ELİF DERİCİ

A SURVEY ON THE USE OF VOCABULARY LEARNING STRATEGIES OF HIGH SCHOOL STUDENTS

A MASTER'S THESIS

BY

ELİF DERİCİ

THE PROGRAM OF CURRICULUM AND INSTRUCTION
İHSAN DOĞRAMACI BILKENT UNIVERSITY
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To my family

with heartfelt gratitude

for being the biggest supporters of my life

A SURVEY ON THE USE OF VOCABULARY LEARNING STRATEGIES OF HIGH SCHOOL STUDENTS

The Graduate School of Education

of

İhsan Doğramacı Bilkent University

by

Elif Derici

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GRADUATE SCHOOL OF EDUCATION

A Survey on the Use of Vocabulary Learning Strategies of High School Students

Elif Derici

June 2019

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Curriculum and Instruction.

Asst. Prof. Dr. Necmi Akşit (Supervisor)

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Curriculum and Instruction.

Asst. Prof. Dr. İlker Kalender (Examining Committee Member)

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Curriculum and Instruction.

Asst. Prof. Dr. Sedat Akayoğlu, Abant İzzet Baysal University (Examining Committee Member)

Approval of the Graduate School of Education

Prof. Dr. Alipaşa Ayas (Director)

ABSTRACT

A SURVEY ON THE USE OF VOCABULARY LEARNING STRATEGIES OF HIGH SCHOOL STUDENTS

Elif Derici

M.A., Program of Curriculum and Instruction
Supervisor: Asst. Prof. Dr. Necmi Akşit

June 2019

This study investigates the vocabulary learning strategies (VLSs) employed by 556 high school students to identify the most and least frequently used discovery and consolidation strategies. The study further investigates whether there is any difference between VLSs used with respect to gender, grade level, school type and age. To these ends, the researcher collected data through an adapted version of Schmitt's (1997) *Vocabulary Learning Strategies Questionnaire* (VLSQ) administering it in different types of schools, Anatolian high school, Private high school and Science high school. The researcher analyzed both discovery and consolidation strategies, including their sub-categories descriptively. The researcher also analyzed the collected data inferentially with reference to gender, grade level, school type and age. The analysis of the data yielded significant results.

Key words: Vocabulary learning strategies, discovery, consolidation

ÖZET

LİSE ÖĞRENCİLERİNİN KULLANDIKLARI KELİME ÖĞRENME STRATEJİLERİ ÜZERİNE BİR ANKET ÇALIŞMASI

Elif Derici

Yüksek Lisans, Eğitim Programları ve Öğretim
Tez Yöneticisi: Dr. Öğr. Üyesi Necmi Akşit

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Bu araştırmanın amacı 556 lise öğrencisinin keşfetme ve pekiştirmek için en sık ve en az kullandığı kelime öğrenme stratejilerini belirlemek ve öğrencilerin kullandığı stratejilerin yaş, sınıf düzeyi, okul türü ve yaş değişkenlerine göre farklılık gösterip göstermediğini araştırmaktır. Çalışma için gerekli olan veri Ankara'daki Anadolu lisesi, özel lise ve fen lisesi türlerindeki okullarda Schmitt (1997) tarafından hazırlanan Kelime Öğrenme Stratejileri Anketi (VLSQ) aracılığıyla toplanmıştır. Keşfetme ve pekiştirme stratejilerinin yanı sıra bu stratejilerin alt kategorileri de betimleyici olarak analiz edilmiştir. Araştırmacı toplanan verileri ayrıca yaş, sınıf düzeyi, okul türü ve yaş değişkenlerine göre çıkarımsal olarak analiz etmiştir. Veri analizleri önemli sonuçlar göstermektedir.

