EZBERLEYEREK ÖĞRENMEYE KARŞILIK DERİN İŞLEM SÜRECİ: SÖZCÜK ÖĞRENİMİ VE KALICILIĞINA ETKİSİ

**ROTE LEARNING VERSUS DEEP PROCESSING:
THE EFFECT ON
VOCABULARY LEARNING AND RETENTION**

Orhan GÖK
(Yüksek Lisans Tezi)
ESKİŞEHİR, 2006

ROTE LEARNING VERSUS DEEP PROCESSING : THE EFFECT ON VOCABULARY LEARNING AND RETENTION

ORHAN GÖK

M.A. THESIS

Department of English Language Teaching

Advisor: Assist. Prof. RIDVAN TUNÇEL

Eskişehir

Anadolu University Institution of Educational Sciences

October, 2006

YÜKSEK LİSANS TEZ ÖZÜ

EZBERLEYEREK ÖĞRENMEYE KARŞILIK DERİN İŞLEM SÜRECİ: SÖZCÜK ÖĞRENİMİ VE KALICILIĞINA ETKİSİ

Orhan Gök
İngiliz Dili Eğitimi Anabilim Dalı
Anadolu Üniversitesi, Eğitim Bilimleri Enstitüsü, Ekim 2006
Danışman: Yard. Doç. Dr. Rıdvan Tunçel

Bu deneysel çalışma öncelikle yabancı dildeki sözcükleri hafızada tutmak, tanımak ve hatırlamak için etkili bir yöntemin ortaya konulmasını amaçlamıştır. Bu amaç doğrultusunda, iki sözcük öğrenme yöntemi karşılaştırılmıştır: Derin İşlem Süreci ve Ezberleme. Çalışma içerisinde, "Derin İşlem Süreci" "yeni sözcükleri öğrenirken dahil olunan ileri derecedeki anlama yada kavrama işlem süreci" olarak ele alınırken, "Ezberleme" "yeni sözcüklerin bağlam içermeyen sözcük listelerinin ezberlenmesi yoluyla öğrenimi" anlamında kullanılmıştır. Çalışmada derin işlem sürecini teşvik eden dört teknik kullanılmıştır: "Bu Nedir?" (What is it?), "Anlamdan Öte" (More than Meaning), "Çıkarım Sorgulaması" (Power Questioning) ve "Anlamlı yada Anlamlı Değil" (Sense or Nonsense?).

Bu çalışmaya Anadolu Üniversitesi Fen Fakültesi'nde öğrenim görmekte olan elli orta düzey üstü yabancı dil öğrencisi katılmıştır. Öğrencilerin ders kitaplarından seçilen otuz iki sözcük çalışmada kullanılmak üzere hedef sözcükler olarak belirlenmiştir. Sayıca eşit iki gruba yerleştirilen öğrencilerden deney grubundaki öğrenciler derin işlem süreci uygulamasında kullanılırken, kontrol grubundaki öğrencilere hedef sözcüklerin Türkçe karşılıklarını yada İngilizce anlamlarını içeren bir sözcük listesi verilmiştir.

Çalışmanın ön-testi, uygulama-sonrası-testi ve uzun-dönem-testi olarak verilen aynı test hedef sözcüklerin hafızada kalması, tanınması ve hatırlanmasında öğrencilerin gösterdiği gelişimi ölçmüştür. Test üç bölümden oluşturulmuş (A. sözcüklerin anlamları ile eşleştirilmesi, B. cümleler içerisine uygun düşen sözcüklerin yerleştirilmesi, ve C. paragraflardan oluşan bağlam içerisine uygun düşen sözcüklerin yerleştirilmesi) ve otuz

iki soru içermiştir. Test içeriğindeki üç bölüm ile, sözcüklerin tanınması (A Bölümü) ve hatırlanması (B ve C Bölümleri); daha genel ifade ile hafızada kalıp kalmadığının ortaya konulmasına çalışılmıştır.

Kontrol ve deney grupları arasında anlamlı bir fark olup olmadığını belirlemek üzere bir t-testi uygulanmıştır. Gruplar arasında anlamlı bir fark olmadığını ortaya koyan ön-testi iki haftalık bir uygulama süreci takip etmiştir. Uygulamayı takiben verilen uygulama-sonrası-testi, gruplar arasında deney grubu ve derin işlem süreci yöntemi lehinde anlamlı bir fark olduğunu ortaya koymuştur. Üç hafta sonra uygulanan uzun-dönem-testi de gruplar arasında yine deney grubu ve derin işlem süreci yöntemi lehinde anlamlı bir fark olduğunu göstermiştir.

Herbir denek grubunun kendi içinde anlamlı bir gelişim gösterip göstermediğini belirlemek üzere başka bir t-testi daha uygulanmıştır. Bu analizin sonuçları ise hem derin işlem süreci (deney grubu) hem de ezberleme (kontrol grubu) yöntemlerinin sözcüklerin kısa ve uzun dönemde hafızada kalması, tanınması ve hatırlanması konusunda yardımcı olduklarını ortaya koymuştur. Bu nedenle, sözcüklerin kısa ve uzun dönemde hafızada kalması, tanınması ve hatırlanması konusunda ezberlemenin tamamen etkisiz olduğu söylenemez.

Her ne kadar kontrol grubunun sonuçları ezberlemenin de sözcüklerin kısa ve uzun dönemde hafızada kalması, tanınması ve hatırlanması konusunda yardımcı olduğunu ortaya koysa da; deney grubundaki öğrencilerin derin işlem sürecini teşvik eden teknikler sayesinde daha etkili sözcük tanıma, hatırlama ve hafızada tutma başarısı gösterdiği açıktır.

Çalışma içerisinde uygulanan derin işlem süreci teknikleri, sözcüklerin kısa dönem ve uzun dönem hafızada tutulması konusunda öğrencilere yardım etmenin yanısıra, uygulandıkları süre boyunca öğrencilere hedef sözcükleri öğrenirken daha istekli, coşkulu, eğlenen ve katılımcı olmaları konusunda da katkıda bulunmuştur.

Bu çalışma, derin işlem sürecinin ezberlemeye olan üstünlüğünün derin işlem sürecinin öğrenciye sunduğu yeni sözcükleri öğrenirken dahil olunan ileri derecedeki anlama yada kavrama işlem sürecinden kaynaklandığı sonucuna varmıştır.

ABSTRACT

This experimental study mainly aimed at finding an effective way to retain, recognize and recall foreign language vocabulary. In order to fulfil the aim, two vocabulary learning methods were compared: Deep Processing and Rote Learning. "Deep Processing" in the study referred to "a greater degree of semantic or cognitive involvement while learning new words" whereas "Rote Learning" meant "learning new vocabulary through memorization of decontextualised word lists". Four techniques encouraging deep processing on vocabulary were practised in the study: 'What is it?', 'More than Meaning', 'Power Questioning' and 'Sense or Nonsense?'.

Fifty upper-intermediate learners of English as a Foreign Language in Faculty of Sciences at Anadolu University took part in the study. A number of thirty-two words which were selected from the textbooks of the students were determined to be the target words of the study. Of the students assigned into two groups which were equal in number, those who were in the experiment group were exposed to the treatment of deep processing whereas those who were in the control group were provided with a vocabulary list involving either Turkish equivalent or English meaning of the target words.

The same test which was administered as the pre-test, immediate post-test and delayed post-test of the study measured the progress in retention, recognition and recall of the target words. The test included three sections (A. matching words with meanings, B. using appropriate words for the blanks in sentences, and C. using appropriate words for the blanks in the paragraphs of a context - cloze test) and covered 32 questions. By means of these three sections, recognition (Section A) and recall (Sections B and C); in a more general term, retention of words was aimed to be checked.

A t-test was used to find out if there was a significant difference between the control and experiment groups. The pre-test, which did not reveal significant difference between the groups, was followed by the treatment stage which lasted for two weeks. The immediate post-test, which was given after the treatment, demonstrated significant difference between the groups –favouring the experiment group and deep processing method. The delayed post-test, which was given after three weeks, showed a similar

significance between the groups –again favouring the experiment group and deep processing method.

Another t-test was also used to find out if there was a significant progress within each subject group. The results of the analysis suggested that both deep processing (experiment group) and rote learning (control group) methods promote immediate and delayed retention, recognition, and recall. Therefore, it cannot be suggested that rote learning is not effective for immediate and delayed recognition, recall and retention of vocabulary.

Although the results of the control group indicated that rote learning also facilitates immediate and delayed recognition, recall and retention of vocabulary, it is clear that students in the experiment group presented a more effective achievement in the recognition, recall and retention of words with the assistance of techniques which encouraged deep processing.

Besides aiding students in short-term and long-term lexical retention, the deep processing techniques practised in the study also promoted the students to be highly motivated, enthusiastic, amused and active while learning the target vocabulary throughout the application of the techniques.

It is concluded in this study that the superiority of deep processing over rote learning is a result of the greater degree of semantic or cognitive involvement with which it equips the learner while learning new words.

vi

JÜRİ VE ENSTİTÜ ONAYI

Orhan GÖK'ün, "Rote Learning Versus Deep Processing: The Effect on Vocabulary Learning and Retention" başlıklı tezi 19/10/2006 tarihinde, aşağıda belirtilen jüri üyeleri tarafından Anadolu Üniversitesi Lisansüstü Eğitim-Öğretim ve Sınav Yönetmeliğinin ilgili maddeleri uyarınca Yabancı Diller Eğitimi Anabilim Dalı İngilizce Öğretmenliği Programı yüksek lisans tezi olarak değerlendirilerek kabul edilmiştir.

	Adı-Soyadı	İmza
Üye (Tez Danışmanı)	: Yard.Doç.Dr.Rıdvan TUNCEL	.....
Üye	: Prof.Dr.İlknur KEÇİK	.....
Üye	: Prof.Dr.Zülal BALPINAR	.....
Üye	: Doç.Dr.Ümit Deniz TURAN	.....
Üye	: Yard.Doç.Dr.İlknur MAVİŞ	.....

Prof.Dr.İlknur KEÇİK
Anadolu Üniversitesi
Eğitim Bilimleri Enstitüsü Müdürü

ACKNOWLEDGEMENTS

I would like to thank several people who made it possible for me to complete this thesis.

Words are not enough to convey my profound gratitude to my advisor, Assist. Prof. Rıdvan Tunçel, whose continual inspiration, enlightening instructions, and thoughtful guidance rendered the completion of this thesis possible.

My sincere gratitude also goes to my proposal jury members, Prof. Dr. Zülal Balpınar, Prof. Dr. İlknur Keçik, Assoc. Prof. Dr. Hülya Özcan, Assoc. Prof. Dr. Handan K. Yavuz, Assist. Prof. Dr. Aynur Boyer, Assist. Prof. Dr. Rıdvan Tunçel, Assist. Prof. Dr. Belgin Aydın, Assist. Prof. Dr. Mine Dikdere, and Assist. Prof. Dr. Aysel Bahçe, who spent much time reading my work and provided many valuable comments.

My thanks are due to Instructor Ayla Balcı who read my work and gave constructive comments on the improvement of my thesis before defence.

Extra special thanks must go to my thesis defence jury members, Prof. Dr. Zülal Balpınar, Prof. Dr. İlknur Keçik, Assoc. Prof. Dr. Ümit Deniz Turan, Assist. Prof. Dr. Rıdvan Tunçel, and Assist. Prof. Dr. İlknur Maviş, for their invaluable comments and guidance.

I am also very much indebted to my students who were the subjects of the study. Without their participation, this thesis would have been impossible.

My special thanks go to my wife, Yasemin, for her invaluable support, encouragement, love, understanding and patience in the preparation of this thesis.

I also wish to thank to my parents, sisters and brothers for their support, encouragement and understanding.

Finally, I would like to express my deepest gratefulness and true love to my beloved daughter, Dide İlayda, whose great patience has made it possible for me to complete this thesis. With her curiosity, interest and involvement in the books, computer and thesis, this thesis would have been impossible.

ÖZGEÇMİŞ

Orhan GÖK

İngiliz Dili Eğitimi Anabilim Dalı
Yüksek Lisans

Eğitim

Lisans	1996	Anadolu Üniversitesi, Eğitim Fakültesi İngiliz Dili ve Eğitimi Bölümü
Lise	1992	Sami Yangın Anadolu Ticaret Lisesi Bilgi İşlem Bölümü

İş

1998 -	Öğretim Görevlisi. Anadolu Üniversitesi Yabancı Diller Yüksekokulu
1996 -	Öğretim Görevlisi. Anadolu Üniversitesi Mühendislik Mimarlık Fakültesi

Kişisel Bilgiler

Doğum Yeri ve Yılı	: Kayseri, 10 Eylül 1974
Cinsiyet	: Erkek
Yabancı Dil	: İngilizce

TABLE OF CONTENTS

Page

LIST OF TABLES

CHAPTER 1
INTRODUCTION

"The horror of that moment," the King went on, "I shall never, never, never forget!"
"You will, though," the Queen said, "if you don't make a memorandum of it."
(by Lewis Carroll in Loftus and Loftus, 1976 : 73)

Although determination or motivation is a crucial factor in storing things in memory, it is not always possible to do it without a reminder.

This is the same with the words of a foreign language; learners sometimes need the assistance of something to retain words, and that 'something' mostly refers to a way of meaningful learning, a mnemonic, an appropriate classroom procedure or rehearsal.

Learning thousands of foreign language words is a success which is appreciated; retaining them in the memory is the success that is more appreciated, though.

1.1. Background to the Problem

In the first language acquisition, babies start communicating through sounds and meaningless words. Likewise, in the second language acquisition, learners start speaking the language through single words or prefabricated patterns -without being aware of the structural or phonological rules (Stern, 1970; cited in Brown, 1994). Not surprisingly, such a performance suffices to communicate - at least at the very early stage of exposure to a language.

In the succeeding stages, the exposure to rules, and the proficiency in skills and areas follow. As a result of the emphasis put on mastering skills and areas, vocabulary learning has not been viewed as a separate skill or area and; therefore, it has merely

been handled in reading and writing skills. Unfortunately, vocabulary instruction is treated as the step-child of language teaching process and; therefore, is neglected. (Twaddell, 1973; Chastain, 1976; Rivers, 1968; and Michel and Patin, 1972; all cited in Judd, 1978)

Despite the common belief and practice, Judd (1978) claims that it is the control over the lexicon, besides others, which shows how fluent a learner is in a foreign language. Hence, vocabulary instruction should not be seen as a means to an end; but as a goal in itself for effective communication in foreign language.

Numbers of studies, research, articles and books are presented by the upholders of vocabulary instruction. They mostly focus on answering the question of how best words can be taught or learnt and, the same with other skills or areas, some effective learning strategies are proposed, identified and practised (Oxford, 1990; Schmitt, 1997; Nation, 2001).

Although learners may benefit from the view mentioned above on vocabulary teaching, they still experience the problem of lexical shortage; and the problem mostly derives from forgetting, as stated by researchers, instructors and the learners themselves. (Anderson and Ausubel, 1965, cited in Brown, 1994; Loftus and Loftus, 1976; Gairns and Redman, 1986; Mastropieri and Scgruggs, 1991; Sökmen, 1997; Jullian, 2000)

1.2. Problem

Zhihong (2000) gives an idea on the general problem concerning vocabulary learning:

> … vocabulary is taught mainly through reading. Each course book has a list of words with translations. Teachers must prepare extensively to master these words, and students try to memorize these words, unsure about which meanings should be remembered. The texts seem to be the only means of providing new vocabulary. As a result, learners forget words easily. (p. 18)

Schmitt and Schmitt (1995: 136) have very well stated remark on the issue: “When studying language, most forgetting occurs soon after the end of the learning session. After that major loss, the rate of forgetting decreases”. In their research, Schmitt and Schmitt highlight the fact that learners can easily forget newly learned vocabulary if they are not guided or assisted.

Similarly, Mastropieri and Scruggs (1991) claim that the language teachers should help learners develop a firmly established knowledge base and; therefore, the learners should be able to assimilate and apply new information easily. They explain how this knowledge base can be established for vocabulary through mnemonics.

Everyone would no doubt agree that an utterance like “I’ve learnt it!” does not mean much unless it is followed by “and I know it!”. The learners should be able to utter the complete set; “I’ve learnt it and I know it!”.

What is suggested in this current study is that language teachers could aid their students in overcoming the problem of forgetting from which they suffer a lot.

No matter how hardworking or lazy, motivated or unmotivated the students are; how enjoyable or boring the class hours and the textbooks are; how guiding, assisting or not the instructors are; or how difficult or easy the tests are, “forgetting” still remains as a fact in language teaching / learning. The common problem declared by the students and observed by the researcher himself is ‘the problem of not being able to retain the new words in mind’.

The problem, in light of the information introduced up to this point, is clear: the students do not have a firmly established knowledge base for vocabulary, they are not able to assimilate and apply the words they have learnt; and therefore, forget them as soon as they leave the classroom.

1.3. Purpose of the Study

This study attempted to explore possible ways in which the researcher could encourage his students to systematically and effectively record lexis that he had taught them during an ongoing general foreign language teaching course in a classroom setting. Then, it questioned how he could help learners to transfer this record into their

long-term memories so that each item was added to the repertoire of words and phrases that they could understand and, when necessary, use.

In short, this study aimed and proposed a treatment in which subjects were aided in retaining and recalling the words they had learnt by means of four different techniques within the framework of 'Deep Processing' which is introduced in Section 2.10 in detail.

It simply aimed to help learners utter the complete set; "I've learnt it and I know it!".

1.4. Significance of the Study

While summarizing the reasons for the general neglect of vocabulary teaching, Allen (1983) puts a very vivid picture of what happens in language classrooms with regard to vocabulary teaching:

> Some who gave advice to teachers seemed to be saying that word meanings can be learned only through experience, that they cannot be adequately taught in a classroom. As a result, little attention was directed to techniques for vocabulary teaching. (p. 3)

Any language teacher who is not that much interested in benefiting from the vocabulary teaching techniques may happen to examine the innovations and thoughts throughout the world; be aware of the presence of techniques for vocabulary teaching; and at least may consider benefiting.

Similarly, learners who are highly motivated for English language and should not always be spoon-fed may possibly be able to see what they also could do on their own for their own learning during their language education. Furthermore, they may also be able to see what they could do in the following years in order to prepare themselves for the kind of English they will need during their interactions with native speakers of English. (Allen, 1983)

What is more, the study will also contribute to provide empirical data on a specific application of 'Deep Processing' through some classroom techniques which

remains in theory but necessitates practice in language teaching. Thus, it is thought that such a study would open some new understanding of effective vocabulary teaching.

1.5. Research Questions

Based on all the information above, the current study will try to find out answers to the following questions:

Does the application of 'Deep Processing' to vocabulary learning

1. facilitate immediate recognition / recall of vocabulary compared with the traditional way of vocabulary learning?
2. facilitate delayed recognition / recall of vocabulary compared with the traditional way of vocabulary learning?

1.6. Limitations of the Study

This study was limited to the students of the Physics Department of the Faculty of Sciences, Anadolu University who had had a year of English preparatory class and were taking an upper-intermediate level English course in their first year when the study was conducted.

It was limited with 32 words which were selected from three units of the textbook of the course.

It was also limited to vocabulary teaching; therefore, it will not be possible to relate any kind of result to any other skill or area.

Another limitation of the study was that it handled and practised only four techniques for deep processing for two weeks, so the results would reflect the effectiveness of these four techniques rather than all techniques which encourage deep processing.

