THE IMPACT OF VOCABULARY LEARNING STRATEGIES AND COMPUTER ASSISTED LANGUAGE LEARNING ON VOCABULARY DEVELOPMENT OF TURKISH HIGH SCHOOL STUDENTS

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ABSTRACT

THE IMPACT OF VOCABULARY LEARNING STRATEGIES AND COMPUTER ASSISTED LANGUAGE LEARNING ON VOCABULARY DEVELOPMENT OF TURKISH HIGH SCHOOL STUDENTS

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The present study investigated the effects of strategy training and digital flashcard tool use on Turkish high school students' vocabulary development in English. In order to examine this impact, a mixed-methods design was used.

The quantitative part of the study included pre and post vocabulary achievement test scores, pre and post applications of a Likert-type scale, and Strategy Inventory for Language Learning (SILL) given to the students. The qualitative part of the study consisted of the semi-structured interviews conducted with the students.

The pre and post vocabulary achievement tests applied before and after the strategy training and the use of a digital flashcard tool had significantly different results, showing that students' English vocabulary developed. Additionally, the questionnaire was administered two times, before and after the strategy training and the use of a digital flashcard tool, and the results in terms of difference in strategy

use were not statistically significant, even though some strategies that the students preferred to use changed after the training. According to the data collected from the interviews, students found using the digital the flashcard tool effective in many ways when practicing vocabulary. The findings of this study are significant as they contribute to the literature in terms of vocabulary development.

Keywords: Vocabulary Learning Strategies, Strategy Training, Computer Assisted Language Learning, Digital Flashcard Tool, Quizlet

ÖZ

KELİME ÖĞRENME STRATEJİLERİNİN VE BİLGİSAYAR DESTEKLİ DİL ÖĞRENİMİNİN TÜRK LİSE ÖĞRENCİLERİNİN KELİME BİLGİSİ GELİŞİMİNE ETKİSİ

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Bu çalışma kelime öğrenme stratejileri eğitiminin ve bilgisayar destekli dil eğitiminin Türk lise öğrencilerinin İngilizce kelime bilgisi gelişimi üzerindeki etkisini araştırmıştır. Çalışma, bu etkiyi incelemek için karma araştırma desenini kullanmıştır.

Çalışmanın nicel boyutu strateji eğitiminden ve dijital kelime kartı kullanımından önce ve sonra uygulanan kelime başarı testlerinden ve yine strateji eğitiminden ve dijital kelime kartı kullanımından önce ve sonra uygulanan Likert tipi ölçekten oluşmaktadır. Çalışmanın nitel boyutu ise öğrencilere uygulanan yarı yapılandırılmış görüşmelerden oluşur.

Kelime öğrenme stratejileri eğitiminden ve dijital kelime kartı kullanımından önce ve sonra uygulanan kelime başarı testleri, öğrencilerin İngilizce sözcük dağarcığı gelişimini gösteren önemli sonuçlara sahiptir; fakat kelime öğrenme stratejileri eğitiminden ve dijital kelime kartı kullanımından önce ve sonra uygulanan ankete göre öğrencilerin kullanmayı tercih ettiği bazı stratejiler değişse bile strateji

kullanımında istatistiksel olarak belirli farklılıklar oluşmamıştır. Yapılan görüşmelerden toplanan veriye göre, öğrenciler kelime öğrenirken dijital kelime kartı kullanımını birçok açıdan etkili bulmuşlardır. Bu çalışmanın bulguları kelime gelişimi açısından art alana katkıda bulunmaktadır.

Anahtar Kelimeler: Kelime Öğrenme Stratejileri, Strateji Eğitimi, Bilgisayar Destekli Dil Öğrenme, Dijital Kelime Kartı Yazılımı, Quizlet

To all the strong women in my life; especially to my mother Fahriye and the greatest sister on earth, Gökçeçiçek who never lost their faith in me and were always there for me unconditionally, even when I stumbled on the way from time to time.

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LIST OF ABBREVIATIONS

ELT	English Language Teaching
SLA	Second Language Acquisition
EFL	English as a Foreign Language
ESL	English as a Second Language
VLS	Vocabulary Learning Strategies
SILL	Strategy Inventory for Language Learning
MEM	Memory Strategies
COG	Cognitive Strategies
DET	Determination Strategies
SOC	Social Strategies
MET	Metacognitive Strategies
CALL	Computer Assisted Language Learning
MALL	Mobile Assisted Language Learning

Chapter 1: Introduction

1.1 Overview of the Chapter

This chapter provides the outline of this study including information regarding the theoretical framework that this research was built on, statement of the problem, purpose of the study, research questions and significance of the study along with the definitions.

1.2 Theoretical Framework

ESL and EFL learning strategies can be defined as "any set of operations, steps, plans, routines used by the learner to facilitate the obtaining, storage, retrieval, and use of information" (Rubin, 1987, p. 19). They are "specific actions, behaviors, steps, or techniques—such as seeking out conversation partners, or giving oneself encouragement to tackle a difficult language task—used by students to enhance their own learning" (Scarcella & Oxford, 1992, p. 63).

There are numerous taxonomies of ESL and EFL learning strategies Ellis, 1990; O'Malley & Chamot, 1990; Oxford, 1990; Stern, 1992; Stoffer, 1995; Wenden & Rubin, 1987) and Oxford's taxonomy (1990) attempts to integrate all previously discussed strategies into a single one. Her taxonomy subsumes strategies for four main language skills (speaking, reading, listening and writing) along with linguistic, communicative and psychological dimensions of language learning. This study adopts and applies the rationale of the Oxford's taxonomy of learning strategies (1990) as it covers broader areas related to vocabulary learning procedure of ESL/EFL students. This taxonomy is one of the most frequently and widely used taxonomy in language learning and research (Table 1). According to Hsiao and Oxford (2002), Oxford's 6-factor model of learning strategies "is the most consistent with learners' strategy use" (p. 368). Strategy Inventory for Language Learning (SILL) is to measure the six strategy groups and this model of learning strategies includes a specific set of strategy items: (Part A) memory strategies (items 1 to 9), (Part B) cognitive strategies (items 10 to 23), (Part C) compensation strategies (items 24 to 29), (Part D) metacognitive strategies (items 30 to 38), (Part E) affective strategies (items 39 to 44), and (Part F) social strategies (items 45 to 50). She applied

this inventory to 517 college EFL learners in Taiwan during the spring term of 1998 and after the examination of the results it was found that this taxonomy was the most consistent with learners' strategy use (Appendix A).

To summarize, it is important to emphasize that strategies are ESL/EFL learners' tool kit that they pave the way for focused, active and purposeful learning and help attain proficiency, autonomous learning and self-regulation.

Main group	Strategy groups	Sub-groups
Direct	Memory	Creating mental linkages, applying images and sounds, reviewing well, employing action
	Cognitive	Practicing, receiving and sending messages, analyzing and reasoning, creating structures for input and output
	Compensation	Guessing intelligently, overcoming limitations in speaking and writing
Indirect	Metacognitive	Centering your learning, arranging and planning your learning, evaluating your learning
	Affective	Lowering your anxiety, encouraging yourself, taking your emotional temperature
	Social	Asking questions, cooperating with others, empathizing with others

Figure 1. Oxford's Taxonomy of Learning Strategies (1990)

1.3 Statement of the Problem

Multilingualism is a crucial feature for individuals as Kroll and Dussias (2017) put forward. On the other hand, teaching and learning English in Turkey sometimes become problematic (Aktas, 2005; Atay & Ozbulgan, 2007; Cubukcu, 2008; Isik, 2008; Oguz, 1999; Paker, 2007; Tilfarlioglu & Ozturk, 2007). Researchers in the field of English language teaching try "to observe, find, identify and determine these

problems through dialogues with English language teachers regarding the classroom situations" (Kizildag, 2009, p. 188).

An important issue in language instruction is that students do not have the required knowledge about vocabulary learning strategies and fail to adopt and implement them (Garner, 1990). Additionally, as Zimmerman (1997) discussed vocabulary teaching did not get much attention in EFL, even though vocabulary is defined as the core of language learning (Meara, 1996).

According to Lee, Jor and Lai (2005) English language teaching may be substantially improved to be more influential, with the assistance of developing technologies, so that students would be able to take responsibilities and benefit more from various types of activities including humor and mystery, when using these technologies; so this aspect of the technology use would led them being more motivated intrinsically. In terms of self-esteem and self-confidence, students could develop strategies thanks to technology use and they may take the responsibility of their own learning.

Upon observing the students from time to time, the reason for their belief regarding learning English was identified as the inability to understand English, hence showing no effort in trying and learning the language. This study focuses on developing students' way of employing the language learning strategies during process of learning a language and integrating technology efficiently since they were born as 'digital native' as put forward by Prensky (2001).

1.4 Purpose of the Study

The main objective of this study is to provide some insights regarding the effects of strategy training and computer assisted language learning (CALL) on students' vocabulary development. Students participated willingly and employed different learning strategies as well as utilizing CALL. Hawkins and Nicoletti (2008) argue that what learners bring to school and what is expected from them might have gaps in between making them viewed as deficient learners coming to school without good language skills, knowledge and experience. Reflection on learning is a way to increase awareness, to help develop autonomous learning:

> Strategies ... can become automatized and function without conscious control. But they can also be brought to conscious observation and

awareness and can be modified as a result of conscious effort (Kohonen, 1992, p. 24).

In this study, the intention is to raise awareness on implementing learning strategies and benefiting from CALL to assist students increase their vocabulary size.

1.5 Research Questions

The research questions were shaped to measure and evaluate the above mentioned purposes of the study and these questions are listed below:

1 – What are students' vocabulary learning strategies?
2 – Do students' language learning strategies change after the strategy training?
3 – Is there a significant difference between students' vocabulary achievement;
   a) immediately before and after the strategy training?
   b) before and after the delayed achievement tests?
4 – What are students' perspectives towards the use of vocabulary flashcard application in their vocabulary learning processes?

1.6 Significance of the Study

The number of research studies on integrating technology into teaching and learning with the help of computers and programs has notably increased in the last decades (Zengin & Aksu, 2017). Today, technology is a crucial part of teaching. Learning a foreign language and the development in this area attract many educators and learners to harmonize traditional ways of language learning with the latest enhancements, promoting variety and enhancing motivation as well.

Although there has been extensive research on strategy training and CALL implementation in ELT separately, there are limited studies displaying the effects of strategy training in the CALL environment. Furthermore, the number of studies conducted to find out the impact of strategy training and integration of CALL for vocabulary development are not in abundance in Turkey.

Regarding the lack of importance given to vocabulary teaching and strategy use in CALL, this study is significant in terms of its contribution to the literature by creating a link between the importance of strategy training and integrating CALL into the existing English curriculum. This study may be helpful for the teachers and

learners in terms of providing an opportunity to increase vocabulary achievement through language learning strategies and practicing with CALL.

1.7 Definitions

Language Learning Strategies: Language learning strategies are processes that might directly help and contribute to learning (Brown, 1990).

Vocabulary acquisition: Vocabulary acquisition is the process of learning new words.

Computer-Assisted Language Learning: "Computer-assisted language learning means learners' learning language in any context with, through, and around computer technologies" (Egbert, 2005, p. 4). The broader definition of CALL is used in this study to cover the developing technologies in language education such as mobile-assisted language learning (MALL) or technology enhanced language learning (TELL).

Mobile-Assisted Language Learning: It is the use of mobile devices such as, tablets, personal digital assistants (PDAs) and smartphones for language learning purposes.

Digital Flashcard Tool: It is software to practice vocabulary online, instead of using traditional paper flashcards. In this study Quizlet website and application were used to increase students' vocabulary size.

Chapter 2: Review of the Literature

2.1 Overview of the Chapter

This chapter focuses on what literature has to say about vocabulary development, while reporting its gravity and how it is handled in different teaching methods; its relation to memory emphasizing on what "knowing a word" means, its role according to the kinds of memories and retention; how vocabulary is taught through strategies and the effects of digital flashcard tool on vocabulary development reporting the research conducted in these areas.

2.2 Vocabulary Development and SLA

Vocabulary development is as noteworthy as the four main skills in foreign language learning (speaking, reading, listening and writing). It is an essential part of English language teaching as without it, it is not possible to comprehend others and speak one's own ideas (Lessard-Clouston, 2013). What Wilkins (1972) puts forward shows its great importance; ". . . while without grammar very little can be conveyed, without vocabulary nothing can be conveyed" (pp. 111–112). Thus, lack of vocabulary would prevent meaningful communication (Zimmerman, 1997). Similarly, Lewis (1993) commented on the importance of vocabulary and argued that "lexis is the core or heart of language" (p. 89). That being the case, the vocabulary development is crucial for successful second language acquisition. Otherwise, comprehensible communication is obstructed even though structures and functions are well-known (Rivers & Nunan, 1991).

2.2.1 Importance of vocabulary in SLA. Vocabulary is an important part of learning a second language (Schmitt, 2010), and with many different studies that are completely devoted to it, vocabulary teaching has been more in focus since the 1980s. The more you have a vast knowledge of vocabulary of a particular language, the more comprehensible the oral or written message becomes. There are almost 450.000 words in English language including inflected forms in Webster's Third New International Dictionary (Goulden, Nation & Read, 1990), and it is not possible to cover all these words, even for a native speaker, that even the educated ones know

around 20.000 word families (Goulden, Nation & Read, 1990), and a learner ought to have a very large volume of vocabulary with long term growth goal, that equal value should be given to the learning of each word (Nation, 2001), especially when they are stated as knowing up to 5000 word families only (Nation & Waring, 1997). So that, to maximize the number of known words there should be a system to teach vocabulary as well as vocabulary learning strategies, and it starts with prioritizing the needs of the learners and designing the courses according to those needs.

Previously, the vocabulary learning process was teacher-led and mostly in the classroom atmosphere. There was just little attention given to the vocabulary research in the 1980s, which caused harsh criticism (Meara, 1980; 1984). With Communicative Approach coming to the stage, it has been emphasized that vocabulary is as crucial as grammar (Wilkins, 1972; 1974) and issues regarding the lexical items inhibit communication, causing communication breakdowns (Allen, 1983). According to Meara (1996) vocabulary knowledge is the very core element of communication. Furthermore, a research conducted by Cortazzi and Jin (1996) in Chinese context confirms that vocabulary is seen as the most important part of the language learning process by students.

Researchers in the field of language teaching noticed that most of the learner difficulties including lack of receptive and productive mastery were the end results of less vocabulary knowledge, even though the learners had good command of language they still felt insecure and needed more vocabulary (Laufer 1986; Nation 1990).

As vocabulary has always been important and central to learning a language (Shen, 2003), many different approaches such as *discourse-based language teaching* (Carter & McCarthy, 1988), *the lexical phrase approach* (Nattinger & DeCarrico, 1992), *the lexical approach* (Lewis, 1993; 1997), and *the lexical syllabus* (Sinclair & Renouf, 1988; Willis, 1990) were developed. Thanks to the technology, corpus was also developed and all these studies and research diminished the criticism for the lack of importance given to the vocabulary teaching (Shen, 2003).

2.2.2 Foreign language teaching methods. During the period when the grammar translation method was prevailing, only the written translations of the words were used in language teaching and there was no place for oral communication (Xia, 2014). As Krashen (1987) argues “it can be claimed that grammar translation provides scraps of comprehensible input. The focus is entirely

on the form, and not on meaning ... students are forced to read word by word, and consequently rarely focus completely on the message'' (p. 128).

Direct method, also known as the reform movement, aimed at training students who could communicate in the foreign language which was also used as a means of instruction, and during that charts, pictures, and realia as concrete vocabulary were used to teach vocabulary (Naeini & Shahrokhi, 2016). Spoken language and phonetic training were underlined (Zimmerman, 1997). Linguist Henry Sweet, being one of the reformists, developed a system which had three stages: mechanical stage, grammatical stage and idiomatic stage (Howatt, 1984). Firstly, phonetics were studied; during the second stage grammar and basic vocabulary were covered; and in the final stage vocabulary was used in depth (Howatt, 1984). As this method did not get any attention in the schools of America and Europe, it was not adopted widely (Howatt, 1984).

Reading method in the USA and situational learning in Britain became popular afterwards (Zimmerman, 1997). According to Thomas (as cited in Sachs, 1943) thanks to reading method, it is possible to grasp the meaning of a word after encountering with it a dozen times in a text, and Cross and Carney (as cited in Sachs, 1943) point out if the words are seen three or four times, students both infer the meaning of a word and use it in a speech or in writing.

Furthermore, situational language teaching had the scientific base for vocabulary teaching that linguists in favor of this method believed in teaching and practicing language in meaningfully curated situations; since the communication was in the center, vocabulary was one of the most important element in second language teaching (Zimmerman, 1997).

As a consequence of immediate needs during the World War II, the audio-lingual method was developed afterwards and this method only required drilling and memorization of the structures as well as vocabulary, instead of analyzing the logic behind them. According to Charles Fries, the founder of audio-lingual method, there might be misunderstanding among learners just as they know some words, for that reason he took vocabulary as a way to highlight only the grammatical points (Zimmerman, 1997).

Unlike audio-lingual method, the aim is to communicate in communicative language teaching analyzing the structures of the language and benefit from them ingeniously, overlooking drilling; and contrary to the word lists of situational

learning method the vocabulary is mostly authentic in communicative language teaching (Zimmerman, 1997).

2.3 Vocabulary Development and Memory

There are different elements affecting language acquisition such as age (Birdsong & Molis, 2001; Johnson & Newport, 1989), motivation (Fan, 2003; Sanaoui, 1995), phonological short-term memory (Gathercole & Baddeley, 1993; Service, 1992), and working memory (Harrington & Sawyer, 1992; Sunderman & Kroll, 2009). The last two elements are deeply discussed in the following parts of this study as the role of memory has been greatly important in language education that many research has been conducted (Baddeley, 1999). Especially, the working memory has a vital role in language acquisition as it is responsible for "mentally store and manipulate information related to a task" (Baddeley, 1998, 2003, as cited in Martin & Ellis, 2012, p. 380).

2.3.1 Aspects of knowing a word. Apparently, English has the greatest number of words in its vocabulary when compared to other widely used languages and this makes learning many vocabulary items a very hard process (Schmitt, 2007).

There are many different aspects of knowing a word and it is not only knowing the meaning of it but also use it in any situation that the learner wants and requires, that is the reason why more knowledge is crucial for the full mastery of a word (Schmitt, 2007).

Words are complex and, mostly, have more than one meaning. Furthermore, these complex, and compound meanings of words are to be understood in relation to the other vocabulary items in the sentences and paragraphs, in different contexts (Hiebert & Kamil, 2005).

In general, the knowledge of a word's meaning is called as vocabulary, but this definition gets complicated as words exist in two forms: print and oral. Knowledge of words has also at least two forms, being receptive which we understand or notice, and productive that we need and use while writing and speaking (Hiebert & Kamil, 2005).

Pronunciation of a word is related to recognizing when it is heard and producing it orally. Spelling refers to the written knowledge of the word. Having

competence both orally and in print help learners comprehend what they hear and read (Nation, 2001).

The other important aspect of vocabulary knowledge is word parts. This knowledge means creating many different words from one particular root by using derivative prefixes and suffixes. The knowledge of word parts is important as English is a language with frequent and broad usage of derivative prefixes and affixes (Carstairs-MacCarthy, 2002).

The knowledge of word parts also has a crucial place in using words in phrases and sentences (Carstairs-MacCarthy, 2002), as words are also closely connected to grammatical structures; it is important and required for learners to realize for what part of speech a word is used (Schmitt, 2002).