Anahtar Kelimeler: Kelime öğrenme stratejileri, keşfetme, pekiştirme

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TABLE OF CONTENTS

ABSTRACT iii

ÖZET iv

ACKNOWLEDGEMENTS v

TABLE OF CONTENTS vi

LIST OF TABLES xi

CHAPTER 1: INTRODUCTION 1

Introduction 1

Background 1

Problem 5

Purpose 7

Research questions 8

Significance 8

Definition of key terms 9

CHAPTER 2: REVIEW OF RELATED LITERATURE 11

Introduction 11

Implicit and explicit language learning 11

Language learning strategies 12

Rubin’s classification 13

O’Malley and Chamot’s classification 14

Oxford's classification 15

What is to know a word? 15

Implicit and explicit vocabulary learning 17

Technology use for learning vocabulary 18

Vocabulary learning strategies 20

Gu and Johnson's classification 21

Schmitt's classification 22

Nation's classification 23

Schmitt's taxonomy of vocabulary learning strategies 23

Discovery strategies 24

Determination strategies 24

Social strategies 24

Consolidation strategies 25

Social strategies 25

Memory strategies 26

Cognitive strategies 27

Metacognitive strategies 27

Related studies focusing on VLSQ 28

Studies on EFL learners in Turkey 31

CHAPTER 3: METHOD 35

Introduction 35

Research design 35

Participants 35

Instrumentation 37

Method of data collection 38

Method of data analysis 38

CHAPTER 4: RESULTS 40

Introduction 40

Discovery and consolidation strategies: Gender 40

Discovery strategies and gender 43

Determination strategies concerning gender 44

Social strategies (discovery) concerning gender 46

Consolidation strategies and gender 48

Social strategies (consolidation) concerning gender 49

Memory strategies concerning gender 50

Cognitive strategies concerning gender 54

Metacognitive strategies concerning gender 56

Discovery and consolidation strategies: Grade level 58

Discovery strategies and grade level 61

Determination strategies concerning grade level 62

Social strategies (discovery) concerning grade level 65

Consolidation strategies and grade level 68

Social strategies (consolidation) concerning grade level 70

Memory strategies concerning grade level 73

Cognitive strategies concerning grade level 82

Metacognitive strategies concerning grade level 85

Discovery and consolidation strategies: School type 88

Discovery strategies and school type 92

Determination strategies concerning school type 93

Social strategies (discovery) concerning school type 97

Consolidation strategies and school type 99

Social strategies (consolidation) concerning school type 101

Memory strategies concerning school type 103

Cognitive strategies concerning school type 111

Metacognitive strategies concerning school type 114

Discovery and consolidation strategies: Age 116

Discovery strategies and age 118

Determination strategies concerning age 119

Social strategies (discovery) concerning age 123

Consolidation strategies and age 125

Social strategies (consolidation) concerning age 127

Memory strategies concerning age 129

Cognitive strategies concerning age 138

Metacognitive strategies concerning age 141

CHAPTER 5: DISCUSSION 145

Introduction 145

Overview of the study 145

Discussion of the major findings 145

Conclusion 1: Strategy use and gender 145

Conclusion 2: Strategy use and grade level 149

Conclusion 3: Strategy use and school type 153

Conclusion 4: Strategy use and age 158

Implications for practice 161

Implications for further research 162

Limitations 163

REFERENCES 164

APPENDIX A: Questionnaire (Turkish) 176

APPENDIX B: Questionnaire (English) 182

APPENDIX C: Summary of Significantly Higher Mean Score Results 188

LIST OF TABLES

Table		Page
1	Gender distribution across school types	36
2	Grade levels across school types	36
3	Age groups across school types	37
4	Overall discovery and consolidation strategies: Gender	40
5	Independent samples t-test for overall discovery and consolidation strategies: Gender	41
6	Discovery and consolidation strategies: Gender	41
7	Independent samples t-test for discovery and consolidation strategies: Gender	42
8	Discovery strategies and gender	43
9	Independent samples t-test for discovery strategies concerning gender	43
10	Determination strategies and gender	44
11	Independent samples t-test for determination strategies concerning gender	45
12	Social strategies (discovery) concerning gender	46
13	Independent samples t-test for social strategies (discovery) concerning gender	47
14	Consolidation strategies and gender	48
15	Independent samples t-test for consolidation strategies concerning gender	49
16	Social strategies (consolidation) concerning gender	49
17	Independent samples t-test for social strategies (consolidation) concerning gender	50
18	Memory strategies concerning gender	51

19 Independent samples t-test for memory strategies concerning gender 54
20 Cognitive strategies concerning gender 55
21 Independent samples t-test for cognitive strategies concerning gender 56
22 Metacognitive strategies concerning gender 57
23 Independent samples t-test for metacognitive strategies concerning gender ... 57
24 Overall discovery and consolidation strategies: Grade level 58
25 ANOVA for overall discovery and consolidation strategies: Grade level 58
26 Results of post hoc tests for discovery and consolidation strategies: Grade level 59
27 Discovery and consolidation strategies: Grade level 60
28 ANOVA for overall discovery and consolidation strategies: Grade level 60
29 Discovery strategies and grade level 61
30 ANOVA for overall discovery strategies and grade level 61
31 Determination strategies concerning grade level 62
32 ANOVA for determination strategies concerning grade level 63
33 Results of post hoc tests for determination strategies concerning grade level. 64
34 Social strategies (discovery) concerning grade level 66
35 ANOVA for social strategies (discovery) concerning grade level 67
36 Results of post hoc tests for social strategies (discovery) and grade level 67
37 Consolidation strategies and grade level 69
38 ANOVA for consolidation strategies and grade level 69
39 Results of post hoc test for consolidation strategies and grade level 70
40 Social strategies (consolidation) concerning grade level 71
41 ANOVA for social strategies (consolidation) concerning grade level 71