1.7. Definition of the Terms

The following terms which were used in this current study need to be defined in order to avoid possible confusions:

- Deep Processing: A greater degree of semantic or cognitive involvement while learning new words.
- Traditional Vocabulary Learning: Refers to "Rote Learning" in this study.
- Rote Learning: Learning new vocabulary through memorization of decontextualised word lists.
- Mnemonics: Memory strategies which involve the presentation of information in ways that promote retention, and provide structured strategies for retrieval of that information.
- Power Questioning: Learners try to infer the meaning of a new word and create definitions step by step by focusing on definitive characteristics through asking questions.
- Encoding: The processes whereby information is recorded.
- Retention (Storage): The maintenance of information over time.
- Retrieval: The accessing of the information by recognition or recall.
- Recall: A principal method of retrieval in which case the subject is required to reproduce the target items.
- Recognition: A principal method of retrieval which requires the subject to say whether a given item was presented or not (yes/no recognition) or to choose the previously presented item from a set of two or more alternatives (forced-choice recognition).
- Rehearsal: Repeating or going over the information.

CHAPTER II
LITERATURE REVIEW

2.1. A Brief History of Vocabulary Teaching

The Roman children studying Greek -the common language of religion, trade, and education of the time- were the first learners of second language in history. The first thing they were to master was the alphabet to be able to read in Greek. Following the alphabet, they advanced in the syllables, words and discourse (Bowen, Madsen, and Hilferty, 1985; cited in Schmitt, 2000).

Since then, as Schmitt (2000) summarises, a number of different methodologies have been on the stage, including the Grammar-Translation, the Direct Method, the Reading Method, the Audio-lingual Method and Communicative Language Teaching. Among all, it was only the Reading Method in which vocabulary was accepted worth studying through principles of its own.

Zimmerman (1997) reviews how vocabulary teaching was handled in the methodologies as follows:

The Grammar Translation Method: Students were provided with bilingual word lists which included a wide literary vocabulary by means of which any grammatical rule could be illustrated. Whenever learners faced difficulties with vocabulary, the explanations for the words largely focused on etymology.

The Reform Movement: The reform movement mainly focused on spoken language and phonetic training. The aim was to train learners in pronouncing a passage accurately. The sentence –rather than the word- was claimed to be the unit of a language. Teaching of basic and useful words was preferred and learners had a chance to deal with vocabulary in depth in some stages of the curriculum.

The Direct Method: Charts, pictures, objects and demonstration –rather than translation- were favoured in teaching vocabulary.

The Reading Method: Acquisition of vocabulary was claimed to be the first thing to be dealt in learning a language. Vocabulary skills had to be improved in order to facilitate reading. Learners were trained to speak the language through a great number of fully mastered, highly frequent, and useful words.

The Audio-lingual Method: Simple and familiar words were taught through drills. Extensive vocabulary teaching was avoided so that learners could focus on target structures instead.

Communicative Language Teaching: Communicative proficiency was preferred rather than structural accuracy. Since expressing oneself in a more communicative way was focused, words were paid more attention. Accurate grammar was claimed to have no effect with inaccurate vocabulary. Nonetheless, vocabulary teaching was not the focus of attention.

The Natural Approach: Comprehensible input was thought to have a crucial role in the acquisition of a language; recognising the meaning was important; therefore, acquisition of a language would not be possible in the lack of comprehension of vocabulary. Activities were not designed as vocabulary builders so as not to mislead learners to vocabulary learning, but rather were designed to encourage communication.

Zimmerman (1997) concludes as in the following:

> Theoretical priorities have changed throughout language teaching history, as reflected in the relative importance placed on pronunciation, grammar, reading, or conversing. Likewise, there have been contrasts in attitudes toward the use of formal versus colloquial language, toward memorization versus internalization of language forms, toward the gradation or sequencing of skills versus subjective assessments of the usefulness of structures or words, and toward language description. Until recently, however, there has been little emphasis placed on the acquisition of vocabulary; although the lexicon is arguably central to language acquisition and use, vocabulary instruction has not been a priority in second language acquisition research or methodology. (p. 17)

Zimmerman's conclusion reveals a good summary of how vocabulary teaching has been relegated.

Coady (1997) cites a typical attitude held by teachers and scholars that teaching vocabulary is a low-level activity not worthy of their complete attention. Although students feel words are very important, teachers tend to believe the challenge is grammar.

Nowadays, the place of vocabulary instruction is approached as follows (Nation, 2001):

First of all, if learners are to learn new language items through listening and reading -what is called meaning-focused input, they must be familiar with a great number of words used. In case that they experience the problem of lexical shortage, they will not be able to learn.

Secondly, according to the language-focused learning / form-focused instruction, learners will also benefit from direct and deliberate teaching of the language. Correspondingly, if certain features of words are taught directly, progress in learning vocabulary will be available.

Next approach stands within the application of meaning-focused output. Learners, who are to communicate in the language they are learning, need words for speaking and writing. Thus, while speaking or writing, they meet the chance to enhance previously learnt lexical items.

Fluency development finds its place as the final approach. Even if a small amount of fluency practice is carried out, the learners will be able to become more fluent in operating the vocabulary they already know. Since becoming totally fluent is the final expectation in learning a language, enough practice is crucial for previously learnt words.

2.2. Vocabulary Learning Strategies

Since the 1970s, research into second and foreign language teaching has moved away from the investigation for a perfect teaching method to how teachers and learners actually achieve their goals. The role of the learner as an active participant in language

learning experience has led to considerable research into the area of language learning strategies. (Schmitt, 1997)

"Foreign language or second language learning strategies are specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, or more transferable to new situations". (Oxford, 1990:8)

Studying on vocabulary learning strategies, Schmitt (1997:207-208) introduces a taxonomy of vocabulary learning strategies as follows:

A. Discovery Strategies

1. Determination Strategies
   - Analyse part of speech
   - Analyse affixes and roots
   - Check for L1 cognate
   - Analyse any available pictures or gestures
   - Guess from textual context
   - Bilingual dictionary
   - Monolingual dictionary
   - Word lists
   - Flash cards

2. Social Strategies
   - Ask teacher for an L1 translation
   - Ask teacher for paraphrase or synonym of new word
   - Ask teacher for a sentence including the new word
   - Ask classmates for meaning
   - Discover new meaning through group work activity

B. Consolidation Strategies

1. Social Strategies
   - Study and practise meaning in a group

- Teacher checks students' flash cards or word lists for accuracy
- Interact with native-speakers

2. Memory Strategies
   - Study word with a pictorial representation of its meaning
   - Image word's meaning
   - Connect word to a personal experience
   - Associate the word with its coordinates
   - Connect the word to its synonyms and antonyms
   - Use semantic maps
   - Use 'scales' for gradable adjectives
   - Peg Method
   - Loci Method
   - Group words together to study them
   - Group words together spatially on a page
   - Use new words in sentences
   - Group words together within a story-line
   - Study the spelling of a word
   - Study the sound of a word
   - Say new word aloud when studying
   - Image word form
   - Underline initial letter of the word
   - Configuration
   - Use Keyword Method
   - Affixes and roots (remembering)
   - Parts of speech (remembering)
   - Paraphrase the word's meaning
   - Use cognates in study
   - Learn new words of an idiom together
   - Use physical action when learning a word
   - Use semantic feature grids

3. Cognitive Strategies
   - Verbal repetition
   - Written repetition
   - Word lists
   - Flash cards
   - Take notes in class
   - Use the vocabulary section in the textbook
   - Listen to tape of word lists
   - Put English labels on physical objects
   - Keep a vocabulary notebook

4. Metacognitive Strategies
   - Use English-language media (songs, movies, newscasts, etc.)
   - Testing oneself with word tests
   - Use spaced word practice
   - Skip or pass new word
   - Continue to study word over time

"When the learner consciously chooses strategies that fit his or her learning style and the L2 task at hand, these strategies become a useful toolkit for active, conscious, and purposeful self-regulation of learning". (Oxford, 2003:2)

2.3. Memory Strategies / Mnemonics

Chamot (1987:71) defines "learning strategies" as "techniques, approaches, or deliberate actions that students take in order to facilitate the learning and recall of both linguistic and content area information".

They are the memory strategies (also known as mnemonics) which serve for the 'recall' part of the above definition.

Referring to Mastropieri and Scruggs (1991), Bolich and McLaughlin (2001) explain that "mnemonics involve the presentation of information in ways that promote

retention, and provide structured strategies for retrieval of that information". They list some of the mnemonic techniques as:

> … pegwords (words associated with numbers, used to remember lists of items); phonetic mnemonics (associating sounds with numbers to remember a list of unassociated numbers); keywords (associating a similar-sounding word with a targeted word); acronyms (using the first letter of each word in a list to construct a word); acrostics (creating a sentence where the first letter of each word is the targeted information); reconstructive elaborations (mimetic, symbolic, or acoustic structures linking unfamiliar material with familiar terms, words, or pictures) …. (p. 41)

"Most memory strategies … involve relating the word to be retained with some previously learned knowledge, using some form of imagery, or grouping". (Schmitt, 1997:211)

Thompson (1987:43) has a similar explanation of mnemonics:

> …mnemonics work by utilizing some well-known principles of psychology: a retrieval plan is developed during encoding, and mental imagery, both visual and verbal, is used. They help individuals to learn faster and recall better because they aid integration of new material into existing cognitive units and because they provide retrieval cues. (cited in Schmitt, 1997:211)

Schmitt (1997:212), in his discussion of the memory strategies, concludes that the "integration of new material into existing cognitive units" in Thompson's explanation of mnemonics "also involves the kind of elaborative mental processing" which is suggested as a means of long-term retention in the Depth of Processing Hypothesis.

There are also views on the implications of mnemonics for teaching and learning vocabulary. Pillai (2004) while discussing the benefits of mnemonics to students states that even weak students can produce effective work as a result of the mnemonics.

While concluding his study on theoretical considerations and pedagogical implications of mnemonic methods in foreign language vocabulary learning, Hulstijn (1997:220) suggests that "although the applications of mnemonic techniques are limited, their effect has been sufficiently proven".

2.4. Memory

Raaijmakers (1993) reviews how the terms “short-term memory” and “long-term memory” were proposed:

> … Atkinson and Shiffrin (1965, 1968) introduced the so-called "two-store model" of memory. It proposed a distinction between a temporary Short-Term Store (STS) and a more permanent Long-Term Store (LTS). A basic assumption of the model was that storage of information in LTS is determined by the processing of information in STS. (p. 1)

2.4.1. Short Term Memory

The short-term memory (also known as temporary or working memory) can store limited information for a limited period of time (for seconds or a couple of minutes). It is suggested in the literature that the short-term memory can process only 7 (plus or minus 2) single items of information at a time. Therefore, the number of information should not exceed 7 (plus 2) in order to have an effective retention in the short-term memory. (Miller, 1956; Loftus and Loftus, 1976; Gairns and Redman, 1986; Lucas, 2001a; Keeley, 1997; Hauptmann, 2004; Baddeley, 2004)

In terms of vocabulary teaching, this suggests that the number of words the teacher aims to teach in his classroom at a time should not be more than 7 (plus 2). (Moras, 2001; Hauptmann, 2004)

2.4.2. Long Term Memory

All information that is known and can be recalled is included in the long-term memory. Since it becomes a part of the person in many ways, it can be accessed for a long period of time. (Keeley, 1997)

“Information in long-term memory is permanent, and is held in a uniform format. Control processes (rehearsal, retrieval) within short-term memory govern what

transfers in and out of long-term memory. Long-term memory has unlimited capacity." (Lucas, 2001a)

Any kind of information needs to be transferred into long-term memory in order to accomplish learning or retention. On the issue of this transfer, Hauptmann (2004) refers to Mayer (1998) and reviews that:

> It has therefore been of interest to the cognitivists how this 'encoding' process could be achieved, how long-term memory operates and how information can be retrieved from this store, reversing the path and transferring information from long-term memory to short-term memory. To this end, learners need appropriate strategies to achieve success. (p. 39)

Concerning vocabulary learning and long-term memory, Schmitt (2000) claims that:

> The object of vocabulary learning is to transfer the lexical information from the short-term memory, where it resides during the process of manipulating language, to the more permanent long-term memory. The main way of doing this is by finding some pre-existing information in the long-term memory to 'attach' the new information to. In the case of vocabulary, it means finding some element already in the mental lexicon to relate the new lexical information to. … Because the 'old' words are already fixed in the mind, relating the new words to them provides a 'hook' to remember them by so they will not be forgotten. New words that do not have this connection are much more prone to forgetting. (pp. 131-132)

Schmitt (2000) explains what is required in the achievement of transference from short-term memory to long-term memory with regard to vocabulary teaching.

Baddeley (2004) reviews the distinction within the long-term memory and presents that there are two kinds of memories within the long-term memory; explicit (or declarative) memory and implicit (or non-declarative) memory.

Tulving (1972: cited in Baddeley, 2004:5-6), carrying on the distinction issue, proposes that "… explicit memory itself can be divided into two separate systems, episodic and semantic memory, respectively. ... Episodic memory can be contrasted

with “semantic memory”, our generic knowledge of the world; knowing the meaning of the word “salt”, for example, or its French equivalent, or its taste.”

Therefore, besides the distinction within memory as short-term and long-term, long-term memory is also studied to have distinctions within: explicit and implicit memories. Furthermore, explicit memory is studied to have distinctions within: episodic and semantic memories. It becomes clear in Tulving’s (1972) explanation that knowledge of a foreign language is a part of the semantic memory.

2.5. Stages of Memory

2.5.1. Encoding, Storage and Retrieval

Baddeley (2004:7) mentions about three stages of memory and defines them as: “… encoding, the processes whereby information is registered; storage, the maintenance of information over time; and retrieval, which refers to the accessing of the information by recognition or recall ...”

2.5.2. Recall and Recognition in Retrieval

Retrieval stage is the one which presents what we have stored in our memory. Unlike other stages, it has methods of its own explained as in the following:

> The two principal methods of memory retrieval involve recall, in which case the subject is required to reproduce the stimulus items, or recognition. This requires the subject to say whether a given item was presented or not (yes/no recognition) or to choose the previously presented item from a set of two or more alternatives (forced-choice recognition). (Baddeley, 2004:7)

Baddeley (2004) carries on with the advantages or disadvantages of yes/no recognition and forced-choice recognition:

> Yes/no recognition performance will be influenced by the degree of caution the subject applies. By saying "yes" to everything he/she can, of course, correctly categorize all the previously presented targets while not necessarily indicating any memory. Such a subject would of course be discounted, but more subtle differences in the level of caution applied in deciding on whether an item was presented before ("old"), or has just been presented ("new") may also markedly influence performance. With forced-choice procedures, all subjects are required always to choose one item from each set, with the result that degree of caution does not become relevant. (p. 7)

Federmeier (2004) informs about what recognition and recall include on exams: "recognition … includes … matching, multiple choice, True/False on exams …; recall … includes … fill-in-the-blank on exams".

When two methods of the retrieval stage are compared, it also becomes obvious that "recognition is assumed to place a less heavy load on the retrieval processes than recall, where it is necessary not only to discriminate "new" and "old" items but also to produce them." (Baddeley, 2004:7)

While recalling information from the memory, the serial position of the information during the presentation stage of it also plays an important role as introduced below:

> When recall is immediate, the probability of a word being recalled correctly is typically highly dependent on its serial position during presentation, with the first one or two words enjoying a modest advantage (the primacy effect), the middle items showing a relatively flat function, and the final words showing the best recall (the recency effect). (Baddeley, 2004:8)

2.6. Memorising and Rote Learning

Craik and Lockhart (1972; cited in Li, 2004) regard rote learning simply as a meaningless repetition of information and describe rote learning as "rote rehearsal".

Johansson, Edström, Wiklund and Engström (2003) define rote learning as "learning through memorisation without understanding".

Gairns and Redman (1986) inform about rote learning and explain that:

> … rote learning … involves repetition of target language items either silently or aloud and may involve writing down the items (perhaps more than once). These items commonly appear in list form; typical examples being items and their translation equivalent (e.g. door = *die Tür*), items and their definitions (e.g. nap = short sleep), paired items (e.g. hot-cold, tall-short), and irregular verbs. (p. 93)

With regard to long-term memory and level of processing, Gairns and Redman state that rote learning:

> … may also be a very legitimate means of transferring items into long term memory where there is a direct mother-tongue equivalent and very little semantic coding is involved in the learning process. … However, … we indicated that a far deeper level of processing is required to commit items to long term memory ….(1986:93)

Gu (2003) mentions about "memorising word lists" as an example of rote learning and define word lists as:

> Word lists here refer to decontextualised lists of words, including lists compiled by learners from various sources and dictionary-type lists of words in alphabetical order, and including simple lists of L1-L2 meaning equivalents and more sophisticated lists containing, for example, L1 equivalents, L2 synonyms, usage information, and examples. (p. 77)

2.7. Forgetting

The study of memory, recall, recognition, or retention is also the study of forgetting. Despite the presence of memory strategies, learners still suffer from forgetting.

Researchers (Anderson and Ausubel, 1965, cited in Brown, 1994; Loftus and Loftus, 1976; Gairns and Redman, 1986; Mastropieri and Scgruggs, 1991; Schmitt and

Schmitt, 1995; Sökmen, 1997; Jullian, 2000) state the reasons of forgetting (some are adapted for vocabulary learning) as follows:

- Some learners (especially the advanced level learners) think that they do not need all the words they have learnt; therefore, they prefer and overuse the ones which are the simplest and most common,
- The little frequency of a word in the language,
- The lack of rehearsing,
- The small capacity of short-term memory (it holds about seven words, plus or minus two, in case that the word is not sent to the long-term memory),
- The interference of previously learned words,
- Misplacing the word in the memory,
- Not having the right retrieval cue,
- The lack of meaningful learning,
- The inefficiency of implicit vocabulary learning,
- The underestimation of classroom procedures which help retention.

How Kelly (1997) informs about the lack of rehearsing as a reason of forgetting is really interesting. She uses the term "fading" and explains that:

> … the trace or mark a memory etches into your brain is like a path you make in the woods when you continually walk along the same route. If you don't take that same path, it eventually becomes overgrown until it disappears. In the same way, facts that you learn are forgotten when you don't review them. (p. 1)

2.8. Remembering

Kelly (1997:3) lists the keys to remembering and claims that each key will help the information to be entered into the long-term memory:

- "Choose to remember": When people really want to learn and know, they become interested in the topic, they pay attention to the information; therefore, they learn and remember more effectively.
- "Visualize or picture in your mind what you wish to remember": When a mental picture is created about a concept and the picture is carefully examined for a few seconds, the concept will probably be recalled.
- "Relate the ideas and information you wish to remember to each other and to ideas and information you already know": When information is related to each other, a chain of memories is created. When the chain is named, it becomes a file which makes the information easy to be located and remembered. This can be achieved through mnemonic devices.
- "Repeat what you wish to learn until you overlearn it": When the information is gone over and over, especially in one's own words, the time spent on the process will make recalling easier.

2.9. Retention of Vocabulary

There has been a great deal of research into how something is remembered and much of this helps language teachers decide how they should encourage their students to retain vocabulary.

The following is a summary of some principles which help the retention of vocabulary (Loftus and Loftus, 1976; Gairns and Redman, 1986; Schmitt and Schmitt, 1995; Laufer, 1997; Schmitt, 1997; Nation, 2001; Thorne, 2003; Nation, 2005):

- The brain stores vocabulary in semantic groups.
- Some words are more difficult to learn than others.
- Organised material is easier to learn than seemingly random lists.
- New vocabulary should be integrated into language already known by the learners.
- The very act of recalling a word makes it easier to recall again at a later date. This is known as the 'retrieval practice effect'.