Lastly, contextual knowledge of a word is knowing the appropriate use of a word (Miller, 1999). The context refers to a specific situation in which the communicative interaction occurs. In a specific situation some words are more suitable than the others, making it a must for learners to have competence of this aspect of word knowledge to communicate properly (Nation, 2001). The below table of Nation (2001, p. 27) shows us clearly what knowing a word means:

ASPECT	COMPONENT	RECEPTIVE KNOWLEDGE	PRODUCTIVE KNOWLEDGE
Form	spoken	What does the word sound like?	How is the word pronounced?
	written	What does the word look like?	How is the word written and spelled?
	word parts	What parts are recognizable in this word?	What word parts are needed to express the meaning?
Meaning	form and meaning	What meaning does this word form signal?	What word form can be used to express this meaning?

Figure 2. Aspects of Knowing a Word (Nation, 2001)

ASPECT	COMPONENT	RECEPTIVE KNOWLEDGE	PRODUCTIVE KNOWLEDGE
	concept and referents	What is included in this concept?	What items can the concept refer to?
	associations	What other words does this make people think of?	What other words could people use instead of one?
Use	grammatical functions	In what patterns does the word occur?	In what patterns must people use this word?
	collocations	What words or types of words occur with this one?	What words or types of words must people use with this one?
	constraints on use (register, frequency…)	Where, when, and how often would people expect to meet this word?	Where, when, and how often can people use this word?

Figure 2 (cont.d)

2.3.2 The kinds of memory: phonological short-term memory, working memory, long-term memory and permanent memory. It is important for an English teacher to understand what causes the difference in levels of vocabulary acquisition of the students. Apart from affective and personality-related individual differences, there is also the cognitive aspect of learning vocabulary (Gardner, 1985). Foreign language aptitude (Carroll & Sapon, 1959; Carroll, 1981), intelligence (Skehan, 1986), and working memory capacity (Sawyer & Ranta, 2001) are the cognitive aspects that are important indicators of successful language learning.

Focusing on the cognitive factors, the most common terms that are commonly discussed are short-term and long-term memory. There are also working memory, holding memory and permanent memory concepts found in literature.

According to Stevick (1996), short-term memory and working memory are different concepts and "holding memory" and "permanent memory" are also the parts of long-term memory.

It is important to remember the reason why working memory concept is essential, since it involves storage and processing of information simultaneously, and

requires the retainment of some information while processing the other (Salthouse, Babcock, Skovronek, Mitchell & Palmon, 1990). One of the most important functions of working memory is being a tool for interpreting and producing spoken language (Stevick, 1996).

As put forward by Stevick (1996), there has been constant confusion between the short-term and working memory, in a way that both of them are derived from the observed constraints of mental functioning. Working memory can be taken as a place that assists complex cognitive activity and real time processing of the information at that specific time (Archibald, 2017). It is an important part of our cognitive capacity as it gives the capability to keep task-relevant information active and accessible during the performance of multiple cognitive tasks. (Conway, Kane, Bunting, Hambrick, Wilhelm & Engle, 2005). Working memory is accountable for observing lasting actions and cognitive processes, relating selective attention to relevant images and operations, and abolishing unrelated, distracting ones (Oberauer, Süß, Wilhelm & Wittmann, 2003). It is integrated with the online storage and operation of verbal tasks, visuo-spatial tasks, or both verbal and visuo-spatial tasks at the same time. Importantly, according to D'Esposito (2007) working memory is a part of, and perhaps not distinct from, other memory processes. As he continues to discuss, he also mentions Baddeley's most important remark in relation to memory was being differentiating the concept of short-term memory that is only responsible for the storage of representation, from the concept of working memory that is a multi-component system responsible for both storage and processing of transiently active representation. In other words, supporting "real time information processing and complex cognitive activity in the moment" (Archibald, 2017, p. 6).

Working memory helps in many ways to sustain lives; for example, when somebody tells a phone number while we are busy with another thing, and then when the work is finished the phone number can be played back without any disruption, suffice to say it happens naturally. Another example is that, when students repeat the new vocabulary they recently learn, the same thing applies here as well (Stevick, 1996).

Furthermore, people do not notice some details of the relevant information at first, but when with the help of working memory starting to play back the relevant information, some details may be noticed and understood clearly, as the prefixes that make words "known" and "understood" negative are different from each other that

one is “(un)known” and the other is “(mis)understood” (Stevick, 1996). After noticing these details, information and representations can be compared with each other. All this noticing and comparing provides the benefit of intentionally manipulating the data of working memory (Stevick, 1996).

Apart from all the positive functions of working memory it can be added that it does not work with permanent data and the duration of the process of its electrically disruptable data is limited to only 20 seconds or so, not to mention that its capacity is utterly limited and affective states such as anxiety can lower the limited storage capacity of working memory (Stevick, 1996).

The term known as “long-term memory” refers to what remains accessible in the memory after short-term memory storage, supposedly 20 seconds or so (Stevick, 1996), and if the representations remain in the memory for more than 20 seconds, even if it is not used, a good amount of semantic knowledge remains perfectly accessible for decades later. (Bahrick, 1984). “Permanent memory” is what refers to this part of the memory (Stevick, 1996).

Unlike working memory mentioned above, long-term memory can keep ample amount of data for a very long time. Even though it cannot be observed directly, indirect inferences can be made in accordance with the product that long-term memory provides (Stevick, 1996).

One of the most important thing related to the long-term memory is that the information that it retains cannot be changed or modified directly. There is a two-way transit between the working memory and long-term memory that is continuous and complex. The data and various kinds of memories from the past are retrieved from the long-term memory by working memory and reformation of the data occurs there thanks to the new experiences (Stevick, 1996).

According to some researchers phonological short term memory has broader role in second language acquisition than just assisting vocabulary acquisition. As students proceed and have progress in language learning, they begin to comprehend the phonological rules of the language, and vocabulary acquisition helps increase the limited short-term phonological storage (Papagno & Vallar, 1995).

According to Baddeley and Hitch’s model (1974), working memory can be grouped in three sub-systems that are visuo-spatial scratch pad, phonological loop and central executive (See Figure 3).

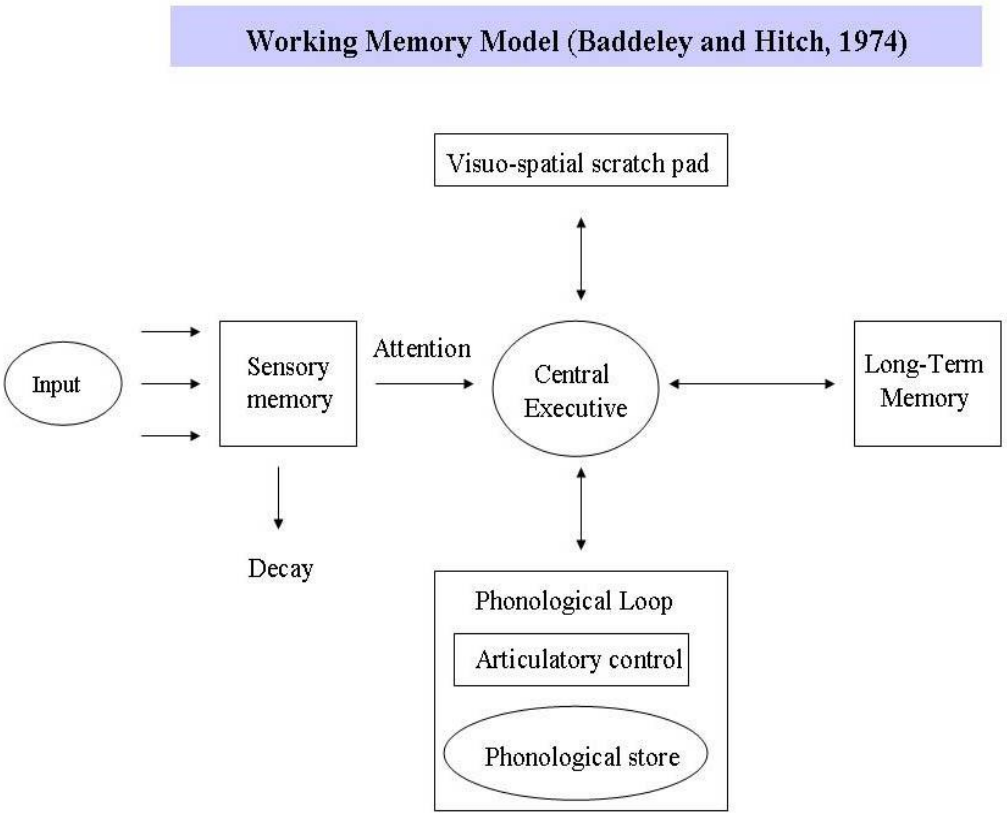


Figure 3. The Working Memory Model Components according to Baddeley and Hitch (1974)

The central executive manages the working memory and sends data to other sub-systems; the phonological loop and the visuo-spatial scratch pad. It also deals with cognitive tasks such as mental arithmetic and problem-solving. Baddeley (1986) refers to the central executive with the metaphor of a "company boss" to emphasize the importance of it.

The visuo-spatial scratch pad is responsible for turning a visual into a mental picture. Also it allows navigating through these mental images.

The phonological loop is a system which converts visual information into verbal information. More detailed definition of its role is given below:

> When visually presented verbal information is encoded, the information is transformed into a sound-based, or "auditory-phonological," code. This code is something like an internal echo-box, a repository for sounds that reverberate briefly before fading away. To prevent complete decay, an

active process must refresh the information, and this is where the idea of a "loop" comes in (Smith & Kosslyn, 2006, p. 251).

Phonological short-term memory might be defined as "the ability to recognize and remember phonological elements and their order of occurrence" (O'Brien, Segalowitz, Freed & Collentine, 2007, p. 558). Accordingly, it can be said that the role of phonological memory is crucial in a way that it gives advantage to the listener to help recognize words and syntactic structures. It is part of the working memory and includes the phonological loop and articulatory control.

Phonological loop deals with the spoken and the written material but for a written material to enter the phonological store, first it needs to be converted into an articulatory code (Baddeley & Hitch, 1974). Baddeley (1986) argues that the phonological loop has an essential part in the learning of new words by storing unfamiliar sound patterns during the assembly of long-term representations, which might indicate a direct relation between long-term learning and short-term memory.

Articulatory control is linked to speech production. It holds verbal information of the phonological store and rehearses it repeatedly to keep the information, e.g., phone numbers, in the working memory (Baddeley & Hitch, 1974)

It can be added that phonological short term memory helps the learning of new vocabulary items. The responsibility of this short term memory is recalling the sequential information which shows that short term memory has greater role than it was previously thought.

2.3.3 Vocabulary retention. "Knowledge of a lexical item is not an 'all-or-nothing' proposition; it is rather to be conceived of as a continuum of knowledge" (Takac, 2008, p. 10). As vocabulary develops incrementally, there should be multiple exposures to words to achieve lexical acquisition (Schmitt, 2010). That is the case, as according to Nagy (1997) there is a lower chance of learning a word just from a single exposure while reading and that is only about 5% - 14%. So, for the actual learning there should be five to sixteen or more repetitions according to other studies (Nation, 1990). Should enough focus is not given, many words which are known only partially might be forgotten and all the previous effort given when learning might be wasted (Nation, 1990). As Schmitt (2010) emphasizes and Folse (2006)

also states that the number of exposures to the words could be as important as the type of learning activity itself.

It is obvious that the amount of time given to learning a word increases, the possibility of learning it increases as well. The more the exposure, the amount of attention given and time spent on the words, the more the words become meaningful (Schmitt, 2010). According to Craik and Lockhart's (1972) Depth/Levels of Processing Hypothesis, if the learner gives more attention and more manipulation with the lexical item is involved during the learning process, the chances of remembering the item will be higher. Furthermore, Laufer and Hulstijn (2001) limited this view of increased attention and manipulation suggesting that total involvement for vocabulary learning consists of three components: need, search, and evaluation. To be able to keep up with the lexical tasks such as knowing a word to understand a text, firstly there must be the "need" component. Secondly, it is the "search" phase, which is trying to find the relevant information regarding the lexical item in question. And lastly, evaluation is the phase where the learner questions and evaluates the place of that particular lexical item whether it is fit to use in context, and/or is the best option available.

As stated in some research (Bloom & Shuell, 1981; Dempster, 1987) spaced repetition prompts more reliable learning than massed repetition does. Massed repetition comprises investing a certain amount of time uninterruptedly, providing focus on a word at once. Whereas, spaced repetition comprises scattered repetitions over a long period, but not giving more time to the repetition of words. This results in learning of the words and these words might be recalled for an extended period (Nation, 2001)

According to Griffin (1992) most forgetting occurs soon after learning. As time passes, the pace of forgetting becomes slower. There are investigations on retention of the vocabulary items up to eight weeks (Seibert, 1927; Anderson & Jordan, 1928; Seibert, 1930). At first soon after the learning, then one week later and three and eight weeks later researchers measured the recall and the percentages related to the material retained were 66%, 48%, 39% and 37% respectively (Anderson & Jordan, 1928). These results demonstrate that it is crucial to repeat the new lexical items as soon as the learning occurs to prevent forgetting. After this, spaced repetitions can take place putting longer periods between each study.

When presenting new words it is better to delay the presentation of the meaning so that learners can make an effort to guess or recall the meaning, and seemingly this might contribute to faster and longer retained learning. Nonetheless, if only the foreign word gives a powerful hint regarding its meaning thanks to being cognates or the foreign word and its meaning being seen together previously, can make the guessing strong. In agreement with experimental evidence it is best to present the new word with its meaning at first, and they can be presented separately afterwards, with delayed periods to increase the possibility of successful recall as the learners would show more effort to remember the first time they are presented with the meaning (Nation, 2010). Landauer and Bjork (1978) propose that retrieval might be more effective when the word and its meaning are presented separately as it requires more endeavor to retrieve the meaning of the word that is presented simultaneously at the beginning.

There is research regarding the recall of vocabulary items in second language that are not used for very long period of time, namely 8 to 50 years (Bahrick, 1984; Bahrick & Phelps, 1987). They found that the first original learning affected recall and easy items along with the ones practiced with spaced repetition were retained for a very long time. Bahrick and Phelps' research in 1987 strongly supports the benefits of spaced over massed repetition (Nation, 2010).

2.4 Learning Strategies and Vocabulary Development

The term *learning strategies* has got many different definitions in literature but the most common one is that learning strategies are processes that might directly help and contribute to learning (Brown, 1990). These strategies have been used for a very long time as Oxford (1990) states that mnemonic or memory tools were used in old times to aid storytellers in recalling their stories. In language acquisition, learning strategies also refer to “activities in which the learner may engage for the purpose of improving target language competence” (Bialystok, 1983, p. 101) and as a sub-division of learning strategies, studies on language learning strategies (LLS) has started around 1960s. According to Tarone (1983), learning strategy is "an attempt to develop linguistic and sociolinguistic competence in the target language -- to incorporate these into one's interlanguage competence" (p. 67) and Rubin (1987) argues that learning strategies are "strategies which contribute to the development of the language system which the learner constructs and affect learning directly" (p.

22). According to O'Malley and Chamot (1990), learning strategies are defined as "the special thoughts or behaviors that individuals use to help them comprehend, learn, or retain new information" (p. 1).

Studies of Oxford (1990) and O'Malley and Chamot (1990) confirm that most of the LLS are used for the purpose of completing vocabulary related tasks. For that reason, vocabulary learning strategies are subserving the learning strategies in broader aspect when acquiring a second language.

2.4.1 Vocabulary learning strategies. For over the last decades linguists, psychologists and language teachers have been studying vocabulary learning strategies (Levenston, 1979), which clearly shows the importance of vocabulary, as "lexis is the core or heart of language" (Lewis, 1993, p. 89). The process of vocabulary acquisition is affected by many different factors such as motivation, individual and group-based activities or explicit and implicit techniques, and learning strategies (Coady, 1997; Nation & Newton, 1997).

It cannot be denied that there is not a single and best way to teach vocabulary as there are many different dynamics affecting the acquisition process such as the student type, the target words, the curriculum and the school system apart from many other factors as listed above.

According to Rivers (1983) "vocabulary cannot be taught" (p. 127), implying that teacher can present it, explain it, but still at the end it is the learner who acquires it using strategies. In essence, according to Rivers (1983) this means "students must learn how to learn vocabulary" (p. 130) and "must eventually develop their own vocabularies" (p. 118).

To get into vocabulary learning there is an increasing amount of focus on vocabulary learning strategies (VLS). Vocabulary learning strategies (VLS) are a sub-division of language learning strategies. Previously, vocabulary teaching was chiefly teacher-oriented; however, nowadays there is a shift towards the interest in the learner and effect of learner actions on vocabulary learning. Many learners use different strategies when learning vocabulary and these strategies have been classified and categorized many times by different scholars and researchers as the process of vocabulary learning is more different, when compared to the other language activities (Schmitt, 2002).

2.4.2 Taxonomies of vocabulary learning strategies. Vocabulary learning strategies (VLS) are a sub-division of language learning strategies. There are few taxonomies developed by the researchers. To start with, Vocabulary Learning Strategy Inventory (VOLSI) was developed by Stoffer (1995) and it contains 53 items to find out vocabulary learning strategies. These 53 items were grouped in nine categories as shown below:

1. Strategies involving authentic language use
2. Strategies used for self-motivation
3. Strategies used to organize words
4. Strategies used to create mental linkages
5. Memory strategies
6. Strategies involving creative activities
7. Strategies involving physical action
8. Strategies used to overcome anxiety
9. Auditory strategies

Figure 4. Stoffer's Vocabulary Learning Strategy Inventory (VOLSI) (1995)

Furthermore, there is another taxonomy created by Gu and Johnson (1996), Upon analyzing the responses of their questionnaire, six types of strategies were identified as follows;

1. Guessing
2. Dictionary
3. Note-taking
4. Rehearsal
5. Encoding
6. Activation

Figure 5. Gu and Johnsons' Taxonomy of Learning Strategies (1996)

In 1997, Schmitt used Oxford's (1990) Strategy Inventory for Language Learning (SILL) as a starting point, and specifically developed a taxonomy designed

to carry out vocabulary learning. The classification of Oxford's learning strategies containing *memory strategies, cognitive strategies, metacognitive strategies, social strategies,* and Cook and Mayer's (1983) *discover/consolidation* distinctions are blended together by Schmitt to propose an extensive taxonomy of VLS. In his design, Schmitt included two main categories of *discovery strategies* and *consolidation strategies* and five sub-categories *determination strategies* and *social strategies (*under *discovery strategies), memory strategies, cognitive* and *metacognitive strategies* (under *consolidation strategies*).

Determination strategies support learners to determine the meaning of a word with the help of dictionaries or context the word belongs to, and identifying the parts of speech and combining elements in a sentence. Specifically, these strategies are exploring the meaning of a word not with the help of others but the individual's own effort (Schmitt, 2000).

Social strategies are used to determine the definition of a word with the help of others. Namely, teachers, classmates and native speakers can be helpful for us to find out the meanings of unknown words. Simply put, social strategies might embolden learners to communicate with the others and learn from each other (Schmitt, 2000).

Memory strategies (also traditionally known as *mnemonics*) are directly related to recalling the vocabulary. In other words, these strategies enable learners to use their mental processing to acquire new words by creating links between their existing knowledge and the new words (Schmitt, 2000).