42 Results of post hoc tests for social strategies (consolidation) concerning grade level 72
43 Memory strategies concerning grade level 73
44 ANOVA for memory strategies concerning grade level 76
45 Results of post hoc tests for memory strategies concerning grade level 78
46 Cognitive strategies concerning grade level 82
47 ANOVA for cognitive strategies concerning grade level 83
48 Results of post hoc tests for cognitive strategies concerning grade level 84
49 Metacognitive strategies concerning grade level 86
50 ANOVA for metacognitive strategies concerning grade level 87
51 Results of post hoc tests for metacognitive strategies concerning grade level 87
52 Overall discovery and consolidation strategies: School type 89
53 ANOVA for overall discovery and consolidation strategies: School type 89
54 Results of post hoc tests for discovery and consolidation strategies: School type 90
55 Overall discovery and consolidation strategies: School type 90
56 ANOVA for overall discovery and consolidation strategies: School type 91
57 Discovery strategies and school type 92
58 ANOVA for discovery strategies and school type 92
59 Results of post hoc tests for discovery strategies and school type 93
60 Determination strategies concerning school type 94
61 ANOVA for determination strategies concerning school type 95
62 Results of post hoc tests for determination strategies concerning school type 96
63 Social strategies (discovery) concerning school type 97
64 ANOVA for social strategies (discovery) concerning school type 98

65 Results of post hoc tests for social strategies (discovery) concerning school type 99
66 Consolidation strategies and school type 100
67 ANOVA for consolidation strategies and school type 100
68 Results of post hoc tests for consolidation strategies and school type 101
69 Social strategies (consolidation) concerning school type 102
70 ANOVA for social strategies (consolidation) concerning school type 102
71 Results of post hoc tests for social strategies (consolidation) concerning school type 103
72 Memory strategies concerning school type 104
73 ANOVA for memory strategies concerning school type 106
74 Results of post hoc tests for memory strategies concerning school type 108
75 Cognitive strategies concerning school type 111
76 ANOVA for cognitive strategies concerning school type 112
77 Results of post hoc tests for cognitive strategies concerning school type 113
78 Metacognitive strategies concerning school type 114
79 ANOVA for metacognitive strategies concerning school type 115
80 Results of post hoc tests for metacognitive strategies concerning school type 115
81 Overall discovery and consolidation strategies: Age 116
82 ANOVA for overall discovery and consolidation strategies: Age 116
83 Results of post hoc tests for discovery and consolidation strategies: Age 117
84 Discovery and consolidation strategies: Age 117
85 ANOVA for overall discovery and consolidation strategies: Age 118
86 Discovery strategies and age 119

87 ANOVA for overall discovery strategies and age 119
88 Determination strategies concerning age 120
89 ANOVA for determination strategies concerning age 121
90 Results of post hoc tests for determination strategies concerning age 121
91 Social strategies (discovery) concerning age 123
92 ANOVA for social strategies (discovery) concerning age 124
93 Consolidation strategies and age 125
94 ANOVA for consolidation strategies and age 126
95 Results of post hoc tests for consolidation strategies and age 126
96 Social strategies (consolidation) concerning age 127
97 ANOVA for social strategies (consolidation) concerning age 128
98 Results of post hoc tests for social strategies (consolidation) concerning age 128
99 Memory strategies concerning age 130
100 ANOVA for memory strategies concerning age 133
101 Results of post hoc tests for memory strategies concerning age 134
102 Cognitive strategies concerning age 138
103 ANOVA for cognitive strategies concerning age 139
104 Results of post hoc tests for cognitive strategies concerning age 140
105 Metacognitive strategies concerning age 142
106 ANOVA for metacognitive strategies concerning age 142
107 Results of post hoc tests for metacognitive strategies concerning age 143
108 Strategy use and gender: Discovery and consolidation strategies 146
109 Strategy use and gender: Discovery strategies 146
110 Strategy use and gender: Consolidation strategies 147

111 Summary list of strategy use and gender: Discovery and consolidation strategies 148
112 Strategy use and grade level: Discovery and consolidation strategies 150
113 Strategy use and grade level: Discovery strategies 150
114 Strategy use and grade level: Consolidation strategies 151
115 Summary list of strategy use and grade level: Discovery and consolidation strategies 152
116 Strategy use and school type: Discovery and consolidation strategies 153
117 Strategy use and school type: Discovery strategies 154
118 Strategy use and school type: Consolidation strategies 155
119 Summary list of strategy use and school type: Discovery and consolidation strategies 156
120 Strategy use and age: Discovery and consolidation strategies 158
121 Strategy use and age: Discovery strategies 158
122 Strategy use and age: Consolidation strategies 159
123 Summary list of strategy use and age: Discovery and consolidation strategies 160

CHAPTER 1: INTRODUCTION

Introduction

This chapter begins with featuring background information about the study. The following sections of this chapter include information on the problem, purpose, research questions and significance of the study. The chapter finally proceeds with the definition of key words.

Background

People have a natural ability to acquire a language from the very beginning of their lives. Several scholars have come up with different language acquisition theories (Chomsky, 1959; Skinner, 1957; Tomasello, 2003). Chomsky (1959) opposed Skinner's (1957) idea that a child acquires language and strengthens it through reinforcement. Krashen (1981) stated that language acquisition shows similarities to how a child acquires a language. He claimed that this process depends on speakers interacting in meaningful ways in their target language. Tomasello's (2003) theory of acquiring a language was similar to Krashen's (1981) theory as the usage-based theory is related with competence of language in a natural language context. This idea can be further explained as a child hearing and using the language on a daily basis. Krashen (1981) made a distinction between language acquisition and language learning. As he remarked, language learning occurs consciously with some help of error connection and being exposed to explicit rules (Krashen & Seliger, 1975, as cited in Krashen, 1981). Schmitt (1997) used vocabulary learning and vocabulary acquisition interchangeably.

