Impact of Mnemonic Keyword Method on EFL Pupils’ Long-Term Retention of New Vocabulary Items
The case of First Year Pupils at Ibn Sina Middle School

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master in Language Sciences and Teaching English as a Foreign Language

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Dedication

In the name of Allah the most beneficent the most merciful all the gratitude goes to him for helping his weak servant accomplishing this work.

I dedicate this work to my

My tender mother who looked after me to realize my dreams with care, encouragement, and endless love

May Allah keep you by my side, Amen

To my beloved father (Allah Bless Him)

To my lovely sister Kafia who did her best to give me the chance to fulfill this work

To my brothers Omar, Zakaria, and Chawki

To my sweetheart Narimene who inspired me with Strength and care to succeed during my studies

To my second family; my husband Marwen;

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To my dear classmates Hanane, Rania, Sarra, and Ikram

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Abstract

Vocabulary knowledge is an essential aspect of language learning and teaching along with the development of language teaching methodologies and approaches. Perhaps, the greatest tool that can be given to students not only in their education but also in their life is an extended and rich vocabulary. This research reports a quasi-experimental investigation about the effect of the keyword mnemonic on EFL pupils’ long-term retention of new vocabulary items. Two pre-existing groups of first year middle school pupils are randomly assigned as being the experimental group and the control group. The groups are made up of thirty pupils each; participants in both groups were pre-tested in the first session of the treatment to measure their word knowledge before undertaking the treatment. After that, while the control group received no particular teaching, the experimental group received five sessions of vocabulary teaching through the use of the mnemonic keyword method. A post-test similar to the pre-test has been done in due time for both groups. The findings, at last, demonstrated considerable improvement in recalling the words provided during the treatment period where it has been observed that the MKM had not only the expected effect but helped the learners in the acquisition and memorization of other new words. The results of the study reveal that the research hypothesis is highly supported.

Key Words: Vocabulary, Keyword mnemonic, Long-term retention.
List of Abbreviations

**FL**: Foreign Language

**SL**: Second Language

**EFL**: English as a Foreign Language

**LTM**: Long-Term Memory

**STM**: Short-Term Memory

**MKM**: Mnemonic Keyword Method

**L1**: First Language

**V.S**: Versus

**VLSs**: Vocabulary Learning Strategies

**%**: Percentage
List of Tables

Table 1: the Design of the Study 33
Table 2: Frequency of the Experimental and Control Groups Scores 37
Table 3: Square Pre-test Scores of both Groups 40
Table 4: Control group’s pre-test, post-test Score Differences 43
Table 5: The Control Group’s Square Difference Scores 45
Table 6: Experimental Group Pre- and Post-test Score Differences 48
Table 7: Experimental Group Square Score Differences of the Pre- and Post-test 50
Table 8: Post-test Scores of the Experimental and the Control Groups 54
List of Figures

Figure 1: A Visual Approach to Thematic Grouping (Carter & McCarthy 1988, p. 25) 14
Figure 2: Word Formation (Carter and McCarthy, 1988, p. 43) 15
Figure 3: Special Grouping of Body Parts (Holden as cited in Jeorn, 2004, p. 78) 22
Figure 4 and 5: Pictorial Representation of The words Increase and Decrease (Meier as cited in Jeorn, 2004: 79) 22
Figure 6: The Mediation Hypothesis (Robert, 1990, p. 3) 28
Figure 7: The Mediation Hypothesis within the Keyword Mnemonic Frame Work (Robert, 1990: 5) 28
Figure 8: The Direct Modal for the Keyword Technique (Robert, 1990, p. 7) 29
Figure 9: The Schematic Representation of the Research Design 32
Figure 10: Control and Experimental Groups’ Scores in the Pre-test 38
Figure 11: Frequency of the Control Group Scores in the Pre- and Post-test 42
Figure 12: Experimental Group Scores Frequency in the Pre- and Post-test 47
Figure 13: Experimental V.S Control Group Scores of the Post-test 52
# Table of Contents

Introduction 1  
1. Statement of the Problem 2  
2. Aim of the Study 2  
3. Research Question and Hypothesis 2  
4. Research Methodology 2  
5. Structure of the Study 3  

**Chapter One: Literature Review**

**Section One: Vocabulary Learning and Teaching**  
Introduction 4  
I.1.1 Vocabulary 4  
I.1.2 Types of Vocabulary 5  
  I.1.2.1 Productive/Active and Receptive Vocabulary 5  
  I.1.2.2 Academic and Non-Academic Vocabulary 6  
  I.1.2.3 Content and Form Vocabulary 6  
  I.1.2.4 Concrete and Abstract Vocabulary 6  
  I.1.2.5 Basic Vocabulary 6  
I.1.3 Vocabulary Learning 7  
  I.1.3.1 Marzano’s Steps of Building Academic Vocabulary 7  
I.1.3.2 Vocabulary Learning Strategies 8  
  I.1.3.2.1 Intentional Vocabulary Learning Strategies 9  
  I.1.3.2.2 Incidental Vocabulary Learning 9  
I.1.3.3 Classification of Vocabulary Learning Strategies 10  
I.1.4 Vocabulary Teaching 11  
  I.1.4.1 Vocabulary Selection 11  
  I.1.4.1.1 Tier one: Words of Everyday Speech 11  
  I.1.4.1.2 Tier two: High Frequency /General Academic Words 12  
  I.1.4.1.3 Tier three: Low Frequency /Content Specific Vocabulary 12  
I.1.4.2 Techniques for Teaching Vocabulary 12  
  I.1.4.2.1 Visual Techniques 12  
  I.1.4.2.2 Verbal Techniques 13  
I.1.4.3 Strategies for Teaching Vocabulary 13  
  I.1.4.3.1 Thematic grouping 14  
  I.1.4.3.2 Words Formation 14
I.1.4.3.3 Cognates and False Friends 15
I.1.5 The Importance of Vocabulary 16
Conclusion 16

**Section Two: Memory and the Keyword Mnemonic**

Introduction 18
I.2.1 Human Memory 18
I.2.2 Types of Memory 19
  I.2.1.1 Short-term Memory 19
  I.2.1.2 Working Memory 19
  I.2.1.3 Long-term Memory 20
I.2.3 Mnemonics or the Art of Memory 20
  I.2.3.1 Some Mnemonic Strategies 21
  I.2.3.2 Characteristics of Successful Mnemonics 23
  I.2.3.3 Limitations and Unrealistic Use of Mnemonics 24
I.2.4 The keyword Mnemonic 24
  I.2.4.1 Characteristics of a Successful Keyword Strategy 25
  I.2.4.2 Mental Imagery 26
I.2.5 Retrieval Modals 27
  I.2.5 The Mediation Hypothesis 27
  I.2.5 The Direct Hypothesis 28
I.2.6 Objections to the Keyword Mnemonic 29
  I.2.6.1 Time 29
  I.2.6.2 Practicability 30
  I.2.6.3 The mediator crutch 30
I.2.7 Forgetting 30
Conclusion 30

**Chapter Two: Field Work**

Introduction 31
II.1 Choice of the method 31
II.2 Participants 31
II.3 The Research Design 32
II.4 Procedure 33
  II.4.1 The Pre-test 34
  II.4.2 The Treatment 34
Introduction:

Vocabulary learning is the process by which EFL pupils are to be facing words that they are unfamiliar with, and this issue may affect negatively various learning activities such as reading, writing and even speaking because of the lack of vocabulary knowledge. It is argued that vocabulary learning is at the heart of any language learning and language use. One approach has been found for effective vocabulary teaching, and learning is the use of mnemonics (the art of memory). According to Raugh and Atkinson (1975), the Mnemonic Keyword Method (MKM) is a strategy for learning foreign vocabulary whereby students are asked to find a keyword in the mother tongue (L1) that sounds like the target word. Then, they are asked to create a mental image of the keyword that may help them to remember the foreign word. In short the MKM is made up of 3 R’s which stand for Reconstructing, Relating, and Retrieving.

1. Statement of the Problem

Human learning is a complex activity, and memory is just one of the many phenomena that exhibit the brain’s complexity. It represents the mechanisms that allow people to retain and retrieve information over time. Also, the duration of how much the information are stored in the mind is a matter of short-term and long-term memory (LTM) processes. On the one hand, the information lasts seconds or few minutes in short-term memory (STM), and then it disappears. In other words, the data stored in STM could not be retrieved when needed. On the other hand, the information, after being stored for extended periods of time -the duration can last for years- would be retrieved quickly thanks to the retention process which stands for the act of memorizing things for the purpose of remembering them later.

Learning English as a Foreign Language (EFL) is usually a matter of being exposed to new vocabulary items which pupils of first grade in the middle school may find it hard to memorize and recall them when needed. The reason for this is that they are not aware of which strategy they need for long-term retention. Besides, it has been regarded that learners of English find tremendous difficulties to memorize the new vocabulary items because teachers are only teaching them following traditional methods like dictation, translation, and repetition. For these reasons, the investigation seeks to raise learners’ awareness about the adoption of the keyword method as a mnemonic device which leads to long-term retention.
2. Aim of the study

The main purpose of the study is to investigate the impact of the keyword mnemonic on EFL pupils’ long-term retention of the vocabulary items. This goes along with the demonstration that the keyword method is a mnemonic device that pupils should rely on for successful vocabulary retention for long-term.

3. Research Question and Hypothesis

The present study leads to the following question

• Do EFL pupils retain the new vocabulary items using the keyword method?

In the light of the question stated above, the following hypothesis is raised:

The MKM has a positive effect on EFL pupils’ long-term-retention of the new vocabulary items.

4. Research Methodology

a. Population and Sampling

The target population is made up of 175 male and female EFL pupils of Ibn Sina middle school, Ain Beida, Oum Bouaghi. They are aged between 10 to 12 years old. The sample involves two groups. The first one is made up of thirty pupils for the experimental group, and the second one has the same number of pupils, and it constitutes the control group. The sample has been chosen randomly to guarantee that all members of the sample have equal chances when conducting the experiment. Obviously, the first year pupils have been chosen since they did not learn English before; so the MKM may be a basic support for the retention of vocabulary.

b. Means of Research

The study carries an experimental method through which the data would be calculated and analyzed. In other terms, the study would adopt a quasi-experimental design. At first, both the experimental group and the control group will have a pre-test in order to examine their vocabulary knowledge before having any new instructional materials. Next, the experimental group will receive the MKM training when learning new vocabulary items (the treatment period), while the control group would carry on learning vocabulary lessons following the traditional instruction (repetition, translation, imitation...etc). Afterward, a
post-test is designed for both groups to examine the influence of the MKM on the target vocabulary retention of middle school pupils.

5. Structure of the Study

The study is made up of two chapters. The first one is devoted to the theoretical aspects of the study which seek to give a clear explanation about the vocabulary knowledge along with some theoretical attempts to the MKM use in EFL context. This chapter is divided into two main sections. The first section is entitled vocabulary learning and teaching. It deals with the various definitions of vocabulary proposed by a number of scholars, the types of vocabulary in addition to some strategies and techniques for vocabulary learning and teaching. The second section is entitled memory and the keyword mnemonic; it includes a detailed review of the MKM use for EFL vocabulary retention. The second chapter is concerned with the description of the method followed for data collected from the experiment as well as the analysis of results where, at last, some pedagogical implications and a general conclusion are drawn.
Chapter One

Section One: Vocabulary Learning and Teaching

Introduction

In the past, vocabulary has been systematically taught through the other skills rather than being taught independently as a separate module, however, in recent years much has been done in the field of vocabulary in the context of SL/FL acquisition. Generally, vocabulary learning has been seen as a crucial aspect that leads to successful comprehension of that language. That is to say, the relation between words knowledge and language proficiency is so tied; so, this part of research aims at bringing some clarifications about the term vocabulary and presenting other aspects that may help understand further explanations for that close relationship.