Strategies for the Discovery of a New Word's Meaning			
DET	Analyze part of speech	DET	World lists
DET	Analyze affixes and roots	DET	Flash cards
DET	Check of L1 cognate	SOC	Ask teacher for an L1 translation
DET	Analyze any available pictures or gestures	SOC	Ask teacher for paraphrase or synonym of new word
DET	Guess from textual context	SOC	Ask teacher for a sentence including the new word
DET	Bilingual dictionary	SOC	Ask classmates for meaning
DET	Monolingual dictionary	SOC	Discovery new meaning through group work activity

Figure 6. Schmitt's Categories of Vocabulary Learning Strategies (1997)

Strategies for Consolidating a Word Once It Has Been Encountered			
SOC	Study and practice meaning in a group	MEM	Use Keyword Method
SOC	Teacher checks students' flash cards or world lists for accuracy	MEM	Affixes and roots (remembering)
SOC	Interact with native-speakers	MEM	Part of speech (remembering)
MEM	Study word with a pictorial representation of its meaning	MEM	Paraphrase the word's meaning
MEM	Image word's meaning	MEM	Use cognates in study
MEM	Connect word to a personal experience	MEM	Learn the words of an idiom together
MEM	Associate the word with its coordinates	MEM	Use physical action when learning a word
MEM	Connect the word to its synonyms and antonyms	MEM	Use semantic feature grids
MEM	Use semantic maps	COG	Verbal repetition
MEM	Use "scales" for gradable adjectives	COG	Written repetition
MEM	Peg Method	COG	Word lists
MEM	Loci Method	COG	Flash cards
MEM	Group words together to study	COG	Take notes in class
MEM	Group words together spatially on a page	COG	Use the vocabulary section in your textbook
MEM	Use new word in sentence	COG	Listen to tape of word lists
MEM	Group words together within a storyline	COG	Put English labels on physical objects
MEM	Study the spelling of a word	COG	Keep a vocabulary notebook
MEM	Study the sound of a word	MET	Use English-language media (songs, movies, newscasts, etc.)
MEM	Say new word aloud studying	MET	Testing oneself with word tests
MEM	Image word form	MET	Use spaced word practice
MEM	Underline initial letter of the word	MET	Skip or pass new word
MEM	Configuration	MET	Continue to study word over time

Figure 3 (cont.d)

Pictures, related words, grouping, a word's phonological or orthographical form help remembering the meaning of new words. Instead of working with the definition of a word, related pictures can be used to learn new words, or already known L2 words can be linked to the target words as in coordination, synonymy or antonym. Furthermore, grouping is also a very important strategy that people can commonly re-arrange words into categories and group them. Another mnemonic strategy to acquire the meaning of a word is concentrating on a word's phonological or orthographical form. Learners can focus on the spelling or pronunciation of a word, or contemplate the written form of it (Schmitt, 1997).

The strategies that are not linked to mental procedures, but deal with the mechanical facets of vocabulary learning are *cognitive strategies* (Schmitt, 2000).

There are many different cognitive strategies and repetition is one of the most frequently used one. What's more, it can be said that making lists of new words, keeping vocabulary notebooks, taking notes for the new words and highlighting them, using flashcards to keep new words, putting labels in English on physical objects, and writing new words repeatedly are among the other cognitive strategies (Schmitt, 2000).

Metacognitive strategies reflect learners' efficiency to find moments to learn, record and revise their experiences via monitoring, decision-making, and assessing their own progress. These strategies might help learners decide on the right strategies to keep acquiring new words in the target language (Schmitt, 2000). Paying attention to the foreign words when someone is speaking in the target language or studying new words many times belong to metacognitive strategies.

2.4.3 Research on vocabulary learning strategies. Yaacob, Shapii, Saad, Al-Rahmi & Alias, (2018) investigated the vocabulary learning strategies of 58 Saudi and Arab secondary school students in Malaysia. They were native speakers of Arabic and had no previous foreign language learning experience except of English. Their age range was between 16 and 18. They used a vocabulary learning strategies questionnaire (VLSQ) to measure discovery, storage, retrieval, use and metacognitive abilities of the participants. According to the results they benefited from various memory strategies such as visuals, audios, verbal and written repetition of the words to consolidate the new vocabulary. Also, using the word that was learnt recently in a sentence is one of the mostly used strategy as Jiménez-Catalán (2003) also suggest. Furthermore, aforementioned study is parallel with the studies of Gu and Johnson (1996), Kudo (1999), Schmitt (1997), (1999), Fan (2003), Jiménez-Catalán (2003), Liao (2004) and Wu (2005) in terms of finding that the using dictionaries strategy was frequently used by the learners of L2.

In another similar study, 600 Japanese high school, college and adult learners participated in a survey carried out by Schmitt (1997) and according to the researcher's analysis the most frequently used strategies were dictionary use, written and oral repetition, spelling the words, and guessing from the context, while the key word method, semantic map, and first language cognates were less popular among the learners.

In another study, 150 EFL students in Mexico were examined, and it was found by Marin-Marin (2005) that using dictionary to check the meaning, guessing it from context and repeating the lexical items were the most commonly used strategies.

In Amirian and Heshmatifar's study (2013) on VLS use of 74 Iranian EFL university students, a VLSQ, adapted from Schmitt's (1997) taxonomy of VLS was used and according to the results of the questionnaire, determination strategies were the most frequently used ones among five vocabulary learning strategy groups, followed by cognitive strategies. The third and fourth mostly used strategies were memory and metacognitive strategies. Lastly, it was found that social strategies were least frequently used. According to Kafipour (2006) students do not benefit from social strategies frequently, mostly because in an EFL environment they do not need to negotiate or discuss the meaning of an unknown word.

Astika (2016) collected data from 706 secondary school students in Indonesia via Survey Monkey research tool and it could be seen that determination strategies were the mostly used strategies, whereas unlike the findings of the other studies memory strategies were the second mostly used ones instead of cognitive strategies which were the third mostly used strategies.

2.4.4 Vocabulary learning strategies training. The importance of vocabulary in language learning has been broadly discussed above, and needless to say having a wide capacity of vocabulary knowledge is one of the asserting aspects of language learning process that the learners would encounter (Kılıçkaya & Krajka, 2010). It is also necessary to emphasize that vocabulary learning strategies are equally important as they are responsible for allocating vocabulary items to memory (Gu & Johnson, 1996). Mostly the best strategies for vocabulary learning were investigated previously but learners tend to use various kinds of strategies during the learning process (Ahmed, 1989; Gu, 1994; Sanaoui, 1995).

"Learning strategies" is a broader term which also covers vocabulary learning strategies. Learners use these specific mental and communicative procedures to regulate their learning and use of language (Chamot, 2005; O'Malley & Chamot, 1990). According to Weinstein and Mayer (1986), learning strategies aim to "affect the learner's motivational or affective state, or the way in which the learner selects, acquires, organizes, or integrates new knowledge" (p. 315), and as Dörnyei (2005) puts forward employing learning strategies is "learners' proactive contribution to

enhancing the effectiveness of their own learning" (p. 166). Thanks to the use of strategies learners are able to take the responsibility of their own learning process and keep on at their own pace. It is for the best if a teachers teaching language learning strategies also considers learners' beliefs and feelings, that it creates a path for them to take more responsibility on their learning (Oxford, 1990).

It is clear that even though learners may not be aware of the mental process they use during learning something new, in a classroom every exercise and task requires at least one learning strategy. As Macaro (2001) points, it is important to raise awareness and use strategies to help create more potent language acquisition.

The rest of the chapter will focus more on the vocabulary learning strategies. The effect of strategy training on vocabulary acquisition was first studied by Cohen and Aphek (1980). As research shows these strategies provide an important increase in the number of words known (Nation, 2001) and help reduce vocabulary teaching time in classroom (Oxford, 1990) in order to create more convenient time and space for further tasks and exercises. In order to achieve these, teachers are supposed to know how to initiate the process of making learners realize the need to learn how to learn, as language learning is an active self-regulated and self-directed process (Oxford, 1990).

According to research, learners with strategy training learn better and most language teachers believe that training language learners explicitly, making them conscious of the training process are much more meaningful, also supporting the collaborative environment in the classroom between learner and teacher, creating opportunities to explore and practice strategies mindfully to initiate taking responsibility for self-learning (Oxford, 1990). According to Oxford (1990) one of the important aspects of the strategy training is that informing the learners 'as completely as possible' about the importance of these strategies, the training and how these strategies may be applied to different tasks apart from the existing one in the natural classroom environment. Exploring the strategies and their effects on the learner should be discussed as well to make the training more effective, which is also related to metacognition, one's knowledge about one's own cognitive processes and anything related to the (Flavell, 1976). This is also a part of the strategy training process, which emphasizes the fact that self-monitoring and self-assessment are crucial factors in learning.

As a teacher it is important to understand how students learn in order to make their learning more effective. In order to do that "strategy training" or, in other words "learner training" is crucially needed (Oxford, 1990). Instead of giving it with isolated materials, presenting this training by making use of regular course materials that the students are familiar with would be more effective as the latter application might cause some problems in the classroom in a way that students may not establish relation with their ongoing language education. Integrating strategy training into students' ongoing language learning process in their familiar classroom environment lets them understand how they can benefit more from these strategies and use them in context meaningfully and that helps transfer the training to new tasks which is very important (Oxford, 1990).

2.4.5 Research on vocabulary learning strategy training. There are many studies in the literature on the effects of vocabulary learning strategy training. To start with, Cohen and Aphek (1980) trained 26 university students to enable them to create their own mnemonic associations with the vocabulary items and found that thanks to the use of this strategy for learning vocabulary, students were able to remember the words for a long period of time.

Green and Oxford (1995) found a noteworthy relationship between learning success and strategy use. Their findings showed that when target language was used actively in natural context, students were able to develop proficiency in their second language.

In a more recent study, Tezgiden (2006) followed a three-week strategy training with 24 pre-intermediate level EFL learners in a preparation class at university and found that the number of strategies that the learners used increased according to the results of the post vocabulary questionnaire.

In another study, Atay and Özbulgan (2007) investigated the effects of memory strategy instruction on EFL learners' vocabulary performance and they discussed that experimental group students who took strategy training achieved better than the control group students who did not receive any training and the vocabulary retention scores of the experimental group was higher than the latter.

Furthermore, Akın and Seferoğlu (2004) explored the influence of vocabulary learning strategies training on an EFL class of a Turkish university. According to their findings on the delayed post-test results applied three weeks after the treatment,

training was effective and experimental group students achieved more on the recall of selected vocabulary items.

Cubukcu (2008) looked at the effects of metacognitive strategies on vocabulary development and reading comprehension. The researcher worked with two groups; experimental group and control group. According to the results, vocabulary performance of the experimental group in the post-test was higher than that of the control group after the strategy training.

As shown in the above literature, there is an irrefutable positive relation between learning process in general and learning strategies. Needless to say, learning strategies increase students' performance as well.

2.5 Vocabulary Development and Technology Use

For the last decades there has been great focus on computer technologies as they assist language learning in various ways to enhance development (Constantinescu, 2007). Research has been about the effects of CALL on vocabulary development and the benefits of CALL on learning foreign language have been stressed by Chanier and Selva (1998). In addition, as Constantinescu (2007) argues utilizing computerized reading passages with glosses is a unique way to enhance vocabulary development.

2.5.1 History of CALL. According to Levy (1997) computer-assisted language learning, that will be referred to as "CALL" in the following lines, is defined as "the search for and study of applications of the computer in language teaching and learning" (p.1), and it is one of the most important developments in language teaching today. Thanks to the rapidly developing features of the computers, CALL is an area that is in constant change concerning pedagogy and technological advances (Beatty, 2010).

CALL is associated with a lot of different disciplines. Computer is used as a tool to help teaching and learning both in and out of the classroom. For instance, CALL is used, more and more, in teaching four main skills that are listening, speaking, writing, and reading. Apart from that, there are different fields where CALL is used actively, such as autonomy in learning (Beatty, 2010).

Technology has been focal point for education, in a way that in today's world most learners have online access to ample amounts of materials in any language, take

language tests, or regardless of where they are, in or out of the classroom, they can communicate with each other anytime they want (Chapelle & Sauro, 2017)

Even though computers are used widely in teaching learning, they are inadequate in teaching and testing the writing because of their shortcoming of predicting the learner output. It does not necessarily mean that a grammatically correct sentence is semantically correct too, as Noam Chomsky (1957) proves with the example that "Colorless green ideas sleep furiously.", showing that the sentence is grammatically correct but it is not meaningful (Beatty, 2010).

According to Warschauer and Healey (1998) there are three main stages of CALL and they are: behavioristic CALL, communicative CALL and integrative CALL. These stages are discussed below in detail.

2.5.1.1 Behavioristic CALL. Corresponding to the behaviorist learning model, this stage of CALL was to practice repetition of language forms as much as possible, which also known as "drilling" (Warschauer & Healey, 1998), and the focus was only on the form, not using the form.

Even though there are limited information on scattered documents regarding the use of technology in language learning from the period of early decades of 20th century, some researchers such as Sanders (1995), Levy (1997), Davies (2008), Delcloque (2000), Butler-Pascoe (2011), Davies, and Fischer (2013) give important information regarding the process and development of CALL through the decades (Otto, 2017).

At the beginning, the first computers used to learn language were 1950s mainframes that were available only at university research facilities and they were used from the 1950s to 1970s. Because of their size, they were only available at universities' research facilities. These early machines were quite expensive and due to the demands upon them for only research caused limited amount of time given to teaching and learning. Nevertheless, the need to teach language efficiently and as fast as possible, especially important for military, opened the ways to time and funds for language research. Parallel to this improvement, there was also another research going on about machine translation that would affect the development of CALL (Beatty, 2010).

These computers were only working with paper punch cards. Only during the late 1960s and early 1970s computers were able to support keyboards which enable

interaction with the computer and this led the way to CALL. The first developers of CALL were well aware of the fact that the developments in this area helping language teaching would allow to practice language forms, specifically vocabulary and grammar; recognize self-pacing and do self-selected exercises; give immediate feedback, and correct assignments instead of the teacher, so that the teacher would have more time to concentrate on communicative tasks and activities in the classroom (Ahmad, Corbett, Rogers & Sussex, 1985).

The first and most crucial language teaching and learning applications in computers were the ones developed by the University of Illinois in 1959 and they were a part of the Programmed Logic/Learning for Automated Teaching Operations (PLATO) system (Merrill, Hammons, Vincent, Reynolds, Christensen & Tolman, 1996). PLATO was the mid-point for the best CALL features and its importance was being custom-designed for teaching English. It had its own components and provided extensive drills, grammatical instruction and tests (Ahmad et al., 1985). The other two most prominent CALL projects were Stanford University the Tutorial Russian project and Brigham Young University and University of Texas the Time-shared Interactive Computer Controlled Information Television (TICCIT) project. The reason that these three projects were highly distinguished that they could provide students with automated interactive practices full of medias, give immediate feedback and reflect detailed scores and students' progress in the lessons (Otto, 2017).

This period was when numerous Second Language Acquisition (SLA) methods and theories were put forward emphasizing especially interaction and some of these methods and theories were Omaggio's Proficiency-Based Instruction, , Terrell and Asher's Total Physical Response, Krashen's Natural Approach, Long's Interaction Hypothesis, and Curran's Community Language Learning (Richards & Rodgers, 2001).

In terms of technological advances there were radical changes in 1981 thanks to microcomputers, some of which are Apple II in 1977 and the IBM PC, affecting the aspect of computing thoroughly. By means of these microcomputers that were relatively small compared to the mainframes, individuals and schools had the chance to access information directly and this opened the path to creating multiple CALL software projects in United States, Canada and Europe.

Language teachers' and developers' focus shifted from mainframes to microcomputers thanks to their graphics capabilities, enabling images on screen, animations, and, at last, foreign characters. To advance one step further in the area of language teaching, computer-controlled audiocassettes, for example, the Instavox Random-Access Audio system, the Tandberg Computer-Controlled Cassette Recorder, and random-access VHS videotape along with the BCD board for the Apple II also appeared during this period promoting listening comprehension in a controlled way (Otto, 2017).

Furthermore, there were many free or cost-effective software tools for instructional purposes such as HyperCard, or software specifically developed for language teaching such as WinCALIS, MacLang, Storyboard, Dasher, and Libra among other software and tools.

2.5.1.2 Communicative CALL. During this period it was emphasized by the cognitive theories that learning was not instructed by another person, namely the teacher, in the classroom; but "a process of discovery, expression, and development" (Warschauer & Healey, 1998, p. 57). Grammar was to be taught implicitly, and students were to be encouraged to produce their own sentences instead of replicating the available forms of language, so that they used the target language whether it was in the perfect form or not (Jones & Fortescue, 1987; Phillips, 1987; Underwood, 1984).

Some developers were after creating games and stimulations. Bassein and Underwood's Spanish games, Juegos Communicativos, gave a chance to practice communication in 1985 and a German spy game Spion, developed by Sanders and Sanders in 1995, indicated the first impressions of intelligent CALL (ICALL). Even though the user only inserted limited amount of natural language production, these programs were able to comprehend these inputs (Otto, 2017).

There was a dramatic increase in the amount of authentic media using natural language input due to the high emphasis put on the communicative skills of language learners, as these students were exposed to the language produced by teacher and for instructional purposes only, so this led to not understanding the natural language in real life (Otto, 2017).

After the transition from mainframes to microcomputers, the language corpora and concordances were adapted for the latter making it more accessible for students

and teachers (Otto, 2017). The concordances are tools to search through the corpora which are the accumulation of the authentic language products. The language corpora provide the learners with words and forms in their natural context and it is widely used in language teaching, as well as learner corpora which includ language products of students only. This also lets the teachers and students track and recognize the progress and errors in language learning (Granger, Hung, & Petch-Tyson, 2002).

Satellite technology supported language learning, connecting the learners of foreign languages all around the world and the developments have begun in 1980s. Satellite TV was a tool enabling to watch broadcasts of authentic foreign language programs from different countries to expose students to the foreign language in its natural context (Otto, 2017). For example, one of the most important satellite telecourses in language teaching was Wohlert's German course, broadcasted in 1989, for students in Oklahoma and the states around. This course was developed in 1985 at Oklahoma State University.

Another most important technological improvement in the 1980s was interactive videodisc which allowed the user playback the media swiftly. There were already technological materials for language teaching in the market but videodiscs helped less commonly taught languages such as Chinese, Arabic, Hebrew, Japanese, Korean, Russian, and Quechua appear (Rubin, Ediger, Coffin, Van Handle & Whiskeyman, 1989).

As mentioned above, CALL helped teachers save valuable time in classroom when testing and assessing language developments. So that, with the rapidly developing technology computerized adaptive testing (CAT) for languages became popular in 1980s. This major development ensured that lower testing time was required and the security of the text was increased because of randomly drawn test items, the students' anxiety was decreased and the test was adapted according to students' performance throughout the test. One of the examples of CAT was Larson' S-CAPE in 1989, a computerized adaptive placement exam in Spanish. This exam had a pool full of grammar, reading items, and vocabulary that were chosen randomly during the test. Afterwards, this test was adapted to English, French, German, and Russian (Otto, 2017).

2.5.1.3 Integrative CALL. As many teachers shifted their focus from cognitive aspect of communicative teaching to a more social/socio-cognitive outlook, more

and more importance was given to intercultural engagement and effective and appropriate target language use in 1990s. Using the target language in an authentic context became utterly important (Warschauer & Healey, 1998). Project-based, content-based and task-based approaches all wanted to engage learners in authentic environments, and also to integrate the various language learning skills. This opened a way to a new perspective on language learning and technology, which has been noted as integrative CALL (Warschauer, 1996). Here, various skills such as speaking, listening, writing, and reading were to be integrated along with technology during the learning process.