The process of learning a new language does not occur in the same way for all learners. For over three decades, language learning strategies have been a field of research in which researchers seek to understand how some language learners are more successful in learning a second language (Lee, 2010; Rubin, 1975; Rubin, 1981). Rubin (1975) indicated that good language learners use strategies that help them to learn a language more effectively. Stern (1975) listed ten language learning strategies that good language learners use as follows:

- experimenting,
- planning,
- developing the new language into an ordered system,
- revising progressively,
- searching for meaning,
- practicing,
- using the language in real communication,
- self-monitoring,
- developing the target language into a separate reference system,
- learning to think in the target language. (as cited in Griffiths, 2013, p. 5)

Researchers defined language learning strategies in different ways. Rubin (1987) defined it as "the processes by which information is obtained, stored, retrieved, and used". Rubin's definition showed that strategies affect the learning process directly and indirectly. In a similar way, Cohen (1998) defined it as "processes which are consciously selected by learners and which may result in action taken to enhance the learning or use of a second or a foreign language, through the storage, retention, recall and application of information about that language" (p. 4). Scarcella and Oxford (1992) defined language learning strategies as "specific actions, behaviours, steps or techniques – such as seeking out conversation partners, or giving oneself encouragement to tackle a difficult language task – used by students to enhance their own learning". O'Malley and Chamot (1990) stated that language learning strategies assist learners to obtain, learn and understand through particular behaviours or

intellectual process. Weinstein and Mayer (1986) also related language learning strategies with behaviours.

Vocabulary knowledge is also considered as an essential factor in learning a language as a language learner should know a number of words to have a good comprehension about that language. Smith (1926) claimed that up to six years old, children acquire more than 2000 words cognitively. Many researchers classified the use of vocabulary learning strategies of language learners in different ways (Fan, 2003; Gu & Johnson, 1996; Nation, 2001; Schmitt, 1997; Stöffer, 1995). Stöffer (1995) classified vocabulary learning strategies into nine categories as follows:

- strategies involving authentic language use,
- strategies involving creative activities,
- strategies used for self-motivation,
- strategies used to create mental linkages,
- memory strategies,
- visual/auditory strategies,
- strategies involving physical action,
- strategies used to overcome anxiety,
- strategies used to organize words. (as cited in Schmitt, 1997, p. 7)

Gu and Johnson (1996) categorized vocabulary learning strategies as metacognitive regulation, guessing strategies, dictionary strategies, note-taking strategies and rehearsal strategies, encoding strategies and activation strategies. The questionnaire that they used also included a category of beliefs about vocabulary learning as well as a section for demographic information of the participants. They also stated that there are five types of learners which are readers, active strategy users, non-encoders, encoders and passive strategy users. Another classification of vocabulary learning strategies was made by Nation (2001). His classification consisted of four categories: planning, sources, processes and skills in use. As he stated, planning strategies involved “deciding on where to focus attention, how to focus the attention and how

often to give attention to the item" (p.329). The strategies under the category of sources focused on finding information about the unfamiliar vocabulary. He also stated that process strategies involved "ways of remembering vocabulary and making it available for use" (p. 331). The last division of the taxonomy is the skills in use to enrich vocabulary knowledge. Nation (2001) claimed that learners need to do extensive reading, listening as well as being involved in interactive situations to be able to produce the language. He emphasized that learners should know how to read, listen, speak and write in an easy way so that they can be fluent in the language. Nation and Yamamoto (2011) claimed that "this can be done by someone learning a language without the help of a teacher" (as cited in Nation, 2013, p.332).

Basing his research on Oxford's (1990) language learning strategy taxonomy, Schmitt (1997) also designed a taxonomy and classified vocabulary learning strategies into two dimensions: discovery and consolidation. Discovery strategies were subcategorized as determination and social strategies; consolidation strategies were subcategorized as social, memory, cognitive and metacognitive strategies. Schmitt's (1997) taxonomy consists of 58 vocabulary learning strategies. With this taxonomy, Schmitt did a survey research in 1997 with Japanese students and company workers with a total number of 600 participants to determine the vocabulary learning strategies that they use and the ratings given for their usefulness. Using a bilingual dictionary as a discovery strategy was not only the most used strategy but also the most helpful strategy as indicated by the majority of the participants. The strategies of using a bilingual dictionary, written repetition, verbal repetition, saying a new word aloud, studying a word's spelling and taking notes in class were found as both most used and helpful strategies when the two categories

are compared. Schmitt's (1997) research is important in that the use of strategy changes when learners mature or become more proficient. Schmitt also stated that language proficiency, the task type and culture also affect choosing a vocabulary learning strategy. Cohen and Aphek (1981) emphasized the importance of proficiency in choosing vocabulary learning strategies as advanced students perform better when looking for clues from a context while some others use word associations when trying to recall words. They also stated that students perform better in recall tasks if they are proficient in a language. As for culture, O'Malley and Chamot (1990) found a difference between Hispanics and Asians in terms of strategy training. Their study showed that strategy training helped Hispanics to perform better than those who did not have strategy training whereas it was the opposite for Asians.