- Words which rhyme can be recalled fairly easily. Providing the first few letters, giving opposites, giving translations and giving near synonyms are other strong aids to facilitate recalling.
- The learner's mother tongue may also influence the ease of learning new vocabulary. Those speaking an L1 which has many similarities to English often learn by translating to a seemingly obvious equivalent, whereas if the L1 is completely different, learners are more likely to focus on the actual concept.
- Learners have individual learning styles and these learning styles determine the most appropriate vocabulary learning method for each of them. Some learners remember by visual means, others auditory or kinaesthetic. For most learners, visuals seem to enhance both retention and recall, but other stimuli, such as touch, may also be employed effectively by some students.
- Learners need to meet a word a number of times before they are comfortable and confident enough to use it themselves, or to retain it. The number ranges from five to sixteen. Whichever the number is, it is obvious that 'recycling vocabulary' is important and beneficial. The timing of this recycling also appears to have an effect; a great amount of the vocabulary which learners forget is lost within the twenty-four hours of initial learning. The ideal therefore is to employ a system of "expanding rehearsal". This is a programme for reviewing where the intervals become longer between each review. Although a strictly-timed system would probably be too burdensome and time-consuming in the real world, the value of reviewing the next day seems manageable and highly desirable.
- Word pairs (i.e. a target word with its L1 translation) facilitate rapid learning but the retention is likely to be short-lived because of the shallow level of word knowledge.
- In order to be able to use a word appropriately and accurately, learners need to know much more about it than just its meaning. Ideally they should learn its spelling, pronunciation, grammatical behaviour, associations, collocations, frequency and register. As it is not always possible for every word to be presented as such a complete package, it is important that learners are made aware of particular irregularities or potential difficulties attached to vocabulary

items and that they can add to their records as their knowledge of the item expands.

- The deeper the mental processing that learners engage in when learning a new vocabulary item, the more likely learners are to remember it. By deep processing it is meant that the learners work out the meaning of the item by referring to their existing knowledge or they work on personalising the meaning. If there is elaboration on the meaning, for example encountering the item in different contexts, subsequent retention is enhanced. Shallower processing is more sensory than semantic, remembering by seeing or hearing the item only, not fully engaging with the meaning. This means the learners meet the item in only one context, which makes the word much more forgettable in the long term.

2.10. Depth of Processing Hypothesis

Saffron (2003a) defines "cognition" as "knowing" and states that in the cognitive approach a human is likened to a computer. Cognitive approach defines the brain in terms of information processes and says that it is possible to describe internal mental processes. Furthermore, it examines how sensory input is transferred and stored in the brain, and the brain's recall and usage of that information (Sensory Input – Mental Process – Recall).

Waring (1995) informs about four information processing theories in the cognitive approach: 1) Serial V's Parallel Processing and Chunking, 2) Analysis, Control and Automaticity, 3) Deep Processing, and 4) Interlanguage Theory.

Craik and Tulving (1975) introduce in what way the focus of theorists changed on the issue of information processing in the 1960s and 1970s:

> While information-processing models of human memory have been concerned largely with structural aspects of the system, there is a growing tendency for theorists to focus, rather, on the processes involved in learning and remembering. Thus the theorist's task, until recently, has been to provide an adequate description of the characteristics and interrelations of the successive stages through which information flows. An alternative approach

> is to study more directly those processes involved in remembering — processes such as attention, encoding, rehearsal, and retrieval — and to formulate a description of the memory system in terms of these constituent operations. This alternative viewpoint has been advocated by Cermak (1972), Craik and Lockhart (1972), Hyde and Jenkins (I960, 1973). Kolers (1973a), Neisser (1967), and Paivio (1971), among others, and it represents a sufficiently different set of fundamental assumptions to justify its description as a new paradigm, or at least a miniparadigm, in memory research. How should we conceptualize learning and retrieval operations in these terms? What changes in the system underlie remembering? Is the "memory trace" best regarded as some copy of the item in a memory store (Waugh & Norman, 1965), as a bundle of features (Bower, 1967), as the record resulting from the perceptual and cognitive analyses carried out on the stimulus (Craik & Lockhart, 1972), or do we remember in terms of the encoding operations themselves (Neisser, 1967; Kolers, 1973a)? (p. 269)

Hauptmann (2004) briefly summarizes Craik and Lockhart's memory research they conducted in 1972 on the issue of "levels of processing" which represents an example of the abovementioned change in the focus of the theorists:

> Craik & Lockhart (1972) introduced the 'levels of processing' model which built on Broadbent's (1958) work on computer processing and the concept of memory as information flow between a series of sub-systems. They suggested that it is the 'depth' at which information is processed which determines its long-term retention, not the transfer from one type of memory store to another, but "a continuum from the transient products of sensory modalities to the highly durable products of semantic-associative operations" (Craik & Lockhart, 1972). This model caused a minor revolution and succeeded in explaining away some of the inconsistencies of the 'structural theories'. (pp. 41-42)

Hauptmann (2004) carries on with defining the term "depth" and explaining the levels of information processing in Craik and Lockhart's research:

> The metaphor 'depth' of processing means the way and intensity with which information is organised, analysed and manipulated. Three qualitatively different levels of processing are assumed. The lowest level is that of sensory

> processing at reception. The intermediate level consists of phonological (acoustic structure) processing, which is superior to the first level but inferior to the highest level, semantic processing. This means, basically, elaboration, of which mnemonic elaboration is one form. (p. 42)

Craik and Lockhart define the term “depth” and introduce the levels as in the following:

> Preliminary stages are concerned with the analysis of such physical or sensory features as lines, angles, brightness, pitch, and loudness, while later stages are more concerned with matching the input against stored abstractions from past learning; that is, later stages are concerned with pattern recognition and the extraction of meaning. This conception of a series or hierarchy of processing stages is often referred to as "depth of processing" where greater "depth" implies a greater degree of semantic or cognitive analysis. After the stimulus has been recognized, it may undergo further processing by enrichment or elaboration. … we prefer to think of memory tied to levels of perceptual processing. Although these levels may be grouped into stages (sensory analyses, pattern recognition, and stimulus elaboration, for example) processing levels may be more usefully envisaged as a continuum of analysis. (1972)

Saffron (2003b) makes a similar review of the three levels of processing which was described by Craik and Lockhart:

Level 1: Structured, or Shallow Level
Visual – What the word looks like
e.g. Is the word uppercase?

Level 2: Phonetic or Phonemic Level
What the word sounds like
e.g. Does the word rhyme with …..…?

Level 3: Semantic Level
What the word looks means
e.g. Does the word mean the same as ……. ?

Apart from the degree of semanticity in processing, Craik and Lockhart (1972) also highlight the importance of elaboration, namely the richness with which the information is encoded, as a factor that applies a great influence on retention.

Elaboration, as Thorne (2003) simplifies, is an encoding procedure and in order to get any information into long-term memory, it must be elaborated. 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 materials to be learned, and other things we already know. The more connections the material has, the more likely it is to be remembered.

Lucas (2001b) states that in the Atkinson and Shiffrin model of memory "rehearsal (repetition of analysis) *always* enhances long-term memory" whereas in Craik and Lockhart model of memory "*only* elaboration rehearsal (a deeper, more semantic analysis) improves long-term memory" .

Craik and Lockhart (1972) suggest that the memory trace persistence is a function of depth of analysis. Since the retention is dependent on the level at which information is processed, for a shallow or sensory level of processing, memory traces are shallow and are not processed sufficiently strong to be retained in the long-term memory. At a deeper semantic level, memory traces become more permanent.

For the retention issue, they also propose that "retention is a function of depth, and various factors, such as the amount of attention devoted to a stimulus, its compatibility with the analyzing structures, and the processing time available, will determine the depth to which it is processed".

In Citation Classics, Craik (1979) reviews their research "Levels of Processing: A Framework for Memory Research" and comments on it in his own words as in the following:

> In the 1960s, human memory was thought about principally in terms of stores that were characterized as holding different kinds of information for various lengths of time. The generally accepted model was one in which the sense organs fed information into associated sensory memory stores. The information was then transferred to a limited capacity short-term memory and finally into a permanent long-term memory. Researchers were concerned with such problems as the capacity of the various stores, their coding characteristics, and the mechanism of information transfer between the stores.

> Robert Lockhart and I had both been involved with these types of questions in Sydney and London respectively, but since coming to Toronto we had both developed serious reservations about the continuing usefulness of the stores metaphor. Presumably, different experimental techniques should yield the same values of capacity, decay rate, and so on, but they did not; perhaps the data could be reinterpreted within a rather different conceptual framework. Lockhart and I found that we held very similar views on one such alternative framework in which discrete stores were replaced by a continuum of processing varying from shallow sensory analyses to deeper, semantic analyses. We postulated that memory was the record of the operations carried out during perception and comprehension, and that deeper levels of processing were associated with longer-lasting memory traces. (p. 92)

In Craik and Lockhart's (1972) research, there is not a distinction within the memory; as the short-term or long-term memories. Hayes (2000; cited in Wallace, Ross, Davies, 2003) also shares the view that the depth of processing hypothesis eliminates the distinction between the short-term and long-term memory since the hypothesis proposes a single memory store. Rather than short-term and long-term memory distinction, the hypothesis proposes that the things which are more deeply processed are better remembered than those which are processed in a shallower way. Therefore, the hypothesis avoids any problem that arises as a result of the comparison between the short-term and long-term memories.

Craik, Routh and Broadbent (1983) similarly find the idea that information is transferred from short-term to long-term memory unnecessary and misleading. They explain that memory is largely a product of depth and elaboration of the primary encoding.

Beck, McKeown and Omanson (1987) comment on deep processing on vocabulary as follows:

> Although the instruction would need to include associating words with definitions, it would need to go well beyond that. Instructional conditions should be arranged to provide opportunities for a maximum amount of processing of the words. Students should be required to manipulate words in varied and rich ways, for example by describing how they relate to other words and to their own familiar experiences. To promote and reinforce deep

> processing, activities should include much discussion of the words and require students to create justifications for the relationships and associations that they discover. (1987:149; cited in O'Dell, 1997:277)

Hunt and Beglar (2005) studying on a framework for developing EFL reading vocabulary suggest that the post-reading activities should "encourage the deep, meaningful processing of the" previously met lexical items.

Highlighting retention, Schmitt and Schmitt (1995) propose that the students will have the opportunity to remember words easily in case that they apply deeper processing while they are learning a new word. Similarly, Ellis (1997) states that learners need to make some cognitive effort so as to really learn a word. Sökmen (1997) claims that the deeper the degree of mental processing required by the activity, the more probable that the words will be remembered.

In not a completely contrasting direction, Laufer and Hulstijn (2001), seeing the difficulty in operating depth of processing, proposed the Involvement-Load Hypothesis, which specifies a number of factors that lead to deep processing. The Involvement-Load Hypothesis predicts that the effectiveness of incidental vocabulary tasks depends on the factors "need" (externally or self-imposed motivation to complete a task), "search" (to produce or understand a word), and "evaluation" (to assess whether a word fits in a specific context). These are the elements which form the "involvement load" of a task. It is suggested that a task which elicits a higher involvement load is more effective than a task which elicits a lower involvement load.

2.11. Procedures Encouraging Deep Processing in Vocabulary Learning

The theoretical descriptions are no more vague as a result of the practical procedures some of which are presented below (Mastropieri and Scruggs, 1991; Nation, 1994; Schmitt and Schmitt, 1995; Nation and Newton, 1997; Sökmen, 1997; Schmitt, 2000; Nation, 2001):

- Visualizing the word
- Associating the word to past experiences
- Relating the word to current events
- Restating the word's definition in learner's own words
- Acting the word out
- Explaining the learner's emotional response to the word
- Semantic mapping
- Classifying words (putting newly met words and known words into groups and grade or scale them in some way)
- Crossing out the odd word
- The keyword method
- Working the word into a whole web of meanings (discovering, creating, and reviewing many comprehensible phrases using the word to be remembered)
- Using flash cards (if an example on each card is put and the definition in learner's own words is written)
- Creating analogies to make the word understandable to the learner
- Elaborative rehearsal of the word learned to see if learners truly grasp it
- Examining a range of contexts and uses of the word
- Examining the etymology of the word
- Thinking aloud about the word to see if the learner can discover connections, similarities and differences with other words
- Studying on polysemous words in different contexts (the 'Underlying Meaning' technique)
- Describing a target word to the learner until the meaning is clear (e.g. the 'What is it? technique)
- Knowing a word (e.g. the 'More than Meaning' technique)
- Actively questioning (e.g. the 'Power Questioning' technique)
- Paired and group problem solving (e.g. the 'Sense or Nonsense' technique)

2.12. Procedures Used in the Study

Among the above-mentioned procedures, four techniques - 'What is it?', 'More than Meaning', 'Power Questioning', and 'Sense or Nonsense' - were selected and studied in an attempt to aid the subjects of the study in systematically and effectively recording of vocabulary and transferring this record into their long-term memories.

In the selection of the procedures, it was aimed to handle fairly unfamiliar techniques, which still receive little attention, rather than often preferred and practised ones (e.g. semantic mapping, classifying words, and the keyword method) in order to explore and provide data for the field.

2.13. Review of Empirical Studies on Depth of Processing Hypothesis

In 1.4. Significance of the Study section, it was stated that the field has a great deal of theory rather than empirical studies. This is also supported by Segler (2001 : 24) and Segler, Pain and Sorace (2002 : 24) who state that "There have not been many attempts to verify the DOPH (depth of processing hypothesis) via empirical evidence for L2 vocabulary acquisition". This is true when the Keyword Method, which is probably one of the most researched techniques for vocabulary learning both in the laboratory and in the classroom, is excluded. (Nation, 2001)

Most research has compared the Keyword Method, which works by combining elements of phonological form and meaning in a mental image, with other learning methods such as learning in context, images without interaction and strategies that were left to the learners to choose and use. The most popular control group is that which uses rote learning. (Schmitt, 1997; O'Dell, 1997)

In a study by Atkinson (1975; cited in Ellis, 1997 and Mastropieri and Scruggs, 1991) the subjects had to learn 120 Russian words. The control group, which used their own learning strategies, received the Russian word and its English equivalent on a computer screen; the keyword group was additionally presented with a keyword. In the testing phase the subjects were presented with the Russian word and had to produce the English equivalent. The keyword group scored significantly better.

Hell and Mahn (1997) examined the effectiveness of the keyword method opposed to rote rehearsal in two studies. In the first study, 36 experienced Spanish learning Dutch students participated. In the second study, 40 Americans participated; all were inexperienced foreign language learners who were exposed to Dutch words. In both studies, Hell and Mahn manipulated the concreteness of the new foreign words and the quality of the keyword as a retrieval cue. Half of the concrete and abstract words were linked to a meaningfully related keyword, the rest to a semantically unrelated keyword. They tested immediate learning soon after the learning phase, and after a one-week and a two-week delay. In experienced foreign language learners, rote learners' performance was better than that of keyword learners. In inexperienced learners, rote learners and keyword learners recalled the same proportion of words, though keyword learners had longer retrieval times. Keyword imagery did not hinder the learning of abstract word meanings. They finally concluded that keywords meaningfully related to the foreign word result in more effective retrieval cues than semantically unrelated keywords.

Külekçi (2000) aimed to investigate whether experimenter-provided keyword method is more effective than rote rehearsal in terms of better vocabulary recall and comprehension with a number of 40 participants. He handled 30 words and the results revealed that the experimenter-provided keyword method leads to better recall and comprehension of vocabulary when compared with rote rehearsal.

Brown and Perry (1991) compared three learning strategies; keyword only, semantic (meaning through context), keyword-semantic (keyword plus context). A total of 60 Arabic-speaking subjects were divided into three experimental groups and received a day of instruction on how to use their method, as well as a second day of instruction and practice test. On each of the following four days the subjects were given 5 minutes to learn 10 new words, followed by a recall test. What they found was that “the delayed results for both the recognition and cued-recall tests suggested that the combined keyword-semantic strategy increased retention above the other strategies”. (1991 : 655)

Sagarra and Alba (2006) studied the efficiency of three methods (rote memorization, semantic mapping, and the keyword method) of learning vocabulary among 778 beginner level second language learners. Rote memorization involved

memorizing the first language translation of a new second language word by rehearsal. Semantic mapping displayed first language words conceptually related to the second language word in a diagram. The keyword method consisted of associating the new second language word with a first language keyword that was acoustically or orthographically similar, and then connecting the first language keyword with the first language translation of the second language word. The results showed that vocabulary learning techniques requiring deeper processing through form and meaning associations (i.e., the keyword method) gave in the best retention. In addition, rote memorization of first language – second language equivalents was more effective than creating multiple meaning associations (i.e., semantic mapping). Sagarra and Alba suggested that using the keyword method with phonological keywords and direct first language keyword-translation links in the classroom leads to better second language vocabulary learning at early stages of acquisition.

Rodriguez and Sadowki (2000) examined the effectiveness of rote rehearsal, context, keyword, and context/keyword methods on immediate and long-term retention of words. Eight EFL classes were randomly assigned to one of the methods. Cued recall was tested immediately or one week after the treatments. Results of the study demonstrated that the context/keyword method was significantly more beneficial for long-term retention when compared with other three methods.

The study conducted by Wang, Thomas, Inzana and Primicerio (1993) was planned to measure long-term retention following either keyword learning or rote rehearsal under conditions of intentional learning. Subjects were given an immediate and a delayed test after the treatment procedures. The learning material was 24 Tagalog language nouns. All subjects had homogeneously high levels of retention on the immediate test of cued recall. However, on the delayed test of cued recall (2 days later), keyword learners had forgotten almost twice the number of items as had subjects who had rehearsed the same material by rote. Long-term forgetting was also greater for the keyword condition than for rote rehearsal when subjects were assessed by a test of associative matching.

Gruneberg (1997) refers to a number of studies (Thomas and Wang, 1996; Wang and Thomas, 1992; Wang, Thomas and Ouellette, 1992) and reviews that the keyword method fails to reinforce the long-term retention of foreign language vocabulary in

condition that immediate gains of the learnt words of the learners are lost. Contrasting to the studies he refers, he comments that the keyword method is superior to any rote learning with regard to long-term retention whether or not the immediate gains are lost. Thomas and Wang (1996:330) had claimed that "immediate gains evidenced by learners who use the standard keyword technique may dissipate rapidly".

Coomber (1986) compared three rehearsal methods in his study in order to identify in which method students could remember synthetic words more easily. The rehearsal methods he exposed to the participants were rehearsing with a) definitions, b) with examples, and c) with sentence composing. He concluded that students who used sentence composing performed better on a post-test than those who had rehearsed using examples and definitions.

Crow and Quigley (1985) compared a traditional approach to vocabulary instruction with an approach based on the semantic fields of words. Half of the words they presented to the experiment groups were later presented to the control groups. The control groups who were exposed to the traditional approach showed significant performance in terms of short-term memory when compared with the experiment groups. On the other hand, in terms of long-term memory, there was no significant difference between the groups. One interesting result was that during the presentation stage of the words, semantic field approach worked better because students in the experiment groups were exposed to twice as many words in the same amount of time. Another finding was that when experimentally taught words were compared with the incidentally learnt words, there was a significant difference in terms of long-term memory favouring experimentally taught words.

Urano (2000) investigated the efficiency of lexical simplification and elaboration on sentence comprehension and incidental vocabulary acquisition. There were a total of 40 Japanese learners as participants, 33 female and 7 male, enrolled in intensive English language programs in his study. The results showed that both lexical simplification and elaboration improve learner comprehension at the sentence level. On the other hand, simplification does not provide incidental vocabulary acquisition whereas lexical elaboration does. And finally, lexical elaboration works better with the high proficient learners concerning the acquisition of word meanings.