I.1.1 Vocabulary

The term vocabulary has been clearly distinguished by Thornbury (2002) once he suggested that vocabulary or lexis in English can be used interchangeably to refer to the same aspect of language. It is commonly known that vocabulary is considered with the total number of words that make up a language (Oxford Dictionary, 2002). Also, vocabulary represents all words that someone knows, learns, or uses (Longman Dictionary, 1995). For this reason, it has been regarded that in FL/SL classrooms the lack of vocabulary knowledge remains the basic factor that may delay learners’ understanding of the target language. By the same token, Diamond and Gutlohn (2006) admit that vocabulary is the knowledge of words and their meaning. This implies that FL/SL learners are required to possess a good stock of vocabulary without which it becomes impossible to comprehend and use the language effectively. In addition, Hatch and Brown (1995) consider vocabulary as a list or a group of expressions in a particular language which speakers might use. Here, vocabulary represents the words knowledge that FL/SL learners may choose whenever they are involved in speaking activities. That is, it paves the way for the learners to express and share their ideas freely.

Researchers on vocabulary acquisition have demonstrated that native speakers’ primary source of vocabulary is the wide range of contexts that enable them to experiment, and confirm the lexical diversification (Carter, 1998). Hence, learners could enrich their vocabulary repertoire when their sources of learning and contexts are diversified. In short,
the above definitions share in common the idea that vocabulary knowledge does not require only word meanings knowledge, but also includes the usage of words in appropriate context. Also they provide a clear demonstration of the relationship between the new words acquired and the ones already known.

**I.1.2 Types of Vocabulary**

Vocabulary can be divided into several subgroups, therefore, it is not put at random, it is said to be systematic and well structured.

**I.1.2.1 Productive/Active and Receptive/Passive Vocabulary**

Many scholars explain that vocabulary can be viewed on both sides which are: oral vocabulary and reading vocabulary. Oral vocabulary in its turn can be divides into two main forms that shape speaking and listening processes. The latter refers to words that are used in speaking or recognized in listening, while reading vocabulary is broken down into reading and writing that refer to words recognized or used in print (Cardenas as cited in Carter, 1998).

Equally important, many researchers distinguish productive and receptive vocabulary in the sense that they seem to appear under the umbrella of reading vocabulary and oral vocabulary mentioned above. Tshirner (as cited in Decarrico, 2001) encourages the view that receptive vocabulary refers to words that students recognize and understand in spoken or written settings; but they have never used them in any context. Yet, active vocabulary is defined as “the one that is learned very intensively with respect to form, meaning and use in such a way that the learner will be able to use it in all the listening, speaking, reading and writing activities”(Finocchiaro as cited in Decarrico, 2001). To rephrase it, productive or active vocabulary refers to words that are used by students whenever they are involved in language activities. That is productive vocabulary serves or includes the four skills.

Until now, many attempts have been made to distinguish the two perspectives. Most researchers believe that receptive vocabulary is acquired first then the productive vocabulary; Chanel (as cited in Grunberg and Pascoe 2001) supports this idea when he stated that learners gain receptive control of new words before active control.
I.1.2.2 Academic and Non-Academic Vocabulary

Academic vocabulary is defined as words or items used in formal settings like schools, courts or at work…etc. Academic vocabulary occurs mainly in writing perspective rather than the speaking one. In contrast, non-academic vocabulary refers to items that are used in informal settings and with close people such as: family members or intimate friends. Non- academic vocabulary is largely used in speaking setting rather than the writing one.

I.1.2.3 Content and Form Vocabulary

a. Content words

They are words needed for the purpose of talking about events or objects they are used by speakers when they are involved in interactive activities. Usually, content words are nouns verbs, adjectives and sometimes adverbs (Schmitt 2010). Content words refer to the group of words that carry the content or the meaning of a sentence. Content words are open-class words in the sense that they accept the addition of new morphemes.

b. Function Words

In contrast to content words, West (as cited in Thornbury, 2002) propos that form words are usually prepositions, determiners, conjunctions…etc. Besides, function words are seen as close-class words. This means that they do not easily accept the addition of new morphemes. Hence, they are words that have little lexical meaning and sometimes they seem to have ambiguous meaning.

I.1.2.4 Concrete and Abstract Vocabulary

Concrete vocabulary refers to words that are found in reality and perceived physically through senses such as names of objects. However, abstract vocabulary is known as a set of items which are not embodied in real life, their perception happens at the level of the mind like freedom, happiness, and love…etc

I.1.2.5 Basic Vocabulary

It is pointed out that that basic vocabulary refers to words that are found in regular language activities, so it is an essential variety in any language environment. Generally, it is assumed that basic vocabulary contains the most frequent words used in given language.
Thus, it is very important for learners to receive a large amount of frequency words with which vocabulary learning and teaching would be successful. That is to say, the acquisition of any language necessitates the presence of basic vocabulary.

I.1.3 Vocabulary Learning

Mastering a language is usually a matter of mastering its vocabulary, therefore words knowledge play an important role in the acquisition of foreign languages. Typically, even though most FL/SL students studied grammar before, they still cannot communicate freely and speak fluently. Doubtlessly, learning vocabulary helps EFL students to achieve their wants and fulfill their needs from learning that language because little vocabulary learning may seem in the student’s mind as a sign of unsuccessful learning or poor communication skills. In addition, vocabulary learning helps students to develop their listening, speaking, reading, and writing performance. Similarly, Nation (1994) argues that:

Vocabulary is not an end itself. A rich vocabulary makes the skills of listening, speaking, reading, and writing easier to perform. Learners’ growth in vocabulary must be accompanied by opportunities to become fluent with that vocabulary. This fluency can be partly achieved through activities that lead to the establishment and enrichment of vocabulary knowledge, but the essential element in developing fluency lies in the opportunity. (p.511)

I.1.3.1 Marzano’s Steps of Building Academic Vocabulary

In the process of FL/SL learning, students give much importance to vocabulary learning for the reason that it serves for better understanding of language properties. Regarding this aspect, it has been assumed that Vocabulary learning is the largest and most crucial task facing EFL/ESL language learners.

Importantly Marzano (2004) developed six main steps which teachers have to adopt in teaching vocabulary items. First, the teacher must provide a description, explanation, or example of the term. As vocabulary teaching seems problematic for beginners, the teacher has to help the learner for effective learning by providing a context for the term. For example, create picture that facilitates the meaning. Second, the teacher will ask students to restate the description, explanation or an example in their own words. In order to acquire new vocabulary items it is important that the teacher has to be the monitor or the guider
who redresses students’ gaps and misunderstandings through giving them chances to use their minds and practice the knowledge (example: formulate structured sentences by their own). Third, the instructor asks students to construct a picture, symbol, or graphic representing the word. Engaging students periodically in activities is one step teacher should focus on in order to help them add new words to their knowledge. After that, involving students in activities that refer to asking students to highlight prefixes, suffixes, root words that will help them remember the meaning of the term, and find synonyms and antonyms for the term. Moreover, asking the student to discuss the terms with his partner and compare their descriptions of the term and describe their pictures to one another. Furthermore, the teacher may involve students periodically in games that allow them to play with terms. For example, the teacher can introduce activities like Jeopardy and password games.

I.1.3.2 Vocabulary Learning Strategies

Considering a definition of vocabulary learning strategies (VLSs), it is said that they “…are a part of language learning strategies” (Nation, 2001, p. 217). Moreover, Rubin (as cited in Jeorn, 2004) claims that vocabulary learning strategies are “the process by which the information is obtained, stored, retrieved and used” (p. 29). In addition, Catalan (as cited in Saengpakdeejit, 2014, p. 147) defines vocabulary strategies as:

Knowledge about the mechanisms (process, strategies) used in order to learn vocabulary as well as steps or actions taken by students (a) to find out the meaning of unknown words, (b) to retain them in long-term memory, (c) to recall them at will, and (d) to use them in oral or written mode.

Hence, it can be admitted that vocabulary learning strategies are commonly used not just to discover words meaning, but also to remember and retain them in long-term memory (Saengpakdeejit, 2014). To put it another way, vocabulary learning strategies are specific techniques used by learners as a support in the process of vocabulary learning. In the field of foreign language vocabulary, it has been distinguished two most used strategies which are: intentional and incidental vocabulary learning strategies.
I.1.3.2.1 Intentional Vocabulary Learning Strategies

Explicit or intentional vocabulary learning strategies is described as the approach that focuses on acquiring the vocabulary item in isolation without referring to its context. Clearly, Decarrico (2001) suggests that in explicit learning, the learner is involved in activities that focus on vocabulary rather than the language itself (p.286). Moreover, Nation (2001) describes intentional vocabulary learning as learning that “occurs when learners direct their attention to language items not for producing or comprehending a particular message; but for gaining knowledge about the item as a part of the language system” (p.11). Further, Hulstijn (as cited in Laraba, 2007, p. 178) argues that explicit vocabulary learning strategy is “any activity geared at committing lexical information to memory”. In other words, the intentional vocabulary learning strategy helps learners to retain information about the words they have learned.

Doubtlessly, Nation (1995) claims that in intentional vocabulary learning, students focus on words’ written and spoken form to obtain information about those items. This information can be gained through memorization of collocations, phrases or sentences containing these words (p.11). Decarrico (2001) believes that most researchers support the idea that explicit instruction should be presented in the learning of the first two or three thousand high frequency words because they occur regularly in what we speak or what we hear. Hence, being familiar with these words helps learners to understand approximately 80% of spoken or written passages (p.289). Also, Schmitt (2008) says that “with true beginners, it is probably necessary to explicitly teach all words until students have enough vocabulary to start making use of unknown words meet in context” (p. 2). In other words, the explicit method is advantageous for vocabulary learning for the fact that it allows beginner learners to expand their vocabulary knowledge.

I.1.3.2.2 Incidental Vocabulary Learning Strategy

Incidental vocabulary learning is somehow opposite to intentional vocabulary learning, it is known as implicit vocabulary learning. Decarrico (2001) describes it as “learning that occurs when the mind is focused elsewhere, such as on understanding a text or using language for communication purposes” (p.289). Schmitt (2008) defines incidental vocabulary learning as “learning through exposure when ones’ attention is focused on the use of language, rather than on learning itself, context then plays a very important role in assisting such learning” (p. 41). From what have been mentioned above, it can be said that
incidental vocabulary learning strategy focuses on acquiring words by referring to their context.

Vocabulary learning implies acquiring new items in which these items should be acquired in an incidental manner. Decarrico (2001) claims that “…beyond a certain level of proficiency in a second language, vocabulary learning is more likely to be mainly implicit” (p.289). Moreover, Nation (1995) argues that “at the advanced level, there is little value to indirect teaching of vocabulary” (p.12).

In simple terms, both strategies are beneficial and complete each other. Although, the intentional vocabulary learning strategy is very useful for teaching necessary words, the incidental vocabulary learning strategy is used to enlarge learners’ vocabulary size through exposure. For that, Mondria (as cited in Schmitt, 2008, p. 4) claims that “numerous studies show that this incidental or explicit approach leads to far better results than just incidental learning alone”.

I.1.3.3 Classification of Vocabulary Learning Strategies

Hatch and Brown (as cited in Pavicic, 2008, p. 73) divide vocabulary learning strategies into five main steps involving great number of different strategies.

Students at first come across new words from different sources like reading books or journals, watching TV, listening to music or having social interaction with native speakers. Then, they create a mental image by relating the target word with another word in the mother tongue (L1) or other languages with similar sound (the acoustic link). After that, students move to another step which is learning the words’ meaning by asking teachers about the meaning or guessing from the context. Afterward, they tend to create a link between the word form and meaning and memorize it (regardless of the memory strategy followed here). Finally, after dealing with previous processes, the fifth step is to relate word learned to the appropriate context through example sentences or social interaction activities.

Accordingly, it can be said that these five steps are interrelated, Hatch and Brown (1995) claim that the extent to which learners are engaged in each step depends on student’s learning goals (receptive and productive learning). Therefore, the greatest number of words enter the first step but just a limited number of those lexis pass to the next.
In other words, the process is said to be the same for the five steps, the number of lexical items that are memorized and retained by learners is smaller than the initial input (the first encountered number). Hence, the words knowledge that has gained by the learner from one step to another is now his or her vocabulary repertoire.

1.1.4 Vocabulary Teaching

Vocabulary teaching is one of the main components of any language in class. It is crucial aspect in FL/SL settings since words are the main way of conveying or receiving messages. Knowing the words’ meaning is the key that leads students understand the word, and build sufficient vocabulary knowledge. Richards and Renandya (2002) claimed that in the past vocabulary teaching and learning were often given little priority in second language but recently there has been a high interest in the nature of vocabulary and its role in learning and teaching.