Problem

Zimmerman (1997) stated that vocabulary knowledge is of significant importance for language learners. Many researchers indicated that vocabulary knowledge is essential to a good comprehension in a language (Bonk, 2000; Hu & Nation, 2000; Laufer, 1989). While mastering a language, the process of developing reading skills is essential, and learning new vocabulary is a building block in this process. Kulikuva (2015) believed that vocabulary knowledge has a strong relationship with reading comprehension as the vocabulary growth helps readers to understand texts in a better way. Studies have shown that a learner should know an adequate number of word-families to comprehend texts without any help (Goulden, Nation, & Read, 1990; Nagy & Anderson, 1984). Nation's (2006) study showed that learners should know about between 8,000 and 9,000 word-family vocabulary to comprehend written texts, and between 6,000 and 7,800 word-family vocabulary to comprehend spoken texts.

Researchers also tried to find how many words someone should need to know to read a novel. Hirsh and Nation (1992) indicated that learners should know about 5,000 words to read teen novels.

A person can read a novel only for pleasure and also learn new vocabulary. Schmitt (2010) defined this process as incidental learning and explained it as "a by-product of language usage, without the intended purpose of learning a particular linguistic feature" (p.29). Nation and Waring (1997) also explained it as learning a new word or having more knowledge about a previously learned word through extensive reading and listening in meaningful context. They emphasized the importance of extensive reading as learners can be exposed to the most frequently used and the most useful words.

Reading helps learners to improve their knowledge in a language. Schmitt, Jiang and Grabe (2011) believe the importance of reading on learning vocabulary outside classroom. Students may encounter a number of words that slow down their reading comprehension when they are dealing with a text. In these situations, students may try to get help from other sources or people. To help students become independent learners in their vocabulary learning process, Ghazal (2007) suggested that learners should be instructed on how to use vocabulary learning strategies effectively. Before practicing such instructions, students' the most and least frequently used vocabulary learning strategies need to be identified, preferably with respect to gender, grade level, school type and age. Schmitt and Schmitt (1995) suggested that students can choose the best strategies for themselves if they are introduced a wide range of vocabulary strategies.

There are studies focusing on vocabulary learning strategies of successful and unsuccessful learners (Nation & Moir, 2008); there are some others exploring vocabulary learning strategies and beliefs in their usefulness (Fan, 2003); still others examining the role of various variables such as gender or self-efficacy in vocabulary learning strategies (Gu, 2002; Muzimoto, 2012). There are, however, some studies claiming that no matter what the focus is, the use of vocabulary strategies may change from one educational context to another (Chamot, 2008). Gu (2003) claimed that strategies that work in some context will not work in all contexts. More specifically these suggest that vocabulary strategy use may change from one EFL or ESL context to another. One way of analyzing this might be through focusing on different EFL or ESL contexts within or across countries.

As far as Turkey is concerned, there are different school types providing language instruction. For example, there are private high schools offering high quality language programs; there is a special language program, laid out by the Ministry of National Education, followed by Anatolian high schools; there are also science high schools whose curriculum include English as a Foreign Language. Language use in context may differ with regard to age and grade level as well as gender. Additionally, as suggested by Gu (2002), school type might be considered as a variable to examine as well.

Purpose

There is little research conducted on vocabulary learning strategies used by high school learners in Turkey, and the purpose of the study is to explore the vocabulary learning strategies of high school students from different types of schools in Çankaya

province in Ankara. The researcher also aimed to identify if there was any difference in the use of vocabulary learning strategies with respect to gender, grade level, school type and age. To these ends, the researcher used Schmitt's (1997) framework, and the adapted version of Vocabulary Learning Strategies Questionnaire (VLSQ), which was composed of two main categories: discovery and consolidation strategies.

Research questions

This study will address the following questions:

1. What vocabulary learning strategies are used by high school students coming from different types of schools?
    a. What discovery strategies do they use?
    b. What consolidation strategies do they use?
2. Is there any difference in the use of vocabulary learning strategies with respect to the following variables:
    a. Gender
    b. Grade level
    c. School type
    d. Age

Significance

This study provides some information about the range of the most and least commonly used vocabulary learning strategies in different types of schools in Ankara, Çankaya, Turkey in particular. Teachers, curriculum designers, researchers and policy makers would use the outcomes of the study to make instructional, curricular and policy related decisions. Discovering the vocabulary learning

strategies that students mostly use, teachers may help them to be aware of their own strategies. Knowing the vocabulary learning strategies they use, students may use more effective strategies for themselves to acquire new vocabulary without the presence of a teacher. Students differ in the use of their strategies as they also differ in gender, school type, grade level and age. There is not much research focusing on vocabulary learning strategies and investigating if there is any relation between these aspects.