Thomson and Tulving (1970) conducted three experiments in order to compare the associative continuity hypothesis with encoding specificity hypothesis both of which explain the operation of retrieval cues in event memory. They were mainly concerned with the problem of the relation between storage and retrieval of information**.** In the experimental conditions, to-be-remembered words were presented in presence of weakly associated cue words. Although the two hypotheses made identical predictions about cued recall in earlier experimental situations, the predictions in the experiments of Thomson and Tulving were different. Recalling of the to-be-remembered words was facilitated when these weakly associated words were provided as retrieval cues. No facilitation of recall occurred where strong normative associated words were provided as retrieval cues. It was concluded that the effectiveness of retrieval cues depends on the format of the to-be-remembered information at the time of its storage.

Tulving and Pearlstone (1966) looked at whether people remembered more words from a list than they could name. Subjects of the study were given a list of words with category names, then asked to remember them either with or without the category names. Immediate recall of the words was tested with or without the category names as retrieval cues. The results demonstrated that the cued recall of the words was higher than the noncued recall. They concluded that although words may not be recalled under noncued recall conditions, it is proposed that they are available in the memory storage, though not accessible for retrieval.

Horst, Cobb and Nicolae (2005) investigated how they could expand academic vocabulary with an interactive on-line database. A number of 33 university students participated in their study. Target words to be learned in their study included words (selected from Coxhead's Academic Word List) which occurred frequently in university textbooks and words which the students had met in academic texts and were unfamiliar to students. The on-line resources in their study included concordance, dictionary, cloze-builder, hypertext, and a database with interactive self-quizzing feature. The matching of resources and words was designed to enhance retention by engaging students in deep processing. The results suggested that the computer-based materials work in terms of vocabulary processing. Furthermore, the participants in the study preferred applying deep processing in generating new cloze-tests to shallow processing

in word lists and self-quizzing which asked them to replace the word in the same context.

Stevick (1996) cites three studies conducted on deep processing:

In the first study conducted by Craick (1973), subjects were given a list of words every of which was followed by five questions in the following order : 1) Is this a word? 2) Is it printed in capitals, or in lower-case letters? 3) Does it rhyme with …….. ? 4) Is it a member of the …….. category? and 5) Does it fit into the following sentence? Each following question from 1 to 5 was directed in order to have subjects apply deeper cognitive process on the word. Since the required decisions became deeper and deeper after each question, this led to better retention and subjects showed a better performance both on the recognition and recall tasks.

In the second study, Bransford (1979) presented two groups of subjects with two different tasks. Task A asked subjects to decide whether the provided word fitted meaningfully into the provided sentence. Task B, on the other hand, just asked their judgements about whether the target word rhymed with the word given in a sentence. At the end of the treatment, both subject groups were given a recognition test. The results showed that the subject group who underwent Task A had a better performance in the test because they had applied deep processing - rather than shallow - on the words during the treatment stage.

In the last study, Oller (1971) aimed to figure out the effectiveness of meaningful contexts on sentence learning. Results indicated that it was easier to learn sentences in meaningful contexts because meaningful contexts helped and required learners to apply deeper processing.

Ten experiments were conducted by Craik and Tulving (1975) in order to investigate the levels of processing framework. They tried to search whether or not the episodic memory trace is an automatic result of operations carried out by the cognitive system and tried to examine whether or not the durability of the trace is a positive function of greater degrees of semantic involvement (depth of processing). Subjects were encouraged to process words to different depths by answering various questions about typescript; intermediate levels of encoding were achieved by asking questions about rhymes; deep levels were attained by asking whether the word would fit into a given category or sentence frame. After the encoding period was completed, subjects

were given an unannounced recall or recognition test for the words. For the most part, deeper encodings took longer to complete and were associated with higher levels of performance on the succeeding memory test.

Hyde and Jenkins (1973; cited in Saffron, 2003b) investigated whether the depth of processing had an effect on recalling. The participants in the study were asked to 1) rate words for pleasantness, 2) estimate frequency with which the words appear in English, 3) detect the number of "e"s and "g"s in the words, 4) decide the part of speech appropriate to each word, and 5) decide whether or not the word fitted various sentence frames. Since the first and fifth tasks led to deep-processing, the words handled in these tasks resulted in higher retention in memory. They concluded that better recall is achieved through deep-processing, rather than shallow or phonemic processing.

Barker, McInerney, and Martin Dowson Institute (2002) researched the effects of motivational approach on the recall of verbal information processed at shallow and deep levels. Two hundred participants were randomly assigned to a mastery focused condition, performance approach condition, performance avoidance condition, or a control group. The subjects were motivationally guided before receiving twelve words which were designed to be encoded at either shallow or deep levels of processing. After the administration of a free recall test, a cued recall test was also given to the participants. Results showed that subjects remembered more words during cued recall than free recall. Words were better recalled when they were processed at a deeper level.

Kapur, Craik, Tulving, Wilson, Houle and Brown conducted a very scientific study on the levels of processing effect:

> Twelve subjects performed two different cognitive tasks on a series of visually presented nouns. In one task, subjects detected the presence or absence of the letter a; in the other, subjects categorized each noun as living or nonliving. Positron emission tomography (PET) scans using O-labelled water were obtained during both tasks. Subjects showed substantially better recognition memory for nouns seen in the living/nonliving task, compared to nouns seen in the a-checking task. Comparison of the PET images between the two cognitive tasks revealed a significant activation in the left inferior prefrontal cortex (Brodmann's areas 45, 46, 47, and 10) in the semantic task as compared to the perceptual task. (1994)

As a result of the tasks, they concluded that the retention of information depends on the depth of processing during the encoding stage; and that information which is processed semantically are better remembered than the information processed in a shallow way.

As reviewed in this chapter and claimed at the beginning of the chapter, the depth of processing notion necessitates practice.

In the light of the literature reviewed up to this point, this study is designed to find out the effectiveness of four techniques (What is it?, More than Meaning, Power Questioning, and Sense or Nonsense?), which are claimed to encourage deep processing, on vocabulary retention.

In the following chapter (Chapter III: Methodology), the design of the study which involves the application of these four techniques is presented.

CHAPTER III
METHODOLOGY

3.1. Subjects

The subjects of the study were the freshmen of the Physics Department of the Faculty of Sciences, Anadolu University. They had had a year of English preparatory class in the School of Foreign Languages the year before and were registered to a compulsory upper-intermediate level integrated English course carried out 4 hours per week.

A number of 73 students participated in the study although the number decreased to 63 after the exclusion of the students who participated in the pilot study; and, to 50 after the exclusion of those who were not present at the time the proficiency test, pre-test, immediate post-test or delayed post-test was applied. As can be seen in Table 3-1 below, seventeen of twenty-five students in the control group and fourteen of twenty-five in the experiment group were male.

Table 3-1 Subjects of the Study

	Number	Male	Female
Control Group	25	17	8
Experiment Group	25	14	11

The assignment of the students into one of the groups (Groups A and B) was done by the advisors of the students at the very beginning of the term. Students were free to register to the group in which they would take the course. Since this was done

before the study was conducted, grouping of the subjects was random. The labelling of the groups was also random: Group A was labelled as the Control Group; and, Group B as the Experiment Group.

3.2. Research Design

The study aimed to investigate the effectiveness of deep processing on the retention of foreign language vocabulary. In order to fulfil the purpose, the study was carried out on a "true experimental design", which means that there was an experiment group who was exposed to the treatment of deep processing on vocabulary learning and a control group who did not receive the same treatment but followed traditional way of vocabulary teaching. So as to compare the achievement between the two groups, the design included a pre-test and a post-test and; therefore, it was practiced as the "pretest - posttest control group design". (Seliger and Shohamy, 1990) (See Table 3-2 below)

During the study, Group A students were named as the Control Group who carried on traditional way of vocabulary learning - rote learning; and, Group B students were labelled as the Experiment Group who underwent the treatment. The groups were labelled randomly as mentioned above.

Table 3 - 2 An Outline of the Study

WEEKS	EXPERIMENT GROUP	CONTROL GROUP
1	**Proficiency Test & Pre-Test**	
2	• What is it? • More than Meaning	No New Treatment (Rote Learning)
3	• Power Questioning • Sense or Nonsense?	No New Treatment (Rote Learning)
4	**Immediate Post-Test**	
5		
6		
7		
8	**Delayed Post-Test**	

3.3. Introduction of the Material / Instruments

3.3.1. Target Vocabulary

Although it is agreed that it would be more beneficial to select the target words among those which were related to the field (Physics) of the subjects, this kind of a selection was not possible because of the reasons that the students were not undergoing an ESP course and that they were studying the same textbook which was studied by all students who had all successfully passed the preparatory class.

A number of 32 words (See Appendix C) which were covered in the textbook (Advanced Masterclass CAE by Aspinall and Capel, 1996) of the students were selected and practised through four deep processing techniques in the study ('What is it?', 'More than Meaning', 'Power Questioning', and 'Sense or Nonsense').

Each technique handled different sets of 8 words. Each set included 2 nouns, 2 verbs, 2 adjectives and 2 adverbs so that each technique would cover all parts of speech equally. (See Appendix C)

The number of words in each set overlapped with the theories that the short-term memory cannot process more than 7 (plus 2) single items of information and that vocabulary lists should be presented in appropriate blocks of 7 (plus or minus 2) items. (Miller, 1956; Loftus and Loftus, 1976; Gairns and Redman, 1986; Moras, 2001; Hauptmann, 2004; Baddeley, 2004)

Each technique handled different sets of 8 word items and that made 16 words for a week - considering that two techniques were practised per week. This also overlapped with what Schmitt and Schmitt (1995:140) agree on; "If the primary goal is to teach students how to enrich their word knowledge, twenty words per week should be sufficient. However, if the goal is to increase vocabulary, the number will have to be quite a bit larger". The aim in the study was to help students with the retention of words but not to teach as many words as possible; therefore, sixteen words for each week were appropriate in number.

In order to reflect the real and natural classroom conditions, no criterion, such as the Academic Word List (Nation, 2001), was applied in the selection of words. On the other hand, so as not to conflict completely with the advances in the field, frequencies

of these 32 target words (See Appendix C) were also identified and presented. What is more, the researcher's first aim in conducting the study was to motivate his students on the issue that the words in the textbook were not that much difficult to learn and retain.

3.3.2. Testing Instruments

3.3.2.1. Proficiency Test

A TOEFL practice test, which was adopted from 'TOEFL Practice Tests' (Rogers, 1998) was administered a week before the treatment started. The test was given so as to determine the proficiency levels of both subject groups and to see whether there was a significant difference between the proficiency levels of both groups before the treatment to the experiment group started.

3.3.2.2. Pre-Test

A pre-test (See Appendix D) was applied in the same week as the proficiency test was administered. It aimed to measure the existing knowledge of both subject groups on the words that would be studied; therefore, it would be possible to see the existing differences between two groups before the treatment to the experiment group started. The pre-test included three sections (A. matching words with meanings, B. using appropriate words for the blanks in sentences, and C. using appropriate words for the blanks in the paragraphs of a context (cloze test)) covering 32 questions. Each question was given 1 point, which made the highest possible score 32.

3.3.2.3. Post-Test (Immediate and Delayed Tests)

The post-test was the same as the pre-test and it was administered both as the immediate and delayed test (See Appendix D) of the study. The only change in the post-

test was the order of questions, which was done in favour of preventing the possibility of guessing the format. It was given in the fourth and eighth weeks of the study in order to measure and compare the developmental differences between the groups in terms of recognising and recalling the words.

No labelling, such as Immediate Recognition Test, Immediate Recall Test, Delayed Recognition Test or Delayed Recall Test, was done for the post-test. Since it tested both recognition (Section A) and recall (Sections B and C) (Federmeier, 2004), and since such recognition/recall labelling could lead to confusions, the tests were merely named as Immediate Post-test and Delayed Post-test.

3.4. Data Collection Procedures

3.4.1. Pilot Studies

Two pilot studies were conducted before the treatment started. The first one was conducted for the determination of the target words and the second was conducted in order to foresee possible problems with the tests.

Two weeks before the treatment started, 5 students from each group were given a test (See Appendix A) in which they were asked to write the Turkish (L1) equivalent or English (L2) meaning of 75 words provided for them. The words were chosen from the scheduled units of the textbook and they would be used for the determination of the words which would be handled in the study. “The words” which would be handled in the study “were to be unfamiliar to the students” (Brown and Perry, 1991:661); therefore, any word of which Turkish equivalent or English meaning was provided by any of the students would be eliminated. Students who participated in this first pilot study provided the equivalents or definitions of 29 words and these words were excluded from the study (See Appendix B). A number of 14 words among the unfamiliar ones were also excluded in order to follow the theories “appropriate blocks of 7 (plus or minus 2) items at a time” (Moras, 2001) and “twenty words per week should be sufficient for vocabulary enrichment” (Schmitt and Schmitt, 1995). (See Appendix B)

In the following week, another pilot study was done and this time the pilot study was for the pre/post-test of the study. The test was given to the same students mentioned above in order to see the possible problems which might be faced during the application of it before it was administered to the subject groups.

In the following stages of the study, the students who had participated in the pilot studies were all excluded from the study since there was the possibility that any of these students could wonder and learn the meaning of any of the words, which could spoil the study.

3.4.2. Proficiency Test

In the first week of the study both subject groups were announced and given the TOEFL practice test in order to see whether they presented a significant difference with regard to their proficiency levels of English. Because the subjects were told about the study and they themselves were curious about their proficiency levels, the test consisting of 140 questions did not seem to be tedious for them. Their scores ranged from 357 to 523 (See Appendix J).

3.4.2.1. Comparison and Discussion of the Proficiency Test Results Between Groups

An Independent-Samples t-test was applied in order to examine the statistical difference between the groups in terms of their proficiency test scores. As can be seen in Table 3-3-B below, the t-test result demonstrated that there was no significant difference between the groups in terms of their proficiency levels.

Table 3 - 3 - A / B : Comparison of the Proficiency Test Results Between Groups

(Table 3–3-A)

	Subject Groups	n	Mean	Std. Deviation	Std. Error Mean
Proficiency Test	**Control Group**	25	434,8400	47,57773	9,51555
	Experiment Group	25	436,7600	53,42852	10,68570

(Table 3–3-B)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	p (Sig.) (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Proficiency Test	**Equal variances assumed**	,849	,361	-,134	48	**,894**	-1,92000	14,30838	-30,68894	26,84894

*** The mean difference is significant at the p < 0,05 level**

As shown in Table 3-3-A, the mean score of the Control Group in the proficiency test was 434,8400; whereas the mean score of the Experiment Group in the proficiency test was 436,7600. The analysis of the proficiency test scores revealed the result that (Table 3-3-B) the mean difference between the groups (-1,92000) was not statistically significant (t = - ,134 ; p = 0,894).

As it was mentioned in the introduction of the subjects, all subjects had had a year of preparatory class before the study was conducted. Most of the subjects were either in the same level-based-groups (lower-intermediate or intermediate) or some were classmates in the preparatory class. This information received from the students leads to the conclusion that almost all subjects in the study were exposed to the same curriculum and/or course materials when they were in the preparatory class.

During the whole term, it was not surprising to observe the students demonstrating homogeneity both in the presence and lack of language ability on the

same aspects of the language. If a student was competent at a certain structure point, almost all students had the same competency; if a student knew a lexical item, it was known by almost all students; or vice versa.

The reason why subjects did not demonstrate significant mean difference in the proficiency test is proposed to stand on the common background mentioned above.

3.4.3. Pre-Test

In the same week as the proficiency test, the subjects in both groups were given the pre-test. The students were directed not to make any guesses on the answers to the questions since this would be another factor spoiling the study. The estimated duration for the pre-test was 30 minutes although no limitation was set during the application. Many of the subjects handed in their papers and left the classroom in 5 - 10 minutes. The results of the pre-test for both groups (See Appendix K) revealed the existing knowledge of the subjects on the words tested.

3.4.4. The Treatment

After the application of the pilot studies and administrations of the proficiency test and the pre-test, the treatment started with the experiment group in the second week of the study. It lasted for two weeks with the experiment group; and the control group did not receive any of the same treatment during this period but carried on rote learning of vocabulary. Contrastingly, the experiment group did not receive any rote learning but were just exposed to deep processing techniques in terms of vocabulary learning.

The control group was provided with a vocabulary list (as usually been preferred) involving either Turkish equivalent or English meaning of the target words (See Appendix E).

In the first week of the treatment stage (see Table 3-2), two techniques were handled with the experiment group. They were the ‘What is it?’ and ‘More than

Meaning' techniques. In the second week, they were the 'Power Questioning' and 'Sense or Nonsense?' techniques practised.

3.4.4.1. The 'What is it?' Technique

"Several definition types are combined ... in the 'What is it?' activity where learners listen to contextual definitions of a word and try to think of a second language synonym or a first language translation." (Nation, 1990 ; cited in Nation, 2001:98)

His example for the word 'stirrup' is as follows:

"A stirrup is silver. A stirrup is strong. A stirrup is made of iron. A stirrup has a flat bottom. We can find a stirrup on a horse. A stirrup is used to put your foot into when you ride a horse." (Nation, 1990 ; cited in Sökmen, 1997:243)

Because the meaning of the word is not given to the learner quickly, the learner feels the need to make a cognitive effort in order to understand the word and perhaps to visualize it, which enables better retention of the word 'stirrup'.

It was a new technique for the students and the first impression received from the students was that they had liked it. It took about 25 minutes to study the 8 words deep-processed in this technique.

In the first stage of the technique, the subjects of the experiment group were instructed to listen to the teacher reading aloud the sets of sentences which explain or define the target words. At the end of each set of sentences, they were asked to respond by writing whether a Turkish equivalent or an English meaning (See Appendix F). It was deep processing in which students were involved while they were listening to each sentence and while they were providing the responds.

After all the words had become clear, the students were asked to work in pairs and write their own sets of different sentences in the second stage of the technique (adapted by the researcher). In order to hearten their participation, the students were not directed to use certain structures or produce a certain number of sentences. In the second stage, they had the chance to produce their own sentences using the target words, which required them to apply cognitive effort.

3.4.4.2. The 'More than Meaning' Technique

It is designed to have learners focus on other kinds of word knowledge besides meaning. It encourages learners to think more broadly about what it means to 'know' a word and learners have the opportunity to consider and analyze the connections the target word has with other words; and, therefore leads to deeper processing, and facilitates retention. (Schmitt, 1994)

It informs the learners about the meaning, part of speech, derivative forms, synonyms, antonyms and collocations of the target word.

The four-hour-course had two sets of two hours on different days in the week, so the "More than Meaning" technique was practised during the second set of the course hours. This time the technique was found a little bit frustrating by the students. It was found frustrating since it involved other kinds of word knowledge besides meaning. It informed the learners about the meaning, part of speech, derivative forms, synonyms, antonyms and collocations of the target words as a whole (See Appendix G).

In the presentation of the technique, a great deal of elicitation (adapted by the researcher) was favoured rather than providing the students with all the information about the words. Some information was provided by the researcher himself and some other was elicited from the subjects (e.g. the meaning was given and either the synonyms or antonyms were elicited; or vice versa.). If no elicitation was maintained, the researcher provided the missing information himself. Students were quite successful in providing the synonyms and derivative forms of the target words.

The technique was evaluated by the researcher to be beneficial in terms of deep processing since cognitive effort was required during the elicitation periods of the technique.