1.1.4.1 Vocabulary Selection

When selecting words to teach to FL/SL students for the purpose of giving instructions, the question of how many words to be taught in a foreign language is always present. Senechal and Cornell (as cited in McCarthy, 1990) agree that in some dictionaries; from 1000 up to 3500 can be considered as basic or key vocabulary. However, in some books it is suggested to teach from 800 up to 3500 high-frequency vocabulary. Generally, vocabulary consists of words that are understood when they are heard or read (receptive vocabulary), and words that are spoken or written. Thus, learners build their vocabulary repertoire by picking up words they hear or read while getting instructed by their teachers. So, they not only acquire new vocabulary, but they develop it as well. Depending on students’ age, jobs, among a large number of possible aspects, they need to learn different vocabulary in a foreign language. Hence, McCarthy (1990) explained three levels (tiers) within which vocabulary occurs:

1.1.4.1.1 Tier one: Words of Everyday Speech

They represent words that are used as a part of everyday speech such as: study, hot, knows…etc. They are not considered to be a challenge to the average of native speakers; only FL/SL learners will likely need direct instruction of all what is everyday speech. Thus Schmitt (2008) does not believe in teaching Tier I words. This recommendation clearly
assumes these words are already known or will be learned automatically through social interactions

I.1.4.1.2 Tier two: High-Frequency/General Academic Words

This kind of words specifically occurs in formal written texts rather than speaking. For example, surface, solid, layer…etc. Tier two vocabulary might appear also in several sorts of texts: informational texts, technical texts and even literary texts. That is to say, tier two words seem to be the most basic vocabulary in FL/SL teaching and learning settings (Schmitt, 2008).

I.1.4.1.3 Tier three: Low-Frequency/Context-Specific Vocabulary

This kind of vocabulary can be introduced under the umbrella of domain-specific words. That is, they are closely tied to a single area of study or research (David as cited in Schmitt, 2008). Also, these words represent the very hard and tricky items which instructors have to teach so that learners can use them whenever exposed to a given unit of study. Context-specific vocabulary can be words like: volcano, lava, magma.

I.1.4.2 Techniques for Teaching Vocabulary

Importantly, there are some techniques that can be used in teaching vocabulary in order to convey item meaning namely: visual techniques and verbal techniques.

I.1.4.2.1 Visual Techniques

In EFL/ESL classrooms the use of visual techniques is seen as a basic component for effective instructions. Besides, the use of visual technique may be complementary support for FL/SL to strengthen their vocabulary learning by adopting this technique. Grains and Redman (1986) claim that “they are extensively used for conveying meaning, and are particularly useful for teaching concrete items of vocabulary such as food and furniture, and certain areas of vocabulary such as places, professions, descriptions of people, action and activities” (p. 73). Similarly, when teaching concrete items for SL/FL middle school students, teachers should rely on visual tools such as: realia, pictures, mime, and gestures to establish a like between the word and its meaning.

First, the use of realia like pictures, photographs, maps and even television shows that may raise learners’ interests toward learning new words and enhance the ability of
memorizing better items. Second, the use of pictures creates excitement in students’ spirit and adds interests to presentation of the vocabulary lesson. Richard and Rogers (2001) regard pictures as “one of the most important visual elements in the lesson” (p. 40). This visual tool is crucial for helping visual learners and attracting their attention when lecturing. Finally, Grains and Redman (1986) suggest that mime and gestures are used to supplement other ways of conveying the meaning. That is, they can involve all students to learn vocabulary. In fact, Dof (1988) observes that in FL/SL classrooms vocabulary should be presented visually in case where it needs to be done quickly. This implies that these are not the only ways to teach or present a vocabulary lesson. Yet, visual techniques still the suitable tools for effective vocabulary.

I.1.4.2.2 Verbal Techniques

According to Grains and Redman (1986), this technique works most when an item becomes more abstract. Thus, in order to check learners’ understanding, the teacher needs to use the verbal language so that he can figure out the gaps in students’ comprehension of the selected item. Verbal techniques include a variety of useful tools such as: definitions, synonyms/antonyms, and illustrative sentences.

First, the implementation of definitions and illustrative sentences is a very important aspect in FL/SL teaching and learning settings. When the student utters the words’ definition or gives a sample sentence by his own this may help him for effective learning. Then, Grains and Redman (1986) say that synonyms are used by teachers especially with beginners or with low level student because the length and the explanation of the teachers should be restricted. In other words, synonyms and antonyms are especially important for teaching vocabulary at earlier stages.

I.1.4.3 Strategies for teaching vocabulary

Vocabulary is an important part of any lesson regardless of which skill the teacher is focusing. Teaching vocabulary is a little bit different from teaching grammar. For that reason, the following key strategies of teaching vocabulary are needed for successful instruction during lesson time.
I.1.4.3.1 Thematic Grouping

One basic strategy in vocabulary teaching is thematic grouping or just grouping. It comprises the selection and grouping of vocabulary items in topics of themes (Evan, as cited in Hatch and Brown, 1995). This later may be about feelings, jobs, places or other many possibilities. Accordingly, the initial purpose behind this strategy is to provide students with better or clear contextualization and memorization techniques. Thematic grouping strategy has been extensively introduced in course books, dictionaries, pictures and other teaching tools.

The figure below illustrates a possible visual approach to thematic grouping:

**Figure 1: A Visual Approach to Thematic Grouping** (Carter and McCarthy 1988, p. 25)

![Thematic Grouping Diagram](image)

The words stated above can be followed by their definitions, translated words or even any information other relevant information which by its term will help learners to comprehend the word. It is necessary to highlight that the selection of topics or themes should go hand in hand with the course book units. The action may be done implicitly. For example, when a book introduced a unit about food or culture, it is needed that the author or the teacher should select vocabulary items related to these topics. To sum up Sadoski and Paivio (1994) confirm that this strategy is advantageous because it keeps the words fresh and active in the student’s memory and facilitates the retrieval of those words.

I.1.4.3.2 Word Formation

Carter and McCarthy (1988) stats that most of words in English are derived from other words; this issue is known as word-formation. Additionally, although the importance of word-formation has been given less attention in foreign language teaching, this strategy
could help students to learn vocabulary and figure out the meaning of unknown items. Also, understanding words meaning through the addition of suffixes and prefixes can make the process of vocabulary learning easier and faster, it can also motivate students to learn the target language vocabulary. For example, the learner should be aware that the suffix “er” means the doer of the action or the agent like: “teacher” and the verb to teach. By the same token, Dias (as cited in McCarthy, 1990) agrees that this linguistic knowledge provides students with better tools which can accelerate vocabulary learning and develop learning strategies for reading in a foreign language. In other words, when students are able to comprehend words and their meaning, it is easy for them for them develop strategies that may help them when they are involving in reading activities.

**Figure 2:** Word Formation (Carter and McCarthy, 1988, p. 43).

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### I.1.4.3.3 Cognates and False Friends

Cognates are defined as words that have an identical meaning in different languages. For example, the English word music has cognates in many languages: *Música* (Portuguese), *Musik* (German), *Musique* (French) and *Música* (Spanish). Valiça (as cited in Schmitt, 2010) emphasizes the view that cognates play a fundamental role in developing SL/FL vocabulary learning. Regardless this importance, it necessary to warn students about two basic issues related to cognates and word-formation processes. First, students cannot create new words by adding prefixes or suffixes to words they know, and that word-formation helps them for learning and acquiring new vocabulary items rather than creating new words. Second, not all words in English have cognates even if they share some morphological similarities, this aspect is known as false-cognates or false friends. A better
illustration will be the two words parents (English) and parentes (Portuguese) which they have completely different meanings.

I.1.5 Importance of Vocabulary Knowledge in EFL/ESL Settings

The mastery of vocabulary is an essential component of language acquisition processes. Vocabulary is of prime concern in SL/FL settings because it plays a dominant role in classrooms (Krashen and Terrell, 1983). Similarly, the knowledge of word meaning and the ability to access to that knowledge efficiently are recognized as important factors in reading and listening comprehension, writing and speaking fluency. In addition, this view has been more supported by Lewis (1993) who mentioned that language consists of “grammaticalized lexis, not lexicalized grammar” (p. 34).

With regard to the importance of vocabulary knowledge, Wilinks (1972) confirm that “…without grammar very little can be conveyed and without vocabulary nothing can be conveyed (p. 111-112). That is to say, within the frame of vocabulary people can easily express their ideas and thoughts when they possess a rich stock of vocabulary repertoire. Vocabulary becomes, therefore, everything that shapes language use. Besides, Widdowson and Mckewon (as cited in Lawson and Hogben, 1996) argue that vocabulary is the core or the heart of language comprehension and use. To put it differently, words knowledge facilitate language comprehension and serve learners to a very wide extent when using that language.

Hubbard (as cited in Jeorn, 2004) claims that the more a student knows words the more that student can express the exact meaning he/she wants. Based on this view, for effective communication to take part, students need to be aware of large number of word meanings. Likewise, Allen (1983) suggests that vocabulary knowledge determines the proficiency of a student has in oral context. In other words, vocabulary is an important element for determining how much a student is able to communicate and convey a message effectively. For these reasons, language teachers should focus on effective instructions to help students to develop their vocabulary knowledge.

Conclusion

As a conclusion, vocabulary learning and teaching is an essential aspect as well as a basic element that determines the overall success of EFL mastery. Besides, the process of acquiring new words demands useful and effective strategies which may create fun and
pleasure to the classroom environment. Thus, teachers as well as learners have to develop some strategies that strengthen vocabulary learning and teaching.
Section Two: Memory and the Mnemonic Keyword Method

Introduction

One of the major challenges in learning a foreign language is the acquisition of vocabulary in the new language. Therefore, it has been seen that foreign language learners find a lot of difficulties when coming to memorize and to recall, use or practice the new vocabulary items. This part of research will shed light on some theoretical issues that discuss the role of the keyword strategy in learning English vocabulary.

I.2.1. Human Memory

The phenomenon of human memory is defined as any indication that learning had persisted over time; it is the ability to store and retrieve information. Again, human memory may refer to the power or process of reproducing or recalling what has been learned and retained especially through associative mechanisms (Oxford dictionary, 2002). The evidence for this is provided by Ashcraft and Faust (1994) who pointed out that human memory is “the mental process of acquiring and retaining information for later retrieval, and the mental storage system that enables these processes” (p.11).

In fact, memorization has been clearly explained by Richards and Platt (1992) when they stated that “memorizing is the process of establishing information in memory” (p. 226). Also, it has been mentioned that memorizing is to learn something carefully so that it can be retained when needed (Morris and Stevens 1974). In other words, memorization can be seen as the intentional process which allows learners to store information for specific periods of time.

Experimental studies on memory are typically linked to Morris (as cited in Morris and Stevens 1974). The former is also remembered for being the first who proved the existence of distinct functions of memory with the use of strictly controlled independent variables (time, repetition and memory). He showed the tight relationship between learning time or what he defined as the mental repetition and the durability of memory. Thus, this had a negative effect that the concept of mnemonics which was well known in the 19th century was no longer aimed at learning purposes and research stuff. Rather, rote learning became a crucial aspect in examining the role of memory in EFL/ESL settings (Paivio, 1979).
I.2.2 Types of memory

In modern times, there has been extensive research on memory, mainly by psychologists, with the appearance of several theories. During the last few years, the neurosciences (the study of how nerves affect learning and behavior) have shed light on the functioning of the brain and set up three types of memory.

I.2.1.1 Short-Term Memory

The expression short-term (primary) memory has been first used by James in (as cited in Paivio 1979), after that Atkinson and Shiffrin in (1968). Short term memory can hold a limit amount of information without rehearsal for short periods, the duration ten to fifteen seconds and sometimes up to forty seconds (Atkinson and Shiffrin 1968). Also, one difference between the term “short-term memory” and the term “primary memory” is that the latter might be considered to be more restricted (by means a conscious process).