Definition of key terms

Discovery strategies: These strategies are used when learners first encounter with a word and try to understand its meaning (Schmitt, 1997). Discovery strategies are further divided into two subcategories as determination and social strategies.

Consolidation strategies: These are the strategies that learners use when they try to remember a word's meaning after being introduced to a word (Schmitt, 1997). Consolidation strategies include four subcategories as social, memory, cognitive and metacognitive strategies.

Science high school: These are schools which aim to educate students giving emphasis on science and math lessons. Students are admitted based on their results on an academic test.

Anatolian high school: These schools aim to prepare students in accordance with their needs, talents and abilities while applying a program whose purpose is to

improve students' use of a foreign language. Students' academic test results determine whether they are admitted.

Private high school: These schools provide a variety of sports and extra-curricular activities. Students are admitted based on their results of the nationwide examination; however, parents of the students are charged yearly tuition unless students are granted a scholarship.

CHAPTER 2: REVIEW OF RELATED LITERATURE

Introduction

This chapter starts with introducing background information on implicit and explicit language learning. Then, language learning strategies and major classifications in this field were introduced. The chapter follows with background information on vocabulary learning strategies and major classifications made in this field. Later, information on Schmitt's (1997) taxonomy is given as *Vocabulary Learning Strategies Questionnaire* (VLSQ) was used as data collection tool of this study. The chapter finishes with previous research and studies conducted by using VLSQ.

Implicit and explicit language learning

Over the last decades, researchers have investigated whether second language is learned implicitly or explicitly. Ellis (1994) defined implicit language learning as "acquisition of knowledge about the underlying structure of a complex stimulus environment by a process which takes place naturally, simply and without conscious operations" (p. 1). As for explicit language learning, he provided a definition by saying that it "is a more conscious operation where the individual makes and test hypotheses in a search for structure" (p.1). In consideration of these definitions, one can state that people can learn a language by acquiring the knowledge through communication in a natural way or by studying grammar structures and target vocabulary explicitly. The former one can be given as an example of how people acquire their first language. Ellis (1994) further explained that people do not need explicit instructions when they are learning their first language as they acquire the grammar structures unconsciously and through an input module that he referred to as

a form of a "Language Acquisition Device" (p. 3), which is a term coined by Chomsky (1965). When people are learning a second language, it may be helpful to use some strategies to enhance the learning process.

Language learning strategies

Before the 1970s, teachers' focus was more towards methodology than individual learners. Around the 1980s, researchers began to investigate how some learners are more successful in learning than others (Rubin, 1975; Stern, 1975). Griffiths (2004) claimed that focus on language learning gained interest by educators as they saw that these strategies may enhance learning. Rubin (1975) argued that less successful learners can employ some productive strategies used by successful learners.

Oxford (1990) indicated twelve features of language learning strategies as follows:

- contribute to the main goal of communicative competence,
- allow learners to become more self-directed,
- expand the role of teachers,
- are problem oriented,
- are specific actions taken by the learner,
- involve many aspects of the learner, not just cognitive,
- support learning both directly and indirectly,
- are not always observable,
- are often conscious,
- can be taught,
- are flexible,
- are influence by a variety of factors (as cited in Oxford, 1990, p. 9)

Researchers defined language learning strategies in different ways. Rubin (1975) proposed a broad definition for language learning strategies as "the techniques or devices which a learner may use to acquire knowledge" (p.43). Rubin (1987) later defined language learning strategies as "the processes by which information is obtained, stored, retrieved, and used", which showed these strategies affect the

learning process directly and indirectly. Another definition for language learning strategies was "any set of operations or steps used by a learner that will facilitate the acquisition, storage, retrieval or use of information" (O'Malley, J.M., Chamot, A.U., Stewner-Manzanares, G., Russo, R. P, Kupper, L.., 1985a, p. 23). Oxford (1990) defined language learning strategies as "specific actions taken by the reader to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (p. 8). Cohen (1998) also defined language learning strategies as "processes which are consciously selected by learners and which may result in action taken to enhance the learning or use of a second or a foreign language, through the storage, retention, recall and application of information about that language" (p. 4). Scarcella and Oxford (1992) defined them as "specific actions, behaviours, steps or techniques – such as seeking out conversation partners, or giving oneself encouragement to tackle a difficult language task – used by students to enhance their own learning" (p.63). O'Malley and Chamot (1990) claimed that language learning strategies assist learners to obtain, learn and understand through particular behaviours or intellectual process. Similarly, Weinstein and Mayer (1986) related language learning strategies with behaviours.

Rubin's classification

Rubin (1975) believed that everybody can learn a language as they are born with that ability. However, she also argued that some learners are better in learning a language than others. She called these learners as "good language learners" or "successful learners", and claimed that good language learning depends on variables (p. 44). She indicated three of them as aptitude, motivation and opportunity. She also listed seven strategies that good language learners used as follows:

- The good language learner is a willing and accurate guesser.
- The good language learner has a strong drive to communicate, or to learn from a communication.
- The good language learner is often not inhibited.
- In addition to focusing on communication, the good language learner is prepared to attend to form.
- The good language learner practices.
- The good language learner monitors his own and the speech of others.
- The good language learner attends to meaning (pp.45).