In 1996, American Council on the Teaching Foreign Languages (ACTFL) published the Standards for Foreign Language Learning: Preparing for the 21st century, to focus more on cultures, communication, comparisons, connections, and communities; Common European Framework of Reference for Languages was released in 2001 by Council of Europe, focusing especially on meaningful communication and intercultural engagement along with political and social aspects of language learning (Otto, 2017).

Integrated CD/DVD players became available in 1990s and this led to delivering digital media without tackling with other devices such as speakers or other video tools. Plus, microphones were also a standard part of microcomputers, and this development increased the speech recognition exercises.

In 1990 “the Web” was tested for the first time and it became a world wide tool enabling people all over the world to reach authentic media whenever they needed. According to Pusack and Otto (1997) this digital setting would provide different learning materials linked together in an organized way that it might prompt in-depth learning. Along with the search tools, this type of learning also opened the way for the students to find and combine information obtained from different websites. Besides, another opportunity was to explore the target language and culture autonomously (Otto, 2017).

Foreign language software such as Hyperglot, Transparent Language, and Rosetta Stone were produced during this period. Game software became popular but even today there is still quite a little percentage available for language education. Hot Potatoes let learners to practice cloze, multiple choice, matching, scrambled sentences, short answer, and crosswords multilingually (Otto, 2017).

With the rapid development of the Web, Learning Management Systems (LMCs) or Course Management Systems (CMSs) were in the e-learning field and these software included tools to help teachers guide the learning process of the students both asynchronously and synchronously.

Sociocultural issues and theories related to them has been directing the language learning and according to this view, learner is a social being and learns via social interactions using the language. Teacher-centered classrooms have become student-centered and collaborative learning has been encouraged. A student now is seen "as creator of digital texts and media and (co)constructor of knowledge, both in and out of the classroom" (Otto, 2017, p. 19). Wireless devices such as smartphones, laptops and tablets let students move independently from desktop computers, and interact with fellow students, or work on a project together (Otto, 2017).

Furthermore, with the help of technology, hybrid language courses have become popular where the lesson is conducted face-to-face but through online tools and these courses are popular because they are economical in terms of money and time. A few number of instructors are required to guide a lot of students and as the lessons are conducted online, in-class time is solely used for communicative activities (Otto, 2017).

After all the development in technology through the decades, it is indisputable, as Bax put forward (2003) that "technology becomes invisible, embedded in everyday practice" (p. 23) which means it has been a normal thing in our lives and becomes more and more integrated in language teaching and learning day by day.

2.5.2 CALL and vocabulary acquisition. Technology has always been in education from the times that teachers have started to use blackboards in the classroom as Dudeney and Hockly (2007) argue. But this does not resemble to the technology that we use currently and call "new", whereas this new technology is not new for our students for the reason that they are "digital natives" as Prensky (2001) put forward, they are already born into all these technological advances and these developments are totally ordinary for them. As teachers, it is quite crucial to understand the role of technology in SLA and how students integrate technology into their lives which would help teachers to manipulate their ways into students'

education. This will also help create connection between in-class and out-of-school learning.

Alongside the developing technology, people have easy access to the Internet with the help of personal computers, smartphones, laptops and tablets. The traditional classroom boundaries are vanished, it has become possible that teaching and learning are available whenever or wherever teachers and learners want, maybe at a café or at home.

The new technology, as we call it, has a crucial role in transferring information from one place, one person to another, and in communication (Black, 2009; Smythe & Neufeld, 2010). Due to the continuous advancements in technology and increasing demands in the societies globally, the need to implement technology into the classroom increases as well (Saine, 2012). Owing to this, the use of it in language education has gained momentum and this new technology was brought into the classroom as smartboards, audio systems and especially computers. Dunkel (1987) also adds about the use of computers in language education, that "the utilization of the speech-generating capability of computers stands to make them viable second/foreign language tutors" (p. 251).

According to Levy (2009) CALL provides opportunities for L2 learning in a particular context thanks to the various technological tools and software and they are helpful for the instructors in a way that learners' needs are to be met much more easily and efficiently. Here, it is also important to mention that CALL is not a replacement for the teacher in the learning environment whether it is a classroom or distant education; but a supplement to aggrandize teaching and learning (Beatty, 2013).

As many researchers state (Levy, 2009; Horst, Cobb & Nicolae, 2005), CALL and vocabulary teaching have a very strong relationship from the very first days of the emergence of CALL. If you are a programmer, it is easy to create a vocabulary matching exercise and give immediate feedback of true/false sentences. But when it comes to less discrete aspects of vocabulary such as collocations, colligations, register and semantic aspects of a word such as connotation and semantic prosody, these should not be neglected as well. These aspects are less discrete than simple context independent form-meaning relationship. Fortunately, recent technology allows ample amounts of exercises in any type to measure the desired aspects of vocabulary development (Alhamami, 2014).

Elgort (2018) put forward that "vocabulary knowledge is a complex, multidimensional construct that has been interpreted and categorized in second language research in many different ways" (p. 1).

Vocabulary learning is based on practice and using the new words that as Nation (2001) suggests CALL provides many different activity types of activities which would increase the learning of new words. Unlike printed exercises, learners and teachers can reach as many activities as possible whenever they want. Along with these opportunities of repeated production, CALL also helps give immediate feedback which is preferable for vocabulary teaching (Allum, 2004).

Thanks to the rapid development in technology, vocabulary studies are also increased alongside. As Altay and Tilfarlioglu (2012) and Stubbs (2008) state that data obtained through computers helped building dictionaries and other teaching materials as well as corpora helps provide evidence related to the language use in terms of lexis, grammar and semantics (Eren, 2015).

It has been demonstrated thanks to a study conducted in Taiwan by Lin, Hsiao, Tseng, and Chan (2014) that computer-assisted vocabulary learning enhances the vocabulary development more that computer-free study. Technology use is fruitful in terms of acquisition of new words.

Additionally, another research with Japanese students proves that interactive program they used during the research helps learners to visualize, practice and use the words they came across (Tanaka, Yonesaka, Ueno, & Ohnishi, 2015).

Furthermore, Alhamami's study (2014) shows that mnemonic devices through audios, images, and videos on computer work very effectively in terms of vocabulary learning, as technology gives instructors a chance to create various mnemonic devices that help vocabulary development.

Another benefit of vocabulary learning through CALL is the increased and isolated focus on the word itself. Laufer and Shmueli (1997) explained that focus and attention are fundamental for learning and less distraction, meaning context-independent exercise pave the way to a better retention of the words.

Vocabulary learning is mostly categorized in two groups: intentional and incidental learning (Nation, 2001). Intentional learning of the vocabulary, as the name suggests, is focusing solely on words on purpose and list learning activities belong to this group. However, if the new vocabulary is learned through activities

with different purposes, for example reading for the general idea, or listening for a specific information, this becomes incidental learning.

When reading a text for the general idea, students may not focus on the words individually but ponder upon the whole text which might contribute to learners' lexical development significantly (Nation, 2001), but also can be a shortcoming in terms of incidental learning that it is slow and arbitrary. According to Laufer (2003), a learner should read a text consisting of 200.000 words to learn 108 words incidentally through the context which does not sound like a realistic solution. That's why it can be said that desired vocabulary development may not be achieved. The results of Alhamami's study support practicing new vocabulary in isolation, not associated with a particular context prompts students to pay more attention to the words.

Rote learning is studying the vocabulary through a list. As Hulstijn (2001) argues, rote learning is perceived as an obsolete and behaviorist way of learning and applied linguists are strictly against it. But, unlike the common perception, list learning might have place in L2 vocabulary studies as when compared to contextual learning, empirical studies show that list learning is far more efficient than the latter (Laufer, 2003; Nation, 2001; Waring, 2004). Unlike common belief, studies how that retention of new words via rote learning is time-resistant that those words can be retained after several years (Hulstijn, 2001; Nation, 2001). What's more, in an environment where students are exposed to little to no target language out of the classroom, it is beneficial to support the learning of new vocabularies with isolated activities such as list learning (Hulstijn, 2001; Laufer, 2003; Nation, 2001; Waring, 2004). It should also be added that according to the research at an elementary level it is practical to expect benefit from incidental learning in terms of lexical acquisition (Laufer, 2003).

As mentioned above because of the rapid development in technology, learning environments have changed as well. To keep up with this transformation, technological tools like the iPod, iPad, and smartboard are becoming must-have parts of the classrooms, and this proves that technology has become an essential part of instruction (Clark, 2013). Thus, the mobile-assisted language learning (MALL) has attained significance recently. Mobile devices give us the possibility to take and carry our learning in our pockets and let us learn at our own pace.

In the field of CALL, there are plentiful studies investigating the ways how computers and mobile tools can facilitate vocabulary learning. There are many studies on the effectiveness of technology, MALL applications under CALL technologies aiding language learning and vocabulary acquisition. According to Kulik (2003) and Zhao (2003) technology has positive effects on many aspects of language learning. Kulik (2003) located forty-six studies on the effectiveness of CALL and the results displayed positive instructional effects, from moderate to large improvements in student performance. Many researchers (Al-Seghayer, 2001; Chun & Plass, 1996; Yoshii, 2006) support the fact that CALL enhances retention thanks to multimedia annotations such as video clips or pictures, as these additions create different ways of learning for the students and help longer retention.

Considering that the mobile devices get affordable and more sophisticated every passing day, the use of these devices has become widespread in and out of the class as a language teaching and learning tool. Studies using mobile phones have been conducted since 2007 and researchers found that smartphones, mobile phones, and PDAs (personal digital assistants) are the most-used technologies, even though there are some limitations of these mobile devices such as low-resolution display and small screens, limited and meager memory capacity, slow speed (Hayati, Jalilifar, & Mashhadi, 2013; Li & Hegelheimer, 2013), low-quality sound inhibiting listening to the audios efficiently (Lin & Yu, 2012; Nah, White, & Sussex, 2008), and what's more, it was difficult to type on mobile phones' keypads (Chang, Lee, Chao, Wang & Chen, 2010; Li & Hegelheimer, 2013).

2.5.3 CALL software and vocabulary acquisition. Quizlet was established in 2007 but only in 2013 Android and iPhone applications were developed, so there are limited studies and information regarding the use of Quizlet in the literature. Thanks to over 300 million study sets created by users and 50 million active users every month from 130 countries all around the world, it is a tool to help learners practice vocabulary items by creating, combining and collecting word lists. Learners have the option to work individually or collaboratively with others. Teachers can create classes that students can join and students can start to create their own word lists to be studied afterwards. All the activities are synchronized both on computers and mobile phones once logged into the accounts. Thanks to the various activity types such as flashcards, pronunciation function, matching exercises etc., Quizlet makes

learning visual, fun and reachable. Plus, it takes less time than creating activities on paper, or on board. Technology is supposed to enhance the quality of the learning process, that is the reason why it is integrated into learning environments.

Quizlet is affordable and practical, in parallel with what Nation (2003) highlights as the ways of learning foreign vocabulary "include a definition in the second language, a demonstration, a picture or diagram, a real object, L2 context clues, or an L1 translation" (p. 3), most of which are provided by Quizlet tool. Nevertheless, it is necessary to mention that some of the website features are not available on mobile application as it can be seen below and also application gives less information about students' progress:

FEATURE	WEBSITE	MOBILE APP
Learn	+	+
Flashcards	+	+
Write	+	+
Match	+	+
Test	+	+
Scatter game	+	-
Gravity game	+	-

Figure 7. Comparison of Online and Mobile Features of Quizlet

Although the literature on the use of Quizlet is limited, still there are studies about the effects of the tool and Jackson III's study (2015) was one these: It is stated that there are three reasons to choose Quizlet; receiving immediate feedback after each study session, L1 translations of the words, and the games. Furthermore, Taiwanese university students favored Quizlet instead of Study Stack or cram.com due to the activities it presents, specifically, Gravity game and Speller (Chien, 2015).

2.5.4 Research on CALL and vocabulary acquisition. Studies evaluating the effects of technology use in language education prove that the effects are on the positive side whether there are moderate or great differences in learning. Still, it took time to integrate mobile devices to the learning process as the instructors should have understood how to integrate and use the application effectively to benefit the most

from different learning activities (Kukulska-Hulme & Shield, 2008). Tan and Liu's experimental study (2004) was for Taiwanese primary school children and they were using web-connected PDAs which are linked to teacher's own notebook to guide the learning process. Still, students were responsible for the use of learning materials on their PDAs and after the treatment via web, note-taking and tutorial exercises, a series of six pre and post-tests affirmed the significant vocabulary acquisition of the students.

In another study Shimoyama and Kimura (2009) explored the effects of a digital flashcard program with Japanese university students. The flashcards, in English-Japanese pairs, were linked to audio and additional graphics illustrations or an example sentence to help acquisition and retention of the new words. Pre and post-test results were compared and the results confirmed the effectiveness of the program in vocabulary teaching.

A total of 50 words with definitions and example sentences were presented to 34 university students three times a week over a period of five weeks, in sixteen sessions total by Motallebzadeh and Ganjali (2011). There were two groups; experimental and control. Experimental group received vocabulary via SMS, whereas the latter group were only given printed hand-outs. According to the results of the post-test, experimental group receiving SMS achieved higher vocabulary retention. The process of teaching vocabulary with SMS was in favour of the students in the experimental group. The positive results of the study are in parallel with the studies of Lu (2008) and Hulstijn and Laufer (2001) confirming the effectiveness of mobile phones in vocabulary learning.

Motallebzadeh, Beh-Afarin and Daliry Rad (2011) conducted another research for five weeks and there were 40 university students. They sent vocabulary via SMS to the one half of the group and gave printed hand-outs to the other half. And the result was SMS group participants showed higher vocabulary retention compared to the other group.

In an another Iranian study which was a two-month project with 60 high school students five or six English synonyms and antonyms were studied twice a week in the class for ten weeks. Apart from that, half of the students wrote one sentence using each word after the class and send their sentences to their instructor via SMS. The other half submitted their sentences on paper. Post-test results showed that both groups had higher performance whereas the group using SMS scores higher than the

other group (Tabatabaei & Goojani, 2012). This study also confirms the benefits of technology use in vocabulary teaching and learning.

Saran, Seferoglu and Cagiltay (2012) had a four-week long project with 103 Turkish prep-school students. 53 students were beginners whereas, 50 were pre-intermediate level of English learners. Vocabulary teaching was done via multimedia messages (MMS) in experimental group using the definitions of words, word formation information, exemplary sentences, pronunciation and related visual representations. The control group learners were taught through web pages and printed hand-outs. In both levels, MMS group learners achieved and learned more words than the control group as the pre and post-test results confirmed.

32 Taiwanese junior high school students attended a four-week long vocabulary learning program as reported by Lin and Yu (2012). Each week nine words were taught to these students in a) text, b) text with audio, c) text with image and d) text with both audio and image forms. There was an increase in vocabulary capacity but no significant difference between the four teaching modes was reported.

Additionally in China; Zhang, Song and Burston (2011) wanted to explore how effective was SMS, compared to printed presentation of vocabulary. For twenty six days, 32 experimental group university students studied 130 English words: five words were sent via SMS two times a day (the same words) and 30 control group students were given the same vocabulary on a printed version and these students studied the words by themselves. Pre-test was applied but there was also immediate post-test. Both groups had achieved significantly but still the experimental group was more successful than the control group. However, interestingly, the results of the delayed post-test that was applied only four days later showed no significant difference between both groups.

What can be inferred from these studies that obviously implementations of tools and software, under CALL or MALL technologies, help students achieve higher retention and acquisition of vocabulary items, but it is inevitable that these projects neglect the communicative aspect of CALL and MALL technologies, while arguably adopting behaviorist or structuralist teaching methods (Burston, 2015).

According to the current literature it is advantageous to use CALL tools in L2 learning environments and vocabulary acquisition is increased accordingly (Al-Jarf, 2007; Kiliçkaya & Krajka, 2010; Stockwell, 2010; Thornton & Houser, 2005). It is also important to mention here that there are numerous applications and their

websites that students can reach and use whenever they want to assist their language learning process.

In 2013, McLean, Hogg and Rush examined the effects of digital flashcards on L2 vocabulary acquisition via a flashcard website Word Engine among Japanese university students. According to the compared results of pre and post-tests of both groups, the gain was higher in the experimental group that benefited from the website than the control group that used extensive reading to learn L2 vocabulary.

In another study Altıner (2011) investigated the efficacy of digital flashcards with ESL students in the U.S.A. Schmitt, Schmitt and Clapham's (2001) Vocabulary Level Test (VLT) was used as pre and post-tests. Students used a software, Anki, specifically designed for vocabulary learning with spaced repetition. The end results showed that this software increased students' L2 vocabulary knowledge significantly.

Al-Jarf (2007) experimented with Saudi Arabian students, using an online course management system, Nicenet, along with various vocabulary websites such as OneLook, Cambridge Dictionary and English Club. Students achieved higher levels of vocabulary acquisition according to the pre and post-test results, which implies that online support aids students' L2 vocabulary acquisition.

In Altıner's study (2011), students also expressed that it would have been better if the Anki software had included pronunciation of the target words, definitions, or pictures in L1 that Quizlet already provides with various activities.

In Lander's study (2015), teachers divided 485 students into classes of 15 students each and these classes were categorized as Group A and Group B afterwards to conduct an experimental study. Group A students were trained with the help of technology, whereas Group B only used traditional paper-based word list or flashcards, and that was, supposedly, not as beneficial as technology integrated classes when teaching vocabulary, as there was no visual aid or correct pronunciation of the lexical item. Incorrect translation was also a possible error. However, Quizlet keeps all data in one place digitally and you can reach it whether via computer or mobile phones. Notebook also carries words lists as well, but it is highly possible to forget it somewhere, so the possibilities that digital platforms provide are exceptional (Lander, 2015).

In Lander's study (2015), students took the Test of English for International Communication, commonly referred to as the TOEIC Bridge test which was initially

created in Japan but now is recognized and widely used as the universal standard for communication skill assessment in English. This test was used both as pre and post-test. Previously, none of the students were familiar with any of the digital flashcard tools, but had experience with word lists on a paper or notebook. Each group was supposed to learn 15 lexical items each week and the source was their two textbooks. They were independent to learn any vocabulary item they wanted from these two books. According to the results, it was indicated that students in Group A displayed higher improvement than their fellow students in Group B. The significant difference could be attained to the technologically enhanced learning environment (Lander, 2015).

Dizon (2016) studied with 9 Japanese university students who had the highest TOEIC exam scores in the previous academic year. Researcher was with the students three times a week for 15 weeks, during the spring semester. As a pre-test, researcher administered version 1 of VLT and after the treatment with Quizlet was complete, version 2 of VLT was administered as post-test, based on Schmitt, Schmitt, & Clapham's (2001) comments that version 1 and version 2 of VLT could create similar results, so to say, making them available to use as pre and post-test. According to the results after comparing pre and post-test scores, there was a moderate gain in terms of vocabulary, still supporting the fact that Quizlet enhances L2 vocabulary acquisition.

Chapter 3: Methodology

3.1 Overview of the Chapter

This chapter gives information about the research design, setting of the research with the participants, research instruments, what procedures are followed through and analysis of the data obtained through the research procedure. Reliability and validity of the instruments are displayed and limitations of the study are discussed at the end of the chapter.

3.2 Research Design

This study was designed to answer three research questions. The first research question focused on the existing language learning strategies of the students. Quantitative data was gathered through the questionnaire; before a six-week strategy training, SILL (1990) of Oxford was applied and the changes in use of the strategies were discussed for the second research question after comparing the results of the first and the last application of the inventory.