I.2.1.2 Working Memory

The term working memory was used by Miller (1956) to refer to the process of memory as it is used to plan to carry out a behavior. For instance, one student tries to multiply 45 and 29 together, and someone else asks him to find the result without using pen and paper or calculator. First, the learner needs to hold the two numbers in working memory. Second, he should use the learned multiplication rules to make the operation of successive pairs of numbers. Then he adds to working memory the new products as he proceeds. Finally, he needs to add the products together which held in working memory, then he has to say the result in the appropriate solution. That is, in this case working memory relies on retaining partial information while solving an arithmetic problem without paper. To sum up, Baddeley (1990) provided a definition for working memory as follows:

It comprises those functional components of cognition that allow humans to comprehend and mentally represent their immediate environment, to retain information about their immediate past experience, to support the acquisition of new knowledge, to solve problems, and to formulate, relate, and act on current goals (p. 28-29).
I.2.1.3 Long-term Memory

In long-term memory the information that is acquired in during the course can be retrieved after the experience is past; therefore Baddely (1990) believes that the information within LTM would be retrieved and maintained for a longer period of time. Thus, it can be said, this advantage of storing the information already learned paves the way to effective learning to take place. Tulving (1972) proposed two kinds of LTM, semantic and episodic memory. On the one hand, Reber (1995) admits that the semantic memory serves to memorize words meaning; while episodic memory is seen as the process by which events and facts are stored in the brain.

Furthermore, long-term memory refers to whatever kind of information that individuals learnt consciously. Episodic memory on the other hand is responsible for information stored with ‘mental tags’. That is, where, when and how the information is picked up (Reber, 1995).

1.2.3 Mnemonics or the Art of Memory

In Greek mythology, memory is seen as the mother of the nine Muses, Mnemosyne who illustrates the art of memory. It is Mnemosyne who prevents the heroes and the dead from falling into oblivion and who keeps the glory of the gods and the memory of past times alive. From this, it is derived the Greek word mneme, “to remember”, and the modern term ‘mnemonic(s)’ is a variation of this (Pam, as cited in Jeorn, 2004).

Mnemonics are strategies which involve linking unfamiliar information with one already known through using visual pictures. Mnemonics is a way that allows FL/SL learners to better memorization of the information (vocabulary), Shmidman and Ehri (2010) pointed out that “mnemonics are effective when they speed up learning, reduce confusion among similar items, and enhance long-term retention and application of the information” (p.160). In addition, mnemonics are memory tools that serve as a bridge to help FL/SL learners to recall information and concepts from LTM.

It has been seen that, in middle schools the use of mnemonics is largely emphasized because it has an effective impact on students learning capacities, Hegbee (1993) suggests that “the use of mnemonics with college age students might have enough potential for making learning easier and possibly more fun” (p.11). By the same token, Laing (as cited in Shmisman and Ehri, 2010) argues that “….instruction involving the use of mnemonic
devices does enhance a student’s formal reasoning skills and that this has the potential for application of knowledge to more varied tasks” (p. 354).

1.2.3.1 Some Mnemonic Strategies

Jeffrey and Bakken (as cited in shmidman and Ehri, 2010) set up some mnemonic strategies which they believe they are beneficial in EFL/ESL settings when attempting to teach words knowledge.

a) Acronyms

An acronym is a word or phrase made by using the first letters of the keywords in a list of items to remember. For instance, to remember the five Great Lakes which are Huron, Ontario, Michigan, Erie, and the last one which is Superior, it is better to memorize the word HOMES which represents all the first letters of each keyword.

b) Acrostics

An acrostic is a sentence made by using the first letter of the keywords in a list of items. For example, if the students want to memorize the order of operations in math problems like Parentheses, Exponents, Multiplication, Division, Addition, and Subtraction, it is easier for them only to memorize the sentence: Please Excuse My Dear Aunt Sally.

c) Picture associations

Picture associations are visual suggestions to help you easily remember and recall information. When students tend to memorize for instance the name of the leader of Chinese revolution which is Mao Tse-tung, they will easy try to draw a person mowing the lawn, a person saying something and a tongue.

d) Loci Method

Probably the loci method is the oldest and best known and adaptable technique for learning vocabulary lists. It refers to the method that allows learners to choose familiar places (loci) such as items in a room, trees and houses in a well known street and deposit the words to be learnt there. Then they retrieve and remember them, by walking along these places and collect the words again. If this is done often enough, the words become anchored in memory.
e) Special grouping

It occurs when the words are arranged in a way that forms patterns having for example the body parts.

**Figure 3**: Special Grouping of Body Parts (Holden as cited in Jeorn, 2004, p.78).

f) Visual Information

This method is based on representing words according to their meaning by creating simplified images.

**Figure 4 and 5**: Pictorial Representation of The words Increase and Decrease (Meier as cited in Jeorn, 2004, p. 79).
1.2.3.2 Characteristics of Successful Mnemonics

Characteristics of successful mnemonics are presented as follows:

a) Elaboration

According to McPherson (as cited in Jeorn, 2004) confirms that elaborative strategies lead to the addition of extra meaning to the material to be learned. Elaboration then is seen as one of the advantages of mnemonics in general and of the MKM in particular. By the same token, Hayes (1981) emphasizes that:

...in order to get information into long-term memory, we must elaborate it ...the best way to understand elaboration is to think of it as a process that forms connections – either within the material to be learned, or between the material to be learned and other things we already know. The more connections the material has, the more likely we are to be able to remember it. We might think of an elaborated memory as a satchel with lots of handles. The more handles it has, the easier it is to get hold of (p. 83).

Craik and Lokhrat (as cited in Hayes 1981) see that the action of continuous oral repetition of the material is not adequate for storing information in LTM. In addition, long and complicated sentences are better remembered than short and simple ones (Tulving, 1972). Bower and Reitman (as cited in Jeorn, 2004) concluded that mnemonic elaboration a powerful and additional component to assert remembering.

b) Bizarreness

Bizarreness was seen by practitioners of the art of memory Blum and Ytes (as cited in Jeorn, 2004) in the past for the reason of enhancing human memory.

The concept of “bizarreness probably came into being because of the impossibility for the vast majority of target words of finding a keyword that interacts logically, e.g. a whale and a piano” (Hegbee, 1993), and it was then discovered that these non-logical and non-plausible images helped remembering.

c) Vividness

One of the most important elements of imagery is vividness because it is full of life. For more evidence Anderson and Hidde (as cited in Raugh and Atkinson, 1975) provided
experimental results which to be considered a positive support for the validity of vividness in vocabulary learning. They asked 24 participants to rate vividness in 30 sentences to be remembered, and consequently they performed over three times better. Similarly, Bowers’ (1972) experiments showed beneficial results of increased vividness in paired-associative learning.

1.2.3.2 Limitations and Unrealistic Use of Mnemonics

Importantly, it should be made clear that mnemonics do not improve memory in general (McPherson as cited in Jeorn, 2004). Mnemonics do not serve memory when it comes to memorize or recall information based on our daily life experiences like birthdays, appointments and anniversaries (Herrman as cited in Robert, 1990). However, mnemonics are of a great use when they are clearly defined in memory tasks such as remembering words definition, speeches and keeping in mind the already played cards...etc.

More important, there are many mnemonic strategies that EFL/ESL learners should rely on. That it is not necessarily to choose a single mnemonic technique and try to apply to all types of information because there are information which need different mnemonic strategies to be used.

1.2.4 The Keyword Mnemonic

The term key word method has been first coined by the cognitive psychologists Atkinson and Raugh (1975); they emphasize the idea that the key word instruction divides vocabulary learning into two stages as follows:

By a keyword we mean an English word that sounds like some part of the foreign word. In general, the keyword has no relationship to the foreign word except for the fact that it is similar in sound. The keyword method divides vocabulary learning into two stages. The first stage requires the subject to associate the spoken foreign word with the keyword, an association that is formed quickly because of acoustic similarity. The second stage requires the subject to form a mental image of the keyword interacting with the English translation; this stage is comparable to a paired association…(p. 821)

From what has been mentioned above, it can be deduced that the keyword method is a form of mnemonics which is used to learn any target vocabulary items. Besides, this method requires from students at first to find a word in the mother tongue L1 (keyword)
which sounds the same as the target word (acoustic link). Then, it is important that the two words remain different in meaning. The second stage is to create a mental image that combines both words (the keyword and the target word) using whether bizarre or normal pictures and drawings.

After developing the keyword method, Mastropiery and Scruggs (1991) suggest that mnemonics in general and the keyword technique in particular should be presented under the three Rs which are Recoding, Relating and Retrieving.

**a) Recoding**

Recoding is seen as the first step to be followed in the process of memorization. It is to perceive the information in a way that is purely imaginable. For instance, in the keyword method, the learners are required to make an acoustic between the word in the L1 and the other word of target language.

**b) Relating**

Relating is to combine two or more pieces of information together and link them to an interactive image or sentence. It is of prime importance that the image or the sentence should be vivid and easy to remember. In the keyword instruction this process could be viewed when the learner tries to create the mental image which links the target word with the word in L1.

**c) Retrieving**

Retrieving is a mechanism to remember the already stored information. It is seen as the result of the two first processes which are recoding and relating.

### I.2.4.1 Characteristics of a Successful Keyword Strategy

For effective keyword strategy it is vital to shed light on the following aspects.

**a) Phonetic Similarly**

As it has been stated before, in the keyword instruction there should be a phonetic similarity between L1 and the target word. Phonetic similarity serves to ease the retention of vocabulary items (Joern, 2004).
b) **Uniqueness**

The connection between the target word and the keyword has to be unique for the only purpose which is avoiding interference with other associations (Joern, 2004).

c) **Exaggeration**

It is about using bizarre associations between the target word, the L1 word, and the mental image (Joern, 2004).

d) **Interactivity**

The association between the objects presented through the mental image should attract learners’ attention and make them interested and motivated to learn (Joern, 2004).

e) **Simplicity**

According to Jeorn (2004) the simpler the connection is, the better the information will be retrieved. Thus, complicated structured images may serve the memorization of items.

f) **Sexual, Vulgar and Naughty**

Learners are allowed to create their own words and associations in the frame of sexual and vulgar context if no one will know about them because it is acknowledged that this kind of associations makes the recall of information easier and faster. Russel (as cied in Jeorn, 2004) holds that “…most people find that they remember sexual, vulgar and naughty associations much better” (p. 124)

g) **Involvement**

It is generally known that memory is tightly linked to what learners experience in their lives. So, making students get engaged in activities where they like their daily life experiences with what they have learned makes the adaptation of the MKM more effective. Bower (1972) claims that “…many experimental psychologists cannot entertain thoughts about imagery without some deep sense of guilt associated with forbidden taboos” (p. 51).

I.2.4.2 Mental Imagery

Mental images play an essential role in several cognitive processes such as memory, learning, reasoning…etc (Campos et al. as cited in Raugh and Atkinson, 1975). It
has been regarded in many studies in the field of EFL/ESL vocabulary learning that if there is a tight relationship between imagining and memory, particularly in situations when the items are concrete words (Ernest as cited in Reber 1995).

Robert (1990) found that the process of imagery helps student for long-term recall of vocabulary items. Thus, in the present context, numerous authors have suggested that mental images will be useful aids for better retention if they are both bizarre and interactive. Also, Robert 1990 believes that bizarre images are more significant than normal images. Likewise, Atkinson et al. (as cited in Robert 1990) added that the use of bizarre drawings to create interactive images has been clearly explained to be an effective aid for learning the target vocabulary. However, in recent times it is has been witnessed that the use of images to recall information is a traditional method. Hence, Bergfeld et al. (as cited in Robert 1990) found that normal images are more effective.

I.2.5 Retrieval Modals

To explain the process of retrieving information which is in this case the English vocabulary, light has to be shed on two retrieval modals which are the mediation hypothesis and the direct hypothesis for the MKM.

I.2.5.1 The Mediation Hypothesis

The role of mediation in learning and retrieving foreign vocabulary definitions was first examined by Atkinson and Raugh in 1975 once they conducted an experiment about subjects who learned Spanish vocabulary using the MKM.

Mediators are sub tools that accompany learning but play no role in retrieving information (Robert 1990). In contrast, there has been a general agreement that the use of mediators in learning unfamiliar material is related to facilitate learning and improve words knowledge retention (Adams et al. as cited in Robert 1990). Hence, the question of what role mediators plays in the encoding and retrieval of vocabulary items is of great importance while dealing with human memory. The mediation hypothesis can be presented as follows.
Figure 6: The Mediation Hypothesis (Robert, 1990, p. 3).

