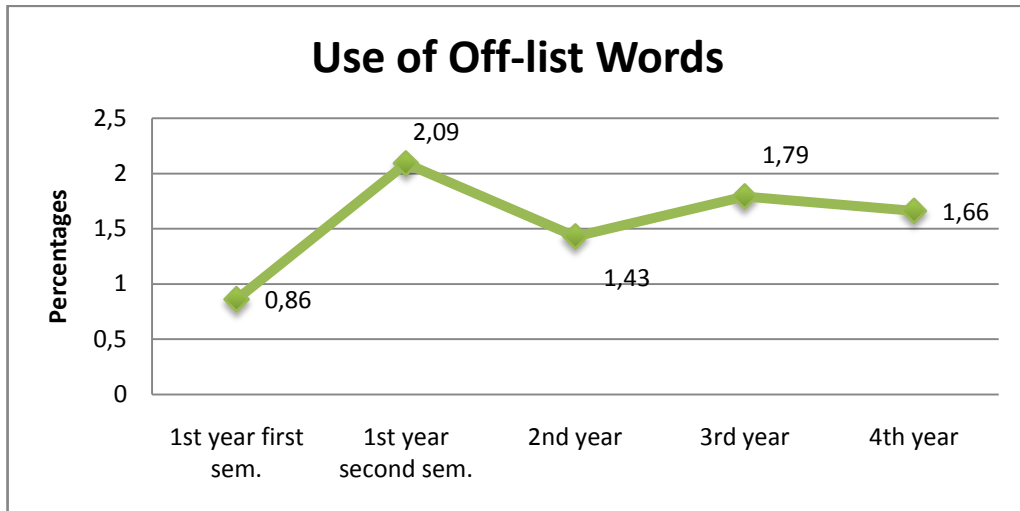


Figure 12: Development of Use of Off-list Words across Five Participant Groups

Table 26 and Figure 12 indicate that there is a similar jump at the 1<sup>st</sup> year second semester ( $\bar{X} = 0,86$ ) to the 1<sup>st</sup> year second semester ( $\bar{X} = 2,09$ ). Then a sharp decline occurred at the 2<sup>nd</sup> year ( $\bar{X} = 1,44$ ). Afterwards, a gradual but slight increase was observed at 3<sup>rd</sup> year ( $\bar{X} = 1,79$ ) and 4<sup>th</sup> year ( $\bar{X} = 1,67$ ). To make sense of these findings, it should be emphasized the off-list category at the Vocabprofile contain the low frequent vocabulary as well as jargons which are the words specific to discipline (Laufer & Nation, 1995; Horst & Cobb, 2004). In this sense, it could be interpreted that the 1<sup>st</sup> year second semester outperformed the other groups since they were more enthusiastic to explain their arguments with the jargons and more complex words that they studied more in their academic writing courses or they had just learned in their courses. However, starting from the 2<sup>nd</sup> year the students mostly relied on high frequency words and seldom used academic vocabulary, which is expected as the case of avoidance (Laufer, 1999) in literature. They might be unsure about the use of some

low-frequent words and they preferred to use the vocabulary that they were mostly exposed to.

The analyses on the proportions of the use of different vocabulary categories indicated that there were differences among the years. The proportions increased and/or decreased at some years. To determine whether these differences at the mean values for each vocabulary category are statistically significant or not, one-way ANOVA was employed. The results of within and between groups comparisons are given in Table 27 in the following:

Table 27

*The results of One-way ANOVAs indicating the Differences of the Five Participant Groups for Lexical Use in Essays*

		Sums of Square	df	Mean Square	F	Sig.
K1_K2	Between Groups	2498,427	4	624,607	5,179	,000*
	Within Groups	44144,380	366	120,613		
	Total	46642,807	370			
ESSAY_AW	Between Groups	196,413	4	49,103	19,617	,000*
	Within Groups	916,147	366	2,503		
	Total	1112,560	370			
OFF_LIST	Between Groups	49,627	4	12,407	9,369	,000*
	Within Groups	484,683	366	1,324		
	Total	534,310	370			

\*significance level is .05

The results of one-way ANOVA indicated that there were significant differences on each vocabulary category across five participant group ( $P=,000$ ). This finding showed that the lexical use of the vocabulary categories under focus differed in terms of the years the participants attend. As a result of their instruction or exposure to these vocabulary categories at that year, the proportion of the lexical use differed. Additionally, the group dynamics which cover the individual differences, some affective factors such as interest and enthusiasm could be an influential factor for this significant difference.

To detect which groups' performance caused this significant difference, Tukey HD post hoc test was employed again. The findings are presented in Table 28.

Table 28

*The Results of Tukey HD post hoc test on the Differences of the Five Participant Groups for Lexical Use in Essays*

	1 <sup>st</sup> year first sem.	1 <sup>st</sup> year second sem.	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
1 <sup>st</sup> year first sem.	---	,000*	,000*	,000*	,000*
1 <sup>st</sup> year second sem.	---	---	1	,993	,896
2 <sup>nd</sup> year	---	---	---	,999	,938
3 <sup>rd</sup> year	---	---	---	---	,986
4 <sup>th</sup> year	---	---	---	---	---

\*significance level is .05

Similar to the other results of Tukey test analyses, the 1<sup>st</sup> year first semester was found as the source of difference. The low performance of this group at the lexical use of all vocabulary categories under investigation caused the difference. Increasing from the 1<sup>st</sup> year first semester, the participants' lexical use differed throughout their university education.

In addition to the statistical analyses on the participants' lexical use of different vocabulary in their essays, the most frequently used words under each category were examined. In that way, it was attempted to reveal the participants' tendencies for lexical use and to extract the potential words that constitute the participants' lexicon. Besides, such analyses could provide more comprehensive picture of Turkish ELT majors' lexical performance.

Examining the lexical profile outputs of each participant gain and using the keyword function of Wordsmith tools, the most frequently used high frequent, academic and low-frequent (off-list) words were determined for each group. The words were listed in terms of frequencies of occurrences in the essay for each year in the following tables. Five words from each category for each year were determined. While selecting these words, the first five was selected at each category and for the words with same proportions; the one at the top was given. The list of these most frequently used words in the essays and frequencies are presented in Table 29.

Table 29

*Most Frequently Used High Frequent Words*

	1 <sup>st</sup> year first sem.	1 <sup>st</sup> year second sem.	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
High Frequent Words (K1_K2)	Easily (47) Age (38) Teach (27) Know (25) Advantage (16)	People (43) Important (41) Education (39) Easily (37) Speak (32)	People (47) Age (46) Think (45) Time (32) Teach (31)	Think (34) Important (31) Native (27) Easily (22) Teach (21)	Early (58) Develop (45) Know (38) Critical (35) Think (34)
Academic Words	Culture (15) Finally (11) Communicate (6) Job (6) Capacity (3)	Job (21) Culture (13) Process (13) Capacity (11) Appropriate (6)	Process (14) Conclusion (13) Adults (10) Capacity (9) Appropriate (7)	Period (21) Acquire (10) Process (10) Environment (8) Expose (7)	Period (47) Process (14) Expose (13) Environment (12) Target (10)
Off-list words (i.e. low frequent 3000 <sup>th</sup> - 10.000 <sup>th</sup> and jargons)	Classroom (12) Difficulty (6) Assimilation (3) Cognitive (3) Graduate (3)	Tongue (28) Fluently (17) Difficulty (14) Vocabulary (13) Enthusiasm (8)	Tongue (19) Grammar (6) Linguistic (4) Pronunciation (4) Competency (3)	Grammar (16) Pronunciation (13) Fluency (10) Cognitively (4) Bilingual (3)	Tongue (16) Pronunciation (13) Difficulty (8) Vocabulary (6) Fluently (6)

As a result of analysis on the most frequent words, it was observed that the participants in all classes used the word of *language*, which is among the high frequent word families. It was followed with *learn, foreign, children, begin*. However, these words are in the prompt of the writing task and most of the participants preferred to start their essays by repeating the prompt, which is “Do you agree or disagree with the following statement? Children should begin learning a foreign language as soon as they start school. Use specific reasons and examples to support your position.” Considering that these words are already given to them and their uses could not reflect their own productive knowledge, these words were extracted from the analysis of the most frequent words.

Other most frequent uses in the essays were the function words (pronouns, determiners etc.), as can be expected. When the proportions of other words were analysed and grouped under each word category (in Table 26), it was seen that for high frequent words, almost the same words were used by all participant groups in spite of changing orders. Among these words, the common ones are *easily, age, people, think* and *teach*. Different from these words, the 4<sup>th</sup> year students used the words of *critical* and *develop* most frequently. Besides, the 3<sup>rd</sup> year students used the words of *native*. These findings imply that these students tried to explain their arguments about the prompt on language teaching referring to their background theoretical knowledge. These words are commonly used while explaining the critical period of language learning. This interpretation can be supported with the findings on the most frequent off-list words, which cover jargons and/or low-frequent words. Thus, it can be interpreted that as the participants’ content knowledge increases throughout their education, they prefer to explain the same prompt with more field specific words.

Regarding the most frequent academic words, it draws attention that the frequencies of the word uses increased as their learning stages enhanced. This finding is also consistent with the distribution of academic words Vocabprofile (in Figure 11). In parallel with the increasing proportion of academic vocabulary use, the 4<sup>th</sup> year students used the academic words in the frequency ranged from 47 to 10 whereas the other groups had maximum 13 and minimum 3 frequencies of occurrences. Another important point is that all used academic words are again field-specific. Considering

that the writing prompt is directly related to the language teaching field, this finding is not surprising, in fact should be expected. Nonetheless, this finding sounds important as approving the applicability of the AWL for the field of ELT.

In the same vein, the most frequently used off-list words are mostly field-specific. Especially, the high uses of the words of *grammar*, *pronunciation*, *vocabulary* and *fluency* indicate that the participants' knowledge of low-frequent words mostly consists of field-specific words. This finding can be interpreted as the revealing need for a field-specific word list for ELT that could help students study the related materials better.

As a result of the analysis on the most frequent words, it can be stated that the preferences of vocabulary uses show the characteristics of the year of the instruction. Although depending on the writing prompt, almost similar words were used, the occurrence frequencies of these words could differ in terms of years. The common point revealed from the analyses of all vocabulary categories is that the participants used the field-specific words, either high, low frequent or academic, to explain their arguments. This finding could be interpreted considering their increased subject-matter knowledge.

These word analyses could provide a ground for the exploration on the lexical diversity, which is based on the ratio of distinct and running words. Thus, in order to see how diverse the participants used the words in their writings, the essays were analysed in terms of type and token ratio and the results are presented in the following section.

#### **4.3.2. Lexical Diversity of Participants' Essays**

In order to probe the participants' lexical performance in-depth, the lexical diversity was adapted as the additional complementary indicator. Therefore, the essays were reanalysed through wordlist function of the wordsmith tools. In that way, the distributions of the tokens (i.e. running words in the text) and types (i.e. distinct words) were obtained as well as the frequencies related to the mean word length and 1-15 letter words. The obtained findings are presented in Table 30 and illustrated in Figure 13 in the following:



Table 30

*Lexical Diversity of the Participants in terms of the Years*

Lexical Diversity	1 <sup>st</sup> year first sem	1 <sup>st</sup> year second sem	2 <sup>nd</sup> year	3th year	4 <sup>th</sup> year
Text	50	50	50	50	50
Token (running words) in text	6,956	11,278	11,207	11,705	11,467
Types (distinct words)	514	1,081	1,077	1,275	1,174
<b>Type/token ratio (TTR)</b>	<b>7.40</b>	<b>9.62</b>	<b>9.83</b>	<b>10.93</b>	<b>10.31</b>
Mean word length (in characters)	4.73	4.77	4.61	4.66	4.60
mean in words	15.43	14.78	15.51	16.43	16.57
SD	7.69	7.41	8.26	8.53	8.22
1-letter words	338	496	592	573	606
2-letter words	1,131	1,916	2,068	1,975	2,112
3-letter words	1,000	1,719	1,685	1,930	1,773
4-letter words	1,190	1,972	1,839	1,971	1,911
5-letter words	936	1,298	1,257	1,459	1,380
6-letter words	572	900	869	931	922
7-letter words	621	884	895	877	896
8-letter words	803	1,277	1,139	1,276	1,236
9-letter words	148	381	349	346	290
10-letter words	109	223	166	173	155
11-letter words	68	136	100	120	112
12-letter words	12	27	21	18	27
13-letter words	22	42	36	43	41
14-letter words	3	4	6	7	5
15-letter words	3	-	1	4	-

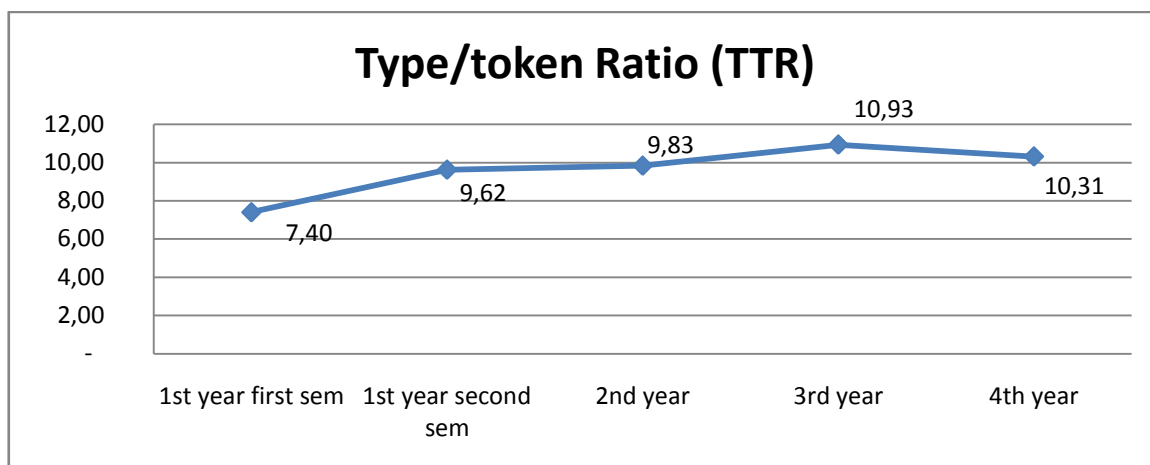


Figure 13: Development of Type/Token Ratio across the Years

For the analysis of lexical diversity, 50 essays from each participant group were selected to make the comparisons effectively. Considering the critics on the type/token ratio analysis about its sensitivity to the length of the essays, it was ensured that each essay was 200 word-lengths. After analysing these essays, as shown in Table 30, the standardized type/token ratios (TTR), which describe the lexical diversity of the essays, differed in terms of the years. The 1<sup>st</sup> year first semester students had lowest lexical diversity in their essays with 7.40 TTR. As observed in the previous findings, there was again a sharp increase at the 1<sup>st</sup> year second semester and 2<sup>nd</sup> year, which got 9.62 and 9.83 TTRs respectively. The 3<sup>rd</sup> year and 4<sup>th</sup> year students outperformed these three groups with 10.93 and 10.31 TTRs. These findings show that the 3<sup>rd</sup> and 4<sup>th</sup> year students' essays were lexically more diverse than the 1<sup>st</sup> first and second semester and 2<sup>nd</sup> year students. Especially, the 3<sup>rd</sup> year students had the highest TTRs, which show that this group used more distinct words but other groups, particularly the 1<sup>st</sup> year first semester students, had more word repetitions. To make sense of these findings, the values for tokens and types in all groups could be examined. Accordingly, the 1<sup>st</sup> year first semester students got the lowest amounts of token (6, 956) and types (514) in their essay, which shows that they tried to explain their arguments with fewer words but mostly repeated words. This finding is consistent with the 1<sup>st</sup> year first semester students' proportions of productive vocabulary types in Vocabprofile analysis. That is, this group showed the lowest performance in high frequent vocabulary use (see Figure 10), academic vocabulary (see Figure 11) and off-list words (see Figure 12). In parallel

with the increase of the proportion of lexical uses in their writing, their lexical diversity got enhanced in terms of tokens and types.

However, the highest performance of the 3<sup>rd</sup> year students for lexical diversity seemed striking because the 3<sup>rd</sup> year students were observed with a kind of decreasing lexical competence and performance, particularly in the use of high frequent words. Yet, when this group's performance in the use of academic words and off-list words was re-examined, it could be seen that the 3<sup>rd</sup> year students had a gradual development in these categories and even for the use of off-list words (see Figure 12), which involve the jargons and low-frequent words, this group outperformed the 2<sup>nd</sup> and 4<sup>th</sup> year, which had the highest performance in other categories. Thus, it can be stated that the 3<sup>rd</sup> year students' performance in using off-list words in their essays triggered the ratio of the running (11,705) and distinct words (1,275) and thus it made their essays more diverse than other groups.

Furthermore, when the findings related to the word-length were examined, a challenging picture revealed. The mean word length values did not flow incrementally; the length of words showed difference in terms of the years. The mean word length values indicated that the 1<sup>st</sup> year second semester used the longer words (4.77) but the 3<sup>rd</sup> (4.66) and 1<sup>st</sup> year first semester (4.73) students preferred shorter and may be simpler words.

The matrix giving the frequencies of the 1-to-15 letter words in Table 30 showed that all groups used 1-to-5 letter words more excessively but for the longer words, which are mostly more complicated, the frequencies decreased. When the examples of 1-to-5 letter words in the participants' essays were examined, it was seen that they were mostly function words involving determiners, pronouns etc. The words such as *a, an, the, this, that, they, I* are some of the most common function words in the essays. In that point, it could be stated that the excessive use of 1-to-5 letter words is expectable since these are mostly function words that the participants should use to explain their arguments. The frequencies of these words across the years indicated that the use of these words increased throughout their education and the 4<sup>th</sup> year students tend to use function words more.

The frequencies for the rest of the words, 6-to-15 letter words, are relatively lower than 1-to-5 letter words. Yet, only for the 8-letter words, the frequencies increased. As an example of these words, *language* could be given. This word was detected as the most frequently used word in the participants' essays. It was given in the writing prompt also it is an essential word to explain the argument for language learning and teaching. Thus, it could be stated that the excessive use of the word of *language* might cause the increase in the frequencies of 8 letter words.

The frequencies of the 6-to-15 letter words showed fluctuation in terms of years. Depending on the participants' lexical repertoire and the content of the messages they wanted to give in the essays, the ratios of the words seemed to change. However, the 1<sup>st</sup> second semester students' outperformance deserves attention considering their limited performance at other vocabulary knowledge dimensions so far. However, when their outperformance at the use of off-list word (see Figure 12) was taken into account, it can be claimed that their lexical repertoire with differing letter-long words appeared to be higher than other groups owing to their performance at the off-list words. With new content lessons at the second semester of the 1<sup>st</sup> year, they encountered and used new jargons and new words, with an enthusiasm they tried to use and vary these words. Rather than shorter words that they already knew, they might prefer to use longer ones. Additionally, as mentioned before, the low-frequent words in the off-list category are mostly field-specific and they are longer such as *enthusiasm*, *comprehension*, *pronunciation* so their outperformance at the off-list yielded their excessive use of longer words.

Overall, the analysis on the lexical diversity of the participants showed that as their proficiency increased across the years, their lexical diversity also enhanced. However, depending on their performance in the use of vocabulary types, namely high, low frequent and academic words, their lexical diversity changes. Thus, the findings related to the lexical diversity are consistent with the analysis of Vocabprofile (i.e. LFP). This clearly shows that lexical use and lexical diversity could be adapted as the two sub-dimensions of lexical performance. Lexical diversity can be adapted as a complementary indicator of lexical performance. In this regard, the participants' overall

lexical performance will be discussed referring to these interrelated sub-dimensions in the following.

### 4.3.3. Overall Picture of Lexical Performance

In line with the sub-research questions of “What is Turkish ELT majors’ general lexical performance?” and “What is Turkish ELT majors’ academic lexical performance?”, the participants’ lexical use and diversity were examined as the two complementary sub-dimensions of lexical performance. The overall analyses indicated that the participants’ lexical performance differed according to the years and it showed the characteristics of vocabulary types and participant groups. That is, after the 1<sup>st</sup> year first semester, a sharp rise in the participants’ both lexical use and lexical diversity were observed. This can be interpreted that along with the content lessons and intensive exposure at the lessons, the participants’ use of high, low and academic vocabulary use as well as diversity of their writings increased. This effect could be clearly monitored at the constant flow of academic vocabulary use throughout their education (see Figure 11). However, as seen in the development of high frequent vocabulary use (see Figure 10), the participants’ lexical performance hesitated after the early years and constituted a kind of a plateau, even regressed (as for the 3<sup>rd</sup> year in Figure 10). At this point, it could be claimed that after the participants’ lexical performance reached at a certain range as a result of exposure or instruction, they used more or less the same amount of high frequent vocabulary. This may be a result of limited exposure and/or opportunity to use these words or the participants’ reluctance to use vocabulary.