The aim of the third research question was to explore to what extent the language learning strategy training helped students increase their vocabulary acquisition and retention. In order to obtain information, their pre and post-test results of vocabulary tests applied before and after the strategy training were compared.

The last research question was to find out whether students benefited from digital flashcard tool in learning new vocabulary. Target words were chosen from students' own classroom material and to gather qualitative data semi-structured face-to-face interviews were used.

In order for this study to reach its aims both quantitative and qualitative data were collected, and this thesis study grounded its methodology on mixed-methods approach where the researcher uses quantitative and qualitative research techniques together (Fraenkel & Wallen, 2005) (See Table 5).

Table 1

Research Questions, Methods and Instruments Used in the Study

Research Question	**Instrument**	**Analysis Method(s) & Procedure(s)**
1 – What are students' vocabulary learning strategies?	Strategy Inventory for Language Learning (SILL) (Oxford, 1990)	QUAN: Frequencies, descriptive statistics
2 – Do students' language learning strategies change after strategy training?	Strategy Inventory for Language Learning (SILL) (Oxford, 1990)	QUAN: Frequencies, Wilcoxon signed-rank test
3 – Is there a significant difference between students' vocabulary achievement before and after the strategy training? a) immediately before and after the strategy training? b) before and after the delayed achievement tests?	Test prepared according to the vocabulary in students' course book	QUAN: Frequencies, Paired sample t-test
4 – What are students' perspectives towards the use of a digital flashcard tool in their vocabulary learning processes?	Semi-structured face-to-face interviews	QUAL: Content analysis

Both qualitative and quantitative methods require different instruments, and the above-mentioned instruments were used to gather the data for the study as mixed methodology is proved to present reliable information, as the researcher combines quantitative and qualitative research techniques, approaches and methods in one study when utilizing mixed methodology, (Fraenkel & Wallen, 2005). The importance of this methodology is also discussed by Brown (1995) that "both types of data might provide valuable information in any kind of evaluation, and it is important to realize that ignoring either type of information would be pointless and self-defeating" (p. 232).

Because of the obvious reasons mentioned above, in this study both quantitative and qualitative research help to explore the language learning strategies of students and how they employ digital flashcard tool in learning new vocabulary.

3.3 Setting and Participants

The study was conducted at a vocational high school in Bağcılar, a suburban area of Istanbul, Turkey. In this study, there were 34 students from a single 9th grade class. There were 5 female and 30 male students in the class and they were all 15 years old. Even though they had been learning English since the 2nd grade of primary school they were using A1 level of English book provided by the Ministry of National Education. All the students taking part in this study had Internet access via their mobile phones or computers at home. They were also familiar with the FATIH project and they had a smartboard in their classroom as well. The smartboard was already used interactively.

3.4 Procedures

The data gathering process of this study started in the first week of the second semester of 2019, on 6th February, Wednesday. The research lasted for 7 weeks in total and strategy training lasted for 6 weeks. Before the procedure started, students were asked to complete the online version of SILL via Google Forms. This questionnaire was filled again after the strategy training to identify the amount of growth made throughout the procedure. Students were already presented with the target words during the regular lesson sessions. Afterwards, each week for 6 weeks, pre and post-tests of the related vocabulary were applied before and after the training. On the training day after the school, students used the digital flashcard tool, namely Quizlet in this study, to practice the vocabulary they used with strategy training on the same day. Apart from that, both on the 4th and 7th week, two tests were applied to measure and evaluate students' overall achievement of the vocabulary items in total. At the end of the research, students were interviewed to obtain their insights on the use of Quizlet, their opinions about advantages and disadvantages of integrating this technology into their learning.

3.4.1 Data collection instruments. Three different data collection instruments were used during the research and they were a questionnaire (Appendix A), pre and post tests for the vocabulary, and a semi-structured face-to-face interview (Appendix C and D).

3.4.1.1 The questionnaire. According to Richards (2001), questionnaires are practical to apply and gather data from many respondents as fast as possible. The SILL was the first instrument that was used to find out about the students' language learning strategy use both before and after the language learning strategy training in the class and outside with the help of Quizlet.

The questionnaire used was the SILL for EFL/ESL learners, version 7.0 (Oxford, 1990), a 50-item survey for students learning English as a foreign or second language (See Appendix A). The SILL, a Likert-type battery, examines the frequency with which respondents use strategies for language learning. It includes six sub-groups of language learning strategies mentioned above: memory, cognitive, compensation, metacognitive, affective and social strategies. There are five points of answers in the questionnaire ranging from 1 to 5: 1 - *Never or almost never true of me*, 2 - *Usually not true of me*, 3 - *Somewhat true of me*, 4 - *Usually true of me* and 5 - *Always or almost always true of me*. There was also a background questionnaire attached to The SILL aiming to gather information about the students' age, gender and the length of English language study.

The Turkish translation of SILL used in this study is from a study by Cesur and Fer (2007) to avoid any errors and misunderstandings that may have occurred due to the insufficient understanding of the English language (Appendix B). The students were given the SILL asking about their learning strategies both at the beginning and end of the language learning strategy training which lasted for 6 weeks.

3.4.1.2 Pre and post vocabulary tests. The target words used in these tests were taken from the up-to-date themes of the course material that the students use in English lessons. Vocabulary was chosen from the units that the students needed to follow according to the syllabus. Many different question types such as multiple choice, matching, cloze test, gap filling were used each week to test students' vocabulary acquisition first and approximately 10 to 15 questions were asked. The pre-test was applied after the regular lesson and the post-test was applied after the strategy training and Quizlet use (Appendix C). These tests were implemented to measure students' vocabulary growth and development affected by strategy training and CALL in terms of achievement. After the tests were prepared, other English teachers at the school checked these tests for content validity, and these tests were applied to the students upon the conformation of another expert in the field.

3.4.1.3 Semi-structured face-to-face interviews. According to Brown (1995) thanks to the interview instruments, researchers can collect personal responses and views privately, and that provides the researchers with the real opinions and thoughts of the participants.

Due to the limited amount of time (Moser, 1952) and low number of participants, six students were interviewed and they were chosen using quota sampling with the quotas of sex and achievement in their regular English exams. Students were put in ranking order according to their average score of the previous English exams and carrying the traits and characteristics of each group, two students, male and female, were chosen from each success group according to their average grades: and these groups were students with high achievement, students with average achievement, students with low achievement. These students were interviewed at the end of the 6-week strategy training.

As the students' level of English was not proficient for an interview to be conducted in the target language, students' native language Turkish was used to encourage students to share their feelings truthfully and sincerely and also to collect clear and reliable data (Appendix D). The interviews lasted around 10-15 minutes and they were immediately analyzed afterwards. The interviews were recorded and the parts that the researcher needed were transcribed and translated into English. Students' real names are not used in this study.

Apart from gathering quantitative data which provides statistical information about students' achievements in pre and post-tests, qualitative data was also needed to focus more on students' thoughts on using Quizlet tool during the strategy training, their views on the advantages and disadvantages of this online tool, whether it was different from using dictionary or not, and if they benefited from it when learning new vocabulary, if their self-esteem and self-confidence in language learning improved. They were also asked about what they liked and did not like during the 6-week strategy training. Furthermore, the students commented on their experiences that they had with Quizlet, and these interviews aided to explore more about students' reflections about this 6-week training.

The interviews were analyzed and interpreted by coding under the headings that appeared naturally thanks to the answers given to the interview questions and the findings were also checked by another expert in the field.

3.4.2 Data collection procedures. At the begining and at the end of the strategy training students were given SILL (See Appendix A) to enable the researcher to compare and contrast the strategies students were already using beforehand and the strategies they used after the strategy training, As Oxford (1990) puts forward that giving the training while using the original course book or available lesson materials is much more meaningful. Therefore, students were trained with the vocabulary items taken from their own course book, *Teenwise*.

Throughout the language learning strategy training different activities were integrated into the existing syllabus. The students were intensively involved in language learning strategy training in the classroom and a digital flashcard tool was used outside of the classroom. The strategy training subsumed memory, cognitive, compensation, metacognitive, affective and social strategies as suggested by Oxford (1990) and all the activities were prepared and presented according to Oxford's ideas and guidance in her book.

There was an explicit training process; that is, the students were informed about the strategies in language learning, how they could use it and why they were important to be used appropriately. Additionally, all of the strategies were integrated into the weekly units of the course book and daily activities during the lessons.

Students had five hours of English on a weekly basis. The existing course book *Teenwise* was used for the first two lessons on Tuesday to cover the target words incidentally and existing syllabus was followed. Immediately after that, the next day at the beginning of the second two-hour session, pre-test of the words that the students learned the previous day was applied (See Appendix B). These tests were also checked by another English teacher to find out whether they were suitable for the students or not. After the application of the pre-test, students had strategy training on the same day with the activities according to Oxford's book on language learning strategy (1990) and they used the particular vocabulary of each week in many different activities to feed the different aspects of learning (memory, cognitive, compensation, metacognitive, affective and social) (Appendix E). Students were encouraged to practice on Quizlet after the school until the following lesson (a one-hour session) which was on the next day when the post-test was also applied. The aim was to create an increase in students' vocabulary capacity.

Two weeks before this research started, an online class on Quizlet was created and the students were asked to get a gmail e-mail account to join the class on digital

platform and complete the SILL via Google Forms (www.bit.ly/tugceteacher). Students were invited by the administrator or when they clicked on the classroom link (www.bit.ly/tugceteacher9e) their request to join the online class would be accepted by the administrator. This was to prevent others from joining the online class and intervening with the research process. Additionally, a WhatsApp group was created to motivate and encourage students to study and practice after school.

After the strategy training the SILL was applied again to find out the changes in students' strategy use. (See Table 2)

Table 2

Weekly Research and Application Design

DATE	**DESCRIPTION**
5th Feb, Tue. (1st week)	SILL and regular lesson with existing course material (2hrs.)
6th Feb, Wed	1st Pre-Test, Strategy Training and CALL (2 hrs.) *(Theme: Natural Disasters)*
7th Feb, Thur	1st Post-Test and Regular Lesson (1hr.)
12th Feb, Tue. (2nd w.)	Regular lesson with existing course material (2hrs.)
13th Feb, Wed.	2nd Pre-Test, Strategy Training and CALL (2 hrs.) *(vocabulary: talented – hang – fire fighter – loose – long-sleeved – fall – journey – explorer – heavy – elegant – glad – dive)*
14th Feb, Thur.	2nd Post-Test and Regular Lesson (1hr.)
19th Feb, Tue. (3rd w.)	Regular lesson with existing course material (2hrs.)
20th Feb, Wed.	3rd Pre-Test, Strategy Training and CALL (2 hrs.) *(Theme: Geographical Landforms)*
21st Feb, Thur.	3rd Post-Test and Regular Lesson (1hr.)
26th Feb, Tue. (4th w.)	Regular lesson with existing course material (2hrs.)
27th Feb, Wed.	- 4th Pre-Test, Strategy Training and CALL (2 hrs.) *(vocabulary: shine – journalist – sandstorm – wind – survive – communication – scarf – extremely – long distance – tent – carry – experience)*
28th Feb, Thur.	4th Post-Test and 1st overall test for the first 3 weeks (1hr.)
5th Mar, Tue. (5th w.)	Regular lesson with existing course material (2hrs.)
6th Mar, Wed.	5th Pre-Test, Strategy Training and at CALL (2 hrs.) *(Theme: Physical Appearance)*
7th Mar, Thur.	5th Post-Test and Regular Lesson (1hr.)
12th Mar, Tue. (6th w.)	Regular lesson with existing course material (2hrs.)
13th Mar, Wed.	6th Pre-Test, Strategy Training and CALL (2 hrs.) *(Theme: Jobs)*
14th Mar, Thur.	5th Post-Test and Regular Lesson (1hr.)
20th Mar, Wed. (7th w.)	2nd overall test for the last 3 weeks and SILL

3.4.3 Data analysis procedures. The researcher benefited from both quantitative and qualitative analyses in this thesis study. Descriptive statistics (means, standard deviations, frequencies) of the pre and post-tests were analyzed using Statistical Packages for Social Sciences (SPSS) Version 18 and paired sample t-test was utilized to explore the change in vocabulary achievement of the students from pre-test to the post-test. For the Likert-Scale type items in the SILL, Wilcoxon Matched Pairs Signed Ranks Test was used in SPSS to determine the changes in students' strategy use during language learning process.

For the qualitative analysis, common points were found in the data collected with the help of the face-to-face interviews and this data was analyzed according to the categorization technique as a qualitative method to find the common points. In this technique, students' answers for the interview questions were arranged according to the recurrent themes in their answers about the use of digital vocabulary flashcard tool in and out-of-class study.

3.4.4 Reliability and validity. Oxford's (1990) Strategy Inventory for Language Learning (SILL) has been used widely by researchers around the world, proving its high validity, reliability and utility (Oxford & Burry-Stock, 1995). According to Hsiao (1995) internal consistency of SILL may vary between 0.72 and 0.76. and a value over 0.70 is required for high internal consistency.

Cesur and Fer's Turkish version of SILL (2007) was used in this study. They conducted the validity and reliability analysis of this test with 768 preparatory class students. The internal consistency value of this scale (α=0.92) showed that the questionnaire was valid and highly reliable to be used in Turkey.

Apart from that, as each pre and post-tests were small scale tests, reliability analysis was only run for both the first and second overall achievement tests which were applied in the classroom after every three weeks of the strategy training (Table 7 and Table 8) and the results displayed high internal consistency which made these tests valid and reliable to be used in this study (α=0.93 was for both tests).

Table 3

Reliability Statistics of the First Overall Achievement Test

Cronbach's Alpha	**Cronbach's Alpha Based on Standardized Items**	***N* of Items**
.93	.92	39

Table 4

Reliability Statistics of the Second Overall Achievement Test

Cronbach's Alpha	**Cronbach's Alpha Based on Standardized Items**	***N* of Items**
.93	.93	48

In terms of validity, the tests used in the classroom were checked by another English teacher to provide validity for each achievement tests, which at the end led to the validity and applicability of these tests.

3.5 Limitations

Some limitations should be acknowledged and addressed regarding the present study that may have affected the study findings. First limitation was the limited amount of time allocated for this study, which was 6 weeks. As the syllabus were to be followed and for the necessity to keep up with other 9th grade teachers to prepare the students for the exams, the training and application process could not be prolonged. Still, as students' own course book which was provided by the Ministry of Education was used, syllabus was successfully followed and students did not fall back on the curriculum.

Another limitation was some students did not have the Internet access whenever they wanted to complete the online vocabulary tasks, due to the economic reasons. This issue might have affected the results of this study. In addition to this, students did not have regular revision habits. If the study had been conducted with students who were more responsible for their studies, the results would have been highly different than the current results.

The last limitation was the work overload that the students experienced with the tasks and activities given to them during the training process as well as the other homework.

Chapter 4: Findings

4.1 Overview of the Chapter

In this chapter results of the in-class application and answers given to the questionnaire are discussed and presented statistically through SPSS. The qualitative data gathered through the interviews which were done after the 6 week language learning strategy training is also included in this chapter. The quantitative data in this study presented the change in vocabulary achievement of the students before and after the weekly strategy training and the use of Quizlet after school, and the qualitative data were utilized to support and gain deeper insight about the use of Quizlet application and the difference in students' strategy use. The research questions asked in this study are as follows:

1 – What are students' vocabulary learning strategies?

2 – Do students language learning strategies change after strategy training?

3 – Is there a significant difference between students' vocabulary achievement;

a) immediately before and after the strategy training?

b) before and after the delayed achievement tests?

4 – What are students' perspective towards the use of vocabulary flashcard application in their vocabulary learning processes?

4.2 Analyses of the Research Questions

This part of the chapter presents the analysis and findings of both quantitative and qualitative data. Descriptive statistics, paired sample t-test and Wilcoxon-signed rank test were used for the quantitative questions; and content analysis was applied for the interview data in order to answer the qualitative question.

4.2.1 Students' language learning strategies. The SILL was applied as a pre-test before the strategy training to find an answer to the first research question which aims to find out *students' language learning strategies.* According to the statistical results it can clearly be seen that the mostly used strategy by the students before the strategy training sessions was metacognitive strategies with the mean score of 2.93.

The second mostly used strategy was memory strategies (μ=2.85). The third strategy was compensation strategies (μ=2.68); the fourth was cognitive strategies with 2.67 mean score. The fifth strategy used by the students was social strategies (μ=2.65), and the least used strategy was affective strategies (μ=2.61) (Table 5).

Table 5

Statistics Demonstrating Pre and Post SILL Results According to the Strategy Categories

	M	***N***	***SD***	***SEM***
Pre-Memory	2.85	32	.80	.14
Post- Memory	3.26	32	.91	.16
Pre-Cognitive	2.67	32	.75	.13
Post- Cognitive	2.82	32	.92	.16
Pre-Compensation	2.68	32	.78	.13
Post- Compensation	2.90	32	.80	.14
Pre-Metacognitive	2.93	32	.96	.17
Post-Metacognitive	3.07	32	.92	.16
Pre-Affective	2.61	32	.87	.15
Post- Affective	2.69	32	.80	.14
Pre-Social	2.65	32	.81	.14
Post-Social	2.78	32	.92	.16

4.2.2 The development of language learning strategy use. To find out whether there was a significant difference in the strategies that the students used as an answer for the second research question *(Do students language learning strategies change after strategy training?),* SILL was applied for the second time as a post-test at the end of the 6 week training and the results were as follows: The first strategy that the students frequently used was shifted from metacognitive strategies to memory strategies (μ=3.26>μ=2.93). Metacognitive strategies (μ=3.07) became the second strategy that was frequently used by the students. The third strategy was compensation strategies (μ=2.90) in both applications of the questionnaire and cognitive strategies with the mean score of 2.82 were the fourth strategies. These two strategies' ranks did not change. Lastly, social strategies were the fifth strategies (μ=2.78), and affective strategies were the least frequently used strategies (μ=2.69) in both applications (See Table 6).

Table 6

Ranking of the Mean Scores for the Pre and Post SILL Results

PRE-SILL	**Rank#**	***M***	**POST-SILL**	**Rank#**	***M***
Memory	2	2.85	Memory	1	3.26
Cognitive	4	2.67	Cognitive	4	2.82
Compensation	3	2.68	Compensation	3	2.90
Metacognitive	1	2.93	Metacognitive	2	3.07
Affective	6	2.61	Affective	6	2.69
Social	5	2.65	Social	5	2.78

As the data was ordinal, meaning that it did not rely on numbers, but on a ranking or order of sorts such as a likert-scale, a non-parametric analysis the Wilcoxon-Ranking test was run to see if there was any significant difference in students' use of strategies between pre and post-questionnaire results. The Wilcoxon signed-rank test showed that a 6 week strategy training and the digital flashcard tool use did not elicit a statistically significant change in students' strategy use ($p > .05$), even though there were changes in the mean scores of the six different strategy categories before and after the training (Table 7).

Table 7

Wilcoxon-Signed Ranks Test Statistics

	PostMem - PreMem	**PostCog - PreCog**	**PostCom - PreCom**	**PostMet - PreMet**	**PostAffec - PreAffec**	**PostSoc - PreSoc**
Z	-1.33[b]	-.74[b]	-.93[b]	-.67[b]	-.40[b]	-.41[b]
Asymp. Sig. (2-tailed)	.18	.45	.34	.49	.68	.68

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

4.2.3 Students' vocabulary achievement. The third research question is about whether there is a significant difference in students' vocabulary achievement tests and the question comprises of two parts; *a* is about the difference in achievement tests applied immediately before and after the strategy training besides CALL implementation; and *b* part is to measure and find out whether there was a significant difference between the means scores of the first and last three post-tests and overall achievement tests which were applied on the fourth and seventh week during and after the training to find out the amount of recall and retention of the target words.