According to one view which is the ‘mediation hypothesis’ (Adams et al. as cited in Robert, 1990), mediators play an essential role in the formation and the representation of the information in human memory. For example, consider learning of an A-B pair: clown- مھﺮج by using the mediator M (ﻣﻠﻮن). Following the mediation hypothesis, in studying the pair A-B, the mediator M becomes a part of the actual memory representation. Therefore, to retrieve A from B, it is important to first access M. That is, when M cannot be accessed, it is then impossible to access A. By the same token, Paivio (1979), Raugh and Atkinson (1975) assumed that the keyword can be embedded under the umbrella of the mediation hypothesis as follows:

Figure 7: The Mediation Hypothesis within the Keyword Mnemonic Frame Work (Robert, 1990, p. 5).

All in all, one type of evidence offered to support the mediation hypothesis comes from a study by Bellezza (as cited in Jeeorn, 2004), in which they performed an analysis of the conditional probability of recalling the English word definition

I.2.5.2 The Direct Hypothesis

The direct modal shows that the interactive image and the keyword have no functional role in remembering directly the target word. It assumes also that these association and mediators are separate from the human memory (Robert, Ibid). The following figure gives more clarifications about the difference between the mediation modal and the direct modal for the key word mnemonic.
1.2.6 Objections to the Keyword Mnemonic

In recent years there has been much attention to the use of imagery and association tools concerning vocabulary learning teaching for EFL/SL students.

Mnemonics nowadays are far to be accepted as an effective and valid learning tool. Gruneberg, and Herrmann (1997) claim that mnemonics have been-and sometimes still-rejected to the point of rational. That is, objection to the keyword technique remain present and teachers should maintain resistance to the method.

One of the main features of mnemonic is that concrete words are seen as the vital support which paves the way for learning abstract vocabulary, abstract concepts are learned only when they are liked to concrete ones; this is often seen in the scientific community as inferior thinking (Pressley, as cited in Jeorn, 2004).

1.2.6.1 Time

A constant objection to mnemonics is that the MKM is time consuming. That is this technique sometimes takes more time away from learning in context. Therefore, the question that should be asked is how much time teachers need for classroom management whenever the MKM is there. As it is said before, the best way for implementing this method in EFL/ESL setting is now by asking students to provide their own keywords and images.

Figure 8: The Direct Modal for the Keyword Technique (Robert, 1990, p. 7).
1.2.6.2 Practicability

It is sometimes claimed that mnemonics are not practical since they are mainly used in memory research in the laboratory. Whereas, nowadays it became an obligation to shift memory studies from laboratory issues to practical implications (Jeorn, 2004).

1.2.6.3 The Mediator Crutch

Another weakness is that mnemonics provide a kind of help or crutch which is the mediator that may disappear at any moment through the process of learning EFL/ESL vocabulary (Paivio, 1979). Another study done by Hegbee (1993) showed that mediators seem to appear through learning progression.

1.2.7 Forgetting

The study of memory is by its turn the study of forgetting. Grains and Redmann (1986) claimed that the information lost from the STM is caused by the arrival and the perception of new information. Yet, it is the role of the teacher to make the information stuck into the LTM. In LTM the main cause of forgetting is probably because the information stored is neglected because of lack of repetition.

This view defends the idea which asserts that the information is not lost, but that the problem lies in the recalling; this is the notion of cue-dependent forgetting. Grains and Redmann (1986) pointed out that “the problem is therefore not one of storage, but of retrieval”. Very often there is no (organized) cue that prompts retrieval.

Conclusion

From what has been discussed above, it is obvious that mnemonics in general and the MKM in particular are useful tools in EFL classrooms. By following keyword instruction, students can relax their mind and practice the language effectively. More important, these kinds if instructions are not waste of time, so teachers can adopt them to create enjoyable atmosphere during lectures.
Chapter Two

Field work

Introduction

The current study seeks to examine the effect of using the MKM in fostering EFL pupils’ long-term retention of the vocabulary items. The first part of the chapter explains the method chosen, the sample, the research design, and the instruments used in favour of this research. The second part provides a detailed statistical analysis of the gathered data.

II.1 Choice of the method

The method employed is a quasi-experiment design; more specifically, it applies a pre-test, post-test control group design, which is the advisable design in this case:

1) Manipulation of the independent variable (the experimental group was given the keyword instructions while the control group was given traditional instructions).
2) A pre-test was also delivered to compare the two groups (experimental and control group).
3) A post-test was delivered also to the comparison groups (experimental and control group).
4) No random assignment for the comparison groups.

As mentioned above, since random assignment for the groups was impossible (administrative constraints), two pre-existing classes were randomly assigned as the control and experimental groups.

II.2 Participants

The whole target population of the present study is 175 first year pupils at Ibn Sina middle school, Ain Beida, Oum Bouaghi for the scholar year 2015/2016. A sample of two pre-existing groups (control and experimental group) was randomly assigned to represent the target population because it is quite difficult to conduct the study on the whole population. Both groups contain 30 pupils aged between 11-12 years old.
First year middle school pupils have been selected because at this stage vocabulary learning is largely required, and for the reason it has been decided to adopt the MKM which remains a basic support for learning the target vocabulary at early stages, which by its turn, can lead to long-term retention.

II.3 The Research Design

A quasi-experimental design was conducted in order to accomplish this study, by means of which two random groups are assigned as the experimental and control groups. The experimental group received the vocabulary instructions using the keyword mnemonic technique; while the control group received the same vocabulary instructions but without using the mnemonic technique.

The present study addresses the following question:

- Do EFL pupils retain the new vocabulary items using the keyword method?

In the light of the question stated above, the following hypotheses are raised:

- The keyword method has positive effect on EFL pupils’ long-term-retention of the new vocabulary items.

There are two types of variables involved in this research, namely:

**The independent variable** is the keyword mnemonic use.

**The dependent variable** is the EFL pupils’ long-term retention of vocabulary items.

**Figure 9:** The Schematic Representation of the Research Design

![The Schematic Representation of the Research Design](image)

The **experimental group** is composed of 30 first year middle school pupils.

The **control group** is composed of 30 first year middle school pupils.
The pre-test consists of providing words meaning in L1, reordering words letters as well as matching words tasks to measure students’ knowledge about certain words (Ref. Appendix 1).

Treatment 1 (T1): it was in the form of teaching vocabulary items through a mnemonic technique known as the keyword method, through which the teacher uses keywords and mental images to let students memorize the target word. (Ref. Appendix 3)

Treatment 2 (T2): it was in the form of teaching the same vocabulary items through the traditional instructions such as: repetition, translation and imitation.

The post-test: is the same task used in the pre-test (Ref. Appendix 1)

Table 1: The Design of the Study.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test (one hour).</td>
<td>Pre-test (one hour).</td>
</tr>
<tr>
<td>Week 2</td>
<td>Treatment session (forty minutes).</td>
<td>Treatment session (forty minutes).</td>
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<tr>
<td>Week 3</td>
<td>Treatment session (forty minutes).</td>
<td>Treatment session (forty minutes).</td>
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<tr>
<td>Week 4</td>
<td>Treatment session (forty minutes).</td>
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<td>Week 5</td>
<td>Treatment session (forty minutes).</td>
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<tr>
<td>Week 6</td>
<td>Treatment session (forty minutes).</td>
<td>Treatment session (forty minutes).</td>
</tr>
<tr>
<td>Week 7</td>
<td>Post-test (one hour).</td>
<td>Post-test (one hour).</td>
</tr>
</tbody>
</table>

II.4 Procedure

In order to measure the effects of the keyword method input, a seven-week quasi-experiment study was designed. The study aims at teaching twenty five vocabulary items to first year pupils of Ibn Sina middle school, the procedure was as follows:
II.4.1 The Pre-test

The pre-test takes the form of a vocabulary quiz that is designed by the researcher to assess pupils’ knowledge about some vocabulary items (Ref. Appendix 1).

The experimental and the control group subjects were pretested during the first week by means of four vocabulary activities. In the first activity, pupils were asked to provide words in L1 for 11 targeted items. Then, in the second and fourth activities, the pupils were asked to match the pairs (10 items) while in third activity they were supposed to order the letters of the words provided in the task (4 items). Besides, the words presented in the test are the same as those of the treatment (Ref. Appendix 3).

At the start of the pre-test, subjects were told to do their best even though they had not formally informed about the test. Throughout the administration of the pre-test, students were allowed to ask any questions about the vocabulary items provided in the test. Though they have been given one hour to solve the activities; the majority of the subjects completed the test in no more than 35 minutes.

Participants of both groups (experimental and control) were not informed about their participation in the study. This was done on purpose in order to keep things done naturally; a fact would give more reliability to the work.

II.4.2 The Treatment

One week after having administrated the pre-test, the treatment procedures were initiated and continued for five weeks which all were about teaching vocabulary items using the keyword instruction; this was exclusively done for the experimental group, i.e. the control group was taught the same vocabulary items following the traditional method used by the teacher. After that, a posts test was administered to both groups.

II.4.3 The Experimental Group Treatment

The experimental group was taught vocabulary through the use of the keyword mnemonic instruction throughout five sessions. During each session pupils were provided with five target vocabulary items. Then, the pupils were given fifteen minutes to find words in L1 that sound the same as the target vocabulary items. After that, they were supposed to negotiate their answers with the researcher before he provides them with the meaning of each word. The next step is that students were given other fifteen minutes to
create mental images that combine both, the target words and the words in L1. Some of them succeeded in following the instructions whereas some others failed to find the words and create the mental images. The final step has been presented by the researcher, he then provides the pupils with the final representation of the words (the word in the mother tongue, the acoustic link, and the word meaning).

The process described above continued during the whole period of the treatment by means of five weeks.

**II.4.4 The Control Group Treatment**

As long as the control group is concerned, the students of the group were taught the same vocabulary items following the traditional way, i.e. with no interference of the MKM instruction. In this way, the students’ first exposure to the words knowledge was in the classroom through the teacher’s presentation of the selected words. In this context, the teacher is supposed to explain every single item following the usual teaching method. This teaching also lasted for five sessions (five weeks) following the same sessions’ division of the experimental group.

**II.4.5 Post-test**

The post-test was employed in the last phase of this research, i.e. it was administrated to each group during the seventh week under the same conditions surrounding the pre-test, and it was the same the pre-test. It was conducted to see whether there were any changes concerning words retention for the experimental group after being taught some vocabulary items following the keyword mnemonic instruction. Besides, one month after finishing the treatment period was sufficient to eliminate any threat concerning the effect of the pre-test, also to create a healthy atmosphere for the researcher to rate the pupils’ long-term retention of the learned vocabulary through the analysis of the data gathered from the experiment.

**II.5 Instruments Used for the Data Collection**

**II.5.1 Scoring**

As far as the scoring was concerned, each correct answer was assigned a single point whereas the other words were given half a mark depending on the nature of the activities. The whole test was scored out of 20 marks; there were no negative points for
wrong answers or the unanswered items. Importantly, the maximum score given was 16 out of 20 (16/20).

II.5.2 Statistical Analysis

The scores of the vocabulary quiz are analyzed using two types of tests namely: the independent samples t-test and the paired samples t-test. The former is used to examine any difference between both groups’ pre-test scores i.e. to make sure they do have the same level, and to find out the significant difference between the post-test scores of the experimental and control groups after the treatment period. Couple of tests have been used to investigate whether providing students with the mnemonic technique (MKM) as a teaching tool for learning the target vocabulary items improved their post-test performance compared to that of the pre-test.

II.6 Data Analysis and Results

The statistical procedures carried out are common in the Social Sciences. Data Analysis was done quantitatively via Statistical Package for Social Sciences (SPSS), which is a computer program that is used to analyze data in research studies in social sciences.