Regarding the participants’ use of off-list words, which contain jargons and low frequent words (3000<sup>th</sup>-10000<sup>th</sup>), a different picture was revealed. Considering the fluctuations in using these words throughout the years (see Figure 12), it could be claimed that rather than certain effect of the instruction year, the effect of exposure and frequency of using these words influenced the proportions. For instance, the 1<sup>st</sup> year second semester students and 3<sup>rd</sup> year students were detected as the two groups who used the off-list words more. As the corpus analysis on the most frequently used words showed that these off-list words mostly cover the field-specific words, jargons. It could be speculated that the participants at the 1<sup>st</sup> year second semester got introduced many

field-specific low frequent words at their courses such as Pronunciation II, Autonomous Learning as well as other language skill courses, which cover some basic theoretical information about language learning and teaching more. Also, in their courses; Academic Writing and Reporting, they began to write essays so they practiced the use of these words more. The same exposure was valid for the 3<sup>rd</sup> year in which the participants dealt with ELT methodology courses and wrote well-structured essays. Thus, it could be claimed that the use of such low frequent words increased when the learners had chance to use or when the students were asked to practice more.

In parallel with the findings on the lexical use of different vocabulary types, the lexical diversity analyses showed that the participants started to use more different words as their learning stages increase. That is, the 1<sup>st</sup> year first semester and second semester students preferred to repeat the same words in their essays but starting at the 2<sup>nd</sup> year, the participants diversified the words, which showed their increasing lexical repertoire. The values related to TTR and distinct words also showed consistency with the findings on the lexical use; that is, the outperformance of the 3<sup>rd</sup> year at the use of off-list resulted in their better lexical diversity, with highest TTR and distinct words. As they used the low-frequent field-specific words in their essays instead of repeating the same words, their essays became more diverse.

Another important point revealed from the analyses of lexical performance is that there was coherence between the results of lexical competence and performance. In other words, the participants who had low lexical competence in terms of size and depth were found to have low lexical performance in terms of the proportions and diversity. For instance, the sharp jump from the 1<sup>st</sup> year first semester to 2<sup>nd</sup> year was observed for both lexical competence and performance. Additionally, the 3<sup>rd</sup> years decreasing profile at overall vocabulary size (see Figure 6 and 7) was also detected for their use of high frequent words. Similarly, the increasing profile of the participants' academic lexical competence according to their recognition of academic words (in Figure 7) was also observed for their use academic words in their essays (in Figure 11). These findings can be interpreted as the validation of tentative dimensional framework proposed in the present study for the general and academic vocabulary. To ensure such validation, a correlation analysis was employed on all measures. However, before this analysis, the

findings referring to the last pillar of the framework, which stands for academic lexical competence and performance, are discussed in the following section to complement the results about the participants' academic vocabulary knowledge.

#### 4.4. Further Analysis on Academic Lexical Competence and Performance

In addition to the findings about the participants' size of academic vocabulary, which was obtained from the scores from Academic Vocabulary section of the VLT, and the proportion of the academic vocabulary use in the essays (as a result of Vocabprofile), the scores of Test of Academic Vocabulary were analysed. By means of this analysis and under the guidance of the research question of "What is Turkish ELT majors' academic vocabulary knowledge in terms of receptive and productive dimensions?", it was attempted to examine the participants' academic vocabulary knowledge in more detail covering both competence and performance dimensions. The obtained findings related to the mean scores and SD values as well as maximum and minimum scores across the five participant groups are presented in Table 31 and illustrated in Figure 14.

Table 31

*Descriptive Statistics of Test of Academic Vocabulary*

<b>Test of Academic Vocabulary</b>	<b>N</b>	<b>Mean*</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
1 <sup>st</sup> year first sem.	49	18,71	11,498	0	54
1 <sup>st</sup> year second sem.	70	34,06	9,570	15	53
2 <sup>nd</sup> year	83	34,76	6,402	18	55
3 <sup>rd</sup> year	89	35,12	5,703	20	54
4 <sup>th</sup> year	80	36,69	8,881	20	54
TOTAL	371	33,01	9,992	0	55

\*The mean score is calculated out of 60 as the maximum score of TAV

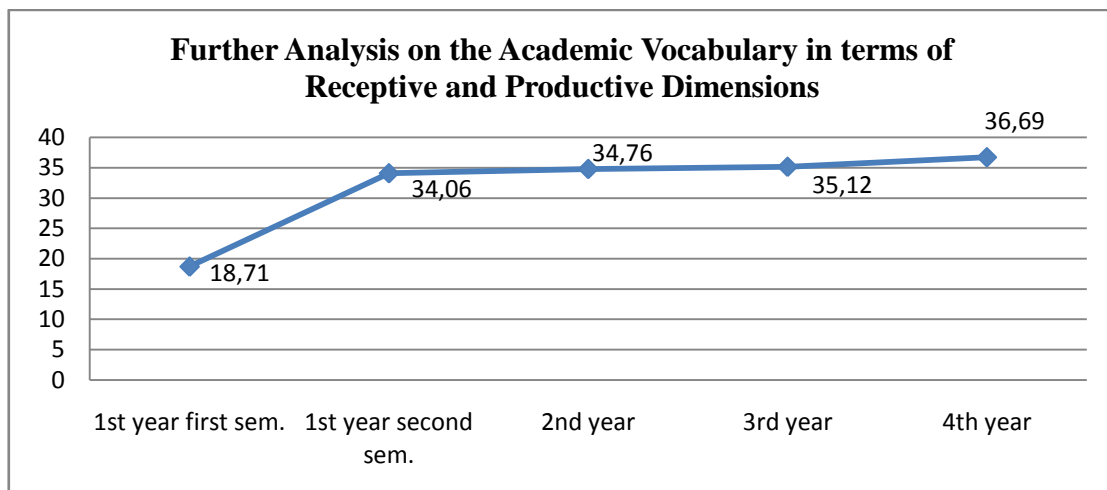


Figure 14: Development of Academic Vocabulary in terms of Receptive and Productive Dimensions across the years

Table 31 and Figure 14 indicate a consistent profile with other findings; there was a gradual increase at the participants' academic vocabulary. The 1<sup>st</sup> year first semester students got the lowest score ( $\bar{X} = 18,71$ ), after a sharp increase, it was followed with 1<sup>st</sup> year second semester students ( $\bar{X} = 34,05$ ). Then, a plateau at the participants' vocabulary knowledge was observed at 2<sup>nd</sup> and 3<sup>rd</sup> year with quite close mean values. At the 4<sup>th</sup> year, a slight increase at the participants' academic vocabulary knowledge was seen. These findings implied that the university education increased the participants' academic vocabulary knowledge receptively and productively. Particularly the increase at the 1<sup>st</sup> year first semester indicated that the exposure to academic vocabulary yielded enhancement at academic vocabulary knowledge. However, the plateau at 2<sup>nd</sup> and 3<sup>rd</sup> years as well as slight increase at 4<sup>th</sup> year implied that the participants' academic vocabulary knowledge remained more or less the same throughout their education.

For further analysis on these findings, one-way ANOVA was conducted. The findings on between and within group comparisons are given in Table 32 below:



Table 32

*The Results of One-way ANOVA on the Differences at Test of Academic Vocabulary (TAV)*

	Sums of Square	df	Mean Square	F	Sig.
Between Groups	11824,177	4	2956,044	43,070	,000
Within Groups	25119,780	366	68,633		
Total	36943,957	370			

\*significance level is .05

The results of one-way ANOVA given in Table 29 also supported that the participants' academic vocabulary knowledge differed in terms of the years they attend, since it was found that the differences were statistically significant ( $F=43,070$ ,  $P=,000 < ,05$ ). In other words, the years of instruction influenced the participants' academic vocabulary. Although the differences seemed slight, except for the 1<sup>st</sup> year first semester, the differences were statistically significant.

To make sense of these findings, Tukey HD test was conducted. In this way, which group(s) caused this difference was examined:

Table 33

*The Results of Tukey HD on the Differences at TAV across the Five Participants Groups*

	1 <sup>st</sup> year first sem.	1 <sup>st</sup> year sec. sem.	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
1 <sup>st</sup> year first sem.	---	,000*	,000*	,000*	,000*
1 <sup>st</sup> year sec.sem.	---	---	,985	,929	,298
2 <sup>nd</sup> year	---	---	---	,998	,572
3 <sup>rd</sup> year	---	---	---	---	,737
4 <sup>th</sup> year	---	---	---	---	---

\*significance level is .05

The matrix of the results obtained from Tukey HD revealed a similar table with the previous findings such that the 1<sup>st</sup> year first semester was found to be the source of difference ( $P = ,000 < ,05$ ). The mean values of this group indicated that the lowest performance of this group caused the difference.

As a consequence, the results of Test of Academic Vocabulary, which measures the academic vocabulary knowledge receptively and productively, indicated that there was a developmental pattern of academic vocabulary knowledge across five participant groups, yet the tendency to remain stable at 1<sup>st</sup> year second sem., 2<sup>nd</sup> year and 3<sup>rd</sup> year draws attention. Thus, it can be claimed that after the exposure at the 1<sup>st</sup> year first semester, the participants' academic vocabulary reached at a certain amount. Then, it did not change a lot. It can be assumed that either the participants did not show much effort to enlarge their academic lexical repertoire or the exposure of academic vocabulary at the courses remained same so they did not encounter more or different academic vocabulary.

In order to probe the participants' overall academic lexical competence and performance, all of the findings related to the size of academic vocabulary, receptive and productive academic vocabulary knowledge and use of academic vocabulary are compiled and illustrated in Figure 15. In that way, the development of academic lexical competence across the five groups can be examined thoroughly.

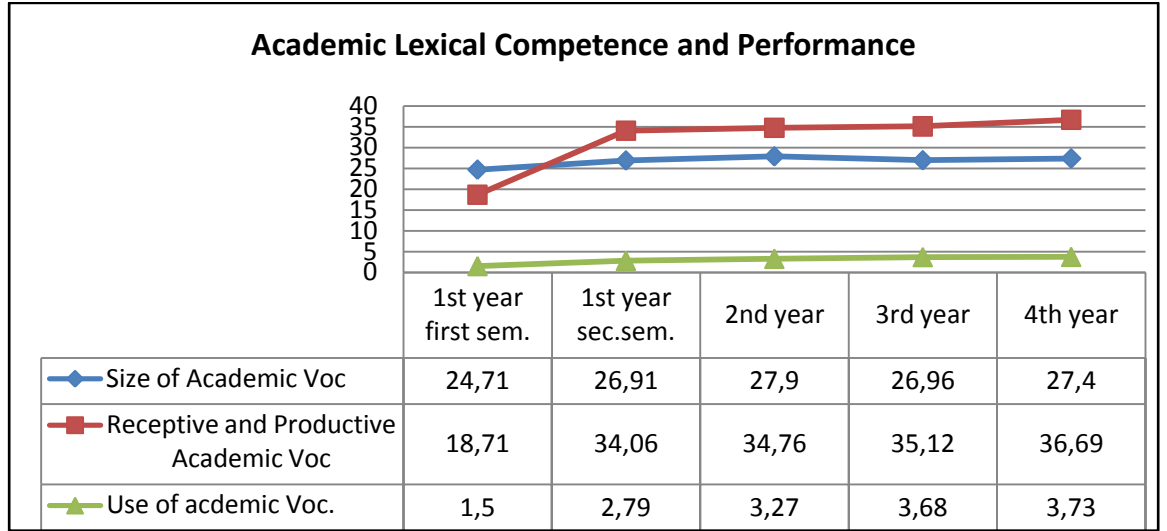


Figure 15: Developments of Academic Lexical Competence and Performance

As Figure 15 indicates that there were increases in the participants' academic vocabulary knowledge regarding all three indices. However, the saliency of these increases differed in a way that the receptive and productive of academic vocabulary developed more strikingly. In the Test of Academic Vocabulary, where the participants were asked to produce a sentence with the academic word, they performed better than in their essays where they had to use the academic words in a context. The reason for this finding might be that the participants could use the academic words at sentence level more easily. However, it should be emphasized that it is not reliable to compare the score of TAV and Vocabprofile since they are totally different measures. Instead, the proportion of increases in these measures could be discussed to reveal the participants' potential academic vocabulary gains. In that point, it is clear that the participants' recognition and use of certain words increased remarkably from the 1<sup>st</sup> year first semester to the 1<sup>st</sup> year second semester. Although similar jump could be observed for the use of academic words in the essays (Vocabprofile) and recognizing non-contextualized words in the tests (VLT), the increase at TAV was doubled. From this point of view, it can be again stated that the participants' productive academic vocabulary, especially at a sentence level, developed strikingly. In spite of such rapid increase at the early years, the development slowed down at the following years. For all indices, there was commonly a plateau at 1<sup>st</sup> year second semester, 2<sup>nd</sup> year and 3<sup>rd</sup> year, even a decrease at 3<sup>rd</sup> year for size of academic vocabulary.

Thus, similar to general lexical competence and performance, the participants' academic lexical competence and performance increased throughout their education. However, instead of big changes, there were low but constant increases after the first year first semester throughout their education. Except the size of academic vocabulary, there was not so much fluctuation in the development of sub-dimensions. Consequently, it could be claimed that Turkish ELT majors developed their recognition and production of academic vocabulary both at sentence level and essays throughout their education.

The consistency between the findings of academic vocabulary size, use and receptive-productive tests also points out the applicability of the tentative dimensional framework of general and academic vocabulary in the study. Including the findings of further analyses on academic vocabulary, mentioned in this section, a correlation analysis was conducted and the results are given in the following section. Through such analysis, it was attempted to assert the interrelationship of all dimensions for general and academic vocabulary and thus the coverage and applicability of the proposed framework.

#### **4.5. Interrelationship between the Dimensions of Lexical Competence and Performance**

In order to examine the interrelationship between the sub-dimensions of lexical competence and performance, the research question of “Do the dimensions of the participants' lexical competence and performance correlate with each other?” was asked in the study. To address this question and substantiate the tentative dimensional framework of vocabulary knowledge proposed in the present study, Pearson Correlation analysis was conducted on the findings of all instruments across all five participant groups. The obtained findings are presented in the following:

Table 34

*Correlation between the Measures of All Sub-dimensions of General and Academic Lexical Competence and Performance*

		VLT	WA	TAV	Essay K1_K2	Essay AWL	Essay Off-list
VLT	Pearson Correlation	---	,494**	,598**	,255**	,258**	,158**
	Sig. (2 tailed)		,000	,000	,000	,000	,000
	N		371	371	371	371	371
WA	Pearson Correlation	---	---	,654**	,400**	,390**	,271**
	Sig. (2 tailed)			,000	,000	,000	,000
	N			371	371	371	371
TAV	Pearson Correlation	---	---	---	,178**	,505**	,256**
	Sig. (2 tailed)				,000	,001	,000
	N				371	371	371
Essay_K1_K2	Pearson Correlation	---	---	---	---	,050	,032
	Sig. (2 tailed)					,333	,538
	N					371	371
Essay_AWL	Pearson Correlation	---	---	---	---	---	,157**
	Sig. (2 tailed)						,002
	N						371
Essay_Off-list	Pearson Correlation	---	---	---	---	---	---
	Sig. (2 tailed)						
	N						

\*\*Correlation is significant at the level of 0.01 (2-tailed)

As indicated in Table 34, the mean scores of all instruments are positively correlated with each other, except Essay\_K1\_K2 which was found as not correlated with Essay\_AWL and Off-list at ,001 significance level. These significant positive correlations implied that the participants' scores from one instrument could predict their performances at other instruments.

Specifically, the significant correlation between VLT and Essay\_K1\_K2 [ $r_{(21)}=0.255$ ,  $p<.01$ ], and Essay\_AWL [ $r_{(21)}=0.258$ ,  $p<.01$ ] and Essay\_Off-list [ $r_{(21)}=0.158$ ,  $p<.01$ ] implied that the more vocabulary the learners know the more they use. In a similar vein, the positive and significant correlation between TAV and Essay\_AWL [ $r_{(21)}=0.505$ ,  $p<.01$ ] can be interpreted that the participants' performance at TAV which was adapted to measure the receptive as well as productive academic vocabulary at a sentence level in this study could indicate how much vocabulary they could use in their academic writing.

On the other hand, it should be mentioned that the results that indicate no correlation between Essay\_K1\_K2 and Off-list are not intervening findings since the corpus used for each category are different and the nature of this program is to use three different corpus that measure three different categories (i.e. 2000<sup>th</sup> high frequent, AWL and low frequency), these lists do not overlap each other (Nation, 1990; Laufer & Nation, 1995; Coxhead, 2000). Thus, the results can be interpreted in a way that the use of high frequent word does not entail the use of academic vocabulary.

#### **4.6. Developmental Patterns of General and Academic Vocabulary Knowledge in terms of Lexical Competence and Performance**

The last sub-research question of the present study is “Do the participants' general and academic lexical competence and performance differ during their higher education?” In other words, it was attempted to examine the participants' developmental patterns of general and academic lexical competence and performance throughout university education. Although while addressing other sub-research questions on the dimensions of lexical competence and performance, the development of all dimensions have been already probed in terms of years at the sections above, a figure that illustrates the overall picture on Turkish EFL students' general and academic lexical competence and performance is presented in the following:

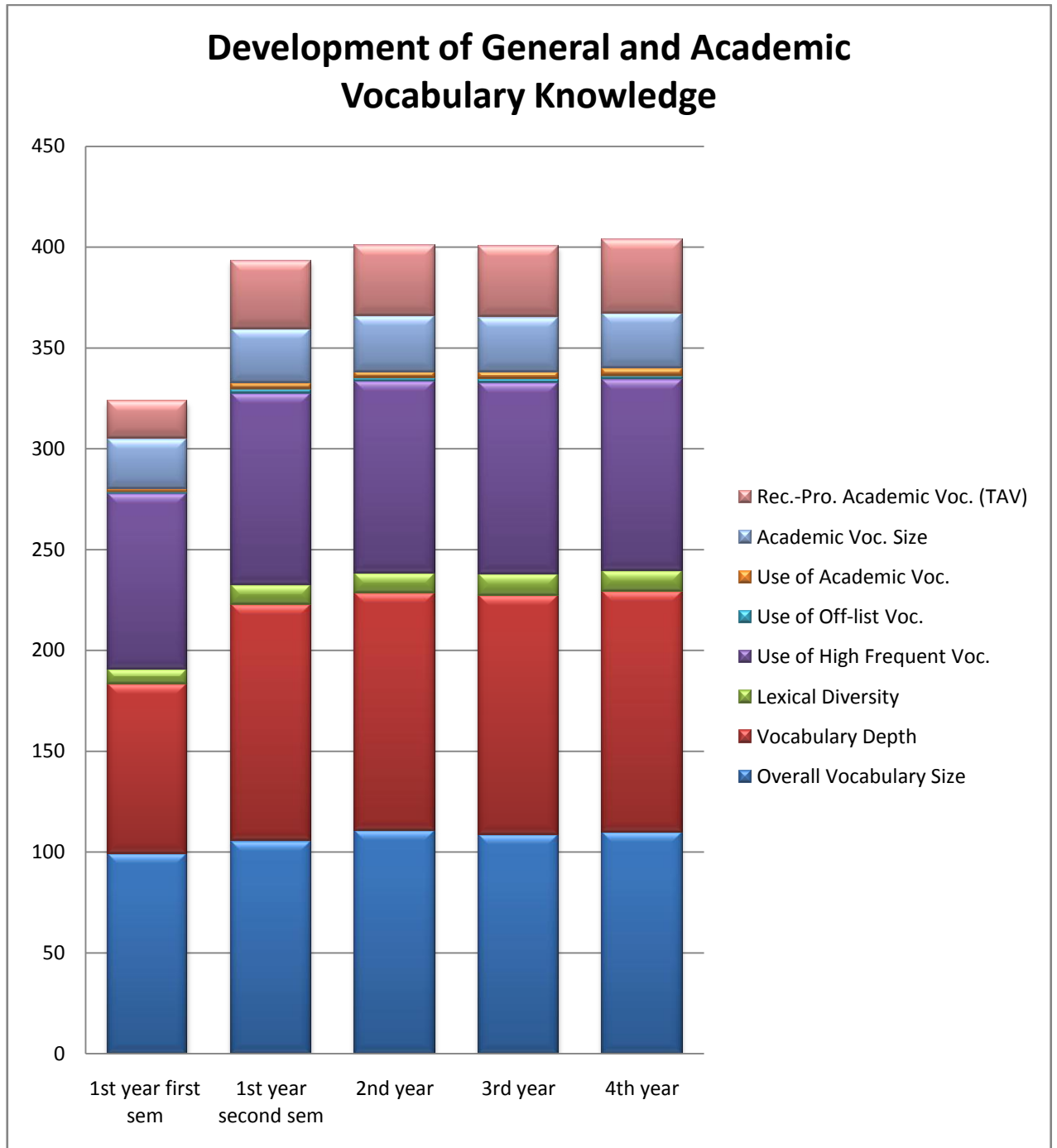


Figure 16: Development of General and Academic Lexical Competence and Performance

As can be seen in Figure 16, the developmental patterns of dimensions of lexical competence and performance differed in terms of years. On the one hand, there were salient increases in the participants' sub-dimensions of lexical competence, namely

size, and depth, on the other hand, some slight variance was observed for lexical use of the 2000<sup>th</sup> words (i.e. K1\_K2), academic vocabulary and off-list words. In other words, it was observed that the participants' receptive vocabulary knowledge that addresses to general and academic lexical competence significantly developed throughout university education, yet the development of productive vocabulary knowledge stands for lexical performance was less and slower. The reasons underlying these findings will be discussed in the following discussion section.