After the presentation of the technique, the students were asked to work in groups and write a short paragraph using any of the target words handled (adapted by the researcher). They could also make use of the other aspects of the target words, such as synonyms or antonyms. They would write about the most interesting past experience of one of the group members, make up a very short story or handle any current event which took place during that week. This adaptation would help them to contextualize the words of the technique. Most of them preferred making up short stories.

Throughout the technique, the experiment group subjects became aware of the "other kinds of word knowledge that are not often given attention"; they were encouraged "to think more broadly about what it means to 'know' a word" (Schmitt, 1994 : 158); and, they related the target words to their own experiences, attitudes and feelings. As a result of these, the students processed deeply on the words studied. What is more, in group-work, the weaker students had the chance to benefit from the assistance and guidance of better students, which is a very important aspect of cooperative learning.

The application of the technique lasted for 30 minutes.

3.4.4.3. The 'Power Questioning' Technique

Learners try to infer the meaning and create definitions step by step by focusing on definitive characteristics through asking questions like What is it?, What is it used for?, Why is it valued?, What kind is it?, Where does it come from?, What does it look, feel, sound, smell like? etc. (Michelle, 2003).

Learners who actively question for the meaning and definition present a cognitive effort and this helps a better retention of the handled word.

The technique was practised during the second week of the treatment phase as the first technique of the week in the first two-hour-set of the course.

The subjects were served with 27 questions (See Appendix H). The questions were helping the students to infer the meaning of the target word being questioned. Starting with the first word in the set, the students directed the questions to the researcher, and the researcher answered all until the meaning was clear. When the meaning (either in Turkish (L1) or in English) was inferred by any of the subjects before all questions were directed to the researcher, this time the rest of the questions or others were directed by the researcher to the students in order the attained information to be used in the following stage of the technique.

It was motivating for the researcher to observe the subjects involved in forming their own questions in case of need.

After all meanings were inferred, the students were asked to work in pairs and write the definition for each word in their own words in the second stage of the technique (adapted by the researcher).

Learners who actively questioned for the meaning and definition of the target words for about 25 minutes presented a cognitive effort and deeper processing, and these were assumed to help a better retention of the handled words within this technique.

3.4.4.4. The 'Sense or Nonsense?' Technique

Learners are asked to decide whether or not the provided sentences make sense; to state their reasons for their decisions; and after becoming familiar with the exercise, to create their own sense-nonsense sentences.

It directs the learners to use the new word to solve a problem, which requires deep processing and enables long-term retention of the word studied. (Holisky, Trechter and Trump, 1994)

The technique, which was practised during the second two-hour-set of the course as the second technique of the week and the last of the study, was a way of problem solving activity.

In the first hour of the course, the subjects were taught the target words of this technique through any of the three techniques practised until then (adapted by the researcher). Since this was the last technique of the treatment, it would be more convenient to practise and remember the techniques applied before.

In the second hour of the course, students were provided with eight sentences involving the target words of the technique, and they were asked to decide whether the provided sentences made sense or not. They were also asked to state their reasons for their decisions (adapted by the researcher). (See Appendix I)

After becoming familiar with the exercise, they were requested to work in groups and create their own sense/nonsense sentences which included the target words of the technique. When the student-formed sentences were available, they were directed to the rest of the students.

The technique directed the subjects of the experiment group to use the new words to solve a problem and, the same as any problem-solving activity; it required deeper processing and cognitive effort.

The application of the technique lasted for about 20 minutes.

3.4.5. Immediate Post-Test and Delayed Post-Test

The subjects in both groups were given the post-test as the immediate post-test in the fourth week, and in the eighth week, as the delayed post-test (See Table 3-2).

In the fourth week, the post-test intended to measure the immediate recognition and recall of the words studied and the scores of both subject groups (See Appendix K) revealed how well they could remember the words soon after the presentation stages of the words for both groups were over.

In the eighth week, the post-test measured the delayed recognition and recall (retention after three weeks) of the words and provided the data on the scores (See Appendix K).

In post-tests which were unexpectedly received by the subjects, the students were again instructed not to make any guesses on the answers to the questions since this could spoil the study.

The estimated duration for the post-tests was 30 minutes although no limitation was set during the application. In the immediate post-test, subjects of the control group handed in their papers and left the classroom in 10 – 30 minutes whereas it was 10 - 20 minutes for the subjects in the experiment group. In the delayed post-test, many of the subjects from the control group handed in their papers within 15 – 30 minutes (a few staying a bit longer; 40 minutes) while subjects in the experiment group left the classroom in 10 - 25 minutes.

3.5. Data Analysis Procedures

The stages listed below were followed while analyzing the data of the study:

Stage 1: Pre-test means of the Control Group and Experiment Group were analyzed through the "Independent-Samples t-test" to check whether there was a significant difference between the groups with regard to existing knowledge on the 32 target words.

Stage 2: Pre-test, Immediate post-test and Delayed post-test means of the Control Group and Experiment Group were analyzed through the "Paired-Samples t-test" within themselves (in-group / within-group comparison) in order to determine whether the results of all tests showed significant difference within each subject group.

Stage 3: Immediate post-test means of both subject groups were analyzed by running the "Independent-Samples t-test" to check whether there was a significant difference between the groups as a result of the treatment periods.

Stage 4: Delayed post-test means of both subject groups were analyzed through the "Independent-Samples t-test" so that it would be possible to conclude whether there was a significant difference between the groups on the long-term retention of words.

Analysis of the data was based on the number of correct answers given by the subjects to the items in all tests.

3.5.1. Introduction of the Statistical Measurements in the Data Analysis

3.5.1.1. Independent-Samples t-test

It is used to compare the means of two independently sampled groups and it is concluded that the two groups are significantly different in terms of their means when $p < 0,05$.

3.5.1.2. Paired-Samples t-test

It is used to compare the means of a group within itself for before-after measures, repeated measures, matched-pairs or case-control studies. It is concluded that the means of the measurements are significantly different within the group itself when $p < 0,05$.

3.5.1.3. Levene's Test for Equality of Variances

It is a test which measures the homogeneity of the variances between the groups. When the p-value is less than 0,05 ($p < 0,05$), this indicates that the variances are heterogeneous which might violate a key assumption of the t-test. When $p > 0,05$, this means that the variances are homogeneous and "equal variances are assumed" in the measurement. Levene's test for equality of variances was also displayed in the between-group (Independent-Samples t-test) tables.

CHAPTER IV
RESULTS AND DISCUSSION

The overall purpose of the current study was to compare the effectiveness of deep processing and rote learning methods in vocabulary learning with regard to short-term and long-term vocabulary retention. Through out the whole study, answers to the research questions were sought.

Students participated in the study were given a series of tests as a result of the research questions; and the results of all these tests were statistically analyzed so as to see and evaluate the presence of significant differences (if there were any).

4.1. Comparison and Discussion of the Pre-Test Results

Table 4 - 1 : Comparison of the Pre-Test Results Between Groups

	Subject Groups	n	Mean	Std. Deviation	Std. Error Mean
Pre-Test	**Control Group**	25	,0000	,00000 **(a)**	,00000
	Experiment Group	25	,0000	,00000 **(a)**	,00000

(a) t cannot be computed because the standard deviations of both groups are 0.

Since the subjects in both groups were not able to answer any of the questions directed in the pre-test; i.e. they did not have any existing knowledge on the words tested, the overall mean for both groups was 0,0000 as shown in Table 4-1.

Both subject groups had the means 0,0000 in the pre-test and this resulted in a standard deviation of 0,0000 in the comparison of these two independent samples, which made it impossible to compute an independent-samples t-test.

The equality on the means of the pre-test scores of both subject groups directed to the conclusion that there was no significant difference between the groups at the beginning of the study in terms of existing knowledge on the words to be handled in the study.

The reason why subject groups did not demonstrate significant mean difference in the pre-test is again proposed to stand on the common background they had, which was mentioned while comparing and discussing the proficiency test scores. (See Section 3-4-2-1 in Chapter III)

4.2. Comparison and Discussion of the Immediate Post-Test Results

Research Question 1:

Does the application of 'Deep Processing' to vocabulary learning facilitate immediate recognition / recall of vocabulary compared with the traditional way of vocabulary learning?

In order to reveal what the case for immediate retention was, just after the treatment comprising four deep processing techniques ('What is it?', 'More than Meaning', 'Power Questioning' and 'Sense or Nonsense?'), a series of statistical analysis were done. The analysis included within-group pre-test and immediate post-test comparisons followed by between-group immediate post-test comparison. The statistical data for the mentioned comparisons are as in the following:

4.2.1. Within-Group Pre-Test & Immediate Post-Test Comparisons

4.2.1.1. Within-Control Group

Table 4 - 2 – A / B : Comparison of the Pre-Test & Immediate Post-Test Results Within the Control Group

(Table 4-2-A)

		Mean	n	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test	,0000	25	,00000	,00000
	Immediate Post-Test	10,4400	25	3,00111	,60022

(Table 4-2-B)

		Paired Differences					t	df	P (Sig.) (2-tailed)
		Mean Difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Test & Immediate Post-Test	-10,44000	3,00111	,60022	-11,67880	-9,20120	-17,394	24	**,000 ***

*** The mean difference is significant at the p < 0,05 level**

As it is shown in Table 4-2-A, the Control Group had a mean of 0,0000 in the pre-test but in the immediate post-test they had a mean of 10,4400. The difference in the means was -10,44000 (Table 4-2-B). The result demonstrated a significant increase in the means for the Control Group (t = - 17,394 ; p = 0,000).

4.2.1.2. Within-Experiment Group

Table 4 - 3 – A / B : Comparison of the Pre-Test & Immediate Post-Test Results Within the Experiment Group

(Table 4-3-A)

		Mean	n	Std. Deviation	Std. Error Mean
Pair 1	**Pre-Test**	,0000	25	,00000	,00000
	Immediate Post-Test	16,9200	25	2,98496	,59699

(Table 4-3-B)

		Paired Differences					t	df	P (Sig.) (2-tailed)
		Mean Difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	**Pre-Test & Immediate Post-Test**	-16,92000	2,98496	,59699	-18,15213	-15,68787	-28,342	24	**,000 ***

*** The mean difference is significant at the p < 0,05 level**

As it is shown in Table 4-3-A, the Experiment Group had a mean of 0,0000 in the pre-test but in the immediate post-test they had a mean of 16,9200. The difference in the means was -16,9200 (Table 4-3-B). The result presented a significant increase in the means for the Experiment Group (t = - 28,342 ; p = 0,000).

4.2.1.3. Discussion of Within-Group Pre-Test & Immediate Post-Test Comparisons

It is obvious from the data presented above that the mean differences (pre-test vs. immediate post-test) revealed significant success in immediate recognition / recall of the target vocabulary for both subject groups (See Tables 4-2-B and 4-3-B). It can be suggested that both rote learning and deep processing facilitate immediate recognition / recall of words.

The effectiveness of both methods in short-term vocabulary retention was also proposed in the study conducted by Wang, Thomas, Inzana and Primicerio (1993). They compared keyword learning with rote rehearsal and found that all subjects had homogeneously high levels of retention on the immediate test of cued recall.

Shen (2003) states that word lists in rote learning, no matter which kind, are usually used for raising the degree of recognition, retention, or memorisation. Referring to Nation (1982), Shen reviews the general belief among many language teachers and learners that the use of word-lists can increase vocabulary size quite quickly, or that word-lists can without doubt help learners to realize a short-term purpose, such as remembering specific words for an examination.

Although rote memorization is suggested to be more effective in short-term vocabulary retention in Herman's (2003) study, it is also suggested that reading literature is, at least, as effective as - and perhaps is more effective than - rote memorization for the purpose of promoting longer-term lexical retention.

The statistical data presented in this study for the comparison of rote learning and deep processing on immediate vocabulary recognition / recall revealed the efficiency of both methods. As reviewed above, the literature also provides evidence for the effectiveness of both methods in short-term retention of vocabulary. However, in order to realize the first aim of this study, the second stage of the statistical analysis carried on with comparing the two methods (deep processing vs. rote learning) with regard to short term retention, recognition and recall of the target vocabulary. The statistical data is presented as in the following:

4.2.2. Between-Group Immediate Post-Test Comparison

Table 4 - 4 – A / B : Comparison of the Immediate Post-Test Results Between Groups

(Table 4-4-A)

	Subject Groups	n	Mean	Std. Deviation	Std. Error Mean
Immediate Post-Test	**Control Group**	25	10,4400	3,00111	,60022
	Experiment Group	25	16,9200	2,98496	,59699

(Table 4-4-B)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	p (Sig.) (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Immediate Post Test	**Equal variances assumed**	,000	,983	-7,654	48	**,000 ***	-6,48000	,84656	-8,18213	-4,77787

*** The mean difference is significant at the p < 0,05 level**

As shown in Table 4-4-A the mean score of the Control Group in the immediate post-test was 10,440; on the other hand it was 16,9200 for the Experiment Group. The difference in means (Table 4-4-B) was -6,48000. The result showed that the Experiment Group performed better; and the difference in the means in the immediate post-test was significant (t = - 7,654 ; p = 0,000).

4.2.2.1. Discussion of Between-Group Immediate Post-Test Comparison

Although both subject groups had performed significantly well in the immediate post-test, when they were compared concerning efficiency, it was demonstrated in the analysis that experiment group had a superiority in the immediate post-test results.

Experiment group subjects were able to recognize / recall more words in the immediate post-test than the control group subjects. As seen in Table 4-4-B, there is a significant difference in the means favouring the experiment group – i.e. deep processing in vocabulary learning.

Similarly, Scribner (2000; cited in Sagarra and Alba, 2006) compared the effectiveness of rote memorization, the keyword method, and a type of semantic method on the immediate and delayed retention of words; and results in Scribner's study revealed that rote memorization was the least effective method in terms of immediate retention of words.

In Toglia's (1999) experiments, subjects were asked to listen to a series of short word lists, each of which contained items associatively related to a theme. While listening to the word lists, subjects were engaged in either semantic or nonsemantic processing. On the immediate free recall test, the results showed that semantic processors demonstrated greater correct recall than nonsemantic processors. Correspondingly in this study, students, who were engaged in semantic processing while listening to the sentences during the application of the 'What is it?' technique, performed a better short-term retention of the target vocabulary in the immediate post-test.

As a conclusion, it is also suggested in this study that deep processing facilitates immediate recognition / recall of target words better than rote learning, which provides the answer to the Research Question 1.

4.3. Comparison and Discussion of the Delayed Post-Test Results

Research Question 2:

Does the application of 'Deep Processing' to vocabulary learning facilitate delayed recognition / recall of vocabulary compared with the traditional way of vocabulary learning?

In order to see the facts about delayed retention three weeks after the immediate post-test and four weeks after the treatment, the following statistical comparisons were made: 1) within-group pre-test and delayed post-test comparisons, and 2) between-group delayed post-test comparison. The statistical data for the mentioned comparisons are as in the following:

4.3.1. Within-Group Pre-Test & Delayed Post-Test Comparisons

4.3.1.1. Within-Control Group

Table 4 - 5 – A / B : Comparison of the Pre-Test & Delayed Post-Test Results Within the Control Group

(Table 4-5-A)

		Mean	n	Std. Deviation	Std. Error Mean
Pair 2	**Pre-Test**	,0000	25	,00000	,00000
	Delayed Post-Test	6,4800	25	2,10396	,42079

(Table 4-5-B)

		Paired Differences					t	df	P (Sig.) (2-tailed)
		Mean Difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 2	**Pre-Test & Delayed Post-Test**	-6,48000	2,10396	,42079	-7,34847	-5,61153	-15,399	24	**,000 ***

*** The mean difference is significant at the p < 0,05 level**

The mean of the Control Group in the pre-test was 0,0000; whereas it was 6,4800 in the delayed post-test (Table 4-5-A). The difference in the means was -6,4800 (Table 4-5-B). In the comparison of the pre-test and delayed post-test means within the Control Group, the result showed that there was a significant increase in the means (t = -15,399 ; p = 0,000).

4.3.1.2. Within-Experiment Group

Table 4 - 6 – A / B : Comparison of the Pre-Test & Delayed Post-Test Results Within the Experiment Group

(Table 4-6-A)

		Mean	n	Std. Deviation	Std. Error Mean
Pair 2	Pre-Test	,0000	25	,00000	,00000
	Delayed Post-Test	14,3600	25	1,93391	,38678

(Table 4-6-B)

		Paired Differences					t	df	P (Sig.) (2-tailed)
		Mean Difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 2	Pre-Test & Delayed Post-Test	-14,36000	1,93391	,38678	-15,15828	-13,56172	-37,127	24	**,000 ***

*** The mean difference is significant at the p < 0,05 level**

The mean of the Experiment Group in the pre-test was 0,0000; whereas it was 14,3600 in the delayed post-test (Table 4-6-A). The difference in the means was -14,36000 (Table 4-6-B). In the comparison of the pre-test and delayed post-test means within the Experiment Group, the result demonstrated that there was a significant increase in the means (t = - 37,127 ; p = 0,000).

4.3.1.3. Discussion of Within-Group Pre-Test & Delayed Post-Test Comparisons

The mean differences (pre-test vs. delayed post-test) revealed significant difference in delayed recognition / recall of target vocabulary for both subject groups (See Tables 4-5-B and 4-5-B). It can be proposed that both rote learning and deep processing facilitate delayed recognition / recall of words.

The effectiveness of rote learning in vocabulary retention was also proposed by Hell and Mahn (1997) who examined the effectiveness of the keyword method opposed to rote rehearsal in two studies. In experienced foreign language learners, rote learners' performance on semantically unrelated keywords was better than that of keyword learners. In inexperienced learners, rote learners and keyword learners recalled the same proportion of semantically unrelated keywords.

Wang (1992), Wang, Thomas, Inzana and Primicerio (1993), and Wang and Thomas (1995; cited in Shen, 2003) also attained similar results revealing the efficiency of rote learning for long-term retention of vocabulary.

On the other hand, the mean difference (-14,36000) between the pre-test and delayed post-test (See Table 4-6-B) showed the significant efficiency of deep processing on the delayed recognition / recall of words for the experiment group in this study as well.

The efficiency of deep processing on long-term retention of vocabulary was also suggested by a number of researchers whose studies were reviewed in this study (Atkinson 1975, cited in Ellis, 1997 and Mastropieri and Scruggs, 1991; Külekçi, 2000; Brown and Perry, 1991; Sagarra and Alba, 2006; Rodriguez and Sadowki, 2000; Crow and Quigley, 1985; Urano, 2000; Thomas and Tulving, 1970; Horst, Cobb and Nicolae, 2005; Craik and Tulving, 1975; Hyde and Jenkins 1973, cited in Saffron, 2003b; and Barker, McInerney, and Martin Dowson Institute, 2002).

In their study, Barker, McInerney, and Martin Dowson Institute (2002) concluded that words are better recalled when they are processed at a deeper level.

A finding in Crow and Quigley's (1985) study was that there is a significant difference in terms of long-term memory favouring experimentally taught words through a semantic based approach.

Results in Rodriguez and Sadowki's (2000) study demonstrated that the context/keyword method is significantly more beneficial for long-term retention when compared with rote rehearsal.

Similar to the efficiency of the key-word method and other semantic approaches mentioned in the above studies, the techniques (What is it?, More than Meaning, Power Questioning, and Sense or Nonsense?) practised in this study also promoted long-term lexical retention.