The subsection deals with the statistical analysis of our research. It shows the results of the vocabulary matching task of both groups in the pre-test and post-test as it discusses the findings gathered from the research.
**Table 2:** Frequency of the Experimental and Control Groups’ Scores.

| Scores | Control group | | Experimental group | |
|--------|---------------| |-------------------|---|
|        | Pre-test      | Post-test | Pre-test | Post-test |
| Frequency | | Frequency | | | Frequency |
| 3       | 1             | _         | 1        | _         |
| 4       | 2             | _         | 2        | _         |
| 5       | 3             | 1         | 3        | _         |
| 6       | 1             | 2         | 5        | 1         |
| 7       | 3             | 3         | 1        | 1         |
| 8       | 3             | 2         | 1        | 2         |
| 9       | 3             | 2         | 4        | 1         |
| 10      | 5             | 12        | 3        | 7         |
| 11      | 4             | 2         | 5        | 1         |
| 12      | 3             | 4         | 1        | 4         |
| 13      | _             | 1         | 3        | 3         |
| 14      | 2             | 1         | 1        | 2         |
| 15      | _             | _         | _        | 5         |
| 16      | _             | _         | _        | 3         |
| **Total** | **30**        | **30**    | **30**   | **30**    |
| **Mean** | **X = 8.73**  | **X = 9.63** | **X = 08.56** | **X = 11.90** |

It is worthy noted that table 2 represents the scores frequency of the pre- and post-tests being delivered to the experimental and the control and the control groups. It is designed for the sake of knowing the performance level of both groups before and after the treatment period.
II.6.1 Control Group versus Experimental Group Scores on the Pre-test

The results shown in table 2 reveal that the scores of the control group in the pretest are higher than those of the experimental group. The former with $X_c = 8.73$ and the latter with a mean $XE = 8.56$. The difference mean $\bar{d} = 0.17$

From comparing the mean (X) of both groups it worthy noticed that the two groups’ performance was approximately the same; $8.56 \approx 8.73$. This will help later when comparing the scores of the post-test. If the learners of both groups started from approximately the same level any difference in the post-test results would be due to the treatment.

For more details, the scores are coded as follow:

**Control group:**
- $14 \geq 10 \rightarrow 46.67\% \geq 10$
- $16 < 10 \rightarrow 53.33\% < 10$

**Experimental group**
- $13 \geq 10 \rightarrow 43.33\% \geq 10$
- $17 < 10 \rightarrow 56.67\% < 10$

**Figure 10:** Control and Experimental Groups’ Scores in the Pre-test.

Based on figure10, we can notice that the control group scoring starts at 3 (the lowest score) and ends at 14 (the highest score), with the most attainable score of 10 (the
most frequent score). On the other hand, the experimental group scores begin with 3 (the lowest score) and reaches the highest mark of 14 as the best one in the group, and the most frequent score is 11.

In order to see whether the over scoring of the control group is due to the difference between the levels, or as a result of chance only, an independent samples t-test is to take place. The results from this confirm or reject the idea that both groups do have the same level via comparing the calculated 't' with the 't' critical. Accordingly, if the calculated 't' is lower than the one in the table at the probability of p = 0.05, it can be said the groups have the same level of competency.

\[
t_{N_1+N_2-2} = \frac{\bar{X}_1 - \bar{X}_2 \sqrt{\frac{(N_1+N_2-2)N_1N_2}{(N_1S_1^2+N_2S_2^2)(N_1+N_2)}}}{\sqrt{(N_1S_1^2+N_2S_2^2)(N_1+N_2)}}
\]

The Independent Samples t-test

The following steps should be followed:

- Calculating the mean of the control and experimental groups.
- Calculating the sample variance of each group.
- Calculating the t-test value for independent groups.
- Comparing the calculated t-value (t calculated) with the critical t-value (t critical).
Table 3: Square Pre-test Scores of both Groups.

<table>
<thead>
<tr>
<th>Individual learner</th>
<th>Control group scores $x^2$</th>
<th>Control square scores $\sum x^2$</th>
<th>Experimental group scores $x^2$</th>
<th>Experimental square scores $\sum x^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
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</tr>
<tr>
<td>30</td>
<td>12</td>
<td>144</td>
<td>13</td>
<td>169</td>
</tr>
<tr>
<td>$\Sigma$</td>
<td>$\sum x = 262$</td>
<td>$\sum x^2 = 2542$</td>
<td>$\sum x^2 = 257$</td>
<td>$\sum x^2 = 2485$</td>
</tr>
</tbody>
</table>

Table 3 is designed in order to calculate the square pre-test scores of the experimental and the control groups. It is also meant as a primary step for the calculation of the sample variance of both groups.

$X_i = \text{individual score} \quad \bar{X}_n = \text{the calculated mean} \quad X^2_i = \text{square score} \quad N_i = \text{number of individuals} \quad \sum X_i = \text{sum of scores} \quad \sum X^2_i = \text{sum of square scores} \quad S_i = \text{sample variance}$
Control group

\[ \sum X_2 = 262 \]
\[ \sum X_2^2 = 2542 \]
\[ \bar{X}_2 = 8.73 \]

Experimental group

\[ \sum X_1 = 257 \]
\[ \sum X_1^2 = 2485 \]
\[ \bar{X}_1 = 8.56 \]

The Sample variance

Control group

\[ S_2 = \frac{\sum X_2^2}{N_2} - \bar{X}_2^2 \]
\[ S_2 = 8.72 \]

Experimental group

\[ S_1 = \frac{\sum X_1^2}{N_1} - \bar{X}_1^2 \]
\[ S_1 = 9.77 \]

The \( t \) value

\[ t_{58} = \frac{8.73 - 8.56}{\sqrt{(30 + 30 - 2) / (30 + 30)}} \]
\[ t_{58} = 0.91 \]

On the basis of sixty (60) pupil as the total number of both groups, the degree of freedom (\( df = N1+N2-2 \)) is to be fifty-eight (58), with a probability level of \( p = 0.05 \); therefore, the calculated \( t \) (0.91) is lower than the \( t \) calculated (2.00) given in the table of distribution.

\[ t_{calculated} < t_{critical} \]

This leads to the conclusion that the experimental and the control group have the same level.

II.6.2 Control Group Post- versus Pre-test Scores

The results in table 4 show that the control group recorded a higher post-test mean \( \bar{X}_{pos} = 9.63 \) than the pre-test mean \( \bar{X}_{pre} = 8.73 \). In order to examine the amount of improvement from pretest and post-test in the control group, the difference scores between the pretest and the post-test in the control group, the difference scores between the pre-test
and post-test for each student have been calculated in table 4 in addition to the mean score difference that is noted as $\bar{d} = 0.9$. This means that the improvement in the participants’ ability to remember the learned vocabulary was not sufficient and less marked in the comparison between the pre-test and the post-test.

Moreover, the number of subjects who have marks under, equal or above the average in the pre- and post-tests is as follows:

**Pre-test:**
- $14 \geq 10 \rightarrow 46.66\% \geq 10$
- $16 < 10 \rightarrow 53.33\% < 10$

**Post-test**
- $20 \geq 10 \rightarrow 66.66\% \geq 10$
- $10 < 10 \rightarrow 33.33\% < 10$

**Figure 11:** Frequency of the Control Group Scores in the Pre- and Post-test.

Figure 11 show that the pre and post-test control group scores have a peak at 10. That is the control group main frequent mark is 10 scored by 5 learners in the pre-test and 12 learners in the post-test. Since the control group did not show a significant improvement in the exercises that were given in the treatment, we may deduce that the traditional methods used in teaching vocabulary has no significant effect on students’ vocabulary learning.
Table 4: Control Group Pre- and Post-test Score Differences.

<table>
<thead>
<tr>
<th>Individuals</th>
<th>Post-test</th>
<th>Pre-test</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>4</td>
<td>+4</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
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<td>11</td>
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<td>4</td>
<td>5</td>
<td>3</td>
<td>+2</td>
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<td>7</td>
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<td>+3</td>
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<td>10</td>
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<td>+1</td>
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<td>9</td>
<td>+1</td>
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<td>+2</td>
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</tr>
<tr>
<td>30</td>
<td>13</td>
<td>12</td>
<td>+1</td>
</tr>
</tbody>
</table>

Mean \( \overline{x_{pre}} = 9.63 \), \( \overline{x_{post}} = 8.73 \), \( t = 9.63, \sigma = 1.9 \)

Table 4 represents the control group results in the pre- and post-test. Therefore, the
table aimed at serving a clear and precise observation of the scores range. It is also meant
for the sake of comparing the control group results of the vocabulary tasks.
The Paired-Samples t-test

According to Chen (2005, p. 32), the paired-samples t-test used in situations where each participant contributes to two test scores, the participants are said to belong to the same group. A common belief in EFL research is that the t-test is used with subjects having a pre-test, post-test and the treatment. In addition, the paired-samples t-test is a parameter used to compare the experimental and the control group’s students before and after having been engaged in the treatment period.

Consequently, the paired sample t-test compares the results of pre-test and post-test and calculates the difference to find out whether the manipulated independent variable (MKM) has affected on the development of the dependent variable (vocabulary learning). To ensure that, this test will go through the following steps and procedures:

1. Computing the difference between pre-test and post-test scores for each individual.
2. Calculating the mean difference ($\bar{d}$).
3. Calculating the standard deviation of the differences $s_d$, and the standard error of the mean difference, $SE(\bar{d}) = \frac{s_d}{\sqrt{N}}$.
4. Calculating the t-statistic, which is given by the equation $t = \frac{\bar{d}}{SE(\bar{d})}$. Under the null hypothesis, this statistic follows a t distribution with N-1 degrees of freedom.
5. Using the table of the t-distribution to compare the value for T to the N-1 distribution. Choose the level of significance required (normally $p = 0.05$) and read the critical value.
6. If the t-value is higher than the critical t-value, it can be said that the differences between the scores of the pre and post-test are significant at the level of probability. As a result, the alternative hypothesis is rejected and the research hypothesis is accepted.

The Mean Difference

$$\bar{d} = \frac{\sum d}{N}$$

Where $\bar{d}$= the mean of difference scores, $N$= number of subjects, and $\sum$ = the total sum.

$\bar{d} = \frac{27}{30} = 0.9$

Table 5 is needed for the calculation of the standard deviation.
Table 5: The Control Group’s Square Score Differences

<table>
<thead>
<tr>
<th>Student</th>
<th>Difference Scores $d$</th>
<th>Square Score Differences</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>+4</td>
<td>16</td>
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<tr>
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<td>+1</td>
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</tr>
</tbody>
</table>

Sum ($\sum$)  \[\sum d = 27\]  \[\sum s_\text{ss} = 105\]
The Standard Deviation of the Differences

$$S_d = \sqrt{\frac{\sum d^2}{N} - \bar{d}^2}$$

Where $S$ = the variance, and $\sum d^2$ = the sum of the square difference scores.

$S_d = \sqrt{\frac{105}{39} - 0.9^2 \sqrt{3.69}}$

$S_d = 2.78$

The Standard Error of the Mean

$$SE (\bar{d}) = \frac{S_d}{\sqrt{N}}$$

$$SE (\bar{d}) = \frac{2.78}{\sqrt{30}} = 0.5$$

The T-statistic

$$t_{N-1} = \frac{\bar{d}}{SE(\bar{d})}$$

$$t_{30-1} = \frac{0.9}{0.5}$$

$t_{29} = 1.8$

After calculating the t-value, we have to look at the distribution table to determine t-value. The total number of the control group students $N=30$, then the degree of freedom is $N-1=29$. The probability value is $p = 0.05$; therefore the t-critical 2.045. When we compare the critical t-value we get:

$$t_{calcul} < t_{crit} (1.8 < 2.045)$$

Thus, the difference between the pre- and post test of the control group is not significant. In other words the calculated t-value is lower than the critical t-value, we conclude that using the traditional method does not improve EFL learners’ long term retention of the new vocabulary items.

II.6.3 Experimental Group Post-test versus Pre-test scores

Table 6 and figure 12 show that the experimental group’s scores improved significantly between the pre- and post-test; that is the scores below the average are more frequent in the pre-test than those above the average. However, the post-test scores show that most of the participants scored above the average. Similarly, the experimental group post-test performance was shown by a calculated difference $\bar{d} = 3.34$ since the first test
(pre-test) mean was $\bar{X} = 8.56$ and increased in the second test (post-test) to become $\bar{X} = 11.90$.