Rubin stated that if teachers make use of these strategies in their instructional strategies, the gap between good and poor learners can be diminished. Rubin (1981) made a classification scheme for learning strategies. Her classification consisted of two categories as "strategies that directly affect learning" and "processes that contribute indirectly to learning" (Rubin, 1981; as cited in O'Malley & Chamot, 1990, p. 3). Under the first category, she included six strategies, and in the latter one there were two strategies. The list of these strategies was stated as follows:

- clarification/verification,
- monitoring,
- memorization,
- guessing/inductive inferencing
- deductive reasoning,
- practice,
- crates opportunities for practice,
- production tricks. (as cited in O'Malley & Chamot, 1990, p. 4)

Rubin's (1987) classification was further categorized as learning strategies, communication strategies, and social strategies.

O'Malley and Chamot's classification

O'Malley at al. (1985a) conducted a study to investigate the language learning strategies that high school students used. The study also included some observations and interviews with teachers. By using the results of this study, O'Malley and Chamot (1990) classified language learning strategies under three broad types of

strategies as cognitive, metacognitive and socio-affective strategies. They argued that language learning strategies were to help individuals to "comprehend, learn, or retain new information" (O'Malley & Chamot, 1990, p. 1). O'Malley and Chamot's (1990) investigation in language learning strategies also included an attempt for teaching strategies and establishing a theoretical foundation.

Oxford's classification

Oxford (1990) compiled Rubin's (1975) classification and O'Malley and Chamot's (1990) classification scheme. Oxford's (1990) classification of language learning strategies included two main categories as direct and indirect strategies. Among direct strategies included memory strategies, cognitive strategies and compensation strategies. As for indirect strategies, metacognitive strategies, affective strategies, and social strategies were listed. Oxford (1990) produced the *Strategy Inventory for Language Learning* (SILL) which was used by many researchers to assess the language learning strategies that learners used. Researchers also benefited from this instrument in the field of vocabulary learning strategies, and adopted them into their framework (Kudo, 1999; Schmitt, 1997). Oxford (1990) also contributed to the field of language learning strategies by developing a model that could be useful for strategy training as well as providing exercises that teachers can use with their students for this purpose.

What is to know a word?

Levelt (1989) listed the aspects of vocabulary knowledge as form, meaning and the use of word. For each of these aspects, he also stated if learning occurs explicitly or implicitly, and provided some activities that may enhance the vocabulary knowledge.

The activities he provided for both form and use of vocabulary included repetition. The activities on meaning focused on inference while use of vocabulary also had activities based on explicit guidance.

To know a word, Ellis (1995) stated that learners need to recognize the word as it enters into mental lexicons and later transfer it into two different channels of input and output lexicons. Ellis (1995) remarked this process as follows:

> We must learn its syntactic properties: its part of speech and its syntactic subcategorisations. We must learn its place in lexical structure: its relations with other words. We must learn its semantic properties, its referential properties, and its roles in determining entailments. We must learn the conceptual underpinnings that determine its place in our entire conceptual system. Finally we must learn the mapping of these I/O specifications to the semantic and conceptual meanings: the relation between word form and word meaning is generally arbitrary (relics of onomatopoeic or pictographic origin aside). (p. 215)

According to Ellis (1995), a learner must be aware of the form, the meaning and mapping of the word to know a word. Nation (1990) defined knowing a word as "being able to recall its meaning when we meet it… to see which shade of meaning is most suitable for the context that it occurs in… and to make various associations with other related words" (p.32). Nation (2013) listed the aspects of knowing a word based on research done in experimental psychology and language acquisition, and believed that there is not only one way of knowing a word.

Levelt (1989) associated the form of a word with implicit learning, the meaning of a word with explicit learning, and the use of the word with both explicit and implicit learning. Nation (2013) examined Levelt's (1989) list of vocabulary knowledge and how he related the kinds of knowledge with the aspects of knowing a word. Ellis (1995) argued that more explicit attention should be given to the meaning of the

word rather than the form as it is an important component of learning. Nation (2013) stated that both explicit and implicit attention is useful to know a word. As for learning the form of a word, Nation (2013) asserted that it can be also learned through explicit learning, but the most helpful way to learn the form can be through implicit learning. To this end, he suggested that more opportunities should be provided for learners.

Implicit and explicit vocabulary learning

Scheffler and Cinciała (2010) defined implicit second language knowledge as being "intuitive, procedural, systematically variable, and automatic and thus available for use in fluent unplanned language use" (p.13). Schmitt (2010) defined incidental learning as "a by-product of language usage, without the intended purpose of learning a particular linguistic feature" (p.29). He further exemplified his definition as a learner reading a novel only for pleasure. Nation and Waring (1997) emphasized the importance of extensive reading as learners can be exposed to the most frequently used and the most useful words.