## CHAPTER 5

### DISCUSSION

#### 5.1. Introduction

In this chapter, the results of the study will be discussed in relation with the previous related studies. In the first part of this chapter, a short summary of findings will be presented referring to each research question. At the second part, these findings will be discussed under three main titles that stands for each pillar of the dimensional framework of general and academic vocabulary knowledge developed specifically in the current study. The first section discusses the findings about the development of size and depth of vocabulary knowledge and thus overall lexical competence. The next section addresses to the participants' lexical use and diversity profile, as a result discussing the participants' lexical performance. The final section of the chapter specifically evaluates the academic lexical competence and performance by relating the findings with the previous research on academic vocabulary. In all sections, as well as reference to the previous related studies in literature, the possible underlying reasons of findings such as factors specific to research setting and learning environment will be probed.

#### 5.2. Summary of the Findings

Two main research questions were addressed in the present study as “What are Turkish ELT majors' general lexical competence and performance?” and “What are Turkish ELT majors' academic lexical competence and performance?” Under the guidance of these two main research questions, a tentative dimensional framework of general and academic vocabulary knowledge overarched with the constructs of lexical competence and performance were proposed. In order to cover and measure all sub-dimensions of this framework viz. receptive size, depth of vocabulary knowledge for lexical competence and lexical use and diversity for lexical performance as well as academic vocabulary dimensions, six sub-research questions were asked. In addition, to investigate the developmental patterns of these dimensions and to ensure the validation of the measurements, two more sub-research questions were posed. In response to these questions, related analyses were conducted and the following results were obtained.

Regarding the participants' academic lexical and academic lexical competence, three sub-research questions were asked. They were "What is Turkish ELT majors' size of general vocabulary knowledge?" and "What is Turkish ELT majors' depth of general vocabulary knowledge?" and "What is Turkish ELT majors' size of academic vocabulary?". Firstly, the results of the analyses yielded that there was a salient increase in the overall size of vocabulary from the 1<sup>st</sup> year first semester (99,16 out of 150) to 1<sup>st</sup> year second semester (105,34 out of 150). Thus, the participants' amount of vocabulary increased sharply as they began their university education. This increase continued till the 2<sup>nd</sup> year (110, 82 out of 150) yet it stopped even decreased at 3<sup>rd</sup> year (108, 76) and contrary to expectations, in spite a slight increase, the 4<sup>th</sup> year students (109, 80 out of 150) fell behind the 2<sup>nd</sup> year students. The difference in these overall mean scores was found as statistically significant, thus it could be concluded that the participants' overall size of vocabulary differed in terms of years.

When the participants' size of vocabulary knowledge was investigated in terms of frequency bands, similar fluctuation table was observed. Specifically, instead of linear increasing scores at each frequency bands across the years, the participants' scores increased and even decreased at certain frequency bands. Except the 3000<sup>th</sup> frequency band, the 3<sup>rd</sup> year students again fell behind the 2<sup>nd</sup> year students at 2000<sup>th</sup>, AWL, 5000<sup>th</sup>, 10000<sup>th</sup>. The 4<sup>th</sup> year students outperformed other groups only at 2000<sup>th</sup>, for other frequency bands they fell behind even the 2<sup>nd</sup> year students. The results of one-way ANOVA analysis approved that the differences at the mean values of the participant groups at five frequency bands were statistically significant. Thus, the frequency effect on the participants' size of vocabulary was ensured. The jump from the 1<sup>st</sup> year first semester to the 1<sup>st</sup> year second semester was also observed at the word frequency based analysis.

Similar to the findings about the size of vocabulary knowledge, the analyses on the vocabulary depth indicated a sharp increase from the 1<sup>st</sup> year first semester (83, 96 out of 160) to 1<sup>st</sup> year second semester (117, 39 out of 160). On the other hand, the developmental pattern of vocabulary depth was almost stationary, that is, very slight increase in the participants' associational links could be observed throughout their education. The 4<sup>th</sup> year students got the highest score (119, 47 out of 160) with small increase across the years. In spite of such slight differences, the one-way ANOVA

results approved that the participants' quality of vocabulary knowledge differed in terms of years.

Compiling the scores of size and depth of vocabulary knowledge, the participants' lexical competence was examined. In this sense, the effect of years on the participants' lexical competence dimensions could be observed more clearly. In other words, it was seen that the participants' lexical competence differed significantly in terms of the years of instruction.

The second pillar of the dimensional framework of the study is for the participants' lexical performance. To answer the sub-research questions of "What is Turkish ELT majors' general lexical performance?" and "What is Turkish ELT majors' academic lexical performance?", the use of general and academic vocabulary and lexical diversity of the essays were examined. The results of Lexical Frequency Profile analysis, which measured the participants' productive vocabulary size, indicated that the participants' use of general high frequent vocabulary increased as they started the education (increase from 1<sup>st</sup> year first semester, 87, 30; to the 1<sup>st</sup> year second semester, 95, 18). Yet, a decrease, even so slight, was also observed at 3<sup>rd</sup> year students (94,65). The results on the general vocabulary use put forth that the participants' general vocabulary performance remained more or less the same in spite of small changes across the year. Regarding the academic vocabulary use, more promising results were observed as after sharp increase from 1<sup>st</sup> year first semester (1, 50) to 1<sup>st</sup> year second semester (2, 79), there was a gradual increase throughout the years and the 4<sup>th</sup> year students got the highest mean value (3, 73). However, the distribution of the proportion of off-list vocabulary, which includes the low-frequency words as well as jargons of ELT, was unexpected. While at the 1<sup>st</sup> year second semester, the use of off-list words reached the peak (2, 09) after sharp increase from the 1<sup>st</sup> year first semester (,86), it suddenly decreased at the 2<sup>nd</sup> year (1, 44) and slightly increased till 4<sup>th</sup> year (1, 67). The results of one-way ANOVA showed that like in lexical competence, the effect of frequency was valid for lexical performance. Put differently, the participants' competence changed significantly according to the frequencies of the words.

As another complementary sub-dimension of lexical performance, the participants' essays were analysed in terms of lexical diversity. The results strikingly

indicated the outperformance of the 3<sup>rd</sup> year. Although the lexical diversity of the essays in this study tend to increase gradually across the years with a sharp increase from the 1<sup>st</sup> year first semester again, the 3<sup>rd</sup> year students were found to use more distinct words in their essays so have more diverse essays.

The last pillar of the dimensional framework of vocabulary knowledge in the present study stands for academic lexical competence and performance. In addition to the analyses on the academic vocabulary section in the Vocabulary Level Test and the proportions of academic vocabulary use in the essays (i.e. through Vocabprofile), Tests of Academic Vocabulary was developed to measure the overall receptive and productive academic vocabulary. Through this exploration, it was attempted to address the sub-research question of “What is Turkish ELT majors’ academic vocabulary knowledge in terms of receptive and productive dimensions?”. The results of this test indicated a similar distribution to the previous findings as there was an increase in the recognition of academic vocabulary and producing it in a sentence after the 1<sup>st</sup> year first semester (18, 71). Yet, a plateau during the 1<sup>st</sup> year second semester (34, 06), 2<sup>nd</sup> year (34, 76) and 3<sup>rd</sup> year (35,12) with slight changes were also observed then the 4<sup>th</sup> year students received the highest value (36, 69).

To determine the developmental patterns of all dimensions, which are referred by the sub-research question of “Do the participants’ general and academic lexical competence and performance differ during their higher education?”, the one-way ANOVA analyses were conducted for each sub-dimension. It was found that there was a linear, gradual increase throughout the years after a sharp jump from the 1<sup>st</sup> year first semester. Yet, the slight decrease at the 3<sup>rd</sup> year deserves more attention.

Lastly, to respond the sub-research question, which was “Do the dimensions of the participants’ lexical competence and performance correlate with each other?”, the correlation studies on the mean scores of all measurements of general and academic lexical competence and performance were employed. The results confirmed the interrelationships among the sub-dimensions. Thus, it could be concluded that the participants’ knowledge at one dimensions of vocabulary knowledge reflected to other dimensions. In other words, lexical competence and performance could be improved hand in hand.

Overall, it can be claimed that Turkish ELT majors' in this study had a varying general and academic lexical profiles. The effects of years and word frequency could be observed in the findings. To explain these findings more comprehensively, in the following; the results will be explained under the main titles for each pillar of the dimensional framework of the present study, with reference to each sub-research question and related studies in literature.

### **5.3. Insights on Lexical Competence**

To determine the participants' lexical competence, two sub-dimensions, namely size and depth of vocabulary knowledge were initially measured, and then the overall scores were taken for the comprehensive picture. The findings of overall receptive vocabulary size in the present study indicated a salient increase as the participants started their education at the 1<sup>st</sup> year first semester (99, 16) till the 2<sup>nd</sup> year (110, 82). This growth of vocabulary size could be explained with the increasing language proficiency as in Fan's (2000) study and repeated exposure to the target vocabulary as in Goldberg et. al.'s research (2008).

Regarding the L2 vocabulary size gained through education, Milton (2009) suggested averagely 2500 vocabulary growth per year and they argued that this ideal vocabulary growth can be achieved best in second language environment. However, it can be claimed that this goal is a very ambitious for most learners of English as a foreign language. In many EFL contexts, the most available resources for the vocabulary input are the instructional context, such that, in the present study, although there was no course assigned for vocabulary teaching, the effects of language-focused courses, requirements of the courses such as reading and searching as well as spoken exposure to language in the lectures were seen with the sharp increase from the 1<sup>st</sup> year first semester to the 2<sup>nd</sup> year. These findings may emphasize the significance of input that through comprehensible input in the courses, L2 learners can increase their receptive vocabulary size to some extent even without explicit vocabulary instruction.

However, after the 2<sup>nd</sup> year, there was a decrease at 3<sup>rd</sup> year, which was followed with 4<sup>th</sup> year with slight growth at overall vocabulary size. This finding sounds alarming because contrary to the results of the studies predicting the gradual increase in vocabulary knowledge throughout education (Henriksen et. al., 2008; Fan, 2000), the 3<sup>rd</sup>

and 4<sup>th</sup> year participants in this study did not improve their vocabulary size, even downgraded as they fell behind the 2<sup>nd</sup> year students.

These striking results can be explained with the issues of attrition and loss of vocabulary. Language attrition is an issue that has been received considerable interest in L2 as well as in L1 to explain the dynamism of language and the changes in proficiency over time. As a result of several factors, such as environment, age, affective factors so forth, language attrition can occur (Hansen, 2001). Related to lexical attrition, Hansen (2001) and De Bot and Weltens (1995) assertively emphasized the effect of non-use. Moreover, as similar to the present study, Asgari and Mustapha (2010) reported the lexical attrition for adult EFL Persian students. They justified the vocabulary loss of their advanced students with variables such as the amount of out-of-class exposure, attitude, motivation, teaching methodology and so forth, in addition to the abstractness and concreteness of vocabulary. Considering these studies, it could be speculated that the 3<sup>rd</sup> and 4<sup>th</sup> year students had vocabulary attrition due to their decreased enthusiasm to learn and intensify vocabulary. The reasons underlying such attrition could be lack of vocabulary-focused instructions. In the courses, these students might not have enough opportunity to enrich their vocabulary knowledge. In addition, their exposure to new vocabulary might get limited. The materials and lectures contained same kinds and range of vocabulary, thus the learners might not encounter new vocabulary to acquire. However, as Melka (1997) assumed that repeated exposure to the word is essential to make it actualized and part of lexicon. When these factors were strengthened with the learners' exhausted motivation to learn more, the decrease in the vocabulary size became indispensable.

In addition, the regression in the participants' size of vocabulary can be related to the frequency of words. Cohen (1986) explained this issue that some words come into learners' vocabulary very easily without much attention whereas some others need conscious effort involving either rote repetition or organizational techniques. Particularly, low frequent and academic words need such special effort. The analysis on the learners' size of vocabulary in terms of frequency bands also supported this assumption.

When the participants' scores from the each frequency band section in the VLT were reanalysed, it was found that the participants' competencies differed in terms of word frequency levels. Specifically, the participants were found as mostly competent at 2000<sup>th</sup>, 3000<sup>th</sup> and AWL word frequency level but not at 5000<sup>th</sup> and 10000<sup>th</sup> levels. This finding is consistent with the assumption on the effect of frequency of input in literature (e.g. Vermeer, 2001). The participants recognized the high frequent words more than the low frequent ones. In terms of years, the gradual increase in all frequency levels (starting from 1<sup>st</sup> year first semester to 2<sup>nd</sup> year) was also observed then this flow was again intervened with decrease at 3<sup>rd</sup> years, except the 2000<sup>th</sup> frequency level. Leaving aside the effect of vocabulary attrition at 3<sup>rd</sup> and 4<sup>th</sup> year, in fact, it could be claimed that the increase from 1<sup>st</sup> year first semester to 2<sup>nd</sup> year implied a systematic order related to frequency as Vermeer (2001) explained since at the lower levels of proficiency learners are familiar with more frequent words, but as their experience with the foreign language increases, less frequent words are incorporated into the lexicon. Thus, it could be stated that the probability of a word being known by foreign language learners rises with its frequency, so higher-frequency words have a greater possibility of being known.

The effect of vocabulary frequency on the learners' vocabulary knowledge was also pointed out by Zareva (2005) and Zahar et. (2001). Considering the learners' performance at different frequency bands, different estimates for the threshold vocabulary were proposed. For instance; Zahar et. al. (2001) concluded their study on the effects of frequency that there is a threshold after 2000<sup>th</sup> frequency zone, that is, learners who scored 50% on the 2000<sup>th</sup> word level understood less than 90% of the texts' vocabulary. Moreover, Hirsh and Nation (1992) suggested 98-99% coverage, which equals to one unknown word in every 50-100 running words, or most frequent 5000<sup>th</sup> word families are necessary to read authentic English texts with 70% comprehension. In a similar vein, Henriksen et. al. (2008) and Cody and Huckin (1997) pointed out the size up to 5000-10000<sup>th</sup> word families is necessary for the proficiency in L2 and lack of vocabulary may lead to incorrect guessing of words and failure to use contextual cues to learn vocabulary (Nation, 2001). Regarding 3000<sup>th</sup> word families, Laufer (1992; 1997) stated that the knowledge of 3000 word families would lead learners to read the authentic texts with no more than 56-60% comprehension. This figure seems not adequate for academic achievement for university students. However,

the findings, revealed that the participants' acceptable size at 2000<sup>th</sup>, 3000<sup>th</sup> and AWL frequency levels but the decreasing means at 5000<sup>th</sup> implied that most of the participants in this study did not reach the threshold vocabulary level of the basic 5000 frequency word families to read authentic texts effectively. Considering the assumptions on the threshold vocabulary knowledge in the previous studies in comparison with the findings of the present study, it can be claimed that most of the English majors in the present study had difficulties in reading authentic materials due to the hindrance of a small vocabulary size.

These findings became more alarming considering the English native speakers' vocabulary size, which has been estimated around 20,000 word families (Goulden et al., 1990; Nation & Waring, 1997). Thus, a large gap was detected between the vocabulary size of native speakers and participants of the present study. However, there are some reasonable explanations for such a big gap, first the participants are studying English in EFL context, thus their exposure to English is very limited to the school. Moreover, they did not have any explicit instruction on vocabulary so they mostly acquired through implicit learning and in case they had limited opportunity and resource to be exposed to input they could not achieve native like receptive size.

As the other indices of lexical competence, the participants' vocabulary depth was examined. The findings revealed a gradual increase across the five participant groups throughout university education. This increase could be explained that exposure to a word in a varying context and situations could help the learners develop an understanding of hierarchical meaning relations (Henriksen, 1999). Similar growth in vocabulary depth was also reported in Greidanus and Nienhuis (2001) and Schmitt and Meara (1997). The reason for this observed growth in the present study could be the requirements on the participants at the courses. The participants were asked to know and produce appropriate collocates of words while expressing their arguments in the essays and while reading the academic texts.

Meara (1996) suggested that as the size of L2 learners' vocabulary enlarges, the importance of well-structured, connected lexicon considerably increases. This assumption was also supported by Zareva (2010), who investigated the L2 users' associative links in comparison with native speakers. Zareva concluded that L2 learners



were much motivated to build lexicosemantic connectivity in their lexicon as a result of their increasing competence. Their awareness about the associational links in their lexicon enhances as their competence and proficiency grows. They become more aware that through such connectivity, they could recognize and use more words more effectively. Such awareness was also observed in the present study. The linear progress in the depth of vocabulary through the years implied that the participants developed their associational links gradually throughout their education.

The distribution of the development of vocabulary size and depth was observed as convergent. In other words, the participants' vocabulary size and depth increased more or less in the same flow. The sharp increase from the 1<sup>st</sup> year first semester to the 2<sup>nd</sup> year was observed for both sub-dimensions. Thus, it could be claimed that although the participants did not have any special course on vocabulary they got exposed to more new vocabulary in more contextualized texts and tasks at their language skill courses such as Contextualized Grammar Lesson, Academic Reading and Writing.

Moreover, the decrease at the 3<sup>rd</sup> year was observed with varying degrees for the size and depth; while there was a sharp decline in the 3<sup>rd</sup> year students' size of vocabulary a slight reduction was seen in their depth of vocabulary. In spite of different degrees of fluctuations, the participants' development of both indices seemed to follow convergent patterns.

This finding on the convergence of size and depth of vocabulary knowledge implies that these two sub-dimensions are complementary and thus they could address to lexical competence together. In this context, the total scores of size and depth measures were reanalysed and the participants' lexical competence was examined at one hand. In that way, it was attempted to give a core picture of the development of participants' lexical competence across the years. Indeed, beyond the fluctuations in the size and depth, the distribution of the overall lexical competence (see Figure 9) indicated a kind of a plateau after the increase from 1<sup>st</sup> year first semester. Thus, it could be claimed that the participants knew more or less same amount of vocabulary. The quantity and quality of this vocabulary seemed to stay the same in spite of continuous exposure throughout their education.

Overall, the analyses on the participants' lexical competence approved that it is a multi-dimensional phenomena and the measurements of the sub-dimensions, size and depth could convey the participants' competency of vocabulary knowledge as Zareva (2005) and Henriksen (1999) suggested. Moreover, the in-depth analyses as well as overall one revealed that the participants' lexical competence differed in terms of years they attend and in terms of frequency of words, which are supported with the results on the frequency, exposure and proficiency effects on vocabulary knowledge (e.g. Vermeer, 2001; Nation, 2001; Henriksen et. al., 2008). However, rather than sharp jumps, the increases seemed limited, considering the plateau distribution of overall lexical competence so it can be speculated that they knew almost same words.

To probe whether the participants could reflect their lexical competence to their writings, the results on the participants' performance in using and diversifying the words will be discussed in the following section.

#### **5.4. Insights on Lexical Performance**

As one of the motivations to examine lexical performance as well as lexical competence is the fact that L2 learners have difficulty to transfer their vocabulary knowledge to productive knowledge, they can rarely reflect their vocabulary knowledge in their writings (Nation, 2001; Morris & Cobb, 2004). By examining the lexical use and lexical diversity profiles of the participants in the present study, it was attempted to investigate this situation for Turkish ELT majors at Anadolu University.

As the first indicator of lexical performance, the participants' Lexical Frequency Profiles indicating the proportion high frequent words, academic words and off-list (low frequency words and jargons) were examined. The analyses revealed a high proportion of high frequent vocabulary use but relatively low proportion of academic vocabulary; nonetheless they gradually increased across the years. In order to make sense whether these figures are high or low, it would be beneficial to compare them with the lexical frequency profile obtained for learners in other studies. For instance, Muncie (2002) found that the learners produced 12% high frequent words (K1\_K2) as a result of processing writing tasks. In the same way, Morris and Cobb (2004) detected average 11,6% high frequent vocabulary use for Canadian university students while Tschirner (2004) found out that 22% of the German students mastered the 2000<sup>th</sup> word level

productively. Comparing the figures estimated in those studies with the ones in the present study, it could be stated that the participants in this study mostly relied on high frequent vocabulary while explaining their arguments.

When these findings were handled in terms of years, the jump in the use of both K1\_K2 (i.e. high frequent vocabulary) and academic vocabulary between the 1<sup>st</sup> year first semester and second semester were also observed. This finding could be inferred that through the courses they took during the academic terms, their higher-order skills had developed and they could access more words as well as more advanced words when engaging in academic writing tasks. Crossley et. al.. (2010) viewed the use of high frequent words from different perspective as claiming that the learners' exposure to frequent words allows the words to be more accessible. Thus, learners are more apt to use these words.