The first overall test included the 39 target words covered in the first three weeks; the second test included 47 words that were covered during the last three weeks of the strategy training. Below are the detailed analysis of these tests' results.

4.2.3.1 Students' vocabulary achievement immediately before and after strategy training and digital flashcard tool use. As the study was conducted in the same class throughout the process, paired sample t-test was run in order to see the difference between immediately applied pre and post-test results of the vocabulary achievement tests (See Table 8).

Table 8

Descriptive Statistics for the Achievement Tests

	N	**Min**	**Max**	***M***	***SD***	**Skewness**		**Kurtosis**	
	Stat	**Stat**	**Stat**	**Stat**	**Stat**	**Stat**	***SE***	**Stat**	***SE***
FirstPreTest	34	0	45	10.06	12.48	1.29	.403	.90	.78
FirstPostTest	34	0	100	54.53	38.08	-.21	.403	-1.42	.78
SecondPreTest	34	0	32	11.06	8.11	.46	.403	.06	.78
SecondPostTest	34	0	72	42.12	20.87	1.07	.403	.20	.78
ThirdPreTest	34	0	77	27.79	17.36	.37	.403	.78	.78
ThirdPostTest	34	0	98	47.56	30.08	-.04	.403	-1.23	.78
FourthPreTest	34	0	60	14.71	13.98	1.93	.403	3.52	.78
FourthPostTest	34	0	88	57.06	18.92	1.07	.403	2.25	.78
FifthPreTest	34	0	65	36.32	20.35	-.39	.403	-.71	.78
FifthPostTest	34	0	100	52.79	35.42	-.54	.403	-1.25	.78
SixthPreTest	34	0	85	22.35	20.27	1.15	.403	1.77	.78
SixthPostTest	34	0	100	60.88	27.09	-.85	.403	.37	.78
FirstOverall	34	39	100	82.74	21.20	-.73	.403	-1.00	.78
SecondOverall	34	0	100	69.50	28.59	1.26	.403	1.00	.78
Valid N (listwise)	34								

Descriptive analysis of the paired sample t-test showed that for the 34 students, there was a leap between the mean scores of first week's pre-test and post-test applied immediately before and after the strategy training and CALL sessions. The mean score of the first pre-test increased after the strategy training in the classroom and at-home digital flashcard tool practice in the post-test ($\mu=10.06>\mu=54.53$). For the second week's tests the mean score of the pre-test was 11.06, and the post-test score was also increased ($\mu=42.12$). On the third week, the mean score of the pre-test was jumped from 27.79 to 47.56 in the post-test. Mean score was 14.71 in the pre-

test of the fourth week and the next day after the strategy training and practicing with the digital flashcard tool mean score of the post-test rose to 57.06. For the fifth week, the mean score of the pre-test was 36.32, and with a little increase it became 52.79 in the post-test. When it comes to the last week the results were as follows: The mean score of the pre-test was 22.35 and the post-test score was also increased (μ=60.88).

Another part of the descriptive results was skewness and kurtosis analysis. Skewness is the measurement of extent for the distribution of values whether it deviates from symmetry around the mean (George & Mallery, 2009). If the skewness value is between ±2.0, in many measurements it is acceptable but under normal conditions the ideal value is ±1.0 (George & Mallery, 2009). In this study, it can be seen skewness values of all the achievement tests were between the range of ±2.0 which is acceptable (Table 8).

Kurtosis is the measurement of the "peakedness" or the "flatness" of a distribution (George & Mallery, 2009). If the value is near 0 (zero), this indicates a shape close to normal. As with skewness, a value between ±1.0 is ideal but if the kurtosis value is between ±2.0, it is still an acceptable for the purposes of the test (George & Mallery, 2009). In this study, kurtosis values of the achievement tests were between ±2.0, meaning that the results were acceptable (Table 8).

Further analysis revealed that according to the results of the paired sample t-test, there was a significant difference between the pre-test and the post-test results of these achievement tests (p=0.000, p=0.001) (Table 9).

Table 9

Paired Sample t-Test Results of the Pre and Post Achievement Tests

	Paired Differences							
	M	***SD***	***SEM***	**95% Confidence Interval of the Difference**		***t***	***df***	**Sig. (2-tailed)**
				Lower	**Upper**			
FirstPreTest-FirstPostTest	-44.47	36.32	6.23	-57.14	-31.79	-7.13	33	.000
SecondPreTest-SecondPostTest	-31.05	18.86	3.23	-37.64	-24.47	-9.59	33	.000

Table 9 (cont.d)

	Paired Differences					*t*	*df*	Sig. (2-tailed)
	M	***SD***	***SEM***	95% Confidence Interval of the Difference Lower	Upper			
ThirdPreTest-ThirdPostTest	-19.76	32.07	5.50	-30.95	-8.57	-3.59	33	.001
FourthPreTest-FourthPostTest	-42.35	20.13	3.45	-49.37	-35.32	-12.26	33	.000
FifthPreTest-FifthPostTest	-16.47	27.73	4.75	-26.14	-6.79	-3.46	33	.001
SixthPreTest-SixthPostTest	-38.52	19.94	3.42	-45.48	-31.57	-11.26	33	.000

4.2.3.2 Students' delayed vocabulary achievement before and after strategy training and digital flashcard tool use. On the fourth week of the strategy training and seventh week after the completion of it, overall achievement tests were applied as delayed tests covering the vocabulary items from the previous three weeks. Below are the t-test results comparing the mean scores of the first three weeks' post-tests' mean score and first overall achievement test applied on the fourth week of the training (Table 10):

Table 10

Paired Sample Statistics for the Mean Scores of First Three Post Achievement Tests and First Overall Achievement Test

	M	***N***	***SD***	***SEM***
First 3 Post-Tests	46.49	34	22.48	3.85
First Overall Test	82.70	34	21.25	3.64

Table 11

Paired Sample t-Test Results of the First Three Post Achievement Tests and First Overall Achievement Test

	Paired Differences					*t*	*df*	Sig. (2-tailed)
	M	***SD***	***SEM***	95% Confidence Interval of the Difference Lower	Upper			
First 3 Post-Tests - First Overall	-36.21	25.47	4.36	-45.09	-27.32	-8.29	33	.000

According to the above results of paired sample t-test there was a significant difference both between the post achievement tests and first overall achievement test (p=.000) (See Table 11).

The same test procedure was re-applied for the second half of the strategy training and second overall achievement test was applied on the 7th week, 1 week after the completion of the training and this test included the vocabulary items from 4th, 5th and 6th weeks. Below are the statistical results of the post-tests applied during the second half of the training along with the second overall achievement test (Table 12).

Table 12

Paired Sample Statistics for the Mean Scores of the Second Three Post Achievement Tests and Second Overall Achievement Test

	M	***N***	***SD***	***SEM***
Second 3 Post-Tests	55.41	34	23.04	3.95
Second Overall	69.50	34	28.59	4.90

According to the below results of paired sample t-test there was a significant difference both between the post achievement tests and second overall achievement test (p=.000) (Table 13).

Table 13

Paired Sample t-Test Results of the Second Three Post Achievement Tests and Second Overall Achievement Test

	Paired Differences							
	M	***SD***	***SEM***	**95% Confidence Interval of the Difference**		***t***	***df***	**Sig. (2-tailed)**
				Lower	**Upper**			
Second 3 Post-Tests - Second Overall	-14.08	15.92	2.73	-19.64	-8.53	-5.15	33	,000

4.2.4 Students' perspectives towards the use of digital flashcard tool in their vocabulary learning processes. According to the different research purposes, the researcher utilizes distinctive research designs and analysis techniques (Knafl & Howard, 1984). This section examines the fourth research question by utilizing

manifest analysis under thematic analysis technique as a qualitative research method. Thematic analysis is a method of "identifying, analyzing, and reporting patterns (themes) within data" (Braun & Clarke, 2006, p. 6), and in a manifest analysis the researchers reports the utterances of the interviewees as exactly as they say, stays close to the transcripted text during the analysis and unlike latent analysis during which the researchers add underlying meanings of the utterances on an interpretive level, no interpretation is added by the researcher (Berg, 2001; Catanzaro, 1988; Downe-Wambolt, 1992).

Quantitative research is mostly about frequency, or duration of a behaviour; whereas qualitative research helps the researcher understand the beliefs, values and the reasons of the particular behaviours that occur. Additionally, qualitative research is conducted to have a better understanding of the situation thanks to the reflections of those who experienced that situation in person (Yin, 2011).

In this study, the focus was on four themes; and these themes showed that this part of the study reflected students' views on the implementation of CALL into English curriculum.

To gain deeper insight into the students' ways of utilizing the digital flashcard tool, open-ended questions were asked in semi-structured interviews "so that the participants can best voice their experiences unconstrained by any perspectives of the researcher or past research findings" (Creswell, 2012, p. 218). The answers given to those questions were recorded electronically and transcribed after informing the students that these recordings would not be used without their consent and their names would not be revelaed, as their real names are not used in this study. According to the thematic analysis after grouping the most distinctively recurring themes during the interviews, four different themes were found and the answers given by the students were analyzed under these themes which are listed below:

1. Enjoyment
2. Effectiveness
3. Usability
4. Self-esteem

4.2.4.1 Enjoyment. After the analysis of the answers given to the interview questions, it can be said all the students (n =6) enjoyed using the digital flashcard

tool as it helped them repeat the new vocabulary items thanks to different types of exercises. As one of the students said:

> *"This application makes the words permanent. Matching the words with pictures is really fun and makes it easy to remember the words. I lşke this application."* (S1, personal communication, March 26, 2019)

According to another students, apart from matching words with pictures there was another useful feature of the application:

> *"I really liked the audible part where you listen, you can repeat if you want and write what you hear to check yourself. There is no part of the application that I do not like. I think that the online application was very fun to use."* (S2, personal communication, March 26, 2019)

After analysing students' responses it was clear that the students liked using the digital flashcard tool during learning new words in English lessons.

4.2.4.2 Effectiveness. Once all the responses regarding students' thoughts on the effect of the application were analyzed, it could be clearly seen that what students experienced changed their thoughts about learning English. During the interview a student reported that;

> *"Today I remember all the words we covered via the application but the day before the use of the application, even though we saw that week's vocabulary during the first English lesson of the week I was unable to remember them on the first test. But we used the application on the second day and on the third day I remembered all the words during the second test."* (S1, personal communication, March 26, 2019)

There were also students who remembered most of the words and they explained their reasons for it and one of them said:

"I really think that the online application very effective in learning new vocabulary. I do not remember all the words now but I remember most of them. We had the Internet access problems at home and I could not complete the vocabulary sets on time. I believe that is the reason why I do not remember all the words." (S3, personal communication, March 26, 2019)

Additionally, students also stated that the digital flashcard tool affected their English learning process positively and another student added the following to her views above:

"I feel I understand better now and participate in the lessons. I know more words than before. This is helpful. Online practice is effective." (S1, personal communication, March 26, 2019)

4.2.4.3 Usability. When students were asked about the difference of using the digital flashcard tool from using a traditional dictionary their main concern was about the practicality of the online tool they used during the strategy training, and a students stated the following:

"As we have easy access to the online tool, using it is much more easier than looking up a printed dictionary. We do not have the stress of finding the word checking the pages and lines one by one." (S3, personal communication, March 26, 2019)

Additionally, what one of the students said was similar to his fellow students' views as can be seen below:

"This tool is absolutely different than a regular dictionary. Mostly, it is really hard to find the meaning of a word in a dictionary, but via this tool I have easy and practical access to the meanings." (S4, personal communication, March 26, 2019)

Another student added that;

> *"Sometimes I get bored of checking the meaning of the words one by one and give up. The online tool is practical, so it is useful."* (S5, personal communication, March 26, 2019)

Furthermore, another aspect of the online tool pointed by the students was the functional use of the tool in many different ways such as; providing pronunciation of the word, matching activities etc. One of the students' reflection on this point is as follows:

> *"I believe this tool is more effective than a traditional dictionary. It gives us the opportunity of hearing and repeating the pronunciation of the words, and also we can match the words with the picture equivalents of them."* (S1, personal communication, March 26, 2019)

4.2.4.4 Self-esteem. In addition to the above issues pointed out by the students regarding their perspectives towards the use of the digital flashcard tool, another important issue mentioned by the students was the self-esteem factor in learning English. A student said that the online tool increased her self-confidence in English lessons:

> *"I had shown no effort previously to learn English. Now I feel that I trust myself. I am not shy. Indeed, I believe I trust myself more than my friends in our class, because I studied with the digital flashcard tool regularly."* (S6, personal communication, March 26, 2019)

In students' comments the common concern was the lack of interest as well as self-confidence in learning English as a student reported:

> *"I have not quite participated in English lessons for the fear of making mistakes. So, I was not interested in. But this tool helped me gain my confidence and now I am keen on learning English, feel more motivated and I participate."* (S4, personal communication, March 26, 2019)

Moreover, one of the students added the following lines:

> *"Last year I had lower grades, but this year I believe I understand. I am more motivated and thanks to this digital vocabulary tool I have self-confidence."* (S3, personal communication, March 26, 2019)

In parallel with the above reflections of his fellow students, a student also said;

> *"I am participating in the lessons more and more everyday as I know more words now, and trust myself more than ever. I am not shy to participate in the lessons."* (S3, personal communication, March 26, 2019)

Another student also underlined that the more words she knows in English, the more self-confidence she has in and out of the classroom:

> *"Thanks to this vocabulary application I have learned many words and for that reason I can understand the lessons which directly affects my self-confidence and taking part during the English lessons as well."* (S5, personal communication, March 26, 2019)

Chapter 5: Discussion and Conclusions

5.1 Overview of the Chapter

The aim of this study was to investigate the effects of vocabulary strategy training and CALL on vocabulary acquisition and retention of the students. The researcher utilized a questionnaire, vocabulary achievement tests and conducted interviews to be able to answer the research questions. This chapter will discuss the significance of the findings for theoretical and pedagogical development and provide data for the future research.

In order to address the research questions in this study, three data collection instruments were utilized: questionnaire, achievement tests, and interviews. The data was analyzed both quantitatively and qualitatively. A t-test was conducted for the questionnaire and achievement tests to determine the statistically significant differences between the pre-test and post-test results.

5.2 Discussion of Findings for Research Questions

1 – What are students' vocabulary learning strategies?

2 – Do students language learning strategies change after strategy training?

3 – Is there a significant difference between students' vocabulary achievement;

a) immediately before and after the strategy training?

b) before and after the delayed achievement tests?

4 – What are students' perspectives towards the use of vocabulary flashcard application in their vocabulary learning processes?

5.3 Students' Language Learning Strategies

According to Wenden and Rubin (1987), learning strategies are "the strategies that contribute to the development of the language system which the learner constructs and affect learning directly" (p. 23). In order to find out the participants' existing language learning strategies before the strategy training, SILL was applied and the mean scores of each part of the questionnaire was calculated on SPSS and these parts are; A – Memory Strategies, B – Cognitive Strategies, C – Compensation Strategies, D – Metacognitive Strategies, E – Affective Strategies, and F – Social Strategies as already mentioned in the previous chapters.

The analysis of the results for this question revealed that the most frequently used strategies by the students were metacognitive strategies. According to Oxford (1990) what metacognitive means is "beyond, beside, or with the cognitive" (p. 136). Metacognitive strategies help learners to plan and organize their own learning procedures. There are three strategy sets included in the metacognitive strategies and they are; 1 - Centering your learning, 2 - Arranging and planning your learning, and 3 – Evaluating your learning. In accordance with what Oxford (1990) suggests, O'Malley and Chamot (1990) also discuss that metacognitive strategies are pivotal for language learning. Additionally, Purpura (1997) adds that they are used to organize the learning, reflect on the learning process and its outcomes, monitoring these outcomes or understanding of the process, and evaluating the process of learning even after an activity is finished.

The finding of this research that metacognitive strategies were the most frequently used strategies is also in parallel with what Nisbet, Tindall & Arroyo (2005), Takeuchi (2003) and Lee and Heinz (2016) found in their research that the most frequently used strategies by language learners were metacognitive strategies. In another study on ESL learners, Hong-Nam and Leavell (2006) found that intermediate level students used metacognitive strategies more frequently. In addition, Tunç (2003) also found that the mostly preferred learning strategies were metacognitive strategies. Cephe and Yeşilbursa (2006) conducted a study with 187 university students in two groups of higher and lower proficiency, to investigate which language learning strategies they were using and unlike the findings of most studies, with the lower proficiency group metacognitive strategies were the most frequently used strategies just as it is the case in this study. Similar findings were found by Park (1997), Griffiths and Parr (2001).

On the contrary, Khalifa (2015) conducted a study with 180 high, medium and low achieving students in Libya to find out which language learning strategies they preferred using and according to the results metacognitive and compensation strategies were the last two strategies used by the students. As using metacognitive strategies means that planning the learning process, creating links between the new concepts and the already known ones as well as self-monitoring, it can be said that these students were unable to do so.

The strategies that had the highest mean scores "*I pay attention when someone is speaking English*" and "*I think about my progress in learning English.*" were opted

to increase vocabulary acquisition. The participants in this study displayed the features of self-monitoring and self-regulating of their own learning progress, and they took the responsibility for their own learning.

The second, third and fourth most frequently used strategies by the participants of this study were memory, compensation and cognitive strategies in line. Unlike metacognitive strategies which are under the category of indirect strategies, as they "support and manage language learning without directly involving the target language" (Oxford, 1990, p. 135), these three strategies are listed under the direct strategies, involving the target language directly during the language learning process.

The second mostly preferred strategies were memory strategies and they include four sets: 1 - Creating mental linkages, 2 – Applying Images and Sounds, 3 – Reviewing well, and 4 – Employing Actions.

In this study one of the memory strategies "*I connect the sound of a new English word and an image or picture of the word to help me remember the word.*" got the highest mean score and showed that students could create mental linkages. The item "*I remember new English words or phrases by remembering their location on the page, on the board, or on a street sign*." was the second memory strategy that had the highest mean score implying that the students were able to associate words or phrases with the locations or places when they came across with them. It is striking that "*I physically act out new English words.*" strategy had the lowest mean score and this might imply that students tend to use mental processes such as repetition or create mental linkages of words with pictures when learning new vocabulary.

Teachers might assume that the memory strategies are the most frequently used strategies by the learners of English and in Griffiths and Parr's study (2001) conducted in New Zealand with 569 learners of English, instructors thought so, but unlike the concurring thoughts memory strategies were the least used strategies by the learners, even though their instructors assumed that these strategies might be the most frequently used ones.

Compensation strategies or communication strategies as Hedge (2000) put forward were the mostly preferred third strategies in the present study. Compensation strategies are used to "compensate" for any gaps to be understood during a conversation or have one (Hedge, 2000, p.79). It is a fact that a learner cannot get fluent immediately that it takes time to maintain a conversation without any

linguistic obstacle. So that, learners of English tend to use these strategies to be able to follow the course of a conversation.

Compensation strategies have two sets of categories under, and they are; 1 – Guessing intelligently in listening and reading, and 2 – Overcoming limitations in speaking and writing. According to Oxford (1990), efficient language learners can use these strategies very well and make educated guesses when necessary to compensate for a lack of appropriate vocabulary or grammatical knowledge.