For more details, the scores are coded as follows:

**Pre-test**

- $13 \geq 10 \rightarrow 43.33\% \geq 10$
- $17 < 10 \rightarrow 56.66\% < 10$

**Post-test**

- $25 \geq 10 \rightarrow 83.33\% \geq 10$
- $5 < 10 \rightarrow 16.66\% < 10$

**Figure 12:** Experimental Group Scores Frequency in the Pre- and Post-test.

Based on figure 12 it can be noticed that the pre-test scoring starts at 3 (the lowest score) and ends at 14 as the highest score with a peak at 6 and 11. On the other hand, the scores noted in the post-test begins at 6 as the lowest mark and reaches the highest mark of 16 as the best one in the group, the most frequent score of the post-test is 10.
Table 6: Experimental Group Pre- and Post-test Score Differences.

<table>
<thead>
<tr>
<th>Individual</th>
<th>Post-test</th>
<th>Pre-test</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>10</td>
<td>+3</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>11</td>
<td>+4</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>14</td>
<td>+1</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>9</td>
<td>+6</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>11</td>
<td>-1</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>11</td>
<td>9</td>
<td>+2</td>
</tr>
<tr>
<td>8</td>
<td>12</td>
<td>10</td>
<td>+2</td>
</tr>
<tr>
<td>9</td>
<td>16</td>
<td>12</td>
<td>+4</td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>9</td>
<td>+3</td>
</tr>
<tr>
<td>11</td>
<td>14</td>
<td>11</td>
<td>+3</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
<td>5</td>
<td>+4</td>
</tr>
<tr>
<td>13</td>
<td>10</td>
<td>11</td>
<td>+1</td>
</tr>
<tr>
<td>14</td>
<td>10</td>
<td>5</td>
<td>+5</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>11</td>
<td>+4</td>
</tr>
<tr>
<td>16</td>
<td>12</td>
<td>5</td>
<td>+7</td>
</tr>
<tr>
<td>17</td>
<td>14</td>
<td>13</td>
<td>+1</td>
</tr>
<tr>
<td>18</td>
<td>16</td>
<td>13</td>
<td>+3</td>
</tr>
<tr>
<td>19</td>
<td>8</td>
<td>4</td>
<td>+4</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>6</td>
<td>+4</td>
</tr>
<tr>
<td>21</td>
<td>7</td>
<td>6</td>
<td>+1</td>
</tr>
<tr>
<td>22</td>
<td>6</td>
<td>3</td>
<td>+3</td>
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<tr>
<td>23</td>
<td>10</td>
<td>8</td>
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</tr>
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<td>24</td>
<td>15</td>
<td>9</td>
<td>+6</td>
</tr>
<tr>
<td>25</td>
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<td>+6</td>
</tr>
<tr>
<td>26</td>
<td>12</td>
<td>6</td>
<td>+6</td>
</tr>
<tr>
<td>27</td>
<td>13</td>
<td>6</td>
<td>+7</td>
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<td>28</td>
<td>10</td>
<td>4</td>
<td>+6</td>
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<tr>
<td>29</td>
<td>8</td>
<td>6</td>
<td>+2</td>
</tr>
<tr>
<td>30</td>
<td>16</td>
<td>13</td>
<td>+3</td>
</tr>
</tbody>
</table>

Mean \( \overline{d} \) = 11.90, \( \overline{d} = 8.56 \)
To confirm one of the stated hypotheses that the keyword method has an effect on EFL pupils long-term retention of the new vocabulary items, a paired samples t-test was executed in order to find out that the treatment was actually effective, and the difference between the two tests was as a result of the manipulated independent variable (mnemonic keyword method) as the research hypothesis proposes, and not by a coincidence (null hypothesis).

**The Mean Difference**

\[
\bar{d} = \frac{\sum d}{N}
\]

Where \( \bar{d} \) = the difference scores mean, \( N \) = number of subjects, and \( \sum \) = the total sum.

\[
\bar{d} = \frac{105}{30} = 3.3
\]

**The Standard Deviation of the Differences**

\[
S_d = \sqrt{S^2} = \sqrt{\frac{\sum d^2}{N} - \bar{d}^2}
\]

Where \( S \) = the variance, and \( \sum d^2 \) = the sum of the square difference scores.

\[
S_d = \sqrt{\frac{9216}{30} - 3.2^2} = \sqrt{307.2 - 10.24} = \sqrt{296.96}
\]

\( S_d = 17.23 \)

The following table is needed since it provides the researcher with the sum of the square differences which is an important parameter to calculate the standard deviation of the differences.
Table 7: Experimental Group Square Score Differences of the Pre- and Post-test.

<table>
<thead>
<tr>
<th>Individual student</th>
<th>Difference scores</th>
<th>Square Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+3</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>+4</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>+1</td>
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<tr>
<td>4</td>
<td>+6</td>
<td>36</td>
</tr>
<tr>
<td>5</td>
<td>-1</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>+0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>+2</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>+2</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>+4</td>
<td>16</td>
</tr>
<tr>
<td>10</td>
<td>+3</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>+3</td>
<td>9</td>
</tr>
<tr>
<td>12</td>
<td>+4</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>+1</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>+5</td>
<td>25</td>
</tr>
<tr>
<td>15</td>
<td>+4</td>
<td>16</td>
</tr>
<tr>
<td>16</td>
<td>+7</td>
<td>49</td>
</tr>
<tr>
<td>17</td>
<td>+1</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>+3</td>
<td>9</td>
</tr>
<tr>
<td>19</td>
<td>+4</td>
<td>16</td>
</tr>
<tr>
<td>20</td>
<td>+4</td>
<td>16</td>
</tr>
<tr>
<td>21</td>
<td>+1</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>+3</td>
<td>3</td>
</tr>
<tr>
<td>23</td>
<td>+2</td>
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</tr>
<tr>
<td>24</td>
<td>+6</td>
<td>36</td>
</tr>
<tr>
<td>25</td>
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<td>49</td>
</tr>
<tr>
<td>26</td>
<td>+6</td>
<td>36</td>
</tr>
<tr>
<td>27</td>
<td>+7</td>
<td>49</td>
</tr>
<tr>
<td>28</td>
<td>+6</td>
<td>36</td>
</tr>
<tr>
<td>29</td>
<td>+2</td>
<td>4</td>
</tr>
<tr>
<td>30</td>
<td>+3</td>
<td>9</td>
</tr>
<tr>
<td>Sum (Σ)</td>
<td>Σ = 103</td>
<td>Σ = 469</td>
</tr>
</tbody>
</table>
The Standard Error of the Mean

\[ SE(\bar{d}) = \frac{S_d}{\sqrt{N}} \]
\[ SE(\bar{d}) = \frac{17.23}{\sqrt{30}} \]
\[ SE(\bar{d}) = 3.14 \]

The T-statistic

\[ t_{N-1} = \frac{\bar{d}}{SE(\bar{d})} \]
\[ t_{30-1} = \frac{17.23}{3.14} \]
\[ t_{29} = 5.48 \]

Since the t value was calculated, we have to find out whether the ratio, which is the formula of the t-test, is large enough to claim that the progress witnessed in the experimental group is due to the treatment. This is applied by checking it out in the table of t distribution and see whether the calculated t value is to be statistically significant.

The total number of the targeted group for the treatment is 30 subjects; therefore, the degree of freedom is (df = N-1) is 29, and the level of probability is \( p = 0.05 \); thus, the t critical value is 2.045, which means that the t value (calculated) is higher than the t critical value.

\[ t_{calcul} > t_{crit} (5.48 > 2.045) \]

We may notice from these results, that the difference between the scores of the experimental group on the pre-test and post-test is highly significant. Thus, the observed results are due to the independent variable (the keyword method) and the research hypothesis is to be accepted.

II.6.4 Experimental Group Vs Control Group Post-test

As presented in table 8 the experimental group pos-test scores exceeded the control group’s scores. In addition the calculated pos-test mean for the experimental group \( \bar{X}_1 = 11.90 \) is higher than that of the control group \( \bar{X}_2 = 9.36 \).

For more details about the scores we have:
Control group  
23 $\geq 10 \rightarrow 76.66\% \geq 10$
7 $< 10 \rightarrow 23.33\% < 10$

Experimental group  
20 $\geq 10 \rightarrow 66.66\% \geq 10$
10 $< 10 \rightarrow 33.33\% < 10$

The following figure shows that the number of students who got above the average in the experimental group exceeds the number of student in the control group who did so.

**Figure 13:** Experimental V.S Control Group Scores of the Post-test.

From figure 13 it can be noticed that the experimental group post-test scores start at 5 and ends at 16 as the best mark obtained in the group with one peak at 10. However, the control group frequency starts at 4 and ends at 14 as the highest mark with a peak of 10.

To investigate the significance of the difference between the experimental and control group’s test mean, the independent-samples t-test was adopted.

The Independent-Sample t-test is used to find out whether there is a statistically significant difference between the means of two different groups; control group and experimental group. In other words the independent-samples t-test shows the effect of the independent variable on the dependent variable. Its formula is denoted as follows:
In order to confirm the independent variable (MKM) on the dependent variable (learners’ vocabulary), and accept the research hypothesis, the calculated $t$ should go beyond the tabulated $t$ at a particular level of probability $p=0.05$.

$X_x = \text{individual score. } \bar{X}_n = \text{the calculated mean. } X_x^2 = \text{square score. } N_x = \text{number of individuals. } \sum X_x = \text{sum of scores. } \sum X_x^2 = \text{sum of square scores. } S_x = \text{sample variance.}$

The following table is designed for the sake of providing some of values that are needed for the calculation of the sample variance.
<table>
<thead>
<tr>
<th>Individual learner</th>
<th>Control group scores</th>
<th>Control square scores</th>
<th>Experimental group scores</th>
<th>Experimental square scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>64</td>
<td>13</td>
<td>169</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>100</td>
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</tr>
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<td>3</td>
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<td>15</td>
<td>225</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>25</td>
<td>15</td>
<td>225</td>
</tr>
<tr>
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<td>6</td>
<td>36</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>6</td>
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<td>100</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td>144</td>
<td>11</td>
<td>121</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>49</td>
<td>12</td>
<td>144</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
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<tr>
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<td>144</td>
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<td>12</td>
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<td>100</td>
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<td>225</td>
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<td>16</td>
<td>11</td>
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<td>17</td>
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<tr>
<td>18</td>
<td>9</td>
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<tr>
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<td>10</td>
<td>100</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>20</td>
<td>7</td>
<td>49</td>
<td>10</td>
<td>100</td>
</tr>
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<td>21</td>
<td>10</td>
<td>100</td>
<td>7</td>
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<td>12</td>
<td>144</td>
<td>6</td>
<td>36</td>
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<td>23</td>
<td>11</td>
<td>121</td>
<td>10</td>
<td>100</td>
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<td>100</td>
<td>15</td>
<td>225</td>
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<td>25</td>
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<td>169</td>
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<td>26</td>
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<td>144</td>
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<td>27</td>
<td>6</td>
<td>36</td>
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<td>49</td>
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<tr>
<td>28</td>
<td>10</td>
<td>100</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>29</td>
<td>9</td>
<td>81</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>30</td>
<td>13</td>
<td>169</td>
<td>16</td>
<td>256</td>
</tr>
<tr>
<td>Sum (Σ)</td>
<td>$\sum_{x \neq a} = 289$</td>
<td>$\sum_{x \neq a} = 2917$</td>
<td>$\sum_{x \neq a} = 353$</td>
<td>$\sum_{x \neq a} = 4363$</td>
</tr>
</tbody>
</table>
Experimental Group

\[ \sum X_1 = 353, \quad \sum X_1^2 = 4363, \quad \bar{X}_1 = 11.90 \]

Control Group

\[ \sum X_2 = 289, \quad \sum X_2^2 = 2917, \quad \bar{X}_2 = 9.63 \]

Sample Variance

Experimental group

\[ S_1 = \frac{\sum X_1^2}{N_1} - \bar{X}_1^2 \]

\[ S_1 = 3.82 \]

Control group

\[ S_2 = \frac{\sum X_2^2}{N_2} - \bar{X}_2^2 \]

\[ S_2 = 4.49 \]

The t value

\[ t_{58} = \frac{2.3 \sqrt{58} \sqrt{30+30-2}}{\sqrt{30+3.101+30+4.49}(30+30)} \]

\[ t_{58} = \frac{2.3 \sqrt{52200}}{\sqrt{13662}} \]

\[ t_{58} = \frac{525.48}{116.88} \]

\[ t_{58} = 4.49 \]

The comparison between the observed t-value is higher than the critical t-value at the level of probability \( p = 0.05 \) with a degree of freedom \( N+N-2, \) df = 58, show that the \( t_{\text{crit}} = 2.00 \)

\[ t_{\text{calc}} \quad t_{\text{crit}} (4.49 \quad 2.00) \]

Thus, the observed t-value is higher than the critical t-value at \( p=0.05. \) Therefore, the null hypothesis is rejected and the research hypothesis is strongly supported, which means there is only 5% probability that the observed mean difference (d=2.54) occurred by
chance. Similarly, there is 95% probability that it was due to the manipulation of the independent variable (MKM).