After such a sharp increase, a kind of plateau in the use of high frequent vocabulary was observed at the 2<sup>nd</sup> year and continued till the 4<sup>th</sup> year as similar to their lexical competence. This finding could be explained with Laufer's (1998) conclusion that the free active vocabulary reached a plateau beyond which it did not progress (p. 266). The reason underlying reason for such kind of plateau and even a slight decline at the 3<sup>rd</sup> and 4<sup>th</sup> year can be the learners' reluctance to write can be also stated, which has been also emphasized in many studies (Laufer, 1998; Schmitt, 2010; Muncie, 2002). Waring (1997) pinpointed that the learners' productive vocabulary is more prone to decay than receptive vocabulary since practice is an important factor to have larger productive vocabulary and learners do not usually practice so much. When the students do not use these words in written context, their active vocabulary might not improve; it would remain at the same level or even regressed due to the excessive use of the same words. Based on the researcher's observations and her informal dialogues with the instructors, it could be tentatively stated that the participants in this study were also very reluctant to write. The underlying reason for their reluctance could be their limited language proficiency, fears to make mistakes, lack of motivation and limited lexical repertoire. Regarding the limited lexical repertoire, the exposure to different vocabulary and opportunity to write could be questioned. Since the participants were in an EFL context, their main source of exposure to language was the classrooms. Out of the classrooms, they did not use language; this could have constraints on learning and

practicing new vocabulary. As Laufer (2005) emphasized that the repeated exposure to newly learned words is necessary to avoid forgetting.

Additionally, at the exams, where the participants were to use vocabulary in a coherent context, the participants used language either at sentence level or they did not use at all but recognized at multiple-choice test. Thus, they did not mostly practice the use of words in a contextualized discourse. If they are not encouraged to write more, they would lose the chance to internalize the newly learned (i.e. exposed) words (Laufer, 2005b). So, they would mostly rely on the high frequent words, which they had learned for years, just to feel safe.

When the proportions of off-list vocabulary use in the essays are examined, a salient fluctuation across the years draws attention. Before discussing about this floating distribution, it should be emphasized that this category consists of the lower frequency words (i.e. 3000<sup>th</sup> – 10000<sup>th</sup>) and some specific jargons. The lower-frequency words, especially in English, are often claimed to cover the technical terminology and field-specific words (Richards et. al., 2008; Nation, 2001). As a support of this claim, when the most frequently used low-frequent/off-list words in the collected essays were examined, it was seen that the words such as *grammar*, *pronunciation*, *vocabulary* and *fluency* were used mostly and these words are specific to the field of English Language Teaching. Although it is clear that the given writing prompt triggered the use of such vocabulary, the fluctuation on the proportion of off-list vocabulary use might imply other reasons. Firstly, the higher reliance on off-list words at the 1<sup>st</sup> year second semester and 3<sup>rd</sup> year (see Figure 12) can be interpreted as the results of the exposure to these words at the courses of these years. The students started to learn more about the language teaching and learning discipline and related jargons at their courses such as Pronunciation II and Academic Writing and Reporting as well as other language skill courses at the 1<sup>st</sup> year second semester. They advanced their knowledge with methodological courses at the 3<sup>rd</sup> year. Thus, as a result of such exposure and their fresh knowledge on the field, they tried to use these words, especially while writing about their arguments on the appropriate age for learning a foreign language as prompted in the writing task. Secondly, it should be emphasized that this result was anticipated due to the nature of the writing prompt chosen for this study, which is a discipline specific topic. However, the reason to choose this topic to help the participants feel secure and to

remove any bias caused with the lack of background knowledge. Beyond these, the proportion of off-list words also might provide insights about the ELT specific vocabulary that are commonly used by the participants.

Considering the participants' overall lexical performance, it could be stated that the participants in the present study seem to roughly produce the amount of vocabulary that is expected considering the writing task and their proficiency levels. They mostly relied on high frequent words. In spite of promising increase of academic vocabulary across the years and high proportion of low frequent words at the 2<sup>nd</sup> year, their lexical use appeared very limited in comparison with their lexical competence (covering size and depth). Although Nation (2001) cautiously stated that the 2000 most frequent words of English might be adequate for learners pursuing academic studies, Kaur and Hegelheimer (2005) highlighted that 2000<sup>th</sup> words alone are not adequate to use the target language to convey their ideas effectively in academic writing. Crossley et. al.(2009) explained the reliance of high frequent vocabulary in writing referring the discrepancy between L1 and L2 vocabulary knowledge. Due to limited vocabulary knowledge in L2 in comparison to their native tongue, the learners tend to use more words of general rather than specific meaning.

This finding is not surprising at all, since similar cases have been observed in other studies. It has been widely affirmed that many L2 learners tend to comprehend, process and produce higher frequency words better (Crossley & Salsburry, 2010; Ellis, 2002; Laufer & Goldstein, 2004). For instance; Laufer (1991) found that university students did not significantly increase their productive vocabulary when there was no systematic instruction to vocabulary learning. She emphasized that learners tend to favour simple, general and frequent words in production. In addition, Laufer and Nation (1999) stated that a learner may be reluctant to use low frequent words when left to his own devices, as in composition writing task and choose to use a simpler more frequent word of a similar meaning. Such reluctance is often a result of uncertainty about the word's usage and lack of confidence caused due to limited L2 vocabulary. In this regard, Read (2000) also pinpointed the learners' used avoidance and paraphrasing strategies not to use low frequent vocabulary. Thus, in the context of the present study, the participants preferred to explain their arguments mostly with high frequent vocabulary, in spite of tendency at 1<sup>st</sup> and 2<sup>nd</sup> year to use off-list vocabulary (containing

jargons and low frequency words), the 3<sup>rd</sup> and 4<sup>th</sup> year students did not take risk although their exposure to low frequent and ELT specific words are supposed to be higher through their courses and requirements. Nonetheless, the consistent increase of academic vocabulary use across the years implied promising development of lexical use.

Robinson (1993) brought a different approach to this issue by mentioning about declarative and procedural knowledge. He claimed that traditional vocabulary materials and instruction overemphasize the declarative, static meanings, which refers to knowing ‘that’ a word has a particular meaning but the procedural aspect of vocabulary learning, which covers knowing ‘how’ a word is being used, is mostly ignored. His argument could be another explanation for the participants’ limited lexical performance since the learners did not have any special training on the procedural aspects, that is, they were not mostly trained on how to use the vocabulary specially. Although they were most encouraged and guided about the vocabulary use in their academic writing courses and tasks, the results pointed out that such implicit teaching and learning are not adequate for their lexical performance.

To probe these results on the participants’ lexical performance, another sub-dimension; lexical diversity of the essays were also analysed. Related findings revealed a challenging picture. While there was again a sharp increase between the 1<sup>st</sup> year first semester to the 1<sup>st</sup> year second semester, the increase stopped and even decayed till the 3<sup>rd</sup> year. The 3<sup>rd</sup> year students’ essays were detected as the more lexically diverse essays (see Table 27 and Figure 13) than the 4<sup>th</sup> year students’. These results might seem to contradict with the findings on lexical use in the study and with the general assumption in literature that lexical diversity increase as the proficiency increases (Treffers-Daller, 2009). However, when the 1<sup>st</sup> year second semester and 3<sup>rd</sup> year students’ outperformance at using the off-list words, which covers the low frequent, field-specific words and jargons, were considered, these participant groups’ high lexical diversity could make sense. Since they were found to use more off-list words in their essays, they varied the word types in their essays, which yielded higher lexical diversity. The participants, whose field specific low frequent words were active, used more distinct words to support their arguments in the essays. As discussed before regarding the proportions of the off-list words in the essays, particularly the courses given at these

years seemed to influence the lexical diversity as well as lexical use. In this context, the effect of instruction and exposure on vocabulary knowledge was also revealed for another sub-dimension.

Another explanation for the varying lexical diversity of the participants could be their limited language resources. Booth (2010) explained this that learners may have internalized more complex low frequent words but they could not use them in a coherent manner due to their limited grammatical, discourse or other language skills. In the context of the present study, it could be thus speculated that the participants at 1<sup>st</sup> year first semester, 2<sup>nd</sup> year and 4<sup>th</sup> year might know as many low frequent vocabulary as 1<sup>st</sup> year second semester and 3<sup>rd</sup> year students but they did not have either practice to use or even they did not know how to use these words in a coherent essay. In fact, the findings related to the size of vocabulary supported that especially 2<sup>nd</sup> year students knew many words up to 5000<sup>th</sup> words but the results of lexical diversity and lexical use showed that they had trouble in using these words in their writings. Due to their limited practice or language resources, they either preferred to repeat the same words (i.e. lexical recycling) as for the 2<sup>nd</sup> year students or they demanded on more frequent and easier words to make simple sentences as for the 1<sup>st</sup> year first semester.

Consequently, the results on the participants' lexical performance showed that instead of greater proportions of less frequent and academic words, the learners used greater proportions of high frequent words (K1\_K2;1000<sup>th</sup>-2000<sup>th</sup>). They were more prone to use high frequent words than the low frequent and academic words. This result could address to lack of proficiency, yet this interpretation could be mistaken because there was a promising progress in the participants' lexical performance.

The results discussed so far revealed the overall state of participants competence and performance in general service vocabulary, which covers the 2000<sup>th</sup>, 3000<sup>th</sup>, 5000<sup>th</sup> and 10000<sup>th</sup>. Although the findings related to academic vocabulary were also involved into the discussion so far to describe the developmental patterns, the participants' academic lexical competence and performance were separately examined as the second major aim of the study. The results of this exploration will be discussed in the following section compiling all findings related to academic vocabulary knowledge .

### 5.5. Insights about Academic Lexical Competence and Performance

While discussing the findings related to lexical competence and performance, the findings regarding dimensions of academic vocabulary knowledge have been already put forth. Nonetheless, in order to address the research questions inquiring the academic lexical competence and performance specifically, these findings will be re-blended and the last complementary pillar for academic lexical competence and performance at the dimensional framework will be referred.

First of all, the findings of academic vocabulary size showed consistency with the general vocabulary size as jump from the 1<sup>st</sup> year first semester to the 1<sup>st</sup> year second semester and intervened with the decrease at 3<sup>rd</sup> year. Thus, it could be claimed the effect of proficiency throughout education as well as attrition at advanced level of education (3<sup>th</sup> year and 4<sup>th</sup> years) are valid for the development of academic vocabulary. Yet, in comparison with 2000<sup>th</sup> high frequent vocabulary gain, it was observed that the mean values fell in range of 23 to 25 out of 30. This case can be explained with the features of academic vocabulary, such as abstractness, polysemy (i.e. (one form can have several meanings), and homonymy, (i.e. one meaning can be represented by different forms) (Nation, 2001). These features can cause difficulties for L2 learners to learn and use the academic vocabulary. Especially, abstractness and polysemic nature of academic vocabulary can be problems. Specifically, regarding abstractness, the problem occurs when the meanings of new academic words do not match with the ones in L1, for which semantic representations have already developed. Likewise, due to polysemy and homonymy, the learners can have difficulty to learn and use the academic words, which have other common meanings (Carson, 1997; Nation, 2001).

In this regard, many researchers studying on the L2 learners' academic vocabulary knowledge emphasized the effect of exposure to learn academic vocabulary (Coady, 1993; Laufer, 1997,1998; Laufer & Nation, 1995). If students read less, they will encounter fewer words or they will learn limited meanings of any polysemic academic words. Eventually it would hamper their development of academic vocabulary.

Thus, it can be claimed that the acquisition of academic vocabulary is concerned with what words learners are exposed to. For instance, despite the gaps in learners' frequent vocabulary knowledge, in an academic learning context, this learner might



primarily acquire words that are generally less frequent but more frequent in the academic setting (Chapelle, 1998; Coxhead, 2000). Milton (2009) explained the assumption of how L2 learners could learn academic and/or less frequent words while having knowledge gaps in high frequency words with the issue of language exposure in foreign language contexts. He suggested that in such language contexts, words are not acquired according to frequency of occurrence but learned thematically from course books, reading texts and lectures. This assumption could explain the participants' linear increase of academic vocabulary on the contrary to the fluctuation in the size of vocabulary knowledge throughout their education. While the participants' exposure to academic vocabulary through course books, lectures and materials were being sustained, the acquisition of new general service vocabularies (i.e. high and low frequent vocabulary) was left to their own interest and desire. In case that the learners are not willing to learn or the instructors or the content of the courses do not force to learn and use more vocabulary, vocabulary acquisition, particularly general vocabulary, can be inhibited. This situation can be observed with the 3<sup>rd</sup> year students in the present study. The findings regarding this group's size, depth and thus lexical competence indicated a decline at this year; they fell behind the 2<sup>nd</sup> year students. On the contrary, the results of test of academic vocabulary showed a linear developmental pattern across five participant groups, there was no decrease at 3<sup>rd</sup> year. Thus, it could be interpreted that owing to continuous exposure to academic vocabulary through education, the participants' academic vocabulary knowledge improved gradually, yet the development of general vocabulary knowledge was varied across the years.

Similar increasing curve was also observed for the participants' use of academic vocabulary in their essays (see Figure 15). While the 1<sup>st</sup> year first semester got the lowest proportion of academic vocabulary use, it increased across the years as the participants read academic texts, they wrote paragraphs and essays about their fields or as they used academic words in their demos and presentations. Thus, it could be claimed that the effects of academic language exposure and requirements of the courses contents were also valid for the participants' academic lexical performance. Considering the fact that there was no special explicit academic vocabulary teaching in the courses, the increase in the use of academic vocabulary (1, 29 points from 1<sup>st</sup> year first semester to 1<sup>st</sup> year second semester, and approximately 0, 5 points per year) throughout the

years seemed promising. Nonetheless, to interpret the results about the distribution academic vocabulary use in the essays thoroughly, the proportions of academic words can be compared with that of different genres according to literature: Academic texts are reported to contain 8.5% to 10% academic words while newspapers consists of 4% and fictions have 2%. (Coxhead, 2011; Paquot, 2007;2010). In this regard, the results indicated that the participants' essays in this study consisted of the academic words within a range of fiction genre contains. The maximum proportion of the academic words was 3.73% (for 4<sup>th</sup> year) in the study. In spite of increase in the use of academic words (from 1.5% to 3.73), the proportions were lower than the academic texts include. According to this comparison, it could be claimed that the participants' academic lexical competence still remained limited in spite of the increase across the years.

In fact, to encourage the participants to write an academic essay, a writing prompt, which is related to their field and for which they could argue and discuss their ideas in an academic manner was selected. Yet, the participants preferred to discuss their ideas in more casual manner, highly demanding on high frequent words. This overuse of high frequent words in comparison with academic words can be explained with the hypothesis of avoidance (Laufer & Nation, 1995; Read, 2000; Crossley et. al. 2009). As discussed before, the participants tend to use high frequent words but avoid using academic words because they may not have enough lexical repertoires; that is, they did not know enough academic words. On the other hand, they might know many academic words but they might not be sure about how to use them so they did not want to take risks. This interpretation could make sense when the results of academic vocabulary size are reconsidered. According to these results (see Figure 15), it was seen that the participants could match most of the academic words with their definitions in the VLT (25-28 scores out of 30) so they knew most of the academic words in the test. However, the results on the use of academic words showed that they could not put their receptive academic knowledge into practice while writing. Therefore, it could be speculated that as a result of continuous intensive exposure of academic vocabulary through their education, the participants' academic lexical competence increased yet their academic lexical performance remained limited due to inadequate practice or lack of opportunities to write more.

To intensify these results and deepen the interpretations, the receptive and productive dimensions of academic vocabulary were examined altogether through the Test of Academic Vocabulary (TAV). By adapting the format of Vocabulary Knowledge Scale (Paribakht & Wesche, 1996), it was attempted to evaluate the learners' familiarity on a continuum, to declare their receptive knowledge through synonyms or definitions, besides, to evaluate their productive knowledge at a sentence level. The results indicated a consistent development across the years. Thus, it could be interpreted that the learners' receptive and productive academic vocabulary develops as their learning stages improve. This result complies with the findings on other indices (i.e. size and use of academic vocabulary) of academic lexical competence and performance. When the developmental patterns of these three sub-dimensions are evaluated together (see Figure 15), it could be observed that in spite of certain increase in all three measures, TAV scores gained more saliently across the years. In other words, the range of increases between the years was more apparent. This finding can be interpreted that the learners' recognition of academic vocabulary and their production at a sentence level increased as they got exposed to such vocabulary in their materials and courses. Considering slight increase in the Vocabprofile analysis, which explained the use of academic vocabulary in the essays, it could be claimed that the learners used academic vocabulary at a sentence level more easily. This result supports the interpretation that the participants' academic lexical competence, which refers to receptive academic vocabulary, seems more developed than their academic lexical performance. Rather than in a coherent academic context, the participants could use the academic words at a sentence level using the given academic word. This result seems to support Laufer and Nation's (1999) assumption about the learners' reluctance to use infrequent, complex words. They stated that the learners could produce a sentence with an infrequent word when required to do so by the teacher, as observed in the results of TAV in the present study. Yet, these learners might prefer to use simpler more frequent words in composition writing task, as seen at the results of Vocabprofile for academic words. In addition to the learners' uncertainty about the word's usage and lack of confidence, which was mentioned before, Laufer's (1997) hypothesis of lexical threshold could be considered as the underlying reason for these results. According this hypothesis, the learners' vocabulary knowledge only grows to the limits of the demands

placed on them. Thus, the learners could improve their academic lexical performance in case they were asked to practice it more, produce more in different contexts. In this point, the requirements and contents of the courses that the participants took should be evaluated in terms of the involvement of activities triggering academic lexical performance.

Overall, it could be concluded that the participants' both academic lexical competence and performance consistently increased throughout their education. Thus, their recognition and production of academic words both at sentence and essay level seemed to develop. Particularly, the results on the academic vocabulary size indicated that they had a large academic lexical competence; they could recognize most of the academic words in the test. On the other hand, their academic lexical performance was found as limited because the proportion of academic words in their essays found lower in comparison with the suggested proportion of the academic text genre. They mostly relied on high frequent words. When the participants' academic lexical competence and performance was re-examined with another measure, the participants' academic lexical competence was ensured with high and increasing results, besides, it was found that the participants could produce the academic words at sentence level more easily. Thus, it was claimed that the participants had difficulty to use academic words in the essays but they could use such words at sentence level.

The discussions on the participants' academic lexical competence and performance pointed out that all sub-dimensions of this pillar complement each other. This finding also applies to the participants' general lexical competence and performance. Thus, it could be claimed that there is interplay between the sub-dimensions of general and academic lexical competence and performance proposed in the dimensional framework of the present study. To examine this interplay, the correlation study was employed. In the following, the results of these analyses will be discussed with reference to related studies.

### **5.6. Interplay among the Dimensions**

Based on the premise that vocabulary knowledge is a multidimensional phenomenon (Nation, 1990; 2001; Schmitt, 2000) the present study attempted to explore the interdependent yet interrelated measurable dimensions. In line with the

results of other vocabulary research studying on the overall state of learners' vocabulary knowledge (Henriksen, 1999; Zareva et. al., 2005; Vermeer, 2001; Zareva, 2010), the correlation analyses revealed that the vocabulary knowledge could be measured through several dimensions and all instruments addressing to each dimension of the framework in the present study were significantly correlated with each other. These findings imply that the participants with more vocabulary size can use more sophisticated and low frequency word families in their writing. Similar findings were also reached by Laufer and Paribakht (1998), who found moderate but significant correlation between the receptive and productive vocabulary sizes. Nation (1990) explained this interplay between receptive and productive dimensions as productive knowledge of a vocabulary contains receptive knowledge and extends it further. In other words, the receptive vocabulary size stands for the candidates of the productive vocabulary. Considering the dimensional framework proposed in this study, it means that the participants' lexical competence, which covers receptive dimensions, and lexical performance, which refers to productive dimensions, complements each other.

In addition to the correlation between the overarching dimensions, the interrelationships between the sub-dimensions of each pillar were also examined. Firstly, the correlation between the results of vocabulary size tests (VLT) and vocabulary depth (WA), which are the sub-dimensions of lexical competence (i.e. which covers the receptive knowledge) were investigated and a significantly high correlation was found. This finding implies that the larger vocabulary size a learner has, more association links he could establish. Similar correlations between these two sub-dimensions were also found in literature. For instance; Schmitt and Meara (1997) reported high and significant correlation between word association and vocabulary size. Considering the interplay between size and depth, Qian (1999) even claimed that it would be rare for an L2 learner to have an in-depth knowledge of vocabulary in which his overall vocabulary size is limited. Considering this relationship in classroom context, it can be observed that enlarging vocabulary size goes hand in hand with deepening the vocabulary knowledge. For example; when a learner encounters a word, he starts to compare this new word with already known ones in terms of use and register constraints. Spelling, collocation and appropriateness of the words are reviewed again and again. As a result, the deeper understanding of these words can occur so the process

of increasing vocabulary size entails intensifying the depth of vocabulary knowledge. Another study that supported this correlation is Gredanus and Nienhuis' (2001). They claimed that vocabulary knowledge grows in size as well as in depth. They also drew attention to the relationship between the frequency of word and its quality. As parallel with the frequency of word, the quality of words develops. Put differently, the frequent, earlier acquired words are qualitatively better than that of less frequent, more recently acquired ones. Considering the participants' increasing and large vocabulary size of 2000<sup>th</sup>, 3000<sup>th</sup> and academic words in comparison to 5000<sup>th</sup> and 10000<sup>th</sup> less frequent words in the present study, it could be claimed that Gredanus and Nienhuis' (2001) assumption is valid for the Turkish ELT majors in this study.