4.3.2. Between-Group Delayed Post-Test Comparison

Table 4 - 7 – A / B : Comparison of the Delayed Post-Test Results Between Groups

(Table 4-7-A)

	Subject Groups	n	Mean	Std. Deviation	Std. Error Mean
Delayed Post-Test	**Control Group**	25	6,4800	2,10396	,42079
	Experiment Group	25	14,3600	1,93391	,38678

(Table 4-7-B)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	p (Sig.) (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Delayed Post Test	**Equal variances assumed**	,093	,762	-13,787	48	**,000 ***	-7,88000	,57155	-9,02917	-6,73083

*** The mean difference is significant at the p < 0,05 level**

In the delayed post-test, the Control Group had a mean of 6,4800; whereas the Experiment Group had a mean of 14,3600 (Table 4-7-A). The difference in the means was -7,88000 (Table 4-7-B). The same as the immediate post-test results, the Experiment Group had a better performance in the delayed post-test and this meant a significant difference between the groups (t = - 13,787 ; p = 0,000).

4.3.2.1. Discussion of Between-Group Delayed Post-Test Comparison

Although both subject groups had performed significantly well in the delayed post-test, when they were compared in terms of efficiency, it was demonstrated in the analysis that experiment group had a superiority in the delayed post-test results. Experiment group subjects were able to recognize / recall more words in the delayed post-test than the control group subjects. As seen in Table 4-7-B, there is a significant difference in the means favouring the experiment group – i.e. deep processing in vocabulary learning.

Correspondingly, in Scribner's study (2000; cited in Sagarra and Alba, 2006), of the three methods (rote memorization, the keyword method, and a type of semantic method) which were compared, rote memorization was by far the least effective method in terms of delayed retention of words.

The conclusion that learners recognize / recall the new words better when they are exposed to a treatment in deep processing method was also proposed by a number of studies mentioned previously. To name a few, Craik and Tulving (1975) and Hyde and Jenkins (1973; cited in Saffron, 2003b) had similarly attained the same results:

Ten experiments were conducted by Craik and Tulving (1975) in order to investigate the levels of processing framework. They tried to examine whether or not the durability of the memory trace is a positive function of deep processing. After the treatment, subjects were given an unannounced recall or recognition test for the words. For the most part, deeper encodings led to higher levels of performance on the memory test.

Hyde and Jenkins (1973; cited in Saffron, 2003b) investigated whether deep processing had an effect on recalling. Some of the tasks in their study led to deep-processing, so the words handled in these tasks resulted in higher retention in memory. They concluded that better recall is achieved through deep-processing.

Similarly, Külekçi (2000) proposes the inefficiency of rote rehearsal against deep processing (experimenter-provided keyword method) in terms of vocabulary recall and comprehension.

In the same vein, techniques practised in the current study all promoted the long-term retention of the target vocabulary better opposed to rote learning. Students who

were involved in deep processing while learning the target vocabulary benefited significantly more than students who were involved in shallow processing in rote learning.

Shen (2003) reviews the argument that using word-lists does not provide advantages for a long-term vocabulary learning.

Carrell (1984:335; cited in Shen, 2003) points out that "merely presenting a list of new or unfamiliar vocabulary items to be encountered in a text, even with definitions appropriate to their use in that text, does not guarantee the induction of new schemata".

As a conclusion, it is suggested in this study that deep processing also facilitates delayed recognition / recall of target words better than rote learning, which provides the answer to the Research Question 2.

4.4 Discussion of the Significance of Forgetting for Both Groups

The previous result and discussion sections all focused on the significance of immediate and delayed recognition / recall. However, the results also revealed the fact that there is a significant forgetting of words for both groups which became visible in the delayed post-test which was administered three weeks after the immediate post-test.

A paired-samples t-test was applied in order to examine the statistical presence of forgetting within each subject group. The delayed post-test scores were compared with immediate post-test scores this time.

The mean difference (3,96000) between the immediate post-test and delayed post-test for the control group, and the mean difference (2,56000) between the immediate post-test and delayed post-test for the experiment group revealed the significance of within-group forgetting as well (See Appendices L and M for Tables 4-8-B and 4-9-B).

Nation (1990:45; cited in Schmitt and Schmitt, 1995:136) states that "if recycling is neglected, many partially-known words will be forgotten, wasting all the effort already put into learning them". Hence, the presence of forgetting for both groups is proposed to stand on the lack of intentional rehearsal of the target words. It is also proposed that all subjects in both groups would intentionally rehearse the words and

could perform better in case both post-tests were announced before they were administered.

4.5. Summary of the Results

To sum up, the results of the statistical analysis revealed that 1) deep processing was significantly more effective in the immediate and delayed recognition / recall of the target words when compared with rote learning, which provides the answers to the research questions, and 2) both deep processing and rote learning were significantly effective in the immediate and delayed recognition / recall of the target words within the groups they were practised.

Additionally, it is proposed that the presence of forgetting for both groups is proposed to stand on the lack of intentional rehearsal of the target words – either rote (for the control group) or elaborative (for the experiment group).

CHAPTER V
CONCLUSION

5.1. Summary of the Study

The problem of the learners, for which this study aimed to find a solution, was experiencing difficulties in recognizing, recalling, and retaining newly learned words.

The aim of this study was to find an effective way of vocabulary teaching which promotes students to retain, recognize and recall new words. In order to fulfil the aim, two vocabulary learning methods were compared; deep processing and rote learning. "Deep processing" here refers to "a greater degree of semantic or cognitive involvement while learning new words" whereas "rote learning" refers to "learning new vocabulary through memorization of decontextualised word lists".

Deep processing of new words were practised through four techniques: the 'What is it?', 'More than Meaning', 'Power Questioning' and 'Sense or Nonsense?'.

Two groups of students registered in upper-intermediate level of integrated English course participated in the study. The total number of the students was 50. Of the students assigned into two groups which were equal in number, those who were in the experiment group were exposed to the treatment of deep processing whereas those who were in the control group were provided with a decontextualised vocabulary list involving either Turkish equivalent or English meaning of the target words.

A number of 75 target words were selected from the textbooks of the students, and in order to determine the unfamiliar ones to be handled in the study, a pilot study was conducted. The total number of target words handled in the study was 32 after the elimination.

At the very beginning of the study, the students were given a proficiency test so that it would be possible to see their proficiency levels. The statistical analysis of the

proficiency scores of the groups demonstrated that there was no significant difference between the groups in terms of language proficiency (See Table 3-3-B: t = - ,134 ; p = 0,894).

The same test was given as the pre-test, immediate post-test and delayed post-test of the study and it was administered to measure progress in recognition, recall and retention of the target words. The test included three sections (A. matching words with meanings, B. using appropriate words for the blanks in sentences, and C. using appropriate words for the blanks in the paragraphs of a context - cloze test) covering 32 questions; and tested both recognition (Section A) and recall (Sections B and C).

The pre-test, which did not reveal significant difference between the groups, was followed by the treatment stage which lasted for two weeks. The immediate post-test, which was given after the treatment, demonstrated a significant difference between the groups –favouring the experiment group (See Table 4-4-B: t = - 7,654 ; p = 0,000). The delayed post-test, which was given after three weeks, showed a similar significant difference between the groups –again favouring the experiment group (See Table 4-7-B: t = - 13,787 ; p = 0,000).

As a result, all the statistical analysis revealed the significant effectiveness of deep processing on the recognition, recall and retention of new words when compared with rote learning.

5.2. Conclusion

In this study, the application of deep processing to learning vocabulary facilitated immediate and delayed recognition / recall of the target vocabulary - compared with rote learning. The statistical analysis presented the significant superiority of deep processing over rote learning.

It is proposed that this superiority of deep processing is a result of the greater degree of semantic or cognitive involvement with which it equips the learner while learning new words. Memorization, on the other hand, serves shallow processing.

Similarly, Ellis (1995:12; cited in Nielsen, 2003) states that "shallow processing like oral rehearsal does not lead to long-term retention of words" but that "deep processing, whereby semantic associations are accessed and elaborated, does".

However, it should not be underestimated that rote learning is also a way of recognizing and recalling words. Students who were directed to learn new vocabulary through memorization of decontextualised word lists in this study also demonstrated a significant success in recognizing and recalling the target words.

The following is a list of some outstanding consequences of the study:

- Deep processing techniques practised in this study facilitate short-term retention of new words better than rote learning.
- Deep processing techniques practised in this study facilitate long-term retention of new words better than rote learning.
- Techniques practised in this study encourage deep processing – as was proposed by their theorists.
- Deep processing involves more cognitive effort and this promotes better retention and recall.
- Elaboration, namely the richness with which the vocabulary is encoded, is a factor that applies a great influence on retention. Techniques in this study provide such elaboration for the words.
- The treatments used throughout the study revealed that the learners become autonomous with respect to how to retain previously learned words in their course coverage.
- Students who are more involved in the learning process become more motivated and enthusiastic to learn.
- Techniques also prevent boredom in vocabulary learning; i.e. students also have fun while learning new words.
- Rote learning is a kind of shallow processing in vocabulary learning.
- Shallow processing in vocabulary learning is more prone to forgetting.
- Techniques in this study also enable students to learn and retain low frequent words.

5.3. Pedagogical Implications

Unfortunately, vocabulary teaching has always been neglected (Judd, 1978) and has never been the focus of attention for the methodologies (Zimmerman, 1997) and for the teachers although students have always felt the necessity and presented the motivation to learn new words (Coady, 1997). Little emphasis is placed on the acquisition of vocabulary; and the only skill which handles vocabulary is reading.

However, vocabulary instruction should be one of the priorities in language teaching if we believe that lexical competence is also one of those which shows how fluent someone is in a foreign language. It should not be seen as an assisting area but as a goal in itself. (Judd, 1978)

One can discuss that one of the possible reasons why deep processing revealed significant superiority over rote learning in this study stands on the amount of time devoted to each word in the techniques practised. The discussion cannot be underestimated since deep processing method has often been receiving the same criticism. However, if the issue is generalized for vocabulary acquisition, it is proposed that this is what language teachers have always underestimated: vocabulary teaching as a goal in itself. In all skills or areas, vocabulary teaching has always been limited within seconds. It is proposed that all skills and/or vocabulary teaching / learning techniques should give the time which a new word deserves.

Here, the language teachers should direct the following questions to themselves: “I’ve just given the first language equivalent of the word. It took only a second. Is it enough for a word to be retained? Is it enough for a word to be produced?”. The answers to both questions are: “No, it is not.”. A cognitive process which lasts a second does not help retention or production. However, a language teacher can spend at most a minute; provide various contexts for the word within this one minute; and, asks the students to infer the meaning of the target word, all of which require cognitive effort; and; therefore, can help the retention and production of the word. The ‘What is it?’ technique in this study was that sort of an activity. Perhaps it took about a minute for each word in this study; but, it was worth practising –especially when the results revealed the efficiency of the technique.

Similarly, the 'Power Questioning' technique devotes more time for a new word. However, asking a number of questions in order to infer the meaning of a new word at last results in success – the inference of the meaning. The feeling of success or achievement, which can never be observed in spoon-feeding classroom settings, promotes motivation and involvement in any kind of learning process. Perhaps it took longer than a second to manage the meaning of a target word in this technique; but, it was worth practising the technique –especially when the students became more motivated in learning new words.

To sum up, language teachers and language curriculum of foreign language schools should consider devoting the time which words of a foreign language deserve.

This study, at first, suggests that any kind of claim like "I've taught it!" or "I taught the X topic last week!" uttered by a language teacher has no guarantee that the students have learnt what s/he claims to have taught. How much of the topic will be encoded, how much of it will be retained, how much of it will be remembered, and how much of it will be produced by the students are all vague. Thus, it is suggested that the language teacher should at first have this in mind.

The current study proposed an effective way of learning vocabulary and it is known that there are many of others either often practised or never tried. Thus, this study suggests benefiting from one of these methods to those language teachers who give little attention to techniques in vocabulary teaching. It is estimated that there is at least one method which is appropriate for the students of those teachers.

This study also informs learners –especially at the advanced level- on the possible result of overusing simple and common words: lexical shortage in new words derived from forgetting. This leads to the succeeding suggestion on the importance of intentional rehearsal. If a word is wished to be added to the repertoire of one's lexicon, there is the need to rehearse it whenever possible.

Another suggestion is again for the teachers. If it is a fact that forgetting starts soon after encoding, language teachers should be more careful about the problems which lead to forgetting. If the goal is the retention and production of new words, then the problem of forgetting and possible reasons of forgetting must be eliminated. Avoiding shallower exercises can be a possible solution. The 'More than Meaning' and

‘Sense or Nonsense?’ techniques which were practised in this study served as possible deeper activites for teaching vocabulary.

Instead of merely giving the first language equivalent or foreign language definition, which serves shallow processing; language teachers can provide the synonyms, antonyms, derivative forms, and collocations of a new word, which encourages deep processing, facilitates retention and aids in the production of the new word. The ‘More than Meaning’ technique in this study was that sort of an activity.

Similarly, language teachers can present problem-solving activities for the students, which encourage deep processing. Instead of directing the “What did the word ‘X’ mean?” question to the students in order to check retention, one can place that “X” word into a sentence and question whether or not the word makes sense in the sentence. The ‘Sense or Nonsense?’ technique in this study was that sort of an activity which facilitated retention and checked both the availability and accessibility of the newly learned word. It also serves a more enjoyable class hour.

These two techniques in this study facilitate retention and minimize the problem of forgetting.

Although the efficiency of deep processing against rote learning in vocabulary learning is significantly demonstrated in this study, this study does not suggest that rote learning is not an effective way of vocabulary learning. The significant efficiency of rote learning was also shown in this study. Therefore, any of these two techniques which serves for the needs and goals of the learners may be preferred. The choice, use, and effectiveness of vocabulary learning strategies depend on the task, the learner, and the learning context.

Another implication of the study will refer to the other skills in a language. The notion of “depth of processing” may also serve for other skills and areas of the language. Thus, it is suggested that one can practice deep processing method in other skills and areas. Brainstorming or semantic mapping are good examples of the notion which are practised before writing an essay in writing classes. Critical reading or reading for details are good examples of the notion for reading classes. Through a similar application of the notion, language teachers can provide activities which encourage deep processing on the new structures in grammar classes. It is suggested

that the Depth of Processing Hypothesis should appropriately be placed in the foreign language curriculum and textbooks.

For the frequency of words, it would be more beneficial to teach high frequent words rather than low frequent ones. Why should the students be bombarded with words which they will never use? Although it is possible to teach low frequent words, emphasis should be placed on teaching high frequent ones. This should also be considered while designing a new curriculum.

As the final implication of the study, it is suggested that any teacher should help his students utter the complete set; "I've learnt it and I know it!".

It will be beneficial to contemplate on the following depiction of 'fish' which is later adapted for vocabulary:

"Fish live longer, swim better, fatten up better, and hide better in deep waters; and they like getting closer to the surface for the sunshine. It is fascinating to see them sometimes jump over the surface while enjoying themselves. Unfortunately, they are prone to any kind of danger in shallow waters."

Likewise, any new word which is deep processed retains longer in the memory and can easily be accessed in need of production. Those which are processed in shallow manners cannot stay longer in the memory and are prone to forgetting.

5.4. Suggestions for Further Studies

This study was conducted with the participation of a relatively small number of subjects. Further studies could include larger numbers of subjects.

The delayed recognition / recall / retention in this study was measured three weeks after the immediate testing. Further research could offer a longer period. Further research could also devote more time for the treatment period.

In this study, four techniques encouraging deep processing were practised. Other techniques or methods within the framework of deep processing, which were mentioned in earlier sections of this study, could also be practised in further studies.

In this study, deep processing was compared with rote learning. Further studies could compare deep processing with other techniques, methods or notions.

This study compared the effectiveness of deep processing with a shallower way of vocabulary learning. Further research could compare the effectiveness of two/three/four techniques, within themselves, all of which encourage deep processing in vocabulary learning.

The current study was conducted on vocabulary learning. Further research could be carried out to study the effectiveness of deep processing in another skill or area.

"The Depth of Processing Hypothesis" necessitates empirical data. Therefore, any study providing empirical data can further be conducted.

One could also study on testing vocabulary. The answer to the question "How should vocabulary be tested?" could be studied.

As the last suggestion for further studies, it would be guiding to refer to Zimmerman (1997:17): "It is hoped that the central role occupied by vocabulary in the reality of language learning will one day be reflected in the attention given to it in research and the classroom".

APPENDICES

Page

APPENDIX A

PILOT STUDY 1 (Stage 1) : DETERMINATION OF THE UNFAMILIAR WORDS

WRITE THE TURKISH EQUIVALENT OR ENGLISH MEANING OF THE FOLLOWING WORDS.

addiction (n) .....
admit (v) .....
aggressively (adv) .....
ashore (adv) .....
assume (v) .....
boastful (adj) .....
boost (v) .....
castle (n) .....
club (v) .....
conceited (adj) .....
conflict (v) .....
confusion (n) .....
considerate (adj) .....
contemplate (v) .....
deceitful (adj) .....
dedicate (v) .....
density (n) .....
deserve (v) .....
determined (adj) .....
devote (v) .....
dramatic (adj) .....
dump (n) .....
eagerly (adv) .....
earnestly (adv) .....
eastward (adv) .....
enigmatic (adj) .....
entirely (adv) .....
exclusively (adv) .....
executive (n) .....
foe (n) .....
forecast (v) .....
furiously (adv) .....
generously (adv) .....

goggles (n) .....
grinding (adj) .....
grudgingly (adv) .....
heritage (n) .....
hesitantly (adv) .....
hostage (n) .....
ingenious (adj) .....
intimacy (n) .....
intimate (adj) .....
lead (v) .....
leaflet (n) .....
legend (n) .....
lift (v) .....
mean (adj) .....
occupied (adj) .....
overnight (adv) .....
promote (v) .....
proportionately (adv) .....
quarrel (v) .....
quash (v) .....
reluctantly (adv) .....
restrict (v) .....
satellite (n) .....
sculpture (n) .....
session (n) .....
shrine (n) .....
sloppy (adj) .....
solicitor (n) .....
sombre (adj) .....
spot (v) .....
stammer (v) .....
strike (n) .....
suburban (adj) .....
supply (v) .....
tactfully (adv) .....
though (adv) .....
trustworthy (adj) .....
trusty (adj) .....
ultimately (adv) .....
upsetting (adj) .....
widow (n) .....
willingly (adv) .....