Again, in Cephe and Yeşilbursa's study (2006) mentioned above, compensation strategies were the most frequently used strategies of the higher proficiency group. In Griffiths and Parr's study (2001) conducted in New Zealand with 569 learners of English showed that compensation strategies were the fourth strategies they utilized when learning English. Khalifa (2015) also found that compensation strategies were the least frequently used strategies implying that guessing the meaning or overcoming any obstacles intelligently when communicating were not utilized by the students. According to the researcher the reason for that was Libya's educational policy which promoted memorization.

Cognitive strategies part in SILL (Part B) has the greatest number of items in the inventory with 14 items. Even though learners are different from each other in terms of applying the cognitive skills, these strategies are essential in learning, as they are the instruments to make learning new things easier and permanent. One important reason that the students do not and cannot learn easily might be that they do not have cognitive awareness or do not use these strategies.

Cognitive strategies are directly related to learning new subjects and being aware of this function of the strategies makes it easier to acquire, comprehend and interpret new things (Schleifer & Dull, 2009). They are used to relate new information to the already existing one (Duke & Pearson, 2002) to create meaningful and permanent learning situations. They are practical and help save and restore the new information (Pintrich, 2004).

As mentioned above compensation strategies are extremely important to learn new information. However, in this study these strategies were the fourth most frequently used strategies among six different strategy categories. In terms of academic achievement, research says that cognitive strategies are positively in relation with the learning in a way that they increase the success by helping students

in problem solving and they become more successful (Graham & Harris, 2003; Huffman, 2005).

According to Khalifa's above mentioned study (2015) students with high achievement benefited more from cognitive strategies. Her finding also confirms that good learners use cognitive strategies efficiently. Nevertheless, students with average and lower success utilize memory strategies more than cognitive strategies, thus they are the second most frequently used strategies. The findings of this study are in parallel with the findings of Cephe and Yeşilbursa (2006) that students in both studies tended to use cognitive strategies not frequently.

In terms of social and affective strategies it can be said that there is a different situation with these two strategy groups, as it is clear in the literature that these two strategy groups have mostly been the least frequently used strategies. Some researchers dealing with language learning strategies noted in their reviews that most of the investigations on this subject have neglected the social and affective aspects of language learning; thus, the other remaining strategies mentioned in the previous paragraphs have been overtly emphasized, especially cognitive and metacognitive strategies (Skehan, 2000; Oxford & Crookall, 1989). Nonetheless, it is essential to integrate social and affective aspects of a language, mostly known as "communication strategies", as these are mainly inseparable from learning strategies.

In the present study social strategies were the fifth and affective strategies were the last strategies in terms of use. As Oxford (1990) emphasizes the fact that language is communication, a kind of social behavior since it involves other people, thus language learning requires using social strategies as effectively as possible. Social strategies include three sets in Oxford's taxonomy which is the framework of the present study and these sets are as follows: 1 – Asking questions, 2 – Cooperating with others, and 3 – Empathizing with others.

Notwithstanding the eminence of social strategies in terms of language learning, the findings in this study showed that students were not capable of using them effectively. "*I practice English with other students*." got the lowest mean score and "*If I do not understand something in English, I ask the other person to slow down or say it again*." got the highest mean score implying that the students are indeed not afraid to ask questions but somehow they do not choose to practice or negotiate with their peers. Harish (2014) also reported that there was not statistically significant use of social strategies. Similarly, Lan and Oxford (2003) investigated

young learners' preferences of strategy use with 379 sixth grade students and they reported that social strategies were not used frequently. It is also noteworthy to point that least frequently used strategies were social strategies in many studies (Şener, 2003; Askar, 2013; Tanyer & Öztürk, 2014), which was consistent with the results of the current study. According to Kafipour (2006) students do not need to use social strategies as frequently as the other strategies, since they believe that it is not necessary to discuss or negotiate the meaning of an unknown word when learning a foreign language. Kudo's study (1999) also came up with the similar results that the social strategies were rarely used when compared to the other strategies. Additionaly, Amirian and Heshmatifar (2013) also reported that social strategies were the least frequently used strategies. It is clear that the findings of this current study are similar to what has been discussed in the literature.

As opposed to the common finding that social and affective strategies were the least frequently used ones, Griffiths and Parr (2001) reported social strategies as being the most frequently used strategies.

Lastly, along with social strategies, even though they help learners handle the stress of learning a new language by decreasing anxiety, affective strategies were the least frequently used strategies by the students in this study The findings are similar to what other studies reported in terms of low to medium usage of affective strategies (Khalil, 2005; Mokhtari, 2007; Oxford, 1990; Park, 1995; Griffiths & Parr, 2001; Tam, 2013). Even though Ehrman, Leaver & Oxford (2003) discussed that "it is at least as important to manage feelings as it is to use more cognitive strategies, since negative feelings reduce the effectiveness of most learning activities" (p. 319), and Oxford (2011) noted that especially at lower levels affective strategies were important to prevent any negative feelings while learning a new language, there is still limited research on the use of affective strategies in vocabulary learning.

The reason for the low usage of affective strategies might be related to students' proficiency level as mentioned by Oxford (2011) that, students who have good command of English might no longer resort to affective strategies (Cephe & Yesilbursa, 2006). Khalifa (2015) also argues that students of low level of English were the ones who used the affective strategies most frequently. However, even though the students participated in the current study were of low level of English, they still did not use affective strategies intensively. The item that had the lowest mean score was "*I write down my feelings in a language learning dairy.*" and the

item with the highest score was "*I try to relax whenever I feel afraid of using English.*". Even though the mean score of a single item which states the fact that students were relaxed and did not hesitate using English, it is interesting to have the lowest mean score categorically as affective strategies. The reason might be that the students are introverted and too shy to ask for help when needed (Oxford, 2001).

To conclude, it is important to highlight that social and affective strategies do not get as much attention as the other strategies discussed above and mostly they have not been included in research (Pintrich & de Groot, 1990).

5.4 The Difference in Students' Vocabulary Learning Strategies after the Strategy Training

This part investigates the answer of the second research question that whether there is any difference in students' strategy use preference after the strategy training that lasted for 6 weeks or not. In order to compare the results of pre and post applications of the SILL, Wilcoxon Signed Rank test was run on SPSS Version 18 and below can be find the comments on the results found.

Needless to say vocabulary learning strategies are responsible for transferring new vocabulary to memory (Gu & Johnson, 1996), and learners prefer various kinds of strategies during this process (Ahmed, 1989; Gu, 1994; Sanaoui, 1995). Therefore, it is important to prompt students and make them use the strategies to achieve more potent language acquisition (Macaro, 2001).

Upon checking the results to see the differences in ranking of the preferred strategies used, it can clearly be seen that students' most frequently used strategy shifted from metacognitive strategies to memory strategies. The reason for this change can be that students also used a digital vocabulary flashcard tool throughout the training and the features on this tool mentioned in the previous chapters might have promoted their memory skills. Still, metacognitive strategy use was their second choice. Suffice it to say that they were still responsible for their own learning and planning this learning process.

One of the most interesting results was that at the first look, the ranking of the remaining four strategies did not change. Even though the frequency of use changed according to the mean scores, students' preference of these four strategies (compensation, cognitive, social and affective) did not show any difference.

With the intention of finding the answer for this research question, Wilcoxon Signed Rand test was run and according to the results, there was no significant difference between the means of average total scores of pre and post applications of SILL. One of the reasons might be the limited amount of time that can be allocated to this study, and another reason could be that the strategy training for this study was too general that it consisted of different kinds of activities based on the suggestions of Oxford's book (1990); therefore it might be more beneficial to focus on one or two strategy groups or skill(s); do the training accordingly and intensively (Macaro, 2001). Even so, there is not a settlement on the ways to conduct a strategy training to cultivate students' capability of applying strategies when learning a language. Hence, researchers and practitioners in this field curate their own strategy training methods intuitively and conveniently (Plonsky, 2011). Lastly, there are other variables such as students' beliefs, attitudes, opinions on language learning (Bull & Ma, 2001; Chamot, 1993; Laoire, 2007; Sengupta, 2000) that might affect students' strategy use and the results of the post-SILL application for that matter.

5.5 The Difference in Students' Vocabulary Achievement

This research question is analyzed according to two aspects: The first part of the question analyses the results according to the period in which the vocabulary achievement tests were applied just before the strategy training and the next day after the strategy training; the second part of the question seeks answer by comparing the mean scores of first three post-tests with the first overall achievement test, and second three post-tests with second overall achievement test. The logic behind these analyses was to investigate the effect of time on memory; both with immediate post-tests and delayed post-tests. Immediate post-tests were applied the next day after the training and online practice at home, and delayed post-tests were applied after every three weeks, two times in total during the strategy training. To enable the researcher to find answers for this question paired sample t-test was run on SPSS with different variables.

5.5.1 immediately before and after the strategy training. There have been many studies in the field of language education in terms of the effects of strategy training on vocabulary achievement. As also mentioned in literature review, learners

who took strategy training tend to learn better than those who did not have strategy training.

Thanks to the strategy training, the numbers of the words that are known are increased (Nation, 2001). Similarly, according to the findings of this study, the participants' vocabulary size increased as well. Upon checking the statistics for the achievement, the significant difference in the pre and post-test results can be seen clearly.

Concerning what literature says, Tezgiden's study (2006) showed an increase in achievement in the post-test after three-week strategy training. Similarly, in Atay and Özbulgan's study (2007) the experimental group who took strategy training achieved higher scores than the control group. There are also other studies that show the positive effect of strategy training on vocabulary achievement in terms of an increase in the post-test scores (Akın & Seferoğlu, 2004; Cubukcu, 2008). Hence, the findings of this study regarding the effect of strategy use on vocabulary acquisition are consistent with the findings in the literature.

5.5.2 before and after the delayed achievement tests. Learning a second language also means acquiring and employing learning strategies to aid the process of comprehension, storage of the new words and retention (Ghazal, 2007). Similarly, Gu and Johnson (1996) suggest that vocabulary learning strategies are important for retention and recalling of the words. Thanks to the vocabulary learning strategies the chances of remembering the vocabulary items will be higher, as these strategies support Craik and Lockhart's (1972) Depth/Levels of Processing Hypothesis meaning that when more attention and more manipulation are engaged, retention and recalling will be easier while learning a language.

Even though students were able to repeat the words whenever they wanted to practice via the CALL software, each week had its own target words and they specifically covered the target vocabulary during strategy training sessions, after studying them on the previous day for the first time. The results of this study showed that even 3 weeks after the explicit instruction and recycling of the target vocabulary via strategy training and digital flashcard tool, students were still able to remember them. These results indicate a possible transfer of these words from short-term memory to long-term memory. Literature also supports the findings of this study: As Stevick (1996) argues, long-term memory holds what remains accessible in the

memory after short-term memory storage which lasts only 20 seconds, and according to Bahrick (1984) a great deal of semantic knowledge remains undisturbed and accessible even after decades. (Bahrick, 1984).

Another important element regarding the results is the effect of spaced repetition. Research suggests that spaced repetition is more beneficial than massed repetition in terms of learning new vocabulary (Bloom & Shuell, 1981; Dempster, 1987). Students covered 87 words during the 6-week strategy training. The target words were not presented altogether at once, instead each week had its own target vocabulary and students had the chance to practice and recycle the words at their own pace for 6 weeks. Scattered repetitions that last over a long period of time result in learning of words and recalling them successfully whenever needed (Nation, 2001). The significant difference between the post-tests and overall achievement tests might suggest that students kept recycling the words from the previous weeks and were able to recall the meanings during the overall achievement tests. Akın and Seferoglu's study (2004) supports the fact that spaced repetition is favored by the students and is more advantageous in terms of vocabulary gain. The findings of this study are in alignment with what literature suggests.

5.6 Students' Perspectives on Digital Vocabulary Flashcard Tool Use for Vocabulary Development

This research investigated how students' vocabulary learning was affected by the strategy training and CALL implementation through training. The previous part of the study analyzed and discussed the vocabulary achievement in terms of vocabulary strategy training. This part of the research focuses on students' opinions on integrating CALL software to their vocabulary development process, as there is limited research focusing on the what users of the digital tools feel about them. In the past, Ranalli (2009) investigated students' perceptions under the themes of *usefulness, usability and enjoyment*. In addition to these themes, the current research covers *self-esteem* theme as well.

In a recent study, it has been found that students enjoyed using digital flashcard tool even though the vocabulary achievement of the traditionally trained group was higher (Baptiste, 2018). Furthermore, Lander (2016) discussed that the participants in his study enjoyed using the same tool used in this study. His qualitative study (Lander, 2016) investigating the students' perspectives on the use of digital flashcard

tool, also supports the other themes found in this study (effectiveness and uniqueness). Participants of Lander's study reported that they preferred using the online tool instead of a dictionary. Chien (2013) also reports the effective and fun aspects of using digital flashcard tool when teaching vocabulary. Altiner (2011) analyzed her findings under the themes of "usefulness, usability and enjoyment" according to Ranalli's study (2009). Participants in her study reported that they enjoyed using CALL software to develop their vocabulary, found it usable and fun to use. Additionally, Anjaniputra and Salsabila (2018) added that the participants of their study also found the use of CALL software effective and enjoyable.

Research has supported the argument that CALL environments are more effective than traditional learning environments in terms of SLA (Levine, Ferenz & Reves, 2000). CALL software is particularly effective in terms of creating secure and supportive classrooms while creating opportunities for authentic exposure to the foreign language (Levine et al., 2000; Ma & Kelly, 2006).

As vocabulary learning with online tools helps learners create meaningful links between the words and the visuals (Mayer & Sims, 1994), resulting in developing vocabulary learning strategies as well (Horst et al., 2005). In the light of the responses students provided during the interviews, it can clearly be seen that they greatly benefited from the digital flashcard tool.

Self-esteem and involvement are crucial and support learning efficiency (Shawcross, 2004). It can be understood from the interview data of this study that as students practiced at home and at their own pace, they felt more secure as they were not criticized or made fun of in case of failure or giving a wrong answer to the question. The definition of self-esteem is as below:

> The evaluation which the individual makes and customarily maintains with regard to himself: it expresses an attitude of approval and indicates the extent to which an individual believes himself to be capable, significant, successful and worthy. In short, self-esteem is a personal judgment of the worthiness that is expressed in the attitudes the individual holds towards himself (Coppersmith, 1967, pp. 4-5).

Language acquisition might be related to variables with neurological and psychological features (Brown, 2000). What Brown (2000) suggests is closely

experienced by the teachers of English that affective obstacles prevent students from enjoying the lessons, concentrating and participating. Affective reasons such as shyness, being an introverted student, fear of making mistakes directly impact second language learning.

The present study has similar findings with Kao and Windeatt's study (2014). Computer assisted learning helped students become familiar with the target language while practicing on a daily basis; hence they were more relaxed and not afraid to speak in the classroom.

According to the same study students found computer assisted language learning more engaging, relaxing, fun and effective. Thanks to the developing technologies, multimedia environments are able to provide these aspects of learning (Pusack & Otto, 1997). These features led to more motivation and willingness to participate (Kao & Windeatt, 2014).

Students practiced at home and when they came to the class they reported having self-confidence as they already practiced the target words and were ready to participate thanks to the digital flashcard tool. According to Andrés (2007), there is a strong correlation between self-esteem and achievement and this study confirms this outcome with the increased vocabulary achievement of the students and students' own expressions.

5.7 Pedagogical Implications

The findings of this study are significant as they contribute to the literature in terms of vocabulary development, which has been a long neglected skill in the field of foreign language teaching. It is also important highlight that harmonizing vocabulary strategy training with CALL software is an efficient and fun way of supporting vocabulary development by also motivating students intrinsically with the unique features of CALL.

The results of this study suggest that it is important raise awareness among students on the topic of strategy use for vocabulary development. Accordingly, as the other supportive factor in this study, CALL is found in the literature as mostly effective when learning a foreign language.

One implication was that students felt more secure thanks to strategy training and CALL practice as these procedures helped them cover most of the target vocabulary. Another criterion to achieve this, was as Oxford (1990) suggests,

informing students explicitly about what the strategy training is and using students' own course material during this training process. Thus, students would not feel out-of-context and meaningful learning situations might occur.

Another aspect of this study was making students' feel relaxed while practicing with CALL software and as Krashen's "Affective Filter Hypothesis" explains, anxiety is an obstacle for learners preventing acquiring a target language input from happening (Lightbown & Spada, 2006). As students practice and learn at their own pace with CALL software, they are comfortable enough to develop their vocabulary. Furthermore, CALL adds variety to the practices and each student can find any type of activities according to their taste, which leads to encouragement to practice more.

Lastly, as both vocabulary strategy training and CALL integration helped create more meaningful learning environments, students were able to transfer the new knowledge from working memory part of the brain to the long-term memory where they would keep the information even for many years (Stevick, 1996). It is important to create opportunities during a lesson, so that the information could become permanent. As Nagy (1997) suggests there is a lower chance of learning a word just from a single exposure and for the actual learning there should be five to sixteen or more repetitions according to other studies (Nation, 1990).

A mentioned in the previous chapters, there are different factors affecting vocabulary development such as age, motivation, readiness, and memory. Teachers should take these factors into consideration while planning a lesson and creating a classroom environment.

5.7 Conclusions

There are three main conclusions of this study in terms of the effect of vocabulary strategy training, its effect on vocabulary achievement and CALL software use on vocabulary development.

Firstly, before the vocabulary strategy training and CALL integration to the course, SILL was applied to find out the strategies that students were already using. After the vocabulary strategy training which lasted for six weeks and CALL integration, the questionnaire was re-administered and even though there were slight differences in the strategies that were used before and after the vocabulary strategy training and CALL integration, this difference was not statistically significant.

Secondly, vocabulary achievement tests were applied every week before and after the vocabulary strategy training sessions and CALL integration to find its effect on vocabulary development. The important thing was that students already covered the target words during regular lesson sessions before the pre-tests as these words were chosen from their own course book, but still the pre-test results were low. After comparing the pre-test results with the post-tests results, the strategy training and CALL integration were found to be effective on students' vocabulary development as there were significant differences. Another aspect of this conclusion was the spaced repetition opportunity that the CALL software provided and after administering two delayed post-test it could clearly be seen that students' vocabulary retention was strong.

Lastly, when asking students face-to-face about their thoughts on using a CALL software, their genuine and sincere responses showed that the 6-week training process was completely different from a traditional lesson and they really enjoyed the lessons, even enjoyed practicing at home, found the technology use more than effective that they were encouraged to attend and participate in the lessons with more self-esteem and confidence.

5.8 Recommendations for Future Research

This study was conducted with a small group of high school students, so that research with bigger group with different demographics might reveal diverse results. A similar study might be conducted with a group with higher level of English and regularly studying habit. Training students was an arduous process and this kind of study requires a longer period of time to prepare and implement. Additionally, rather than focusing on all strategies in a limited time, future studies may focus on just one strategy group intensively. Hence, the results might be different.

Receptive vocabulary was the concern in this study, productive aspect of it should be focused in the future. Apart from that, as mentioned previously, affective strategies have been long neglected in the field of ELT and further research can be conducted to investigate the affective strategies in the future.

Lastly, as well known, digital teaching tools have become central in our lives thanks to the developing technologies. It is important to seek out opportunities to create more effective learning environments. Once, strategy training and technology use are integrated, the face of English language teaching would change irreversibly

and in favor of both learners and teachers. Therefore, it is also important to train teachers.

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APPENDICES

APPENDIX A – English Version of SILL

Dear Students,

This questionnaire has been presented to find out about the learning strategies of the students for a Bahcesehir University English Language Teaching thesis study. Please cross the response (l, 2, 3, 4 or 5) that tells how true the statement is for you.