The high correlations found by Vermeer (2001) also supported the interrelation between size and depth of vocabulary knowledge. She explained this explanation as deeper knowledge is a consequence of knowing more words, in other words, the more a learner knows, the finer the networks and the deeper the word knowledge he will have. Zareva's (2007) study which also found a well-established positive relationship between vocabulary size and word associations supported this conclusion. It was claimed that smaller vocabulary sizes are characterized by fewer links among words. On the other hand, larger vocabularies show greater connectivity that allows learners to associate more words. These conclusions could explain why the 1<sup>st</sup> year first semester students who had the smallest vocabulary sizes had lowest depth of vocabulary with low association scores as well as the 4<sup>th</sup> year students' highest performance of the 4<sup>th</sup> year students at the word association tests in parallel with their relatively high vocabulary sizes.

Thus, as a language learners' network of word associations develop with more words, a great number of word associations become available to them. Moreover, the strength of these associations enable learners to develop their lexical production ( Crossley & Salsbury, 2010; Zareva, 2007). Since lexical performance involves how to write a word, what meaning it has and how to use in grammatical patterns and collocations (Nation, 1990), the significant correlation found in the present study could be evaluated as expected.

Furthermore, the high correlations among the sub-dimensions validated the tentative dimensional framework proposed in this study, which was built on the assumption that vocabulary is a multi-faceted phenomenon with interrelated dimensions. As the first pillar of this framework, lexical competence consists of size and depth sub-dimensions. Both of them are the indices of receptive vocabulary knowledge. The similar distributions of the participants' scores from size and depth measures (VLT – WA) and high correlations of these measures obtained in the present study as well as the supports from the related studies confirming the interrelation between these two indices indicated that these dimensions could be overarched with the construct of lexical competence. They cover the receptive competence in vocabulary knowledge.

For the second pillar, lexical performance, the proportions of productive vocabulary and lexical diversity were adapted as the two indices of productive vocabulary knowledge in the framework. Through the analysis of type/token ratio for lexical diversity, it was attempted to complement and deepen the findings on the lexical use of high, low frequent and academic words. By means of this type/token analysis, it was attempted to clarify how frequent and how diverse the participants used the words, of which proportions were determined in Vocabprofile. The results of this ratio analysis supported this complementary relation between these two analyses; the findings about these two indices showed similarity, that is, there were convergent distributions of the scores at the analyses in terms of years. Additionally, the results of lexical diversity provided the explanations for the participants' varying lexical use. Particularly, the fluctuations at the use of high frequent and off-list words at the Vocabprofile analysis became clearer with the ratios of types and token. Likewise, the results of Vocabprofile provided clues for some striking findings about the participants' lexical diversities. For instance, the 1<sup>st</sup> second semester and 3<sup>rd</sup> year students' higher lexical diversity made sense considering their outperformance at the use of off-list words at the essays. Thus, it can be stated that there is interplay between these two indices that complement and explain each other.

Additionally, the framework involves another pillar for academic vocabulary, of which significance has been highly emphasized but neglected mostly. With this pillar, the multi-dimensional structure of academic vocabulary was also emphasized, the

findings on the size and use of academic vocabulary provided insights about the participants' academic vocabulary knowledge. Besides, a sub-dimension to discuss the receptive and productive academic vocabulary at one hand was suggested. The high correlations between the Test of Academic Vocabulary, which is the measure of this sub-dimension and the measures of other dimensions pointed out that it is a valid classification and the receptive and productive analysis on academic vocabulary covers and interrelates with other sub-dimensions.

Consequently, it could be stated that in the present study, the vocabulary components were classified under certain overarching constructs within a tentative dimensional framework. Through such categorizations, it was aimed to signify that for the mastery of vocabulary, learners should have competence in more than one dimension and they should put this receptive competence into practice with their lexical performance. Thus, this framework attempted to scaffold the multidimensional and interdependent structure of vocabulary knowledge. As consistent with the similar vocabulary research in literature (Zareva, 2005; Zhou, 2010), the interplay among all these dimensions was statistically confirmed in the present study.

With the correlated and convergent results, the tentative dimensional framework of general and academic vocabulary knowledge was validated to a certain degree. Moreover, by means of this structure, the development of vocabulary knowledge could be observed from macro and micro levels. The discussion on these developmental patterns is presented in the following section.

### **5.7. Developmental Patterns of Dimension of Lexical Competence and Performance**

Addressing to the last research question, which is “Do the participants' general and academic lexical competence and performance differ during their higher education?” the participants' vocabulary growth was investigated cross-sectionally for each sub-dimension through one-way ANOVA analyses. To probe the participants' competence and performance for each dimension, the results of these analyses have been already involved and mentioned above. Yet, to reveal and discuss the general developmental patterns of participants' lexical competence and performance across the years, the results could be re-examined through a global perspective. Compiling all



results for each sub-dimension (see Figure 16), it can be claimed that the participants' general and academic lexical competence and performance differed across the years. Thus, it can be claimed that as a result of education, their general and academic vocabulary knowledge got developed, considering the increasing curves across the years. However, the results revealing the fluctuated (i.e. increasing and decreasing) distribution of each sub-dimension across the years indicated that not all of the sub-dimensions were mastered simultaneously and at the same pace. For instance while there was a fluctuated, but sharp increases at vocabulary size, the developmental patterns for high frequent vocabulary use was constant. Thus, it can be stated that the developmental patterns differed in terms of sub-dimensions as well as the years.

These findings could be explained with the assumption that the nature of vocabulary is incremental. That is, mastering vocabulary knowledge entails number of dimensions to be acquired and all of these dimensions could not be completely learned simultaneously, yet some can be learned before others (Schmitt 2000; 2010; Laufer, 1998; Henriksen, 2008; Webb, 2005; 2008). Schmitt (2010) elaborated this assumption referring to three incremental dynamics. Firstly, referring to the multi-dimensional structure of vocabulary knowledge, he explained that not all of these dimensions can be mastered simultaneously. The different developmental patterns of each sub-dimension (see Figure 16) approved this assumption. Such variance was seen even among the sub-dimensions of the same title. The differences in the size and depth vocabulary as well as lexical use and diversity could exemplify this.

For the second incremental dynamic, Schmitt (2010) suggested that each word knowledge aspect may develop along a cline, which means not only is word learning is incremental but learning of the individual word knowledge aspect is (p. 22). This dynamic could explain the different distribution of participants' size and depth of vocabulary knowledge. Although the distributions are convergent and these two receptive dimensions are highly correlated, the results implied that while overall vocabulary size indicated more varying development, depth knowledge was more constant. Thus, it can show that the participants might learn new words or at least recognize many words, but it does not mean that they know the associational links of these words or they know them in-depth.

As the last incremental dynamic of vocabulary knowledge, Schmitt (2010) explained that vocabulary knowledge varies in the degree of receptive/productive mastery. The findings of the present study, which revealed the consistent and increasing receptive vocabulary knowledge yet limited productive knowledge, supported this claim. The similar results were also found by other studies in literature (Laufer, 2005; Fan, 2000; Laufer & Gouldstein, 2004). Schmitt (2010) explained this discrepancy that receptive mastery generally develops before productive mastery (p.21).

This incremental nature of vocabulary development was also explained by Henriksen (1999) in terms of a continuum ranging from zero knowledge to partial to precise knowledge. Starting with unfamiliarity with the word, the learner begins to recognize or know the meaning, which could be referred as partial knowledge, and then he knows all about the word and uses it, which addresses to precision. Considering the results of the present study, it could be claimed that the 1<sup>st</sup> year first semester had a kind of partial knowledge or zero knowledge for many low frequent and academic words at the beginning of their education, as their learning stages increased; they developed their partial knowledge and began to set associations and to use them. However, the results of 4<sup>th</sup> year students imply that the participants could not reach the precision at all tested vocabulary dimensions at the end of their education.

As the underlying factors that trigger the incremental vocabulary development, the effect of education and word frequency has been suggested (Nation, 2001; Schmitt, 1998; Laufer & Goldstein, 2004). In this study, the sharp increase from 1<sup>st</sup> year first semester to 2<sup>nd</sup> year in all sub-dimensions indicates that the participants' vocabulary knowledge developed as they started to get exposed more vocabulary at their courses. Depending on the content of the course, the participants' general and academic vocabulary showed different development. After these years, the development continues but at slower pace, so it could be claimed that the effect of instruction was not so salient for the following years. The participants had almost similar vocabulary.

For the effect of word frequency, the results put forth that the participants' knowledge differed significantly in terms of vocabulary types. While their lexical competence and performance was detected as higher and increasing, their academic

lexical competence and performance remained limited in comparison with the similar genre (i.e. academic text).

Overall, the assumption on the incremental nature or continuum-based knowledge and the results of the present study indicate that vocabulary knowledge is complicated but gradual process. Thus, to describe vocabulary knowledge comprehensively, as Schmitt (2010) suggested, simple *know/does not know* descriptions should not be used. Instead, multiple measurements that could address different dimensions could reveal the incremental nature of vocabulary development. The present study attempted to employ this and the results gave more detailed but a global picture.

## CHAPTER 6

### CONCLUSION

#### 6.1. Concluding Remarks

This study aimed to examine Turkish ELT majors' general and academic lexical competence and performance within a tentative dimensional framework of vocabulary knowledge. On the premise that vocabulary knowledge is a multidimensional phenomenon, the participants' general and academic vocabulary knowledge were examined in terms of receptive and productive sub-dimensions, namely, size, depth, lexical use and diversity. The results indicated that the ELT majors in this study had large general and academic vocabulary size, likewise, in-depth vocabulary knowledge considering the high scores on the vocabulary level and association tests. However, this vocabulary knowledge appeared to be considerably less in production so they could not reflect their vocabulary knowledge in their free production tasks, essay writing. In terms of developmental patterns, the results confirmed the incremental nature of vocabulary learning due to differing developmental routes of each dimension. Some fluctuation in the size, lexical use and diversity were observed, yet after the 3<sup>rd</sup> year a kind of plateau was detected at the developmental patterns. Nonetheless, it can be concluded that the participants' lexical competence and performance developed throughout their university education.

Additionally, regarding the further analysis on the participants' academic lexical competence and performance, it was found that there was a kind of linear development in the size and production of academic vocabulary. However, in comparison with the related studies, it was seen that the participants' academic lexical performance remained limited throughout their education. Thus, in spite of promising progress in the participants' academic lexical competence, they had some difficulties in academic lexical performance, especially in essay context.

Furthermore, the correlation analyses on the sub-dimensions showed that all of the measures were interrelated and interdependent. Thus, it could be concluded that the tentative dimensional framework of lexical competence and performance for both general and academic vocabulary were validated through multiple test approach.

Consequently, it could be concluded that both general and academic vocabulary knowledge has a multi-dimensional structure and they develop incrementally throughout education. As a result of exposure, word frequency and year of instruction, the Turkish ELT majors' general and academic vocabulary knowledge differed and their lexical competence (i.e. receptive dimensions) and performance (i.e. productive dimensions) did not follow the same developmental tracks.

## **6.2. Implications**

The results of the present study yield some theoretical, methodological and theoretical implications, which will be discussed in the following.

### **6.2.1. Theoretical Implications**

To scaffold the cross-sectional evaluation of lexical competence and performance, a tentative dimensional framework was proposed in the present study, which covers the receptive and productive sub-dimensions. The results indicating the high correlations among all sub-dimensions validated this framework. Thus, theoretically, it could be suggested that the dimensional framework for L2 lexical competence and performance could be a guideline for L2 general and academic vocabulary learning and teaching. In spite of various studies that have investigated L2 vocabulary at macro and micro levels (Meara, 1996; Chapelle, 1998; Daller et. al. 2007) and different suggestions on the construct of L2 lexical competence (Henriksen, 1999; Zareva, 2005), there is no empirical study that investigated the L2 general and academic vocabulary within a framework covering main sub-dimensions for both lexical competence and performance. Having such multi-dimensional framework, the present study could offer theoretical ground for academic vocabulary as well as general vocabulary. Besides, other vocabulary dimensions such as semantic and linguistic indices could be involved in the dimensional structure of the framework for different vocabulary research. Moreover, thanks to the flexible structure of the framework, in which there are two separable pillars for general vocabulary and academic vocabulary, any of the pillars with its dimensions or both of the pillars could be adapted depending on the purpose of research.

Additionally, different from other frameworks in literature (Henriksen, 1999; Zareva, 2005; Daller et. al., 2007), the productive dimension of vocabulary was defined and examined as a distinct pillar of the framework since the productive dimensions require different cognitive processes than the receptive dimensions under lexical competence. As two sub-dimensions of lexical performance, lexical use and lexical diversity were adapted and the results indicated their complementary and explanatory relations with each other. Considering this, it could be suggested that this pillar with these sub-dimensions might be beneficial for the analysis of learners' overall lexical performance at different writing tasks as well as the analysis of production of certain words or word classes.

Although this tentative dimensional framework is based on a kind of hierarchical structure, overarching the vocabulary components (i.e. size, depth, lexical use, and diversity) as the sub-dimensions under two pillars of lexical competence and performance, this framework hypothesizes the interrelationship among the dimensions. The correlation results in the study justified this hypothesis. Thus, this study can be seen as a preliminary response for the call for a coherent, comprehensive theory of lexical competence that could explain the development of L2 vocabulary (Meara, 2002; Henriksen, 1999).

Furthermore, through multiple-test approach, it was found that the different dimensions of lexical competence and performance for both general and academic vocabulary develop at different rates; also their developments are interrelated and mutually dependent. In that point, the multi-dimensional incremental nature of vocabulary knowledge is also confirmed in this study. Thus, it could be claimed that the framework proposed for general and academic lexical competence and performance in the present study have theoretical ground, based upon vocabulary acquisition processes as well as the empirical support from the triangulated data analyses. In this regard, it could be suggested that the present study and proposed framework might act as guideline for L2 vocabulary research.

### **6.2.2. Methodological Implications**

Considering the significance of vocabulary knowledge in language proficiency and skills, different studies with different methodologies have been in literature. Depending on the purpose of the study, the vocabulary measurements and designs have been differed. However, as Schmitt (2010) emphasized, owing to multi-dimensional nature of vocabulary knowledge, a single measurement that would describe vocabulary knowledge on the premise of nothing-or-all phenomenon could be misleading. For a comprehensive and reliable description of vocabulary knowledge, the measurements should be varied in a way that more vocabulary dimensions could be examined (Read, 2000b). In line with these assumptions, the present study used five different measurements for each sub-dimension of vocabulary knowledge. This multiple test approach has provided comprehensive insights about the development of vocabulary knowledge covering receptive and productive dimensions separately. In that way, it became clear that the lexical competence and performance developed at different rates and paces. Thus, methodologically, it could be suggested that multiple measurements, at least covering different measurements for lexical competence and performance should be used in order to make reliable descriptions and generalizations.

Additionally, the scope of the present study differs from other similar vocabulary research since it examined the academic lexical competence and performance. To evaluate the participants' academic vocabulary knowledge, an additional instrument was developed in this study on the basis of AWL. Investigating most receptive and productive dimensions at one hand, this instrument could provide comprehensive insights about academic vocabulary. This instrument was validated and the results showed that it could measure the learners' receptive and productive academic vocabulary effectively. For other language contexts and participant profiles, this instrument could be used.

### **6.2.3. Pedagogical Implications**

For the pedagogical implications, firstly it could be suggested that Turkish EFL syllabus designers, material developers, classroom teachers and learners should be informed about the multidimensional nature of lexical competence and performance as

well as the developmental features of the different dimensions. As the results of the present study emphasized vocabulary knowledge does not simply mean how many words learners know. It has different dimensions and as well as competence, the lexical performance is important. Raising such awareness, the syllabus, material and activities could be designed with more focus on vocabulary. Particularly, at higher education, where academic vocabulary is crucial for academic achievement, the multi-dimension of academic lexical competence and performance should be taken into account. Therefore, it could be suggested that the activities that promote use of academic vocabulary should be embedded in the course contents. The results pointing out the limited proportion of productive vocabulary of 3<sup>rd</sup> and 4th year highlighted that the students still had difficulty in using words in a coherent text towards the end of their education. Thus, the course contents and materials should be revised and rearranged to promote both general and academic lexical performance.

Regarding how to implement such awareness in class, in other words, how vocabulary learning and teaching should be carried out, there is no consensus. The controversies about the incidental and intentional vocabulary learning (i.e. implicit and explicit) still continue in literature and there is not a clear-cut answer yet. The research so far demonstrated that implicit, incidental and explicit, intentional exposure (Horst et al., 2005; Laufer, 2005) are valuable for vocabulary learning. Thus, these two approaches are complementary and indispensable for learners (Nassaji, 2004). However, the effectiveness of meaning-based learning, where vocabulary is learned by using rather than explicit focus is widely accepted (Schmitt, 2008). On the other hand, some researchers argue that explicit teaching is irresistible for vocabulary. For example, Laufer (2005) did not deny the invaluable effect of incidental learning, but claimed that intentional learning, where the specific goal is to learn vocabulary with an explicit focus, almost always leads to greater and faster gains and with a better chance of retention and productive knowledge. Laufer (2005) supported her claim with four reasons. Firstly, she stated that learners who grasp the gist of the message do not pay attention to the meanings of the individual words and some words might be ignored for implicit learning. Secondly, she emphasized the threshold in the discourse and claimed that learners could not use guessing strategies if they do not know 98% words in the text. Thirdly, she argued that the words, which are learned through guessing, could be



internalized. Lastly, she emphasized that the new words which learners have met in discourse need to be met again, not to forget. Yet, learners do not usually read so much and often. Therefore, Laufer (2005) favoured the explicit focus on vocabulary learning. Supporting Laufer's (2005) claims and suggestions, Schmitt (2008) stated that vocabulary learning needs to have an explicit component.

The necessity of explicit focus for vocabulary learning was also emerged for the present study. The results pointed out the effect of exposure for all dimensions of vocabulary knowledge, especially for academic vocabulary. Since the participants had this exposure only through implicit means such as reading the sources or materials, listening to lectures, their vocabulary knowledge changed, depending on the exposure, but they were apt to forget or they could not use the words they knew. In that point, it could be suggested that explicit vocabulary activities that could maximize their engagement should be embedded in the courses they had. Particularly, at the language skill courses at the first year, such as Academic Writing and Reporting I-II and Academic Reading I-II courses, instructors could involve more vocabulary-focused activities to enlarge their vocabulary and to teach how to use this vocabulary. The sharp increase in all dimensions of vocabulary knowledge from the 1<sup>st</sup> year first semester to 1<sup>st</sup> year second semester in the present study showed that these courses had an important effect on the participants' vocabulary knowledge. However, the results also indicated that this increase could not sustain, even decayed. Additionally, the participants could not pass even reach the 5000<sup>th</sup> level, which was essential for academic achievement. Thus, the vocabulary instruction at all courses should be revised and some additional reforms such as involving more explicit focus should be conducted. In that way, the participants' vocabulary knowledge could be developed, so do their academic achievements in all areas.

Additionally, considering the incremental nature of vocabulary knowledge, which is emphasized in literature (Schmitt, 1998; 2010) as well as in the results of present study, it could be emphasized that vocabulary components are not learned concurrently, but some are mastered sooner than others. Thus, different approaches to vocabulary teaching may be more appropriate at the varying degrees of vocabulary acquisition. For instance, at the beginning years of education, explicit approach

focusing on the direct instruction on the form-meaning link can be most effective while later this approach could be supported with exposure approach to enhance the contextualized knowledge. Any activity or interaction that could provide more exposure is accepted as invaluable for vocabulary learning. Schmitt (2008) used the term of engagement to refer to the anything that leads to more exposure, attention, manipulation or time spent on vocabulary. He suggested that for vocabulary learning, promoting engagement is the most fundamental task for teacher, material designers and indeed learners themselves. Based on the results that revealed the effect of exposure on both lexical competence and performance, it could be suggested that the activities that trigger the learners' engagement in class and provide regular and intensive lexical exposure are necessary for the EFL university students.

Thus, it could be suggested that rather than favouring one approach to another, a balanced vocabulary learning and teaching should be implemented considering the interrelated multidimensional structure of lexical competence and performance. Some of the vocabulary dimensions are more prone to intentional learning while for some incidental is more effective. For instance, word meaning and form could be taught through in-class teaching and activities. On the other hand, for more contextualized dimensions such as collocations, associations and diverse use of vocabulary, more implicit methods might be more effective. In that point it could be suggested that vocabulary learning should have both an explicit teaching component and implicit component maximizing the repeated exposure to the vocabulary. Nation (2001) supported this balanced approach, emphasizing the four strands: meaning-focused input, language-focused learning, meaning-focused output and fluency development. Meaning-focused input means that L2 learners should have the opportunity to learn new words through listening and reading activities where the main focus is on the information in what they are listening to or reading. The participant Turkish ELT majors learned English, and the input they get is poor in quantity and quality compared with ESL learners in naturalistic learning contexts. Therefore, how to ensure the quantity and quality of input is important. The second strand is language-focused learning or form-focused instruction. This strand refers to the direct or explicit teaching. Nation (2001) claimed that up to the most frequent 3,000 word families in English explicit teaching and learning are crucial. The third strand is meaning-focused output.