APPENDIX B

PILOT STUDY 1 (Stage 2) : ELIMINATION OF ALL FAMILIAR AND SOME UNFAMILIAR WORDS

addiction (n)	.....FAMILIAR.....
admit (v)	.....FAMILIAR.....
aggressively (adv)	.....FAMILIAR.....
ashore (adv)	.....ELIMINATED.....
assume (v)	.....ELIMINATED.....
boastful (adj)	.....
boost (v)	.....
castle (n)	.....FAMILIAR.....
club (v)	…ELIMINATED…..
conceited (adj)	.....
conflict (v)	.....ELIMINATED.....
confusion (n)	.....FAMILIAR.....
considerate (adj)	.....
contemplate (v)	.....
deceitful (adj)	.....
dedicate (v)	.....
density (n)	.....FAMILIAR.....
deserve (v)	.....ELIMINATED.....
determined (adj)	.....
devote (v)	.....FAMILIAR.....
dramatic (adj)	.....FAMILIAR.....
dump (n)	.....
eagerly (adv)	.....
earnestly (adv)	.....
eastward (adv)	.....FAMILIAR.....
enigmatic (adj)	.....
entirely (adv)	.....FAMILIAR.....
exclusively (adv)	.....ELIMINATED.....
executive (n)	.....FAMILIAR.....
foe (n)	.....
forecast (v)	.....
furiously (adv)	.....
generously (adv)	.....
goggles (n)	.....
grinding (adj)	.....ELIMINATED.....
grudgingly (adv)	.....
heritage (n)	.....
hesitantly (adv)	.....

hostage (n)	.....FAMILIAR.....
ingenious (adj)	.....
intimacy (n)	.....FAMILIAR.....
intimate (adj)	.....FAMILIAR.....
lead (v)	.....FAMILIAR.....
leaflet (n)	.....
legend (n)	.....FAMILIAR.....
lift (v)	.....FAMILIAR.....
mean (adj)	.....FAMILIAR.....
occupied (adj)	.....ELIMINATED.....
overnight (adv)	.....FAMILIAR.....
promote (v)	.....
proportionately (adv)	.....ELIMINATED.....
quarrel (v)	.....
quash (v)	.....
reluctantly (adv)	.....
restrict (v)	.....FAMILIAR.....
satellite (n)	.....FAMILIAR.....
sculpture (n)	.....
session (n)	.....FAMILIAR.....
shrine (n)	.....
sloppy (adj)	.....
solicitor (n)	.....
sombre (adj)	.....ELIMINATED.....
spot (v)	.....
stammer (v)	.....ELIMINATED.....
strike (n)	.....ELIMINATED.....
suburban (adj)	.....ELIMINATED.....
supply (v)	.....FAMILIAR.....
tactfully (adv)	.....
though (adv)	.....FAMILIAR.....
trustworthy (adj)	.....FAMILIAR.....
trusty (adj)	.....FAMILIAR.....
ultimately (adv)	.....ELIMINATED.....
upsetting (adj)	.....FAMILIAR.....
widow (n)	.....FAMILIAR.....
willingly (adv)	.....FAMILIAR.....

APPENDIX C

THE WORDS HANDLED IN THE STUDY, THE PARTS OF SPEECH THEY BELONG, THEIR FREQUENCIES AND THE TECHNIQUES APPLIED TO THEM.

Target Word	Part of Speech	Frequency	Technique Applied
dump	noun	Low	What is it?
foe	noun	Low	What is it?
boost	verb	Low	What is it?
contemplate	verb	Low	What is it?
boastful	adjective	High	What is it?
conceited	adjective	Low	What is it?
eagerly	adverb	High	What is it?
earnestly	adverb	High	What is it?
goggles	noun	Low	More than Meaning
heritage	noun	High	More than Meaning
dedicate	verb	Low	More than Meaning
forecast	verb	Low	More than Meaning
considerate	adjective	High	More than Meaning
deceitful	adjective	High	More than Meaning
furiously	adverb	Low	More than Meaning
generously	adverb	High	More than Meaning
leaflet	noun	Low	Power Questioning
sculpture	noun	Low	Power Questioning
promote	verb	High	Power Questioning
quarrel	verb	High	Power Questioning
determined	adjective	High	Power Questioning
enigmatic	adjective	Low	Power Questioning
grudgingly	adverb	Low	Power Questioning
hesitantly	adverb	Low	Power Questioning
shrine	noun	Low	Sense or Nonsense?
solicitor	noun	Low	Sense or Nonsense?
quash	verb	Low	Sense or Nonsense?
spot	verb	High	Sense or Nonsense?
ingenious	adjective	Low	Sense or Nonsense?
sloppy	adjective	Low	Sense or Nonsense?
reluctantly	adverb	High	Sense or Nonsense?
tactfully	adverb	Low	Sense or Nonsense?

APPENDIX D

PRE-TEST / IMMEDIATE POST-TEST / DELAYED POST-TEST OF THE STUDY.

***** DO NOT make a guess if you are not sure of the answer! *****

A. CHOOSE THE RIGHT WORD TO GO WITH EACH MEANING. THEN, WRITE THE LETTER OF THE WORD NEXT TO ITS MEANING.

A.	reluctantly			
B.	eagerly	**1)**	**…….**	acting or deciding in uncertainty or slowness
C.	generously	**2)**	**…….**	acting unwillingly
D.	hesitantly			

A.	determined			
B.	boastful	**3)**	**…….**	dishonest
C.	deceitful	**4)**	**…….**	full of self-praise
D.	ingenious			

A.	dedicate			
B.	contemplate	**5)**	**…….**	to argue angrily esp. about something not very important
C.	quash	**6)**	**…….**	to think deeply and thoughtfully esp. when considering a possible course of action or future event
D.	quarrel			

A.	forecast			
B.	promote			
C.	quash	**7)**	**…….**	to predict; to say what is going to happen at some future time
D.	spot	**8)**	**…….**	to increase; raise
E.	quarrel	**9)**	**…….**	to pick out with the eye; see or recognize, esp. with effort or difficulty
F.	boost			

A.	sloppy			
B.	conceited	**10)**	**…….**	showing cleverness at making or inventing things
C.	determined	**11)**	**…….**	mysterious and very hard to understand
D.	considerate	**12)**	**…….**	having a strong intention or decision
E.	enigmatic			
F.	ingenious			

B. COMPLETE THE SENTENCES USING THE WORDS IN THE BOXES. MAKE NECESSARY CHANGES WHEN REQUIRED.

eagerly, earnestly, furiously, generously, grudgingly, hesitantly, reluctantly, tactfully

13) His family always gives …… to charity and beggars at Christmas time.

14) All the children are …… awaiting the start of summer vacation.

15) I …… didn't mention about his dead wife – I know he loved her very much.

16) During the argument, Marvin pounded the table …… with his fist.

dump, foe, goggles, heritage, leaflet, sculpture, shrine, solicitor

17) John and Paul have made friends again and they are not …… anymore.

18) The old Buddhist woke up early in the morning and took the way to the …… to perform the morning pray.

19) Ann told her son to wear his …… in the sea since the water was too salty.

20) In the late 1980s, Europe used all along Nigeria's coast as a …… for toxic waste.

21) During my vacation in Athens, I had the chance to see the …… of all mythical gods and heroes of ancient Greece.

22) This lovely necklace is a part of our family …… . I don't think we can sell it.

C. COMPLETE THE TEXT USING THE WORDS IN THE BOXES. MAKE NECESSARY CHANGES WHEN REQUIRED.

conceited, considerate, dedicate, earnestly, grudgingly, leaflet, promote, quash, sloppy, solicitor

The job advertisement on the **23) …….** had asked for a self-motivated, **24) …….** individual with good social skills. I remember thinking that the salary wasn't brilliant, but the job didn't seem too underpaid for what was required. However, I soon found out that what they wanted was a workaholic!

The factory was dirty, noisy, and the work was incredibly tiring. The place was seriously understaffed – ten people **25) …….** to doing the work of fifteen – and the management was lazy and inefficient. It soon became clear that anything the factory produced was **26) …….** as quality control was minimal. I wanted **27) …….** brainstorming and cooperative work. Not surprisingly, relations within the workforce were poor and it was impossible to get anybody to co-operate on projects. People were either **28) …….**, irritable and impatient or just couldn't be bothered.

I **29) …….** remember the day I finally handed in my resignation. I tried **30) …….** to explain some of the problems I'd experienced to the senior management and told that some of their working practices were quite frankly illegal. I warned him that they could have problems with the government **31) …….** and that the government officials could **32) …….** their licence. But, true to form, they were completely uncommunicative and disinterested. I was faced with a wall of silence, and then more or less thrown out of the factory gates.

APPENDIX E

VOCABULARY LIST PROVIDED FOR THE CONTROL GROUP

Target Words		Turkish Equivalent or English Meaning
dump	(n)	çöplük
foe	(n)	enemy
boost	(v)	to increase; raise
contemplate	(v)	to think deeply and thoughtfully
boastful	(adj)	fond of self-praising
conceited	(adj)	having too high opinion of oneself
eagerly	(adv)	istekli biçimde, heyecanla
earnestly	(adv)	ciddi biçimde, ciddiyet içerisinde
goggles	(n)	glasses to protect the eyes from the wind, dust, water
heritage	(n)	miras, kalıt
dedicate	(v)	belli bir amacı gerçekleştirmek için bir şeyi ayırmak, tahsis etmek
forecast	(v)	to predict
considerate	(adj)	düşünceli, saygılı, nazik
deceitful	(adj)	dishonest
furiously	(adv)	acting very angrily or in an uncontrolled way
generously	(adv)	cömertçe
leaflet	(n)	broşür
sculpture	(n)	figures and statues made of stone or wood
promote	(v)	bir şeyin oluşturulmasında önayak olmak, yardımcı olmak
quarrel	(v)	to argue angrily about something
determined	(adj)	having a strong intention or decision
enigmatic	(adj)	mysterious
grudgingly	(adv)	acting unwillingly
hesitantly	(adv)	acting or deciding in uncertainty or slowness
shrine	(n)	tapınak
solicitor	(n)	lawyer
quash	(v)	iptal etmek, feshetmek, geçersiz kılmak
spot	(v)	to pick out with the eye; see or recognize
ingenious	(adj)	showing cleverness at making or inventing things
sloppy	(adj)	özensiz, itinasız, yarım yamalak
reluctantly	(adv)	acting unwillingly, and therefore perhaps slowly
tactfully	(adv)	incelikle, nazikçe

APPENDIX F

THE 'WHAT IS IT?' TECHNIQUE

D U M P

- A **dump** is a place.
- A **dump** is a place for storing.
- A **dump** is a dirty place.
- A **dump** is an untidy, disorderly place, especially located out of towns.
- A **dump** smells awful.
- A **dump** may explode for some reasons.
- You would never like to live near a **dump**.
- All kinds of rubbish and waste materials are stored in a **dump**.

DUMP means.....

F O E

- A **foe** is someone hated.
- A **foe** is sometimes someone opposing.
- **Foes** are not considered as friends.
- **Foes** are thought to be dangerous.
- Some **foes** may be large in number.
- A **foe** is someone, a group of people or a country fought against.
- A **foe** is an enemy.

FOE means.....

B O O S T

- Every kind of **boost** is not always welcomed.
- When something **boosts**, generally we talk about the change in the quantity.
- Companies plan to **boost** production ever year.
- The **boost** in production leads to the **boost** in employment.
- If the taxes **boost** too much, many people cannot afford to pay them.
- If inflation in a country **boosts** gradually, the prices also **boost**.
- All employees would love the bosses to **boost** their salaries.
- **Boost** is an increase, especially in the quantity of something.

TO BOOST means……

C O N T E M P L A T E

- Most surgeons do **contemplate** operations before they perform them.
- Before someone changes his job, it is better if he **contemplates** again.
- Generally, **contemplation** is followed by a decision.
- When people **contemplate**, they also consider the possible results of their decision.
- **Contemplation** is a mental process.
- **Contemplation** takes time.
- When someone **contemplates,** he thinks deeply and thoughtfully, especially when considering a possible course of action or future event.

TO COMTEMPLATE means……

B O A S T F U L

- Almost everyone likes **boasting**.
- When some people **boast**, some others do not believe them.
- Almost all parents are **boastful** about their children.
- In fact, **boastful** people are not appreciated.
- While someone is **boasting**, he is often found unpleasant.
- Hunters like **boasting** about their abilities in shooting.
- **Boastful** people are those who are full of self-praise.

BOASTFUL means……

C O N C E I T E D

- Most **conceited** people have few friends.
- **Conceited** people may sometimes be heart-breaking.
- It is thought that celebrities are all **conceited** people.
- Some **conceited** people are thought to have psychological problems.
- If someone becomes very popular and ends his communication with his old mates without any reason, it can be said that he is full of **conceit**.
- **Conceited** people are those who have too high an opinion of themselves; extremely proud of themselves or pleased with themselves.

CONCEITED means……..

E A G E R L Y

- Dogs are always **eager** to play with a ball.
- All businessmen are **eager** for an international success.
- When they are told about extra money, all footballers play much more **eagerly**.
- Kids listen to stories **eagerly**.
- No student does his homework **eagerly**.
- Some employees seem to work much more **eagerly** in order to be appreciated by their bosses.
- If somebody is doing something with a strong interest, impatient desire or enthusiasm, it means he is doing it **eagerly**.

EAGERLY means……..

E A R N E S T L Y

- Everybody likes people who are **earnest** when they promise to do something.
- One should be **earnest** if he really wants to give up smoking.
- Some lazy people work **earnestly** only if somebody is watching them.
- In order to succeed in your exams, you must study **earnestly**.
- Whatever the topic of the lecture is, one should listen to the lecturer **earnestly**; he shouldn't read something, talk to the guy sitting next to, or sleep.
- When somebody does something **earnestly**, we know he is serious and determined to finish it.

EARNESTLY means…….....

APPENDIX G

THE 'MORE THAN MEANING' TECHNIQUE

GOGGLES	
Meaning	a pair of large round pieces of glass or plastic with an edge which fits against the skin so that dust and wind or water cannot get near the eyes
Part of speech	noun (plural)
Derivative forms	---
Synonyms	glasses
Antonyms	---
Collocates	a pair of goggles, to wear goggles, motorcycle goggles, ski goggles, swimming goggles

HERITAGE	
Meaning	an object, custom, or quality which is passed down over many years within a family, social group, or nation and is thought of as belonging to all its members
Part of speech	noun (singular, uncountable)
Derivative forms	inherit (v), heritable (adj), inheritance (n), disinherit (v), disinheritance (n)
Synonyms	inheritance, legacy, hand-me-down, reach-me-down
Antonyms	---
Collocates	inherit from

DEDICATE	
Meaning	to give completely to a particular cause, purpose, or action; to set apart for
Part of speech	verb (transitive)
Derivative forms	dedicated (adj), dedicatedly (adv), dedication (n)
Synonyms	assign, devote
Antonyms	---
Collocates	dedicate sbdy./sthg. to sbdy./sthg., dedicated to

FORECAST	
Meaning	to say, esp. with the help of some kind of knowledge (what is going to happen at some future time)
Part of speech	verb (transitive)
Derivative forms	forecaster (n),
Synonyms	predict, estimate, foretell
Antonyms	---
Collocates	weather forecast, weather forecaster

CONSIDERATE	
Meaning	thoughtful of the wishes, needs, or feelings of others
Part of speech	adjective
Derivative forms	consider (v), consideration (n), considerately (adv), considerateness (n)
Synonyms	attentive, charitable, concerned, gracious, kind, mindful, thoughtful, unselfish
Antonyms	selfish, thoughtless
Collocates	to be considerate to / towards , to show consideration for

DECEITFUL	
Meaning	tending to deceive, dishonest
Part of speech	adjective
Derivative forms	deceit (n), deceitfully (adv), deceitfulness (n), deceive (v), deceiver (n)
Synonyms	dishonest, deceiving, untrustworthy, deceptive, lying
Antonyms	honest, open, trustworthy
Collocates	

FURIOUSLY	
Meaning	acting in a very angry, uncontrolled and wild way
Part of speech	adverb
Derivative forms	fury (n), furious (adj), furiousness (n),
Synonyms	angrily, heatedly
Antonyms	calmly
Collocates	to be furious with/at, fly into a fury

GENEROUSLY	
Meaning	acting in a way which shows the readiness of someone to give money, help or kindness
Part of speech	adverb
Derivative forms	generous (adj), generosity (n)
Synonyms	kindly, open-handedly, charitably, helpfully
Antonyms	ungenerously, meanly
Collocates	to be generous of smbd. to do sthg., to be generous with sthg.

APPENDIX H

THE 'POWER QUESTIONING' TECHNIQUE

1. What action does this thing or person usually perform?
2. What action is usually performed on this thing?
3. How is this thing usually used?
4. What is this thing a part of?
5. What is the process for making this thing?
6. What particular taste, feel, smell, or sound does this thing have?
7. What particular colour, number (or quantity), location or dimensionality does this thing have?
8. How this thing is usually sold?
9. What particular emotional state does this person have?
10. Does this thing have a particular value?
11. When this thing is used, does it present a particular danger to other things or people?
12. What thing or person usually performs this action?
13. What effect does this action have on the taste, feel, sound, or look of this thing?
14. How does this action typically change the emotional state of a person?
15. How is the value of a thing changed by this action?
16. How does this action change the size or shape of a thing?
17. How does this action change the state of a thing?
18. What people are usually involved in this event?
19. During what season or time of year does this event usually take place?
20. On what day of the week does this event usually take place?
21. At what time of day does this event usually take place?
22. Where does this event usually take place?
23. At what point in history did this event take place?
24. What equipment is typically used in this event?
25. How long does this event usually take place?
26. What is the basic process involved in reaching this state?
27. What changes occur when something reaches this state?

APPENDIX I

THE 'SENSE OR NONSENSE?' TECHNIQUE

DOES IT MAKE SENSE?	
SENSE / NONSENSE	Last year he went to Las Vegas and made a fortune in the **shrine**s.
State your reason	
SENSE / NONSENSE	The **solicitor**s of the company made a very successful defence in the court.
State your reason	
SENSE / NONSENSE	His membership is **quash**ed because he hasn't attended any of the meetings.
State your reason	
SENSE / NONSENSE	At last I was able to **spot** Brenda at the concert. She was in the middle of the crowd dancing with her boyfriend.
State your reason	
SENSE / NONSENSE	Have you heard about the **ingenious** monkey? It hasn't eaten any bananas in its life.
State your reason	
SENSE / NONSENSE	All paintings of Leonardo Da Vinci were **sloppy**. That is why people loved them.
State your reason	
SENSE / NONSENSE	He **reluctantly** went to the concert. He loves Shakira, you know!
State your reason	
SENSE / NONSENSE	The burglar **tactfully** stole our all jewellery and left a note saying "Jackass!".
State your reason	

APPENDIX J

TOEFL PRACTICE TEST SCORES

CONTROL GROUP	
SUBJECTS	**SCORE**
1	463
2	420
3	377
4	387
5	430
6	503
7	373
8	447
9	410
10	467
11	487
12	520
13	447
14	480
15	430
16	390
17	483
18	433
19	417
20	417
21	357
22	513
23	400
24	463
25	357
MEAN	**434,84**

EXPERIMENT GROUP	
SUBJECTS	**SCORE**
1	413
2	467
3	373
4	423
5	360
6	497
7	517
8	523
9	390
10	363
11	430
12	457
13	487
14	400
15	493
16	470
17	357
18	413
19	433
20	480
21	500
22	393
23	433
24	360
25	487
MEAN	**436,76**

APPENDIX K

PRE-TEST, IMMEDIATE POST-TEST & DELAYED POST-TEST SCORES

CONTROL GROUP			
Subjects	**Pre - Test**	**Immediate Post Test**	**Delayed Post Test**
1	0	6	4
2	0	8	5
3	0	12	10
4	0	11	3
5	0	8	6
6	0	13	9
7	0	11	5
8	0	12	8
9	0	9	11
10	0	9	3
11	0	14	9
12	0	10	6
13	0	9	4
14	0	15	7
15	0	12	7
16	0	6	4
17	0	11	8
18	0	11	6
19	0	4	5
20	0	12	6
21	0	15	8
22	0	13	7
23	0	8	7
24	0	15	8
25	0	7	6
MEAN	**0**	**10,44**	**6,48**

EXPERIMENT GROUP			
Subjects	**Pre - Test**	**Immediate Post Test**	**Delayed Post Test**
1	0	18	14
2	0	13	11
3	0	13	14
4	0	21	18
5	0	15	16
6	0	15	13
7	0	19	12
8	0	12	13
9	0	21	15
10	0	16	15
11	0	16	12
12	0	15	17
13	0	20	13
14	0	19	17
15	0	13	13
16	0	15	18
17	0	17	13
18	0	16	16
19	0	20	14
20	0	16	16
21	0	18	12
22	0	21	13
23	0	17	14
24	0	23	15
25	0	14	15
MEAN	**0**	**16,92**	**14,36**

APPENDIX L

FORGETTING WITHIN CONTROL GROUP

Table 4 - 8 – A / B : Comparison of the Immediate Post-Test & Delayed Post-Test Results Within the Control Group

(Table 4-8-A)

		Mean	n	Std. Deviation	Std. Error Mean
Pair 3	**Immediate Post-Test**	10,4400	25	3,00111	,60022
	Delayed Post-Test	6,4800	25	2,10396	,42079

(Table 4-8-B)

		Paired Differences					t	df	P (Sig.) (2-tailed)
		Mean Difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 3	**Immediate Post-Test & Delayed Post-Test**	3,96000	2,63755	,52751	2,87127	5,04873	7,507	24	**,000 ***

*** The mean difference is significant at the p < 0,05 level**

APPENDIX M

FORGETTING WITHIN EXPERIMENT GROUP

Table 4 - 9 – A / B : Comparison of the Immediate Post-Test & Delayed Post-Test Results Within the Experiment Group

(Table 4-9-A)

		Mean	n	Std. Deviation	Std. Error Mean
Pair 3	**Immediate Post-Test**	16,9200	25	2,98496	,59699
	Delayed Post-Test	14,3600	25	1,93391	,38678

(Table 4-9-B)

		Paired Differences					t	df	P (Sig.) (2-tailed)
		Mean Difference	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 3	**Immediate Post-Test & Delayed Post-Test**	2,56000	3,33017	,66603	1,18538	3,93462	3,844	24	**,001 ***

*** The mean difference is significant at the p < 0,05 level**

BIBLIOGRAPHY

Allen, V. F. (1983). **Techniques In Vocabulary Teaching**. Oxford University Press.