Finally, we conclude that the keyword method improve EFL pupils long-term retention of vocabulary.

Conclusion

The results obtained from the present study indicate that the experimental group has higher scores than the control group on the post-test measuring students’ vocabulary learning. Improvement is mainly due to the keyword method instruction during the treatment. That is to say, following the keyword method instruction for teaching vocabulary to first year middle school pupils throughout the treatment period was effective since the experimental group performed better than the control group in the post-test, this due to the fact that the control group was taught vocabulary through the traditional method dictation, translation, repetition...etc

Discussion of the Results

After analysing the data gathered from the quasi-experiment, the results are presented as follows:

a) The Homogeneity of the Groups

When we look at the two groups before they have been given any treatment, we find the two groups scored a relatively similar mean $\bar{X}_C = 8.73$ for the control group; while the experimental group has scored a mean of $\bar{X}_E = 8.56$. Thus the difference mean between the two groups in the pre-test was: $\bar{d} = 0.17$ which is statistically not significant. The non significance of the difference mean between the mean in the pre-test is very important when comparing the results obtained in the post-test because any significant difference in the post-test will be credited to treatment group has gone through.

b) The Non-Significance of the Control Group Improvement

The comparison between the scores of the control group in the pre-test and post-test shows that using traditional methods in teaching vocabulary was not effective in improving the students’ vocabulary learning. This is evident when we compare the means of both pre-test and post-test of the control group. The pre-test mean was $\bar{X}_{pre} = 8.73$, and the post-test
mean was \( \bar{X}_{\text{post}} = 9.63 \). Similarly, the difference between the two means was \( \bar{d} = 0.9 \) (unremarkable improvement). For that we conclude that teaching vocabulary through traditional method did not help the students to memorize and recall the words presented in the treatment sheet. Consequently, they did not show any improvement toward the retention of the target vocabulary items.

c) **The Significance of the Experimental Group Treatment**

After completing the treatment, the experimental group showed significant improvement in the post-test. That is when comparing the mean of the pre-test which is \( \bar{X}_{\text{pre}} = 8.56 \) and the one of the post-test \( \bar{X}_{\text{post}} = 11.90 \) with a mean difference of \( \bar{d} = 3.2 \) the improvement is possibly significant. So, it is worthy to point out that the keyword method served for better memorization and retention of vocabulary items.

All in all, the findings of the study show that the experimental group performed better that the control group on the post-test; this leads to the conclusion that the keyword method can be seen as a basic support for EFL vocabulary retention.
General Conclusion

The study aims at highlighting the effectiveness of the keyword mnemonics in the field of vocabulary learning and teaching. In specific terms, the study seeks to investigate the impact of MKM on EFL pupils’ long-term retention of new vocabulary items.

The work consists of two chapters; the first one was for reviewing the literature covering all the aspects of vocabulary learning and teaching as well as human memory and the use of the keyword method in favor of words knowledge. The second chapter covers all the aspects of the quasi-experiment and the analysis of the data gathered.

After analyzing the research findings and discussing the results, it has been proved that the keyword mnemonic has a significant effect on EFL pupils’ vocabulary long-term retention. That is why; teachers should give more importance to the use of mnemonics in the classroom; since the use of the keyword mnemonic helped middle school pupils in improving their memory from pre-test to post-test.
Pedagogical Implications

The present study proved that using the keyword mnemonic is beneficial for vocabulary leaning. The following pedagogical implications might be stated as follows:

1) The keyword mnemonic is one tool that engages all the students in learning vocabulary i.e. memory games attract students’ interest to focus on acquiring new words and store them.
2) Mnemonics are flexible; it means they can be used for teaching any aspect of the language.
3) The obtained results of this study show that there is a progress in students’ learning and memorization of the target words. This indicates that mnemonics are an effective teaching tool that teachers have to adopt while teaching vocabulary.
4) Mnemonics are tools that provide opportunities for EFL learners to acquire and learn vocabulary in a funny way. So teachers have to deviate somehow from the traditional methods that are used in teaching vocabulary.
5) The use of mnemonics in general and the keyword method in particular add pleasure to the classroom atmosphere.

Limitations of the study

An experimental study was applied to obtain reliable results about the effectiveness of the keyword method in the field of vocabulary learning. Thus, in our try to fulfill the research purpose, we have faced a major problem related to the selection of words because it was too difficult for the researcher at first place then for the student to find words that fit the conditions of the method since this work is the first one done on the application of the keyword method for the Arabic and English targeted vocabulary. The second problem which has been found is that the method is more suitable for vocabulary learning rather than teaching because the MKM is addressed to students at first place then teachers.
List of References


Appendix 1: Test Used in the Pre- and Post-Tests

**Level: First Year at Ibn Sina Middle School**

**Name:**  
**Age:**

**Task one:** Read the words below, then provide the meaning in Arabic.

<table>
<thead>
<tr>
<th>Chair</th>
<th>milk</th>
<th>nose</th>
<th>clown</th>
<th>star</th>
<th>sun</th>
</tr>
</thead>
<tbody>
<tr>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dog</th>
<th>colour</th>
<th>flower</th>
<th>camel</th>
</tr>
</thead>
<tbody>
<tr>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
</tr>
</tbody>
</table>

✓ **Task two:** Match words in column (A) with those in column (B):

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bear</td>
<td>•</td>
</tr>
<tr>
<td>Umbrella</td>
<td>•</td>
</tr>
<tr>
<td>Bread</td>
<td>•</td>
</tr>
<tr>
<td>Judge</td>
<td>•</td>
</tr>
<tr>
<td>Deaf</td>
<td>•</td>
</tr>
<tr>
<td>Jail</td>
<td>•</td>
</tr>
<tr>
<td>Smoke</td>
<td>• وجه •</td>
</tr>
<tr>
<td>Face</td>
<td>•</td>
</tr>
</tbody>
</table>
Task three: Reorder the letters of the following words:

<table>
<thead>
<tr>
<th>ot/rr/pa</th>
<th>fi/re</th>
<th>ne/st/o</th>
<th>he/art</th>
</tr>
</thead>
<tbody>
<tr>
<td>..........</td>
<td>.......</td>
<td>..........</td>
<td>.......</td>
</tr>
</tbody>
</table>

Task four: Match the following pairs:

- [Circle](#)
- [Square](#)
Appendix 2: Answers of the Test Used in the Pre- and Post-test.

Level: First Year at Ibn Sina Middle School

Name: ___________________________ Age: ___________________________

Task one: Read the words below, then provide the meaning in Arabic

Chair milk nose clown star sun

istemحيل ﻣﮭﺮج ﻟﻨﺠﻤﺔ ﻟﺸﻤﺲ

Dog colour flower camel

زهرة

✓ Task two: Match words in column (A) with those in column (B):

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bear</td>
<td></td>
</tr>
<tr>
<td>Umbrella</td>
<td></td>
</tr>
<tr>
<td>Bread</td>
<td></td>
</tr>
<tr>
<td>Judge</td>
<td></td>
</tr>
<tr>
<td>Deaf</td>
<td></td>
</tr>
<tr>
<td>Jail</td>
<td></td>
</tr>
<tr>
<td>Smoke</td>
<td></td>
</tr>
<tr>
<td>Face</td>
<td></td>
</tr>
</tbody>
</table>
Task three: Reorder the letters of the following words:

<table>
<thead>
<tr>
<th>ot/rr/pa</th>
<th>fi/re</th>
<th>ne/st/o</th>
<th>he/art</th>
</tr>
</thead>
<tbody>
<tr>
<td>parrot</td>
<td>fire</td>
<td>stone</td>
<td>heart</td>
</tr>
</tbody>
</table>

Task four: Match the following pairs:

Circle

Square
Appendix 3: The Words Being Taught During the Five Sessions of the Treatment.

**NB:** the words were presented in an A4 paper.

( ) Bear =

( ) Bread =

( ) Camel =

Bear = دب
Bread = خبز
Camel = جمال
(chair = شری)

(Clown = مهرج)

(Deaf = رغیف)
( ) Dog = دُمَّرُ" (طَمْرُ)

( ) Face = وَجَهُ (ضَيْفُ)

( ) Flower = زَهْرَة" (فَطْرُ)
(بدين) Green =

(هر) Heart =

(طير) Jail =
Judge =

Milk = حليب

Nose =
Rain =

Shoe =

Smoke =
Sun =

Umbrella =

Fire =
**Résumé**

La science du vocabulaire est conçue comme étant le phénomène le plus important dans le domaine de l’enseignement/apprentissage d’une langue, peut-être qu’elle est l’outil le plus important qu’on puisse donner aux apprenants, non seulement dans le contexte d’enseignement mais dans leurs vie d’une manière générale car elle constitue un dictionnaire riche. L’objectif primordial issu de ce modeste travail para-expérimental est de découvrir l’impact d’utilisation du mot clé comme une stratégie de stockage et de rappel à long terme pour les apprenants du 1ère année moyen du CEM Ibn Sina, Ain Beida. Notre corpus est composé de 60 élèves divisé en deux groupes : le groupe pilote et le groupe expérimental ; chaque groupe contient 30 élèves. Le choix du groupe a été choisi auparavant pour mesurer l’expansion lexique chez les élèves avant le traitement. Après cela le groupe pilote a reçu cinq séances pour apprendre les mêmes mots en suivant la même méthode habituelle de l’enseignant. En même temps l’autre groupe (expérimental) a eu aussi à son tour cinq séances pour apprendre les mêmes mots mais en suivant la stratégie du mot clé de la mémorisation. A la fin de l’étude et après une durée de traitement, ainsi les deux groupes ont eu un deuxième test qui a le même contenu que le premier. Les résultats ont ainsi montré qu’il y a une amélioration remarquable de la part du groupe expérimental vus que la stratégie du mot clé pour la mémorisation encourage les élèves à retenir, donc apprendre de nouveaux mots. Les résultats ont aussi prouvés que l’hypothèse de la dissertation est confirmée.
يعد علم المفردات من أهم المظاهر في مجال تعلم وتدريب اللغة، ربما تكون أعظم الوسائل التي يمكننا إعطاءها للطلبة ليس فقط في مجال تطبيقها، ولكن في حياتهم بصورة عامة في مجتمعهم، الغني بالفرص.

الرئيسي من هذا العمل البحثي الشبيه تجريبي هو استكشاف أثر استخدام الكلمة المفتوحة كاستراتيجية لتخزين وتنوير المفردات لمدة طويلة بالنسبة لطلاب السنة الأول المتوسطة الذين سنين، ومنه فقد طبقت دراسة على نموذج يتكون من 60 تلميذًا مقسمين إلى فئتين: الفئات الظاهرة والفيتوف جي، فئات يحتوي على 30 تلميذًا. تم مسبقاً اختيار الفئات لتقديم مجموعات التدريس النحو لتبني إجراء العلاج بعد هذا المجموعة المثقلة خمسة مجموعات لتكون الفردية بتباع الطريقة المتعددة من طرف الاستاذ، في نفس الوقت تلغت المجموعة التجريبية خمسة مجموعات ت المتعلمس الفردية لتكمن الفرق، لكن بتباع استراتيجيات اللغة المفتوحة للذاكرة في خريج الرسالة، بعد فترة العلاج أظهر الفئات اختبار ثان يبين مضمون الافتتاح الأول. أظهرت النتائج أنه هناك تحسن كبير في تذكر الكلمات من طرف الفئات التجريبية حيث أن استراتيجيات الكلمة المفتوحة للذاكرة زادت من اهتمام التلاميذ لتعلم مفردات جديدة. أيضاً دلت النتائج على أن الفرضية أثبتت إلى حد كبير.