L2 learners should be given adequate opportunities to develop their knowledge of the language through speaking or writing activities where the main attention is focused on the information they are trying to convey. Speaking and writing are invaluable means of vocabulary development because they make learners focus on words they need for communication. Having to speak and write encourages learners to listen like a speaker and read like a writer. These productive activities can reinforce knowledge of partially known words, thus deepening the depth of vocabulary knowledge and strengthening the links among words in the mental lexicon. Lastly, the fourth strand is fluency development. It is claimed that without a strong fluency, the vocabulary gained in the other three strands will not be readily available for normal use.

In addition to the teaching approaches, the materials for vocabulary learning and teaching are of great importance. Particularly, in EFL context, where the language input is mostly provided through course materials, the effectiveness and contents of these materials become more crucial. As emphasized so far, for the context of present study, the students got exposed to general and academic vocabulary mostly from their reading materials or activity sources. Considering the fluctuation in the students' both general and academic lexical competence as well as performance, it could be suggested that the materials given to the students could be varied and enriched to enhance the exposure of different vocabulary. Additionally, the instructors' awareness about the learners' vocabulary needs, the need for more vocabulary exposure, could be raised and they could be encouraged to revise their materials in terms of vocabulary input.

Moreover, the use of additional materials and activities that could foster vocabulary learning could be promoted. For instance, the use of some online components for vocabulary teaching has become widespread owing to the advances in technology. The concordancers, word lists or online available resources could be adapted for both implicit and explicit vocabulary teaching and learning in class. This would enhance learners' attention and motivation. Especially for the academic vocabulary, many online sources have been developed and used in many studies. For instance; there are two programs, which have been widely used in many vocabulary courses as well as research (e.g. Li & Qian, 2010). The first is the AWL Highlighter (available at <http://www.nottingham.ac.uk/walzsh3/acvocab/awlhighlighter.htm>) in

which the academic words in the submitted texts are highlighted. The learners could test their academic lexical performance and try to improve their academic vocabulary use according to the results of this program. If such an activity is advised by the teachers or if it becomes part of their writing course, it could also enhance their autonomy in vocabulary learning. The second program is an AWL Gap maker, (available at <http://www.nottingham.ac.uk/walzsh3/acvocab/awlgapmaker.htm>.) This program creates a gap fill exercise using the AWL. This program could be used by both the learners for their self-access vocabulary studies or by teachers for the preparation of tests.

The main point for both any implicit and explicit approach and any materials is to teach vocabulary learning strategies to ensure the learners' sustained vocabulary learning. Through vocabulary learning strategies, the learners could be aware of their responsible of their own learning processes and they could continue to learn more words. In that way, the learners could benefit from implicit vocabulary opportunities more, besides, they could perform the explicit vocabulary applications on their own. Such awareness is especially critical for academic vocabulary. Since these words are less frequent and encountered in academic texts that the learners read on their own, such strategies could foster their learning. Additionally, particularly at higher education contexts, like in the present study, where vocabulary instruction is usually provided as embedded in the course content, it is crucial for learners to have such strategies to comprehend the materials and to enlarge their vocabulary knowledge. Considering the limited lexical repertoire of the participants to some extent, one of the crucial suggestions is to focus on vocabulary learning strategies beginning from the language skill courses at the early years and revising them in the following courses. In that way, the learners could reach the 5000<sup>th</sup>-6000<sup>th</sup> threshold as emphasized in literature (Nation, 2001).

Consequently, it could be suggested that general and academic vocabulary learning and teaching for Turkish ELT majors could be revised in line with the results of present study; through conceptualizing lexical competence and performance with the integration of vocabulary dimensions, with a specific focus on academic vocabulary and new research perspectives adapting cross-sectional, multi-test approach as well as re-considering pedagogical implementations.

### 6.3. Limitations of the Study

The findings of the present study consequently implied the significance of lexical competence and performance. In an attempt to gain new perspectives on the general and academic vocabulary knowledge, the study employed multi-test approach with a large population cross-sectionally. The present study, however, involves some limitations in conceptualization, generalizability, and methodology like most of the empirical studies.

Firstly, for the conceptualization of the lexical competence and performance within the tentative dimensional framework, the receptive and productive sub-dimensions, namely the size, depth, lexical use and diversity were examined. Considering the different definitions and varying perspectives on vocabulary knowledge (Henriksen, 1999; Nation, 1990; 2001; Zareva, 2005; Daller et. al., 2007), it can be claimed that the results on the participants' vocabulary knowledge were limited to the receptive and productive dimensions focused in the present study. Some dimensions that have been involved in the definition of vocabulary knowledge such as syntactic, pragmatic, strategic and contextual ones (Daller et. al., 2007; Chapelle, 1998; Read, 2000) have not been examined in the study. Therefore, the dimensions under discussion only represent certain traits of lexical competence and performance.

In the present study, the cross-sectional design was used and as emphasized in literature, this design can be efficient to examine the large groups' development to obtain generalizable results. Nonetheless, it would be suggestible to design a longitudinal study on a group from the beginning to the end of education. This could also provide detailed results about the developmental patterns of all vocabulary dimensions and learning processes.

Additionally, regarding the data collection instruments in the study, the writing task could be questioned. The participants were asked to write argumentative essays. Their lexical performance was examined only in this genre and with a specific writing prompt. Thus, their performance was constrained with one composition; it might not be representative enough to generalize their lexical performance. Besides, the participants' lexical performance was assessed only through writing task; their lexical performance in

speaking was not evaluated. Thus, the results on lexical performance were limited to writing discourse.

Moreover, for the sampling of the present study, it should be stated that the results are limited to the English ELT majors at Anadolu University. The results could not be generalized to other majors at other universities, non-majors and other students at secondary or primary education. Thus, some of the results should be interpreted considering these limitations and some of the conclusions should be confirmed with future studies.

#### **6.4. Suggestions for further research**

Considering the scope and limitations of the study, future research at macro-level or micro-level could be suggested to overcome the limitations and give more in-depth analysis of lexical competence and performance. Through further studies, the mechanism of lexical development could be revealed at different research setting with different participants. Thus, more efficient approaches of vocabulary teaching and learning could be discovered.

First of all, the number of participants could be increased so that a more informative picture about the development of lexical competence and performance of ELT majors in Turkey could be obtained. The same research can also be replicated with different majors in comparison with ELT majors to discuss the effect of different disciplines on vocabulary knowledge. Moreover, such a study can be undertaken cross-culturally, for example, to detect the similarity and difference of the native, non-native or ESL, EFL lexical competence and performance. The findings obtained from such different learning contexts would be insightful for the construction of better L2 vocabulary acquisition theories and models.

Additionally, involving more vocabulary components such as pragmatic, syntactic and discourse, the scope of the study can be broadened. With different sub-dimensions, the learners' lexical competence and performance could be investigated from a larger perspective and more detailed picture of learners' general and academic vocabulary knowledge could reveal.

Furthermore, with qualitative research methods, the quantitative data could be enriched and new perspectives on learners' vocabulary knowledge could be examined. Besides, the longitudinal case studies and individual studies focusing on one learner or group's lexical competence and performance could provide insights about the nature of lexical competence and performance as well as their developmental processes.

In addition to new research designs, data collection measures could be varied. For instance, different writing tasks such as narrations or expositions could be used in the future studies to elicit learners' productive vocabulary. Furthermore, the writing prompts could be varied and the learners could be asked to write about general topics as well as field-specific topics. In that way, the learners' tendencies to use certain words could be investigated.

Supporting the written data, learners' spoken data can be a useful source to detect the feature of productive vocabulary. Comparisons can be made between data collected from different writing styles and different modes (written or spoken). Thus, a more comprehensive picture of productive vocabulary can be obtained.

Either using the written data or combining it with spoken data, a learner corpus for the field of ELT (in Turkish context) could be developed. By means of this corpus, learners' vocabulary choices while explaining their field-related topics could be analysed. Besides, the list of academic vocabulary and general vocabulary that is actively and commonly used by ELT learners could be determined. The learners' written and spoken products could be analysed lexically more effectively with this corpus.

Overall, it should be emphasized that any research that could gain new and/or in-depth perspectives on vocabulary knowledge is invaluable to understand vocabulary acquisition perspective. Thus, the studies that replicate, complement or develop the present research design would contribute to literature.

## APPENDICES



A. 1. Academic Word List (AWL) (Coxhead, 2000)

1. ABANDON
2. ABSTRACT
3. ACADEMY
4. ACCESS
5. ACCOMMODATE
6. ACCOMPANY
7. ACCUMULATE
8. ACCURATE
9. ACHIEVE
10. ACKNOWLEDGE
11. ACQUIRE
12. ADAPT
13. ADEQUATE
14. ADJACENT
15. ADJUST
16. ADMINISTRATE
17. ADULT
18. ADVOCATE
19. AFFECT
20. AGGREGATE
21. AID
22. ALBEIT
23. ALLOCATE
24. ALTER
25. ALTERNATIVE
26. AMBIGUOUS
27. AMEND
28. ANALOGY
29. ANALYSE
30. ANNUAL
31. ANTICIPATE
32. APPARENT
33. APPEND
34. APPRECIATE
35. APPROACH
36. APPROPRIATE
37. APPROXIMATE
38. ARBITRARY
39. AREA
40. ASPECT
41. ASSEMBLE
42. ASSESS
43. ASSIGN

44. ASSIST
45. ASSUME
46. ASSURE
47. ATTACH
48. ATTAIN
49. ATTITUDE
50. ATTRIBUTE
51. AUTHOR
52. AUTHORITY
53. AUTOMATE
54. AVAILABLE
55. AWARE
56. BEHALF
57. BENEFIT
58. BIAS
59. BOND
60. BRIEF
61. BULK
62. CAPABLE
63. CAPACITY
64. CATEGORY
65. CEASE
66. CHALLENGE
67. CHANNEL
68. CHAPTER
69. CHART
70. CHEMICAL
71. CIRCUMSTANCE
72. CITE
73. CIVIL
74. CLARIFY
75. CLASSIC
76. CLAUSE
77. CODE
78. COHERENT
79. COINCIDE
80. COLLAPSE
81. COLLEAGUE
82. COMMENCE
83. COMMENT
84. COMMISSION
85. COMMIT
86. COMMODITY

87. COMMUNICATE
88. COMMUNITY
89. COMPATIBLE
90. COMPENSATE
91. COMPILE
92. COMPLEMENT
93. COMPLEX
94. COMPONENT
95. COMPOUND
96. COMPREHENSIVE
97. COMPRISE
98. COMPUTE
99. CONCEIVE
100. CONCENTRATE
101. CONCEPT
102. CONCLUDE
103. CONCURRENT
104. CONDUCT
105. CONFER
106. CONFINE
107. CONFIRM
108. CONFLICT
109. CONFORM
110. CONSENT
111. CONSEQUENT
112. CONSIDERABLE
113. CONSIST
114. CONSTANT
115. CONSTITUTE
116. CONSTRAIN
117. CONSTRUCT
118. CONSULT
119. CONSUME
120. CONTACT
121. CONTEMPORARY
122. CONTEXT
123. CONTRACT
124. CONTRADICT
125. CONTRARY
126. CONTRAST
127. CONTRIBUTE
128. CONTROVERSY
129. CONVENE



130. CONVERSE  
131. CONVERT  
132. CONVINCED  
133. COOPERATE  
134. COORDINATE  
135. CORE  
136. CORPORATE  
137. CORRESPOND  
138. COUPLE  
139. CREATE  
140. CREDIT  
141. CRITERIA  
142. CRUCIAL  
143. CULTURE  
144. CURRENCY  
145. CYCLE  
146. DATA  
147. DEBATE  
148. DECADE  
149. DECLINE  
150. DEDUCE  
151. DEFINE  
152. DEFINITE  
153. DEMONSTRATE  
154. DENOTE  
155. DENY  
156. DEPRESS  
157. DERIVE  
158. DESIGN  
159. DESPITE  
160. DETECT  
161. DEVIATE  
162. DEVICE  
163. DEVOTE  
164. DIFFERENTIATE  
165. DIMENSION  
166. DIMINISH  
167. DISCRETE  
168. DISCRIMINATE  
169. DISPLACE  
170. DISPLAY  
171. DISPOSE  
172. DISTINCT  
173. DISTORT  
174. DISTRIBUTE

175. DIVERSE  
176. DOCUMENT  
177. DOMAIN  
178. DOMESTIC  
179. DOMINATE  
180. DRAFT  
181. DRAMA  
182. DURATION  
183. DYNAMIC  
184. ECONOMY  
185. EDIT  
186. ELEMENT  
187. ELIMINATE  
188. EMERGE  
189. EMPHASIS  
190. EMPIRICAL  
191. ENABLE  
192. ENCOUNTER  
193. ENERGY  
194. ENFORCE  
195. ENHANCE  
196. ENORMOUS  
197. ENSURE  
198. ENTITY  
199. ENVIRONMENT  
200. EQUATE  
201. EQUIP  
202. EQUIVALENT  
203. ERODE  
204. ERROR  
205. ESTABLISH  
206. ESTATE  
207. ESTIMATE  
208. ETHIC  
209. ETHNIC  
210. EVALUATE  
211. EVENTUAL  
212. EVIDENT  
213. EVOLVE  
214. EXCEED  
215. EXCLUDE  
216. EXHIBIT  
217. EXPAND  
218. EXPERT  
219. EXPLICIT

220. EXPLOIT  
221. EXPORT  
222. EXPOSE  
223. EXTERNAL  
224. EXTRACT  
225. FACILITATE  
226. FACTOR  
227. FEATURE  
228. FEDERAL  
229. FEE  
230. FILE  
231. FINAL  
232. FINANCE  
233. FINITE  
234. FLEXIBLE  
235. FLUCTUATE  
236. FOCUS  
237. FORMAT  
238. FORMULA  
239. FORTHCOMING  
240. FOUNDATION  
241. FOUNDED  
242. FRAMEWORK  
243. FUNCTION  
244. FUND  
245. FUNDAMENTAL  
246. FURTHERMORE  
247. GENDER  
248. GENERATE  
249. GENERATION  
250. GLOBE  
251. GOAL  
252. GRADE  
253. GRANT  
254. GUARANTEE  
255. GUIDELINE  
256. HENCE  
257. HIERARCHY  
258. HIGHLIGHT  
259. HYPOTHESIS  
260. IDENTICAL  
261. IDENTIFY  
262. IDEOLOGY  
263. IGNORANT  
264. ILLUSTRATE

265. IMAGE  
266. IMMIGRATE  
267. IMPACT  
268. IMPLEMENT  
269. IMPLICATE  
270. IMPLICIT  
271. IMPLY  
272. IMPOSE  
273. INCENTIVE  
274. INCIDENCE  
275. INCLINE  
276. INCOME  
277. INCORPORATE  
278. INDEX  
279. INDICATE  
280. INDIVIDUAL  
281. INDUCE  
282. INEVITABLE  
283. INFER  
284. INFRASTRUCTURE  
285. INHERENT  
286. INHIBIT  
287. INITIAL  
288. INITIATE  
289. INJURE  
290. INNOVATE  
291. INPUT  
292. INSERT  
293. INSIGHT  
294. INSPECT  
295. INSTANCE  
296. INSTITUTE  
297. INSTRUCT  
298. INTEGRAL  
299. INTEGRATE  
300. INTEGRITY  
301. INTELLIGENCE  
302. INTENSE  
303. INTERACT  
304. INTERMEDIATE  
305. INTERNAL  
306. INTERPRET  
307. INTERVAL  
308. INTERVENE  
309. INTRINSIC

310. INVEST  
311. INVESTIGATE  
312. INVOKE  
313. INVOLVE  
314. ISOLATE  
315. ISSUE  
316. ITEM  
317. JOB  
318. JOURNAL  
319. JUSTIFY  
320. LABEL  
321. LABOUR  
322. LAYER  
323. LECTURE  
324. LEGAL  
325. LEGISLATE  
326. LEVY  
327. LIBERAL  
328. LICENCE  
329. LIKEWISE  
330. LINK  
331. LOCATE  
332. LOGIC  
333. MAINTAIN  
334. MAJOR  
335. MANIPULATE  
336. MANUAL  
337. MARGIN  
338. MATURE  
339. MAXIMISE  
340. MECHANISM  
341. MEDIA  
342. MEDIATE  
343. MEDICAL  
344. MEDIUM  
345. MENTAL  
346. METHOD  
347. MIGRATE  
348. MILITARY  
349. MINIMAL  
350. MINIMISE  
351. MINIMUM  
352. MINISTRY  
353. MINOR  
354. MODE

355. MODIFY  
356. MONITOR  
357. MOTIVE  
358. MUTUAL  
359. NEGATE  
360. NETWORK  
361. NEUTRAL  
362. NEVERTHELESS  
363. NONETHELESS  
364. NORM  
365. NORMAL  
366. NOTION  
367. NOTWITHSTANDING  
368. NUCLEAR  
369. OBJECTIVE  
370. OBTAIN  
371. OBVIOUS  
372. OCCUPY  
373. OCCUR  
374. ODD  
375. OFFSET  
376. ONGOING  
377. OPTION  
378. ORIENT  
379. OUTCOME  
380. OUTPUT  
381. OVERALL  
382. OVERLAP  
383. OVERSEAS  
384. PANEL  
385. PARADIGM  
386. PARAGRAPH  
387. PARALLEL  
388. PARAMETER  
389. PARTICIPATE  
390. PARTNER  
391. PASSIVE  
392. PERCEIVE  
393. PERCENT  
394. PERIOD  
395. PERSIST  
396. PERSPECTIVE  
397. PHASE  
398. PHENOMENON  
399. PHILOSOPHY

400. PHYSICAL  
401. PLUS  
402. POLICY  
403. PORTION  
404. POSE  
405. POSITIVE  
406. POTENTIAL  
407. PRACTITIONER  
408. PRECEDE  
409. PRECISE  
410. PREDICT  
411. PREDOMINANT  
412. PRELIMINARY  
413. PRESUME  
414. PREVIOUS  
415. PRIMARY  
416. PRIME  
417. PRINCIPAL  
418. PRINCIPLE  
419. PRIOR  
420. PRIORITY  
421. PROCEED  
422. PROCESS  
423. PROFESSIONAL  
424. PROHIBIT  
425. PROJECT  
426. PROMOTE  
427. PROPORTION  
428. PROSPECT  
429. PROTOCOL  
430. PSYCHOLOGY  
431. PUBLICATION  
432. PUBLISH  
433. PURCHASE  
434. PURSUE  
435. QUALITATIVE  
436. QUOTE  
437. RADICAL  
438. RANDOM  
439. RANGE  
440. RATIO  
441. RATIONAL  
442. REACT  
443. RECOVER  
444. REFINE

445. REGIME  
446. REGION  
447. REGISTER  
448. REGULATE  
449. REINFORCE  
450. REJECT  
451. RELAX  
452. RELEASE  
453. RELEVANT  
454. RELUCTANCE  
455. RELY  
456. REMOVE  
457. REQUIRE  
458. RESEARCH  
459. RESIDE  
460. RESOLVE  
461. RESOURCE  
462. RESPOND  
463. RESTORE  
464. RESTRAIN  
465. RESTRICT  
466. RETAIN  
467. REVEAL  
468. REVENUE  
469. REVERSE  
470. REVISE  
471. REVOLUTION  
472. RIGID  
473. ROLE  
474. ROUTE  
475. SCENARIO  
476. SCHEDULE  
477. SCHEME  
478. SCOPE  
479. SECTION  
480. SECTOR  
481. SECURE  
482. SEEK  
483. SELECT  
484. SEQUENCE  
485. SERIES  
486. SEX  
487. SHIFT  
488. SIGNIFICANT  
489. SIMILAR

490. SIMULATE  
491. SITE  
492. SO-CALLED  
493. SOLE  
494. SOMEWHAT  
495. SOURCE  
496. SPECIFIC  
497. SPECIFY  
498. SPHERE  
499. STABLE  
500. STATISTIC  
501. STATUS  
502. STRAIGHTFORWARD  
503. STRATEGY  
504. STRESS  
505. STRUCTURE  
506. STYLE  
507. SUBMIT  
508. SUBORDINATE  
509. SUBSEQUENT  
510. SUBSIDY  
511. SUBSTITUTE  
512. SUCCESSOR  
513. SUFFICIENT  
514. SUM  
515. SUMMARY  
516. SUPPLEMENT  
517. SURVEY  
518. SURVIVE  
519. SUSPEND  
520. SUSTAIN  
521. SYMBOL  
522. TAPE  
523. TARGET  
524. TASK  
525. TEAM  
526. TECHNICAL  
527. TECHNIQUE  
528. TECHNOLOGY  
529. TEMPORARY  
530. TENSE  
531. TERMINATE  
532. TEXT  
533. THEME  
534. THEORY

535. THEREBY
536. THESIS
537. TOPIC
538. TRACE
539. TRADITION
540. TRANSFER
541. TRANSFORM
542. TRANSIT
543. TRANSMIT
544. TRANSPORT
545. TREND
546. TRIGGER
547. ULTIMATE
548. UNDERGO
549. UNDERLIE
550. UNDERTAKE
551. UNIFORM
552. UNIFY
553. UNIQUE
554. UTILISE
555. VALID
556. VARY
557. VEHICLE
558. VERSION
559. VIA
560. VIOLATE
561. VIRTUAL
562. VISIBLE
563. VISION
564. VISUAL
565. VOLUME
566. VOLUNTARY
567. WELFARE
568. WHEREAS
569. WHEREBY
570. WIDESPREAD

## A2. Sub-Lists of Academic Word List (Coxhead, 2000)

### **Sublist 1 of the Academic Word List - Most Frequent Words in Families**

This sublist contains the most frequent words of the Academic Word List in the Academic Corpus.