Your responses will stay discreet and not be graded.

Researcher: Tuğçe Kılıç

LEARNING STRATEGIES INVENTORY

1. Never or almost never true of me (0%)
2. Usually not true of me (25%)
3. Somewhat true of me (50%)
4. Usually true of me (75%)
5. Always or almost always true of me (100%)

A- MEMORY STRATEGIES

1	I think of relationships between what I already know and new things I learn in English.	1	2	3	4	5
2	I use new English words in a sentence so I can remember them.	1	2	3	4	5
3	I connect the sound of a new English word and an image or picture of the word to help me remember the word.	1	2	3	4	5
4	I remember a new English word by making a mental picture of a situation in which the word might be used.	1	2	3	4	5
5	I use rhymes to remember new English words.	1	2	3	4	5
6	I use flashcards to remember new English words.	1	2	3	4	5

7	I physically act out new English words.	1	2	3	4	5
8	I review English lessons often.	1	2	3	4	5
9	I remember new English words or phrases by remembering their location on the page, on the board, or on a street sign.	1	2	3	4	5

B- COGNITIVE STRATEGIES

10	I say or write new English words several times.	1	2	3	4	5
11	I try to talk like native English speakers.	1	2	3	4	5
12	I practice the sounds of English.	1	2	3	4	5
13	I use the English words I know in different ways.	1	2	3	4	5
14	I start conversations in English.	1	2	3	4	5
15	I watch English language TV shows spoken in English or go to movies spoken in English.	1	2	3	4	5
16	I read for pleasure in English.	1	2	3	4	5
17	I write notes, messages, letters, or reports in English.	1	2	3	4	5
18	I first skim an English passage (read over the passage quickly) then go back and read carefully.	1	2	3	4	5
19	I look for words in my own language that are similar to new words in English.	1	2	3	4	5
20	I try to find patterns in English.	1	2	3	4	5
21	I find the meaning of an English word by dividing it into parts that I understand.	1	2	3	4	5
22	I do not translate word for word.	1	2	3	4	5

23	I make summaries of information that I hear or read in English.	1	2	3	4	5

C- COMPENSATION STRATEGIES

24	To understand unfamiliar English words, I make guesses.	1	2	3	4	5
25	When I can't think of a word during a conversation in English, I use gestures.	1	2	3	4	5
26	I make up new words if I do not know the right ones in English.	1	2	3	4	5
27	I read English without looking up every new word.	1	2	3	4	5
28	I try to guess what the other person will say next in English.	1	2	3	4	5
29	If I can't think of an English word, I use a word or phrase that means the same thing.	1	2	3	4	5

D- METACOGNITIVE STRATEGIES

30	I try to find as many ways as I can to use my English.	1	2	3	4	5
31	I notice my English mistakes and use that information to help me do better.	1	2	3	4	5
32	I pay attention when someone is speaking English.	1	2	3	4	5
33	I try to find out how to be a better learner of English.	1	2	3	4	5
34	I plan my schedule so I will have enough time to study English.	1	2	3	4	5
35	I look for people I can talk to in English.	1	2	3	4	5
36	I look for opportunities to read as much as possible in English.	1	2	3	4	5
37	I have clear goals for improving my English skills.	1	2	3	4	5

38	I think about my progress in learning English.	1	2	3	4	5

E- AFFECTIVE STRATEGIES

39	I try to relax whenever I feel afraid of using English.	1	2	3	4	5
40	I encourage myself to speak English even when I am afraid of making a mistake.	1	2	3	4	5
41	I give myself a reward or treat when I do well in English.	1	2	3	4	5
42	I notice if I am tense or nervous when I am studying or using English.	1	2	3	4	5
43	I write down my feelings in a language learning dairy.	1	2	3	4	5
44	I talk to someone else about how I feel when I am learning English.	1	2	3	4	5

F- SOCIAL STRATEGIES

45	If I do not understand something in English, I ask the other person to slow down or say it again.	1	2	3	4	5
46	I ask English speakers to correct me when I talk.	1	2	3	4	5
47	I practice English with other students.	1	2	3	4	5
48	I ask for help from English speakers.	1	2	3	4	5
49	I ask questions in English.	1	2	3	4	5
50	I try to learn about the culture of English speakers.	1	2	3	4	5

APPENDIX B – Turkish Version of SILL

DİL ÖĞRENME STRATEJİLERİ ENVANTERİ Oxford (1990)					
Dil Öğrenme Stratejileri Envanteri İngilizce'yi Yabancı Dil olarak öğrenenler için hazırlanmıştır. Bu envanterde İngilizce öğrenmeye ilişkin ifadeler okuyacaksınız. Her ifadenin sizin için ne kadar doğru ya da geçerli olduğunu, derecelendirmeye bakarak, 1, 2, 3, 4, 5' ten birini yazınız. Verilen ifadenin, nasıl yapmanız gerektiği ya da başkalarının neler yaptığı değil, sadece sizin yaptıklarınızı ne kadar tasvir ettiğini işaretleyiniz. Maddeler üzerinde çok fazla düşünmeyiniz. Maddeleri yapabildiğiniz kadar hızlı şekilde, çok zaman harcamadan ve dikkatlice işaretleyip bir sonraki maddeye geçiniz. Anketi cevaplandırmak yaklaşık 10-15 dk. alır.	**1= Hiçbir zaman doğru değil**	**2= Nadiren doğru**	**3= Bazen doğru**	**4= Sık sık doğru**	**5= Her zaman doğru**

BÖLÜM A

1. İngilizce'de bildiklerimle yeni öğrendiklerim arasında ilişki kurarım.	1	2	3	4	5
2. Yeni öğrendiğim kelimeleri hatırlamak için bir cümlede kullanırım.	1	2	3	4	5
3. Yeni öğrendiğim kelimeleri akılda tutmak için kelimenin telaffuzuyla aklıma getirdiği bir resim ya da şekil arasında bağlantı kurarım.	1	2	3	4	5
4. Yeni bir kelimeyi o sözcüğün kullanılabileceği bir sahneyi ya da durumu aklımda canlandırarak, hatırlarım.	1	2	3	4	5
5. Yeni kelimeleri aklımda tutmak için, onları ses benzerliği olan kelimelerle ilişkilendiririm.	1	2	3	4	5
6. Yeni öğrendiğim kelimeleri aklımda tutmak için küçük kartlara yazarım.	1	2	3	4	5
7. Yeni kelimeleri vücut dili kullanarak zihnimde canlandırırım.	1	2	3	4	5
8. İngilizce derslerinde öğrendiklerimi sık sık tekrar ederim.	1	2	3	4	5
9. Yeni kelime ve kelime gruplarını ilk karşılaştığım yerleri (kitap, tahta ya da herhangi bir işaret levhasını) aklıma getirerek, hatırlarım.	1	2	3	4	5

BÖLÜM B

10. Yeni sözcükleri birkaç kez yazarak, ya da söyleyerek, tekrarlarım.	1	2	3	4	5
11. Anadili İngilizce olan kişiler gibi konuşmaya çalışırım.	1	2	3	4	5
12. Anadilimde bulunmayan İngilizce'deki **"th /θ / hw "** gibi sesleri çıkararak, telaffuz alıştırması yaparım.	1	2	3	4	5
13. Bildiğim kelimeleri cümlelerde farklı şekillerde kullanırım.	1	2	3	4	5
14. İngilizce sohbetleri ben başlatırım.	1	2	3	4	5
15. T.V.'de İngilizce programlar ya da İngilizce filmler izlerim.	1	2	3	4	5
16. İngilizce okumaktan hoşlanırım.	1	2	3	4	5
17. İngilizce mesaj, mektup veya rapor yazarım.	1	2	3	4	5
18. İngilizce bir metne ilk başta bir göz atarım, daha sonra metnin tamamını dikkatlice okurum.	1	2	3	4	5
19. Yeni öğrendiğim İngilizce kelimelerin benzerlerini Türkçe'de ararım.	1	2	3	4	5
20. İngilizce'de tekrarlanan kalıplar bulmaya çalışırım.	1	2	3	4	5
21. İngilizce bir kelimenin, bildiğim kök ve eklerine ayırarak anlamını çıkarırım.	1	2	3	4	5
22. Kelimesi kelimesine çeviri **yapmamaya** çalışırım.	1	2	3	4	5
23. Dinlediğim ya da okuduğum metnin özetini çıkarırım.	1	2	3	4	5

BÖLÜM C

24. Bilmediğim İngilizce kelimelerin anlamını, tahmin ederek bulmaya çalışırım.	1	2	3	4	5
25. İngilizce konuşurken bir sözcük aklıma gelmediğinde, el kol hareketleriyle anlatmaya çalışırım.	1	2	3	4	5
26. Uygun ve doğru kelimeyi bilmediğim durumlarda kafamdan yeni sözcükler uydururum	1	2	3	4	5
27. Okurken her bilmediğim kelimeye sözlükten bakmadan, okumayı sürdürürüm.	1	2	3	4	5
28. Konuşma sırasında karşımdakinin söyleyeceği bir sonraki cümleyi tahmin etmeye çalışırım.	1	2	3	4	5
29. Herhangi bir kelimeyi hatırlayamadığımda, aynı anlamı taşıyan başka bir kelime ya da ifade kullanırım.	1	2	3	4	5

BÖLÜM D

30. İngilizce'mi kullanmak için her fırsatı değerlendiririm.	1	2	3	4	5
31. Yaptığım yanlışların farkına varır ve bunlardan daha doğru İngilizce kullanmak için faydalanırım.	1	2	3	4	5

32. İngilizce konuşan bir kişi duyduğumda dikkatimi ona veririm.	1	2	3	4	5
33. "İngilizce'yi daha iyi nasıl öğrenirim? " sorusunun yanıtını araştırırım.	1	2	3	4	5
34. İngilizce çalışmaya yeterli zaman ayırmak için zamanımı planlarım.	1	2	3	4	5
35. İngilizce konuşabileceğim kişilerle tanışmak için fırsat kollarım.	1	2	3	4	5
36. İngilizce okumak için, elimden geldiği kadar fırsat yaratırım.	1	2	3	4	5
37. İngilizce'de becerilerimi nasıl geliştireceğim konusunda hedeflerim var.	1	2	3	4	5
38. İngilizce'mi ne kadar ilerlettiğimi değerlendiririm.	1	2	3	4	5

BÖLÜM E

39. İngilizce'mi kullanırken tedirgin ve kaygılı olduğum anlar rahatlamaya çalışırım.	1	2	3	4	5
40. Yanlış yaparım diye kaygılandığımda bile İngilizce konuşmaya gayret ederim.	1	2	3	4	5
41. İngilizce'de başarılı olduğum zamanlar kendimi ödüllendiririm.	1	2	3	4	5
42. İngilizce çalışırken ya da kullanırken gergin ve kaygılı isem, bunun farkına varırım.	1	2	3	4	5
43. Dil öğrenirken yaşadığım duyguları bir yere yazarım.	1	2	3	4	5
44. İngilizce çalışırken nasıl ya da neler hissettiğimi başka birine anlatırım.	1	2	3	4	5

BÖLÜM F

45. Herhangi bir şeyi anlamadığımda, karşımdaki kişiden daha yavaş konuşmasını ya da söylediklerini tekrar etmesini isterim.	1	2	3	4	5
46. Konuşurken karşımdakinin yanlışlarımı düzeltmesini isterim.	1	2	3	4	5
47. Okulda arkadaşlarımla İngilizce konuşurum.	1	2	3	4	5
48. İhtiyaç duyduğumda İngilizce konuşan kişilerden yardım isterim.	1	2	3	4	5
49. Derste İngilizce sorular sormaya gayret ederim.	1	2	3	4	5
50. İngilizce konuşanların kültürü hakkında bilgi edinmeye çalışırım.	1	2	3	4	5

APPENDIX C - A Sample from Pre/Post Tests

a) Butcher b) Mechanic c) Farmer d) Dentist e) Hairdresser

f) Journalist g) Lawyer h) Gardener i) Engineer j) Carpenter

Yukarıda verilen kelimeleri aşağıdaki tanımlarıyla eşleştiriniz. Anlamlarını yazınız.

1) _____ a person that works with meat. They cut the meat and sell it in their shop.
2) _____ a person that makes things from wood including houses and furniture
3) _____ a person that can fix problems you have with your teeth.
4) _____ a person who develops solutions to technical problems. They sometimes design, build, or maintain engines, machines, structures or public works.
5) _____ a person that works on a farm, usually with animals
6) _____ a person that keeps gardens clean and tidy. They take care of the plants in the garden.
7) _____ they cut your hair or give it a new style
8) _____ a person that makes new reports in writing or through television
9) _____ a person that defends people in court and gives legal advice.
10) _____ a person that repairs machines, especially car motors.

APPENDIX D - Interview Questions

1 – What did you like/dislike about Quizlet?

2 – How did the use of Quizlet instead of traditional methods affect your vocabulary acquisition?

3 – How is it different from using a dictionary?

4 – How did it affect your self-confidence in terms of using English?

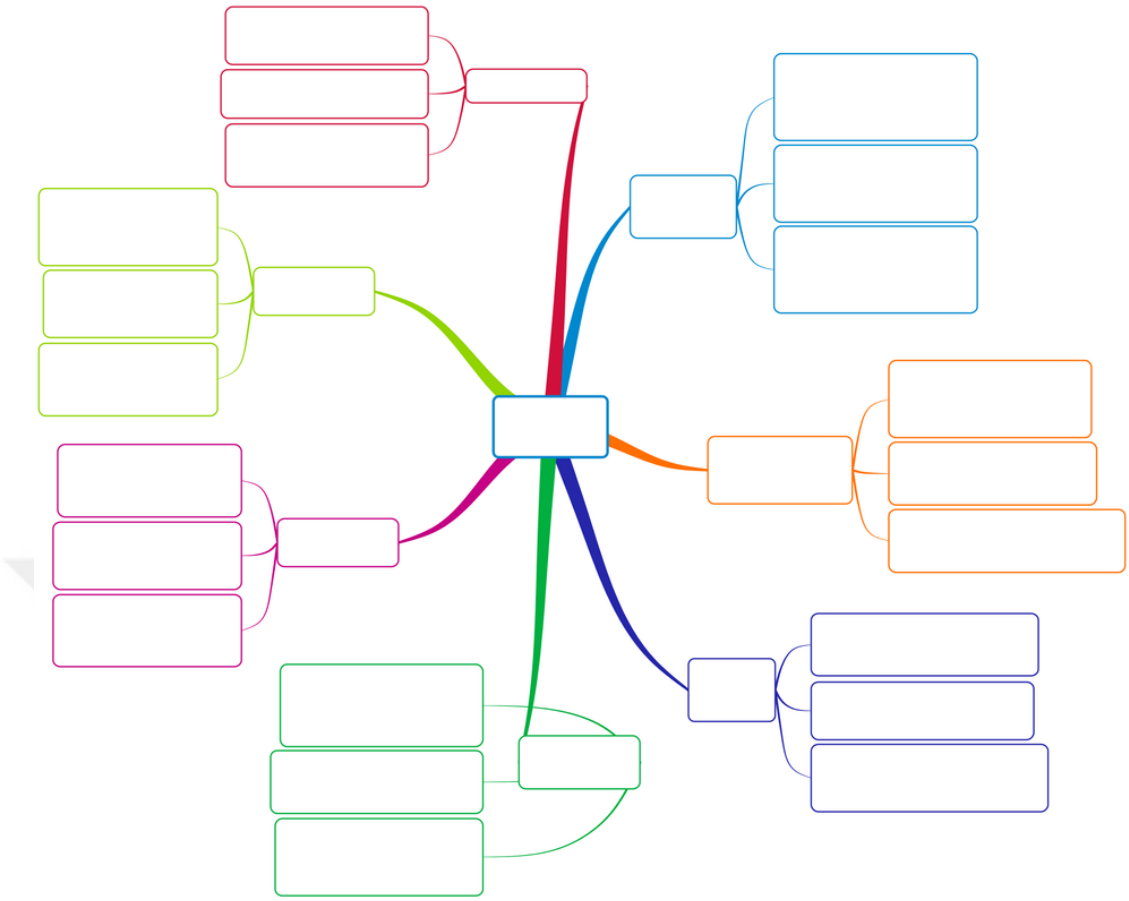
APPENDIX E - Samples Activities Used during the Training

1) Scrambled words

K	X	W	A	H	U	O	A	N	Z	N	U	S	E	W
U	E	X	M	Y	N	T	J	K	Q	W	B	O	W	Z
M	T	K	Q	T	A	N	G	E	I	R	I	V	E	R
N	N	I	A	I	K	E	W	R	R	O	U	F	E	Y
F	I	Y	S	L	X	N	W	T	K	K	A	T	B	P
H	A	Q	M	L	Q	I	C	C	C	C	Q	V	I	H
H	P	Z	R	I	A	T	N	Z	E	L	L	I	R	K
Y	R	J	T	H	E	N	P	Q	L	L	M	Q	T	P
C	G	A	S	T	J	O	D	S	A	E	O	Z	W	F
W	C	C	E	Q	H	C	F	F	G	B	U	J	U	D
C	D	X	R	G	U	O	R	T	E	I	N	T	R	A
E	R	Z	O	C	N	E	N	A	L	R	T	U	B	S
J	N	O	F	S	T	U	C	B	H	T	A	I	T	G
Q	Y	L	G	A	H	H	I	C	I	R	I	X	R	N
B	O	B	W	R	T	M	A	Z	T	C	N	W	H	Y

ISLAND	BEACH	HILL
MOUNTAIN	TRIBE	HUNT
FACE	PAINT	RIVER
CONTINENT	LAKE	WATERFALL
FOREST	HUNT	TRIBE

2) Mind Map



3) Strategy games (Oxford, 1990)

ERRANDS: You are a Canadian student who has just come to Austria to learn German. You must run the following errands in town. First you have to go to the market to get some fruit and vegetables, then to the pharmacy for bandages and toothpaste, then to the bakery for bread, and then to the post office for stamps. You don't yet have all the vocabulary you need for these errands, but you have about an hour to practice the language before you need to run the errands. Which language learning strategies do you need to use?

APPENDIX F - CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Kılıç, Tuğçe

Nationality: Turkish (TC)

Date and Place of Birth: 31 May 1988, Istanbul

Marital Status: Single

E-mail: tugcekilic88@gmail.com

EDUCATION

Degree	Institution	Year of Graduation
BA English Literature	Istanbul University	2010
High School	Nişantaşı Nuri Akın High School	2006

WORK EXPERIENCE

Year	Place	Enrollment
2014-Present	Otocenter High School	English Teacher
2013-2014	Garanti Emeklilik	Customer Care Speciali
2011-2013	arvato Telecom.	Customer Care Specialist

FOREIGN LANGUAGES

English (fluent), German (intermediate), Spanish (Beginner)

CERTIFICATES

27th Int. Conference on Edu. Sci – PEGEM (2018)	Antalya, Turkey
Drama in ELT – ITI (2017)	Istanbul, Turkey
CELTA – ITI (2015)	Istanbul, Turkey
B1 - Goethe Institut (2010)	Istanbul, Turkey

PUBLICATIONS

Kılıç, T., Çatal, N., Jaber, R., & Mede, E. (2018). The Role of CLIL Instructions on the Motivation of Turkish Learners of English. In *The 27th International Congress on Educational Sciences.* Retrieved May 8, 2019.

HOBBIES

Yoga, Running, Travelling, Reading, Listening to music, Writing, Learning new languages.