Aspinall, T. & Capel, A. (1996). **Advanced Masterclass CAE**. Oxford University Press.

Baddeley, M.D. (2004). "The psychology of memory". In A.D. Baddeley, M.D. Kopelman and B.A. Wilson (Eds.), **The Essential Handbook of Memory Disorders for Clinicians**. (pp. 1-13). John Wiley & Sons Ltd. http://media.wiley.com/product_data/excerpt/1X/04700914/047009141X.pdf.

Barker, K.L., McInerney, D.M. & Martin Dowson Institute (2002). "Performance approach, performance avoidance and depth of information processing: a fresh look at relations between students' academic motivation and cognition". **Educational Psychology**. 22, (5), 571 - 589. http://taylorandfrancis.metapress.com/(3hjyez553dooru45cbnceaj3)/app/home/contribution.asp?referrer=parent&backto=issue,6,10;journal,22,34;linkingpublicationresults,1:104804,1

Bolich, B. & McLaughlin T.F. (2001). "The use of mnemonic strategies as instructional tools for children with learning disabilities". **International Journal of Special Education**. 16, (2), 40-49. http://www.internationalsped.com/documents/bolichandmac4.DOC

Brown, H. D. (1994). **Principles of Language Learning And Teaching**. NJ: Prentice Hall

Brown, T.S. & Perry, F.L. (1991). "A comparison of three learning strategies for ESL vocabulary acquisition". **TESOL Quarterly**. 25, (4), 655-670.

Chamot, A. (1987). “The learning strategies of ESL students”. In Wenden, A. & J. Rubin (Eds.), **Learner Strategies in Language Learning**. (pp. 71-83) NJ: Prentice Hall International.

Coady, J. (1997). “L2 vocabulary acquisition: a synthesis of the research”. In J. Coady and T. Huckin (Eds.), **Second Language Vocabulary Acquisition**. (pp.273-290). Cambridge University Press.

Coomber, J. E. (1986). “Elaboration in vocabulary learning: a comparison of three rehearsal methods”. **Research in the Teaching of English**. 20, (3), 281-293. http://eric.ed.gov/ERICWebPortal/Home.portal?_nfpb=true&_pageLabel=RecordDetails&ERICExtSearch_SearchValue_0=EJ343568&ERICExtSearch_SearchType_0=eric_accno&objectId=0900000b8005a050

Craik, F. I. M., & Lockhart, R.S. (1972). “Levels of processing: a framework for memory research”. **Journal of Verbal Learning and Verbal Behavior**. 11, 671-684. http://picard.montclair.edu/psychology/adams/craik-and-lockhart-1972.htm

Craik, F.I.M. & Tulving, E. (1975). “Depth of processing and the retention of words in episodic memory”. **Journal of Experimental Psychology**. 104, (3), 268-294. http://step.psy.cmu.edu/articles/CraikTulving75.doc

Craik, F.I.M. (1979). “Citation Classic: Levels of processing: a framework for memory research”. **Current Contents**. 50, December, 92. http://www.garfield.library.upenn.edu/classics1979/A1979HV66200001.pdf

Craik, F.I.M., Routh, D. & Broadbent, D.E. (1983). "On the transfer of information from temporary to permanent memory [and discussion]". **Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences**. 302, (1110), 341-359. http://links.jstor.org/sici?sici=00804622%2819830811%29302%3A1110%3C341%3AOTTOIF%3E2.0.CO%3B2-E&size=LARGE

Crow, J.T. & Quigley, J.R. (1985). "A semantic field approach to passive vocabulary acquisition for reading comprehension". **TESOL Quarterly**. 19, (3), 497-513.

Ellis, N. C. (1997). "Vocabulary acquisition: word structure, collocation, word-class, and meaning". In N. Schmitt and M. McCarthy (Eds.), **Vocabulary Description, Acquisition and Pedagogy**. (pp. 122-139). Cambridge University Press.

Federmeier, K. (2004). **Memory, Long Term**. PSYC 224 Lecture Notes. University of Illinois. http://wik.ed.uiuc.edu/index.php/Memory,_long_term

Gairns, R. & Redman, S. (1986). **Working With Words : A Guide To Teaching And Learning Vocabulary**. Cambridge University Press.

Gruneberg, M.M. (1997). "A commentary on criticism of the keyword method of learning foreign languages". **Applied Cognitive Psychology**. 12, (5), 529-532. http://www3.interscience.wiley.com/cgibin/abstract/10006035/ABSTRACT?CRETRY=1&SRETRY=0

Gu, P.Y. (2003). "Fine brush and freehand: the vocabulary-learning art of two successful chinese efl learners". **TESOL Quarterly**. 37,(1), 73-104. http://www.ucalgary.ca/lrc/Doc/Gu.pdf

Hauptmann, J. (2004). **The Effect Of Integrated Keyword Method On Vocabulary Retention And Motivation**. PhD Thesis. University of Leicester. http://www.keyword-method.de/download/thesis.pdf

Hell, J.G. & Mahn, A.C. (1997). "Keyword mnemonics versus rote rehearsal: learning concrete and abstract foreign words by experienced and ınexperienced learners". **Language Learning**. 47, (3), 507-546. http://www.ingentaconnect.com/content/bpl/lang/1997/00000047/00000003/art00018

Herman, F. (2003). "Differential effects of reading and memorization of paired associates on vocabulary acquisition in adult learners of english as a second language". **TESL-EJ**. 7, (1), http://www-writing.berkeley.edu/TESL-EJ/ej25/a1.html

Holisky, D.A., Trechter, S. & Trump, K. (1994). "Sense or nonsense?" In P. Nation (Ed.), **New Ways in Teaching Vocabulary**. (pp. 144-145). Illinois : Pantagraph Printing.

Horst, M., Cobb, T. & Nicolae, I. (2005). "Expanding academic vocabulary with an interactive on-line database". **Language Learning & Technology**. 9, (2), 90-110. http://llt.msu.edu/vol9num2/horst/default.html

Hulstijn, J. (1997). "Mnemonic methods in foreign language vocabulary learning: theoretical considerations and pedagogical implications". In J. Coady and T. Huckin (Eds.), **Second Language Vocabulary Acquisition**. (pp.203-224). Cambridge University Press.

Hunt, A. & Beglar, D. (2005). "A framework for developing EFL reading vocabulary". **Reading in a Foreign Language**. 17, (1), 23-59. http://nflrc.hawaii.edu/rfl/April2005/hunt/hunt.html

Johansson, J., Wiklund, A., Edström, K. & Engström, M. (2003). **Experiences Of Learning: Student Accounts Linked With Theory**. Student joint Report. Royal Institute of Technology and Linköping University. http://www.cdio.org/meetings/feb03material/lrning_exp.doc

Judd, E.L. (1978). "Vocabulary teaching and TESOL: a need for reevaluation of existing assumptions". **TESOL Quarterly**. 12, (1), 71-76

Jullian, P. (2000). "Creative word-meaning awareness". **ELT Journal**. 54, (1), 37-46

Kapur, S., Craik, F.I.M., Tulving, E., Wilson, A.A., Houle, S. & Brown, G.M. (1994). "Neuroanatomical correlates of encoding in episodic memory: levels of processing effect". **Proceedings of the National Academy of Sciences**. 91, 2008-2011. http://www.pnas.org/cgi/content/abstract/91/6/2008?ijkey=b9c9055e326e33c2c0036b610fe2fb92af82f08b&keytype2=tf_ipsecsha

Keeley, M. (1997). **Memory and the Importance of Review**. Dissertation. Bucks County Community College. http://www.bucks.edu/~specpop/memory.htm

Külekçi, M. (2000). **The Effects of "Experimenter Provided Keyword Method" In Teaching Vocabulary**. MA Thesis. Anadolu University.

Laufer B. & Hulstijn, J. (2001). "Incidental vocabulary acquisition in a second language: the construct of task-induuced involvement". **Applied Linguistics**. 22 (1), 1-26

Laufer, B. (1997). "What's in a word that makes it hard or easy: some intralexical factors that affect the learning of words". In N. Schmitt and M. McCarthy (Eds.), **Vocabulary Description, Acquisition and Pedagogy**. (pp. 140-155). Cambridge University Press.

Li, X. (2004). **An Analysis Of Chinese EFL Learners' Beliefs About The Role Of Rote Learning In Vocabulary Learning Strategies**. PhD Thesis. University of Sunderland. http://www.asian-efl-journal.com/xiuping_11-05_thesis.pdf

Loftus, G. R. & Loftus, E. F. (1976). **Human Memory: The Processing Of Information**. New Jersey : Lawrance Erlbaum Asssociates, Inc.

Lucas, E. (2001a). **Memory: Structures**. Lectures On Cognitive Psychology. University of Derby. http://ibs.derby.ac.uk/~erica/gua/memorystructures.shtml

Lucas, E. (2001b). **Memory: Processes**. Lectures On Cognitive Psychology. University of Derby. http://ibs.derby.ac.uk/~erica/gua/memoryprocesses.shtml

Mastropieri, M. A. & Scruggs, T. E. (1991). **Teaching Students Ways To Remember: Strategies For Learning Mnemonically**. Cambridge : Brookline Books.

Michelle, J. (2003). "Inferential questioning: building brain power". **Thoughtful Education Resources**. Cracking Vocabulary's Code. Deep-Process. Defining Characteristics. http://www.bg.k12.ky.us/Schools/tccherry/cherry_teachers/PowerQuestioning.ppt

Miller, G.A. (1956). "'The magical number seven, plus or minus two: some limits on our capacity for processing ınformation". **The Psychological Review**. 63, 81-97. http://cogprints.org/730/00/miller.html

Moras, S. (2001). "Teaching vocabulary to advanced students: a lexical approach". **Karen's Linguistics Issues**. http://www3.telus.net/linguisticsissues/teachingvocabulary.html

Nation, I. S. P. (2001). **Learning Vocabulary In Another Language**. Cambridge University Press.

Nation, P. (1994). "What is it?" In P. Nation (Ed.), **New Ways in Teaching Vocabulary**. (p. 157). Illinois : Pantagraph Printing.

Nation, P. (2005). "Teaching vocabulary". **Asian EFL Journal**. 7, (3). 253-259. http://www.asian-efl-journal.com/September_05_pn.php

Nation, P. & Newton, J. (1997). "Teaching vocabulary". In J. Coady and T. Huckin (Eds.), **Second Language Vocabulary Acquisition**. (pp.238-254). Cambridge University Press.

Nielsen, B. (2003). **A Review of Research into Vocabulary Learning and Acquisition**. Dissertation. Kushiro Public University. http://www.kushiro-ct.ac.jp/library/kiyo/kiyo36/Brian.pdf.

O'Dell, F. (1997). "Incorporating vocabulary into the syllabus". In N. Schmitt and M. McCarthy (Eds.), **Vocabulary Description, Acquisition and Pedagogy**. (pp. 258-278). Cambridge University Press.

Oxford, R. L. (1990). **Language Learning Strategies: What Every Teacher Should Know**. Boston : Heinle and Heinle Publishers.

Oxford, R.L. (2003). "Language learning styles and strategies: an overview". **Learning Styles and Strategies / GALA.** pp. 1-25. http://www.education.umd.edu/EDCI/SecondLangEd/TESOL/People/Faculty/Dr.%20Oxford/StylesStrategies.doc.

Pillai, N.R. (2004). "Using mnemonics to improve vocabulary, boost memory and enhance creativity in the ESL classroom".**The English Teacher.** 33, December, 62-83. http://www.melta.org.my/ET/2004/2004-62.pdf.

Raaijmakers, J.G.W. (1993). **The Story Of The Two-Store Model Of Memory: Past Criticisms, Current Status, And Future Directions**. TNO Institute for Perception. http://users.fmg.uva.nl/ewagenmakers/IntroCogSci/JRpastcurrentfuture.pdf.

Rodriguez, M. & Sadowki, M. (2000). "Effects of rote, context, keyword, and context/keyword methods on retention of vocabulary in EFL classrooms". **Language Learning**. 50, (2), 385-412. http://www.blackwell-synergy.com/links/doi/10.1111/0023-8333.00121

Rogers, B. (1998). **Peterson's TOEFL Practice Tests**. NJ: Heinle and Heinle/ITP.

Saffron, (2003a). **The Cognitive Approach**. AS & A2 Physchology Notes. University of Lancaster. http://www.worldofsaffron.co.uk/pdocs/approaches/cognitivism.doc

Saffron, (2003b). **The Levels Of Processing Approach**. AS & A2 Physchology Notes. University of Lancaster. http://www.worldofsaffron.co.uk/pdocs/memory/levels.doc

Sagarra, N. & Alba, M. (2006). 'The key is in the keyword: L2 vocabulary learning methods with beginning learners of Spanish'. **The Modern Language Journal**. 90, (2), 228-243

Schmitt, N. (1994). “More than meaning”. In P. Nation (Ed.), **New Ways in Teaching Vocabulary**. (pp. 158-160). Illinois : Pantagraph Printing.

Schmitt, N. (1997). “Vocabulary learning strategies”. In N. Schmitt and M. McCarthy (Eds.), **Vocabulary Description, Acquisition and Pedagogy**. (pp. 199-227). Cambridge University Press.

Schmitt, N. (2000). **Vocabulary In Language Teaching**. Cambridge University Press.

Schmitt, N. & Schmitt, D. (1995). “Vocabulary notebooks: theoretical underpinnings and practical suggestions”. **ELT Journal**. 49, (2), 133-143.

Segler, T. (2001). **Second Language Vocabulary Acquisition And Learning Strategies In ICALL Environments**. Unpublished PhD Proposal. University of Edinburgh.
http://homepages.inf.ed.ac.uk/s9808690/newprop.pdf

Segler,T., Pain, H. & Sorace, A. (2002). “Second language vocabulary acquisition and learning strategies in ICALL environments”. **Computer Assisted Language Learning.** 15, (4), 409-422.
http:// homepages.inf.ed.ac.uk/s9808690/finalpaper2.pdf

Seliger, H.W. & Shohamy, E. (1990). **Second Language Research Methods**. Oxford University Press.

Shen, W. (2003). “Current trends of vocabulary teaching and learning strategies for EFL settings”. **Feng Chia Journal of Humanities and Social Sciences**. 7, November, 187-224. http://www.cohss.fcu.edu.tw/paper/7-9.doc.

Sökmen, A. J. (1997). “Current trends in teaching second language vocabulary”. In N. Schmitt and M. McCarthy (Eds.), **Vocabulary Description, Acquisition and Pedagogy**. (pp. 237-257). Cambridge University Press.

Stevick, E.W. (1996). **Memory, Meaning & Method : A View of Language Teaching**. Boston : Heinle and Heinle Publishers.

Thomas, M.H. & Wang, A.Y. (1996). “Learning by the keyword mnemonic: looking for long-term benefits”. **Journal of Experimental Psychology**. 2, (4), 330-342. http://imagesrvr.epnet.com/embimages/pdh2/xap/xap24330.pdf.

Thomson, D.M. & Tulving, E. (1970). “Associative encoding and retrieval weak and strong cues”. **Journal of Experimental Psychology**. 86, (2), 255-262. http://step.psy.cmu.edu/scripts/Memory/ThomsonTulving1970.html

Thorne, G.C. (2003). **General Principles For Enhancing Memory And Learning**. Center for Development & Learning. http://www.cdl.org/resource-library/articles/understanding.php

Toglia, M.P. (1999). “Recall accuracy and illusory memories: when more is less”. **Psychology Press**. 7, (2), 233-256. http://taylorandfrancis.metapress.com/(aefv13551gyc34jfd2ula5na)/app/home/contribution.asp?referrer=parent&backto=issue,6,6;journal,45,63;linkingpublicationresults,1:101897,1

Tulving, E. & Pearlstone, Z. (1966). "Availability versus accessibility of information in memory for words". **Journal of Verbal Learning and Verbal Behavior**. 5, 381-391. http://step.psy.cmu.edu/articles/Tulving66.doc

Urano, K. (2000). **Lexical Simplification And Elaboration: An Experiment In Sentence Comprehension And Incidental Vocabulary Acquisition**. MA.Thesis. University of Hawai`i, Manoa. http://ba.hokkai-s-u.ac.jp/~urano/research/thesis_defense.pdf.

Wallace,B., Ross, A. & Davies, J. (2003). **Information Processing Models: Benefits and Limitations**. Dissertation. University of Strathclyde. http://cogprints.org/3093/01/InfProErg.pdf.

Wang, A.Y. (1992). "Keyword mnemonic and retention of second-language vocabulary words". **Journal of Educational Psychology**. 84, (4), 520-528. http://eric.ed.gov/ERICWebPortal/Home.portal?_nfpb=true&_pageLabel=RecordDetails&ERICExtSearch_SearchValue_0=EJ456644&ERICExtSearch_SearchType_0=eric_accno&objectId=0900000b800342d5

Wang, A.Y., Thomas, M.H., Inzana, C.M. & Primicerio, L.J. (1993). "Long-term retention under conditions of intentional learning and the keyword mnemonic". **Bulletin of the Psychonomic Society**. 31, (6), 545-547. http://cat.inist.fr/?aModele=afficheN&cpsidt=3754699

Waring, R. (1995). **Towards A Theoretical Construct For The Interface Between Input And Pre-Existing Knowledge In Second Language Acquisition**. Kiyo Occasional Papers. Notre Dame Seishin University. http://www1.harenet.ne.jp/~waring/papers/input.html

Zhihong, Y. (2000). “Learning words”. **English Teaching Forum Online**. 38, (3), 18-21. http://exchanges.state.gov/forum/vols/vol38/no3/p18.htm

Zimmerman, C.B. (1997). “Historical trends in second language vocabulary instruction”. In N. Schmitt and M. McCarthy (Eds.), **Vocabulary Description, Acquisition and Pedagogy**. (pp. 5-19). Cambridge University Press.