1	2	3	4	5
<i>analysis</i>	<i>contract</i>	<i>factors</i>	<i>legal</i>	<i>research</i>
<i>approach</i>	<i>create</i>	<i>financial</i>	<i>legislation</i>	<i>response</i>
<i>area</i>	<i>data</i>	<i>formula</i>	<i>major</i>	<i>role</i>
<i>assessment</i>	<i>definition</i>	<i>function</i>	<i>method</i>	<i>section</i>
<i>assume</i>	<i>derived</i>	<i>identified</i>	<i>occur</i>	<i>sector</i>
<i>authority</i>	<i>distribution</i>	<i>income</i>	<i>percent</i>	<i>significant</i>
<i>available</i>	<i>economic</i>	<i>indicate</i>	<i>period</i>	<i>similar</i>
<i>benefit</i>	<i>environment</i>	<i>individual</i>	<i>policy</i>	<i>source</i>
<i>concept</i>	<i>established</i>	<i>interpretation</i>	<i>principle</i>	<i>specific</i>
<i>consistent</i>	<i>estimate</i>	<i>involved</i>	<i>procedure</i>	<i>structure</i>
<i>constitutional</i>	<i>evidence</i>	<i>issues</i>	<i>process</i>	<i>theory</i>
<i>context</i>	<i>export</i>	<i>labour</i>	<i>required</i>	<i>variables</i>

### **Sublist 2 of Academic Word List - Most Frequent Words in Families**

This sublist contains the second most frequent words in the Academic Word List from the Academic Corpus.

1	2	3	4	5
<i>achieve</i>	<i>computer</i>	<i>evaluation</i>	<i>obtained</i>	<i>resident</i>
<i>acquisition</i>	<i>conclusion</i>	<i>features</i>	<i>participation</i>	<i>resources</i>
<i>administration</i>	<i>conduct</i>	<i>final</i>	<i>perceived</i>	<i>restricted</i>
<i>affect</i>	<i>consequences</i>	<i>focus</i>	<i>positive</i>	<i>security</i>
<i>appropriate</i>	<i>construction</i>	<i>impact</i>	<i>potential</i>	<i>sought</i>
<i>aspects</i>	<i>consumer</i>	<i>injury</i>	<i>previous</i>	<i>select</i>
<i>assistance</i>	<i>credit</i>	<i>institute</i>	<i>primary</i>	<i>site</i>
<i>categories</i>	<i>cultural</i>	<i>investment</i>	<i>purchase</i>	<i>strategies</i>
<i>chapter</i>	<i>design</i>	<i>items</i>	<i>range</i>	<i>survey</i>
<i>commission</i>	<i>distinction</i>	<i>journal</i>	<i>region</i>	<i>text</i>

<i>community</i>	<i>elements</i>	<i>maintenance</i>	<i>regulations</i>	<i>traditional</i>
<i>complex</i>	<i>equation</i>	<i>normal</i>	<i>relevant</i>	<i>transfer</i>

**Sublist 3 of Academic Word List - Most Frequent Words in Families**

This sublist contains the third most frequent words of the Academic Word List in the Academic Corpus.

1	2	3	4	5
<i>alternative</i>	<i>core</i>	<i>fun</i>	<i>minorities</i>	<i>scheme</i>
<i>circumstances</i>	<i>corporate</i>	<i>illustrated</i>	<i>negative</i>	<i>sequence</i>
<i>comments</i>	<i>corresponding</i>	<i>immigration</i>	<i>outcomes</i>	<i>sex</i>
<i>compensation</i>	<i>criteria</i>	<i>implies</i>	<i>partnership</i>	<i>shift</i>
<i>components</i>	<i>deduction</i>	<i>initial</i>	<i>philosophy</i>	<i>specified</i>
<i>consent</i>	<i>demonstrate</i>	<i>instance</i>	<i>physical</i>	<i>sufficient</i>
<i>considerable</i>	<i>document</i>	<i>interaction</i>	<i>proportion</i>	<i>task</i>
<i>constant</i>	<i>dominant</i>	<i>justification</i>	<i>published</i>	<i>technical</i>
<i>constraints</i>	<i>emphasis</i>	<i>layer</i>	<i>reaction</i>	<i>techniques</i>
<i>contribution</i>	<i>ensure</i>	<i>link</i>	<i>registered</i>	<i>technology</i>
<i>convention</i>	<i>excluded</i>	<i>location</i>	<i>reliance</i>	<i>validity</i>
<i>coordination</i>	<i>framework</i>	<i>maximum</i>	<i>removed</i>	<i>volume</i>

**Sublist 4 of Academic Word List - Most Frequent Words in Families**

This sublist contains the fourth most frequent words of the Academic Word List in the Academic Corpus.

1	2	3	4	5
<i>access</i>	<i>conference</i>	<i>hence</i>	<i>occupational</i>	<i>promote</i>
<i>adequate</i>	<i>contrast</i>	<i>hypothesis</i>	<i>option</i>	<i>regime</i>
<i>annual</i>	<i>cycle</i>	<i>implementation</i>	<i>output</i>	<i>resolution</i>
<i>apparent</i>	<i>debate</i>	<i>implications</i>	<i>overall</i>	<i>retained</i>
<i>approximated</i>	<i>despite</i>	<i>imposed</i>	<i>parallel</i>	<i>series</i>
<i>attitudes</i>	<i>dimensions</i>	<i>integration</i>	<i>parameters</i>	<i>statistics</i>
<i>attributed</i>	<i>domestic</i>	<i>internal</i>	<i>phase</i>	<i>status</i>
<i>civil</i>	<i>emerged</i>	<i>investigation</i>	<i>predicted</i>	<i>stress</i>



<i>code</i>	<i>error</i>	<i>job</i>	<i>principal</i>	<i>subsequent</i>
<i>commitment</i>	<i>ethnic</i>	<i>label</i>	<i>prior</i>	<i>sum</i>
<i>communication</i>	<i>goals</i>	<i>mechanism</i>	<i>professional</i>	<i>summary</i>
<i>concentration</i>	<i>granted</i>	<i>obvious</i>	<i>project</i>	<i>undertaken</i>

**Sublist 5 of Academic Word List - Most Frequent Words in Families**

1	2	3	4	5
<i>academic</i>	<i>decline</i>	<i>facilitate</i>	<i>monitoring</i>	<i>revenue</i>
<i>adjustment</i>	<i>discretion</i>	<i>fundamental</i>	<i>network</i>	<i>stability</i>
<i>alter</i>	<i>draft</i>	<i>generated</i>	<i>notion</i>	<i>styles</i>
<i>amendment</i>	<i>enable</i>	<i>generation</i>	<i>objective</i>	<i>substitution</i>
<i>aware</i>	<i>energy</i>	<i>image</i>	<i>orientation</i>	<i>sustainable</i>
<i>capacity</i>	<i>enforcement</i>	<i>liberal</i>	<i>perspective</i>	<i>symbolic</i>
<i>challenge</i>	<i>entities</i>	<i>licence</i>	<i>precise</i>	<i>target</i>
<i>clause</i>	<i>equivalent</i>	<i>logic</i>	<i>prime</i>	<i>transition</i>
<i>compounds</i>	<i>evolution</i>	<i>marginal</i>	<i>psychology</i>	<i>trend</i>
<i>conflict</i>	<i>expansion</i>	<i>medical</i>	<i>pursue</i>	<i>version</i>
<i>consultation</i>	<i>exposure</i>	<i>mental</i>	<i>ratio</i>	<i>welfare</i>
<i>contact</i>	<i>external</i>	<i>modified</i>	<i>rejected</i>	<i>whereas</i>

**Sublist 6 of Academic Word List - Most Frequent Words in Families**

1	2	3	4	5
<i>abstract</i>	<i>cooperative</i>	<i>fees</i>	<i>instructions</i>	<i>presumption</i>
<i>accurate</i>	<i>discrimination</i>	<i>flexibility</i>	<i>intelligence</i>	<i>rational</i>
<i>acknowledged</i>	<i>display</i>	<i>furthermore</i>	<i>interval</i>	<i>recovery</i>
<i>aggregate</i>	<i>diversity</i>	<i>gender</i>	<i>lecture</i>	<i>revealed</i>
<i>allocation</i>	<i>domain</i>	<i>ignored</i>	<i>migration</i>	<i>scope</i>
<i>assigned</i>	<i>edition</i>	<i>incentive</i>	<i>minimum</i>	<i>subsidiary</i>
<i>attached</i>	<i>enhanced</i>	<i>incidence</i>	<i>ministry</i>	<i>tapes</i>
<i>author</i>	<i>estate</i>	<i>incorporated</i>	<i>motivation</i>	<i>trace</i>
<i>bond</i>	<i>exceed</i>	<i>index</i>	<i>neutral</i>	<i>transformation</i>
<i>brief</i>	<i>expert</i>	<i>inhibition</i>	<i>nevertheless</i>	<i>transport</i>



<i>capable</i>	<i>explicit</i>	<i>initiatives</i>	<i>overseas</i>	<i>underlying</i>
<i>cited</i>	<i>federal</i>	<i>input</i>	<i>preceding</i>	<i>utility</i>

**Sublist 7 of Academic Word List - Most Frequent Words in Families**

1	2	3	4	5
<i>adaptation</i>	<i>couple</i>	<i>finite</i>	<i>isolated</i>	<i>solely</i>
<i>adults</i>	<i>decades</i>	<i>foundation</i>	<i>media</i>	<i>somewhat</i>
<i>advocate</i>	<i>definite</i>	<i>global</i>	<i>mode</i>	<i>submitted</i>
<i>aid</i>	<i>deny</i>	<i>grade</i>	<i>paradigm</i>	<i>successive</i>
<i>channel</i>	<i>differentiation</i>	<i>guarantee</i>	<i>phenomenon</i>	<i>survive</i>
<i>chemical</i>	<i>disposal</i>	<i>hierarchical</i>	<i>priority</i>	<i>thesis</i>
<i>classical</i>	<i>dynamic</i>	<i>identical</i>	<i>prohibited</i>	<i>topic</i>
<i>comprehensive</i>	<i>eliminate</i>	<i>ideology</i>	<i>publication</i>	<i>transmission</i>
<i>comprise</i>	<i>empirical</i>	<i>inferred</i>	<i>quotation</i>	<i>ultimately</i>
<i>confirmed</i>	<i>equipment</i>	<i>innovation</i>	<i>release</i>	<i>unique</i>
<i>contrary</i>	<i>extract</i>	<i>insert</i>	<i>reverse</i>	<i>visible</i>
<i>converted</i>	<i>file</i>	<i>intervention</i>	<i>simulation</i>	<i>voluntary</i>

**Sublist 8 of Academic Word List - Most Frequent Words in Families**

1	2	3	4	5
<i>abandon</i>	<i>commodity</i>	<i>exhibit</i>	<i>minimised</i>	<i>revision</i>
<i>accompanied</i>	<i>complement</i>	<i>exploitation</i>	<i>nuclear</i>	<i>schedule</i>
<i>accumulation</i>	<i>contemporary</i>	<i>fluctuations</i>	<i>offset</i>	<i>tension</i>
<i>ambiguous</i>	<i>contradiction</i>	<i>guidelines</i>	<i>paragraph</i>	<i>termination</i>
<i>appendix</i>	<i>crucial</i>	<i>highlighted</i>	<i>plus</i>	<i>theme</i>
<i>appreciation</i>	<i>currency</i>	<i>implicit</i>	<i>practitioners</i>	<i>thereby</i>
<i>arbitrary</i>	<i>denote</i>	<i>induced</i>	<i>predominantly</i>	<i>uniform</i>
<i>automatically</i>	<i>detected</i>	<i>inevitably</i>	<i>prospect</i>	<i>vehicle</i>
<i>bias</i>	<i>deviation</i>	<i>infrastructure</i>	<i>radical</i>	<i>via</i>
<i>chart</i>	<i>displacement</i>	<i>inspection</i>	<i>random</i>	<i>virtually</i>
<i>clarity</i>	<i>dramatic</i>	<i>intensity</i>	<i>reinforced</i>	<i>widespread</i>



<i>conformity</i>	<i>eventually</i>	<i>manipulation</i>	<i>restore</i>	<i>visual</i>
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**Sublist 9 of Academic Word List - Most Frequent Words in Families**

1	2	3	4	5
<i>accommodation</i>	<i>concurrent</i>	<i>format</i>	<i>mutual</i>	<i>rigid</i>
<i>analogous</i>	<i>confined</i>	<i>founded</i>	<i>norms</i>	<i>route</i>
<i>anticipated</i>	<i>controversy</i>	<i>inherent</i>	<i>overlap</i>	<i>scenario</i>
<i>assurance</i>	<i>conversely</i>	<i>insights</i>	<i>passive</i>	<i>sphere</i>
<i>attained</i>	<i>device</i>	<i>integral</i>	<i>portion</i>	<i>subordinate</i>
<i>behalf</i>	<i>devoted</i>	<i>intermediate</i>	<i>preliminary</i>	<i>supplementary</i>
<i>bulk</i>	<i>diminished</i>	<i>manual</i>	<i>protocol</i>	<i>suspended</i>
<i>ceases</i>	<i>distorted/distortion</i>	<i>mature</i>	<i>qualitative</i>	<i>team</i>
<i>coherence</i>	<i>- equal figures</i>	<i>mediation</i>	<i>refine</i>	<i>temporary</i>
<i>coincide</i>	<i>duration</i>	<i>medium</i>	<i>relaxed</i>	<i>trigger</i>
<i>commenced</i>	<i>erosion</i>	<i>military</i>	<i>restraints</i>	<i>unified</i>
<i>incompatible</i>	<i>ethical</i>	<i>minimal</i>	<i>revolution</i>	<i>violation</i>
				<i>vision</i>

**Sublist 10 of the Academic Word List - Most Frequent Words in Families**

This sublist contains the least frequent words of the Academic Word List in the Academic Corpus.

1	2	3	4	5
<i>adjacent</i>	<i>conceivedconvinced</i>	<i>inclinationintegrity</i>	<i>nonetheless</i>	<i>posed</i>
<i>albeit</i>	<i>depression</i>	<i>intrinsic</i>	<i>notwithstanding</i>	<i>reluctant</i>
<i>assembly</i>	<i>encountered</i>	<i>invoked</i>	<i>odd</i>	<i>so-called</i>
<i>collapse</i>	<i>enormous</i>	<i>levy</i>	<i>ongoing</i>	<i>straightforward</i>
<i>colleagues</i>	<i>forthcoming</i>	<i>likewise</i>	<i>panel</i>	<i>undergo</i>
<i>compiled</i>			<i>persistent</i>	<i>whereby</i>

### A3. Vocabulary Level Test

Class \_\_\_\_\_ Name \_\_\_\_\_ Number \_\_\_\_\_

Please choose the right word to go with each meaning. Write the number of that word next to its meaning. Here is an example:

1. business
2. clock \_\_\_\_\_ part of a house
3. horse \_\_\_\_\_ animal with four legs
4. pencil \_\_\_\_\_ something used for writing
5. shoe
6. wall

You answer it in the following way

1. business
2. clock 6 part of a house
3. horse 3 animal with four legs
4. pencil 4 something used for writing
5. shoe
6. wall

#### ***THE 2,000 WORD LEVEL***

(1)

1. copy
2. even \_\_\_\_\_ end of highest point
3. motor \_\_\_\_\_ this moves a car
4. pity \_\_\_\_\_ thing made to be like another
5. profit
6. tip

(2)

1. accident
2. debt \_\_\_\_\_ loud deep sound
3. fortune \_\_\_\_\_ something you must pay
4. pride \_\_\_\_\_ having a high opinion of yourself

5. roar

6. thread

(3)

1. birth

2. dust

\_\_\_\_\_ game

3. operation

\_\_\_\_\_ winning

4. row

\_\_\_\_\_ being born

5. sport

6. victory

(4)

1. clerk

2. frame

\_\_\_\_\_ a drink

3. noise

\_\_\_\_\_ office worker

4. respect

\_\_\_\_\_ unwanted sound

5. theatre

6. wine

(5)

1. dozen

2. empire

\_\_\_\_\_ chance

3. gift

\_\_\_\_\_ twelve

4. opportunity

\_\_\_\_\_ money paid to the government

5. relief

6. tax

(6)

1. admire

2. complain

\_\_\_\_\_ make wider and longer

3. fix

\_\_\_\_\_ bring in for the first time

4. hire

\_\_\_\_\_ have a high opinion of someone

5. introduce

6. stretch

(7)

1. arrange

2. develop

\_\_\_\_\_ grow

3. lean \_\_\_\_\_ put in order  
4. owe \_\_\_\_\_ like more than something else

5. prefer

6. seize

(8)

1. blame

2. elect \_\_\_\_\_ make

3. jump \_\_\_\_\_ choose by voting

4. manufacture \_\_\_\_\_ become like water

5. melt

6. threaten

(9)

1. brave

2. electric \_\_\_\_\_ commonly done

3. firm \_\_\_\_\_ wanting food

4. hungry \_\_\_\_\_ having no fear

5. local

6. usual

(10)

1. bitter

2. independent \_\_\_\_\_ beautiful

3. lovely \_\_\_\_\_ small

4. merry \_\_\_\_\_ liked by many people

5. popular

6. slight

### ***THE 3,000 WORD LEVEL***

(1)

1. bull

2. champion \_\_\_\_\_ formal and serious manner

3. dignity \_\_\_\_\_ winner of a sporting event

4. hell \_\_\_\_\_ building where valuable objects are shown

5. museum

6. solution

(2)

- |               |                                  |
|---------------|----------------------------------|
| 1. blanket    |                                  |
| 2. contest    | _____ holiday                    |
| 3. generation | _____ good quality               |
| 4. merit      | _____ wool covering used on beds |
| 5. plot       |                                  |
| 6. vacation   |                                  |

(3)

- |              |   |
|--------------|---|
| 1. apartment |   |
| 2. candle    | _____ a place to live                       |
| 3. draft     | _____ chance of something happening         |
| 4. horror    | _____ first rough form of something written |
| 5. prospect  |   |
| 6. timber    |   |

(4)

- |                   |                                     |
|-------------------|-------------------------------------|
| 1. administration |                                     |
| 2. angel          | _____ group of animals              |
| 3. frost          | _____ spirit who serves God         |
| 4. herd           | _____ managing business and affairs |
| 5. fort           |                                     |
| 6. pond           |                                     |

(5)

- |               |                                   |
|---------------|-----------------------------------|
| 1. atmosphere |                                   |
| 2. counsel    | _____ advice                      |
| 3. factor     | _____ a place to cover with grass |
| 4. hen        | _____ female chicken              |
| 5. lawn       |                                   |
| 6. muscle     |                                   |

(6)

- |            |                                   |
|------------|-----------------------------------|
| 1. abandon |                                   |
| 2. dwell   | _____ live in a place             |
| 3. oblige  | _____ follow in order to catch    |
| 4. pursue  | _____ leave something permanently |
| 5. quote   |                                   |

6. resolve

(7)

1. assemble

2. attach

\_\_\_\_\_ look closely

3. peer

\_\_\_\_\_ stop doing something

4. quit

\_\_\_\_\_ cry out loudly in fear

5. scream

6. toss

(8)

1. drift

2. endure

\_\_\_\_\_ suffer patiently

3. grasp

\_\_\_\_\_ join wool threads together

4. knit

\_\_\_\_\_ hold firmly with your hands

5. register

6. tumble

(9)

1. brilliant

2. distinct

\_\_\_\_\_ thin

3. magic

\_\_\_\_\_ steady

4. naked

\_\_\_\_\_ without clothes

5. slender

6. stable

(10)

1. aware

2. blank

\_\_\_\_\_ usual

3. desperate

\_\_\_\_\_ best or most important

4. normal

\_\_\_\_\_ knowing what is happening

5. striking

6. supreme

### *ACADEMIC VOCABULARY*

(1)

1. area

2. contract

\_\_\_\_\_ written agreement

3. definition \_\_\_\_\_ way of doing something
4. evidence \_\_\_\_\_ reason for believing something is or is not true
5. method
6. role
- (2)
1. construction
2. feature \_\_\_\_\_ safety
3. impact \_\_\_\_\_ noticeable part of something
4. institute \_\_\_\_\_ organization which has a special purpose
5. region
6. security
- (3)
1. debate
2. exposure \_\_\_\_\_ plan
3. integration \_\_\_\_\_ choice
4. option \_\_\_\_\_ joining something into a whole
5. scheme
6. stability
- (4)
1. access
2. gender \_\_\_\_\_ male or female
3. implementation \_\_\_\_\_ study of the mind
4. license \_\_\_\_\_ entrance or way in
5. orientation
6. psychology
- (5)
1. accumulation
2. edition \_\_\_\_\_ collecting things over time
3. guarantee \_\_\_\_\_ promise to repair a broken product
4. media \_\_\_\_\_ feeling a strong reason or need to do something
5. motivation
6. phenomenon



(6)

1. adult

2. exploitation

\_\_\_\_\_ end

3. infrastructure

\_\_\_\_\_ machine used to move people or goods

4. schedule

\_\_\_\_\_ list of things to do at certain times

5. termination

6. vehicle

(7)

1. alter

2. coincide

\_\_\_\_\_ change

3. deny

\_\_\_\_\_ say something is not true

4. devote

\_\_\_\_\_ describe clearly and exactly

5. release

6. specify

(8)

1. convert

2. design

\_\_\_\_\_ keep out

3. exclude

\_\_\_\_\_ stay alive

4. facilitate

\_\_\_\_\_ change from one thing into another

5. indicate

6. survive

(9)

1. bond

2. channel

\_\_\_\_\_ make smaller

3. estimate

\_\_\_\_\_ guess the number or size of something

4. identify

\_\_\_\_\_ recognizing and naming a person or thing

5. mediate

6. minimize

(10)

1. explicit

2. final

\_\_\_\_\_ last

3. negative

\_\_\_\_\_ stiff

4. professorial

\_\_\_\_\_ meaning 'no' or 'not'

5. rigid

6. sole

(11)

1.analogous

2.objective

\_\_\_\_\_happening after

3.potential

\_\_\_\_\_most important

4.predominant

\_\_\_\_\_not influenced by personal opinions

5.reluctant

6.sole

(12)

1.abstract

2.adjacent

\_\_\_\_\_next to

3.controversial

\_\_\_\_\_added to

4.global

\_\_\_\_\_concerning the whole world

5.neutral

6.supplementary

### ***THE 5000 WORD LEVEL***

(1)

1. analysis

2. curb

\_\_\_\_\_ eagerness

3. gravel

\_\_\_\_\_ loan to buy a house

4. mortgage

\_\_\_\_\_ small stones mixed with sand

5. scar

6. zeal

(2)

1. concrete

2. era

\_\_\_\_\_ circular shape

3. fiber

\_\_\_\_\_ top of a mountain

4. loop

\_\_\_\_\_ a long period of time

5. plank

6. summit

(3)

1. circus

2. jungle

\_\_\_\_\_ musical instrument

3. nomination

\_\_\_\_\_ seat without a back or arms

4. sermon \_\_\_\_\_ speech given by a priest in a church
5. stool
6. trumpet
- (4)
1. artillery
2. creed \_\_\_\_\_ a kind of tree
3. hydrogen \_\_\_\_\_ a system of belief
4. maple \_\_\_\_\_ large gun on wheels
5. pork
6. streak
- (5)
1. chart
2. forge \_\_\_\_\_ map
3. mansion \_\_\_\_\_ large beautiful house
4. outfit \_\_\_\_\_ place where metals are made and shaped
5. sample
6. volunteer
- (6)
1. contemplate
2. extract \_\_\_\_\_ think about deeply
3. gamble \_\_\_\_\_ bring back to health
4. launch \_\_\_\_\_ make someone angry
5. provoke
6. revive
- (7)
1. demonstrate
2. embarrass \_\_\_\_\_ have a rest
3. heave \_\_\_\_\_ break suddenly into pieces
4. obscure \_\_\_\_\_ make someone feel shy or nervous
5. relax
6. shatter
- (8)
1. correspond
2. embroider \_\_\_\_\_ exchange letters

3. lurk \_\_\_\_\_ hide and wait for someone  
 4. penetrate \_\_\_\_\_ feel angry about something  
 5. prescribe  
 6. resent  
 (9)  
 1. decent  
 2. frail \_\_\_\_\_ weak  
 3. harsh \_\_\_\_\_ concerning a city  
 4. incredible \_\_\_\_\_ difficult to believe  
 5. municipal  
 6. specific  
 (10)  
 1. adequate  
 2. internal \_\_\_\_\_ enough  
 3. mature \_\_\_\_\_ full grown  
 4. profound \_\_\_\_\_ alone away from other thing  
 5. solitary  
 6. tragic

***THE 10,000 WORD LEVEL***

- (1)  
 1. apparition  
 2. botany \_\_\_\_\_ ghost  
 3. expulsion \_\_\_\_\_ study of plants  
 4. insolence \_\_\_\_\_ small pool of water  
 5. leash  
 6. puddle  
 (2)  
 1. alcove  
 2. impetus \_\_\_\_\_ priest  
 3. maggot \_\_\_\_\_ release from prison early  
 4. parole \_\_\_\_\_ medicine to put on wounds  
 5. salve  
 6. vicar

(3)

1. dissipate

2. flaunt

3. impede

4. loot

5. squirm

6. vie

\_\_\_\_\_ steal

\_\_\_\_\_ scatter or vanish

\_\_\_\_\_ twist the body about uncomfortably

(4)

1. contaminate

2. cringe

3. immerse

4. peek

5. relay

6. scrawl

\_\_\_\_\_ write carelessly

\_\_\_\_\_ move back because of fear

\_\_\_\_\_ put something under water

(5)

1. indolent

2. nocturnal

3. obsolete

4. torrid

5. translucent

6. wily

\_\_\_\_\_ lazy

\_\_\_\_\_ no longer used

\_\_\_\_\_ clever and tricky

(6)

1. alabaster

2. chandelier

3. dogma

4. keg

5. rasp

6. tentacle

\_\_\_\_\_ small barrel

\_\_\_\_\_ soft white stone

\_\_\_\_\_ tool for shaping wood

(7)

1. arsenal

2. barracks

3. deacon

4. felicity

5. predicament

6. spore

\_\_\_\_\_ happiness

\_\_\_\_\_ difficult situation

\_\_\_\_\_ minister in a church

(8)

1. alkali

2. banter

\_\_\_\_\_ light joking talk

3. coop  
nobility

\_\_\_\_\_ a rank of British

4. mosaic  
glass or stone

\_\_\_\_\_ picture of small piece of

5. stealth

6. viscount

#### A4. Word Associates Test (Read, 2000b)

Instruction for taking Word Associates Test:

This is a test of how well you know the meaning of adjectives that are commonly used in English. Each item looks like this:

Example: sudden

<input type="checkbox"/> beautiful	<input type="checkbox"/> quick	<input type="checkbox"/> surprising	<input type="checkbox"/> thirsty	<input type="checkbox"/> change	<input type="checkbox"/> doctor	<input type="checkbox"/> noise	<input type="checkbox"/> school
------------------------------------	--------------------------------	-------------------------------------	----------------------------------	---------------------------------	---------------------------------	--------------------------------	---------------------------------

There are eight words in the two boxes (left & right boxes).

The words here on the left side may help <u>to explain the meaning</u> of "sudden".	The words here on the right side are nouns that may <u>come after</u> "sudden" in a phrase or a sentence.
---	---

"Sudden" means "happening quickly and unexpectedly", so the correct answers on the left side are "quick" and "surprising".	We do not normally say "a sudden doctor" or "a sudden school", but we often say "a sudden change" and "a sudden noise", so "change" and "noise" are the correct answers on this side.
--	---

From the two boxes, select FOUR WORDS that you think are relevant to the stimulus word, then, according to the criteria mentioned above, put (☑) in the boxes.

Note: In the example above, there are two correct answers on the left and two on the right, but this is just an example. Do NOT assume there is a consistent number of correct answers on the left or on the right. Just remember: try to find four related words for each item

1. beautiful

<input type="checkbox"/> enjoyable	<input type="checkbox"/> expensive	<input type="checkbox"/> free	<input type="checkbox"/> loud	<input type="checkbox"/> education	<input type="checkbox"/> face	<input type="checkbox"/> music	<input type="checkbox"/> weather
------------------------------------	------------------------------------	-------------------------------	-------------------------------	------------------------------------	-------------------------------	--------------------------------	----------------------------------

2. bright

<input type="checkbox"/> clever <input type="checkbox"/> famous <input type="checkbox"/> happy <input type="checkbox"/> shining	<input type="checkbox"/> colour <input type="checkbox"/> hand <input type="checkbox"/> poem <input type="checkbox"/> taste
---	--

3. calm

<input type="checkbox"/> open <input type="checkbox"/> quiet <input type="checkbox"/> smooth <input type="checkbox"/> tired	<input type="checkbox"/> cloth <input type="checkbox"/> day <input type="checkbox"/> light <input type="checkbox"/> person
---	--

4. natural

<input type="checkbox"/> expected <input type="checkbox"/> helpful <input type="checkbox"/> real <input type="checkbox"/> short	<input type="checkbox"/> foods <input type="checkbox"/> neighbours <input type="checkbox"/> parents <input type="checkbox"/> songs
---	--

5. fresh

<input type="checkbox"/> another <input type="checkbox"/> cool <input type="checkbox"/> easy <input type="checkbox"/> raw	<input type="checkbox"/> cotton <input type="checkbox"/> heat <input type="checkbox"/> language <input type="checkbox"/> water
---	--

6. general

<input type="checkbox"/> closed <input type="checkbox"/> different <input type="checkbox"/> usual <input type="checkbox"/> whole	<input type="checkbox"/> country <input type="checkbox"/> idea <input type="checkbox"/> reader <input type="checkbox"/> street
--	--

7. bare

<input type="checkbox"/> empty <input type="checkbox"/> heavy <input type="checkbox"/> uncovered <input type="checkbox"/> useful	<input type="checkbox"/> cupboard <input type="checkbox"/> feet <input type="checkbox"/> school <input type="checkbox"/> tool
--	---

8. acute

<input type="checkbox"/> hidden <input type="checkbox"/> often <input type="checkbox"/> rich <input type="checkbox"/> sharp	<input type="checkbox"/> angle <input type="checkbox"/> hearing <input type="checkbox"/> illness <input type="checkbox"/> stones
---	--

9. common

<input type="checkbox"/> complete <input type="checkbox"/> light <input type="checkbox"/> ordinary <input type="checkbox"/> shared	<input type="checkbox"/> boundary <input type="checkbox"/> circle <input type="checkbox"/> name <input type="checkbox"/> party
--	--

10. complex

<input type="checkbox"/> angry <input type="checkbox"/> difficult <input type="checkbox"/> necessary <input type="checkbox"/> sudden	<input type="checkbox"/> argument <input type="checkbox"/> passengers <input type="checkbox"/> patterns <input type="checkbox"/> problem
--	--

11. broad



<input type="checkbox"/> full <input type="checkbox"/> moving <input type="checkbox"/> quiet <input type="checkbox"/> wide	<input type="checkbox"/> night <input type="checkbox"/> river <input type="checkbox"/> shoulders <input type="checkbox"/> smile
--	---

12. conscious

<input type="checkbox"/> awake <input type="checkbox"/> healthy <input type="checkbox"/> knowing <input type="checkbox"/> laughing	<input type="checkbox"/> face <input type="checkbox"/> decision <input type="checkbox"/> effort <input type="checkbox"/> student
--	--

13. convenient

<input type="checkbox"/> easy <input type="checkbox"/> fresh <input type="checkbox"/> near <input type="checkbox"/> suitable	<input type="checkbox"/> experience <input type="checkbox"/> sound <input type="checkbox"/> time <input type="checkbox"/> vegetable
--	---

14. dense

<input type="checkbox"/> crowded <input type="checkbox"/> hot <input type="checkbox"/> noisy <input type="checkbox"/> thick	<input type="checkbox"/> forest <input type="checkbox"/> handle <input type="checkbox"/> smoke <input type="checkbox"/> weather
---	---

15. curious

<input type="checkbox"/> helpful <input type="checkbox"/> interested <input type="checkbox"/> missing <input type="checkbox"/> strange	<input type="checkbox"/> accident <input type="checkbox"/> child <input type="checkbox"/> computer <input type="checkbox"/> steel
--	---

16. distinct

<input type="checkbox"/> clear <input type="checkbox"/> famous <input type="checkbox"/> separate <input type="checkbox"/> true	<input type="checkbox"/> advantage <input type="checkbox"/> meanings <input type="checkbox"/> news <input type="checkbox"/> parents
--	---

17. dull

<input type="checkbox"/> cloudy <input type="checkbox"/> loud <input type="checkbox"/> nice <input type="checkbox"/> secret	<input type="checkbox"/> colour <input type="checkbox"/> knife <input type="checkbox"/> place <input type="checkbox"/> rock
---	---

18. direct

<input type="checkbox"/> honest <input type="checkbox"/> main <input type="checkbox"/> straight <input type="checkbox"/> wide	<input type="checkbox"/> fence <input type="checkbox"/> flight <input type="checkbox"/> heat <input type="checkbox"/> river
---	---

19. favorable

<input type="checkbox"/> helpful <input type="checkbox"/> legal <input type="checkbox"/> possible <input type="checkbox"/> positive	<input type="checkbox"/> habit <input type="checkbox"/> response <input type="checkbox"/> teacher <input type="checkbox"/> weather
---	--

20. secure

<input type="checkbox"/> confident <input type="checkbox"/> enjoyable <input type="checkbox"/> fixed <input type="checkbox"/> safe	<input type="checkbox"/> game <input type="checkbox"/> job <input type="checkbox"/> meal <input type="checkbox"/> visitor
--	---

21. tight

<input type="checkbox"/> close <input type="checkbox"/> rough <input type="checkbox"/> uncomfortable <input type="checkbox"/> wet	<input type="checkbox"/> bend <input type="checkbox"/> pants <input type="checkbox"/> surface <input type="checkbox"/> wood
---	---

22. violent

<input type="checkbox"/> expected <input type="checkbox"/> smelly <input type="checkbox"/> strong <input type="checkbox"/> unlucky	<input type="checkbox"/> anger <input type="checkbox"/> death <input type="checkbox"/> rubbish <input type="checkbox"/> storm
--	---

23. chronic

<input type="checkbox"/> continuing <input type="checkbox"/> local <input type="checkbox"/> serious <input type="checkbox"/> unplanned	<input type="checkbox"/> accident <input type="checkbox"/> examination <input type="checkbox"/> illness <input type="checkbox"/> shortage
--	---

24. compact

<input type="checkbox"/> effective <input type="checkbox"/> small <input type="checkbox"/> solid <input type="checkbox"/> useful	<input type="checkbox"/> group <input type="checkbox"/> kitchen <input type="checkbox"/> medicine <input type="checkbox"/> string
--	---

25. crude

<input type="checkbox"/> clever <input type="checkbox"/> fair <input type="checkbox"/> rough <input type="checkbox"/> valuable	<input type="checkbox"/> behaviour <input type="checkbox"/> drawing <input type="checkbox"/> oil <input type="checkbox"/> trade
--	---

26. domestic

<input type="checkbox"/> home <input type="checkbox"/> national <input type="checkbox"/> regular <input type="checkbox"/> smooth	<input type="checkbox"/> animal <input type="checkbox"/> movement <input type="checkbox"/> policy <input type="checkbox"/> speed
--	--

27. profound

<input type="checkbox"/> bright <input type="checkbox"/> deep <input type="checkbox"/> exact <input type="checkbox"/> great	<input type="checkbox"/> effect <input type="checkbox"/> machine <input type="checkbox"/> taste <input type="checkbox"/> thought
---	--

28. fertile

<input type="checkbox"/> dark <input type="checkbox"/> growing <input type="checkbox"/> private <input type="checkbox"/> special	<input type="checkbox"/> business <input type="checkbox"/> egg <input type="checkbox"/> mind <input type="checkbox"/> soil
--	--

29. formal

<input type="checkbox"/> fast <input type="checkbox"/> loud <input type="checkbox"/> organised <input type="checkbox"/> serious	<input type="checkbox"/> bomb <input type="checkbox"/> education <input type="checkbox"/> growth <input type="checkbox"/> statement
---	--

30. independent

<input type="checkbox"/> changed <input type="checkbox"/> equal <input type="checkbox"/> important <input type="checkbox"/> separate	<input type="checkbox"/> child <input type="checkbox"/> country <input type="checkbox"/> ideas <input type="checkbox"/> prices
--	--

31. original

<input type="checkbox"/> careful <input type="checkbox"/> closed <input type="checkbox"/> first <input type="checkbox"/> proud	<input type="checkbox"/> condition <input type="checkbox"/> mind <input type="checkbox"/> plan <input type="checkbox"/> sister
--	--

32. sensitive

<input type="checkbox"/> feeling <input type="checkbox"/> interesting <input type="checkbox"/> sharp <input type="checkbox"/> thick	<input type="checkbox"/> clothes <input type="checkbox"/> instrument <input type="checkbox"/> skin <input type="checkbox"/> topic
---	---

33. professional

<input type="checkbox"/> paid <input type="checkbox"/> public <input type="checkbox"/> regular <input type="checkbox"/> religious	<input type="checkbox"/> advice <input type="checkbox"/> manner <input type="checkbox"/> musician <input type="checkbox"/> transport
---	--

34. critical

<input type="checkbox"/> clear <input type="checkbox"/> dangerous <input type="checkbox"/> important <input type="checkbox"/> rough	<input type="checkbox"/> festival <input type="checkbox"/> illness <input type="checkbox"/> time <input type="checkbox"/> water
---	---

35. synthetic

<input type="checkbox"/> artificial <input type="checkbox"/> electronic <input type="checkbox"/> expensive <input type="checkbox"/> simple	<input type="checkbox"/> drug <input type="checkbox"/> meal <input type="checkbox"/> radio <input type="checkbox"/> sound
--	---

36. liberal

<input type="checkbox"/> free <input type="checkbox"/> moderate <input type="checkbox"/> plenty <input type="checkbox"/> valuable	<input type="checkbox"/> crops <input type="checkbox"/> furniture <input type="checkbox"/> parents <input type="checkbox"/> transport
---	---

37. dramatic

<input type="checkbox"/> exciting <input type="checkbox"/> official <input type="checkbox"/> surprising <input type="checkbox"/> worried	<input type="checkbox"/> adventure <input type="checkbox"/> change <input type="checkbox"/> patient <input type="checkbox"/> salary
--	---

38. conservative

<input type="checkbox"/> cautious <input type="checkbox"/> hopeful <input type="checkbox"/> traditional <input type="checkbox"/> warm	<input type="checkbox"/> clothes <input type="checkbox"/> estimate <input type="checkbox"/> meeting <input type="checkbox"/> signal
---	---

39. coherent

<input type="checkbox"/> clear <input type="checkbox"/> normal <input type="checkbox"/> recent <input type="checkbox"/> together	<input type="checkbox"/> crime <input type="checkbox"/> health <input type="checkbox"/> speech <input type="checkbox"/> theory
--	--

40. ample

<input type="checkbox"/> heavy <input type="checkbox"/> large <input type="checkbox"/> plentiful <input type="checkbox"/> windy	<input type="checkbox"/> amount <input type="checkbox"/> climate <input type="checkbox"/> feelings <input type="checkbox"/> time
---	--

## A5. TEST OF ACADEMIC VOCABULARY

Please show how well you know each of the words below. Check off (✓) the appropriate line and follow the instructions for each option. If at all possible, please make a sentence for each word, especially if you choose (c)

### 1. constitutional

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 2. established

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 3. justification

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 4. proportion

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 5. shift

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 6. coordination

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 7. access

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 8. commitment

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

### 9. emerge

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

### 10. internal

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

### 11. overall

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

### 12. resolution

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

### 13. expansion

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

### 14. substitution

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

### 15. incidence

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

### 16. identical

- a. I have never seen this word before
- b. I have seen this word before but I don't know what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

### 17. submitted

- a. I have never seen this word before

- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 18. empirical

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 19. clarity

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 20. deviation

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 21. induced

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 22. practitioners

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 23. tension

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 24. commenced

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means
- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 25. duration

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means
- d. I can **use this word in** a sentence (if you answer this part, also answer part c)

### 26. mature

- a. I have **never** seen this word before

- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means

d. I can use this word in a sentence (if you answer this part, also answer part c)

- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 27. preliminary

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means

- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 28. sphere

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means

- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 29. adjacent

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means

- d. I can use this word in a sentence (if you answer this part, also answer part c)

### 30. whereby

- a. I have **never** seen this word before
- b. I have seen this word before but I **don't know** what it means
- c. I have seen this word before and I think it means





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