As for explicit knowledge, Scheffler and Cinciała's (2010) definition was based on being "conscious, declarative, anomalous, and inconsistent (i.e., it takes a form of fuzzy rules inconsistently applied) and generally accessible through control processing in planned language use" (p.13) and stated it can be learned at any age. Nation (2001) stated that "the constraints on vocabulary use are more closely related to meaning and would benefit more from explicit learning" (p. 34). Ellis (1994) argued that learning the form of a word relies on implicit learning but learning the meaning and the use of the word relies on explicit processes. He stated that implicit

learning is strongly affected by repetition while explicit learning occurs more consciously. As learners are in search for structure and rules, Ellis (1994) said that explicit learning is affected by mental processing. In mental processing, learners link the knowledge of the word form to the meaning of it. To this end, Nation (2001) further explained Ellis' (1994) argument and stated that "especially for high-frequency words, teachers should explain the meaning of words, and learners should do exercises, look up in dictionaries, and think about the meanings. After brief attention to spelling and pronunciation however, experience in meeting and producing the word form should be left to encounters in meaning focused use" (Ellis, 1994, p. 33-34).

Technology use for learning vocabulary

The Internet and integration of technology in ELT have provided new pathways. The term, practice of, Computer-Assisted Language Learning (CALL) evolved into "information and communication technologies (ICT) (Dudeney & Huckley, 2012). These technologies include computers, tablets, smart phones, smart boards, as well as the Internet. Interactive Whiteboard tools (IWBs) supported teachers in presenting multimedia materials. The Internet has brought new opportunities for educational purposes that could be utilized in and outside the classroom. With the advent of more affordable and convenient Internet, the network has emerged to a platform for teachers and learners to easily access information and create new paths for practice. Web 2.0, which is defined as "a Web technology that aims to enhance creativity, information sharing and collaboration among users" by Tu, Blocher and Ntoruru (2008), is used to create a more interactive environment by using a variety of websites.

The integration of the use of mobile phones into the teaching and learning, also known as Mobile Assisted Language Learning (MALL), has also been an assistant on vocabulary learning since the growth of the use of technological devices. Online dictionaries, which are one of the key components of the mobile technologies, are also used to quickly access the meanings of the unknown words, and they have become "a preferred alternative" to print dictionaries, and made the vocabulary learning process more "convenient, strategic and learner- oriented" (Nesi, 1999, as cited in Nurmukhamedov, 2012, p.15). By means of these flexible and immediate sources, learners may access to these dictionaries in and outside the classroom via their laptops, tablets or smart phones easily. Osman and Al Yafei (2016) indicated that using mobile phones for the purpose of learning vocabulary "outside the classroom allows more exposure and interaction with the learned words, resulting in better retrieval of the vocabulary knowledge" (p. 302).

Many researchers found educational technologies effective in learning new vocabulary (Arndt, H. L. & Woore, R., 2018; Kasapoğlu-Akyol, 2010; Li, J. and Cummins, J., 2019; Ramezanali, N. & Faez, F., 2019) while some other researchers asserted that there are disadvantages of technology use. Kruse (2001b) claimed that not all students have access to these technologies (as cited in Solano, L., Cabrera, P., Ulehlova, E. & Espinoza, V. 2017). Lai and Kritsonis (2006) said that students or teachers may not know how to use these technologies effectively. Another disadvantage they reported was the inefficiency of computers in interacting with learners and finding solutions to unexpected problems. Learners also may not be able to have access to the Internet all the time. In these situations, it may be helpful to use some other strategies.

Vocabulary learning strategies

Ahmed (1989) was among the first researchers who investigated vocabulary learning strategies that learners used. His study focused on Sudanese students' strategy use through lexical tests (as cited in Meara, 1992). He categorized the strategies in two groups as macro-strategies and micro-strategies. The former one was comprised of "memorization, practice, note-taking, and using different information sources" while the latter one was related with specific behaviors (Ahmed, 1989; as cited in Kulikova, 2015, p. 27).

Nation (2001) defined vocabulary learning strategies as "a part of language, which in turn a part of general learning strategies" (p. 217). Cameron (2001) viewed vocabulary learning strategies as "actions that learners take to help themselves understand and remember vocabulary" (as cited in Ruutmets, 2005). Following Rubin's (1987) definition of learning strategies which is "the process by which information is obtained, stored, retrieved, and used" (Rubin, 1987, p. 29), Schmitt (1997) claimed that vocabulary learning strategies "could be any which affect this rather broadly defined process" (p. 203). Stating that providing a definition for vocabulary learning strategies is not easy, Nation (2001) listed some features of the strategies as follows:

- involve choice, that is, there are several strategies to choose from,
- be complex, that is, there are several steps to learn,
- require knowledge and benefit from training,
- increase the efficiency of vocabulary learning and vocabulary use (p. 217).

According to Nation (2001), learners should be aware of their goals regarding vocabulary knowledge, and they should choose the vocabulary words that they need to focus on by considering their goals. Gu and Johnson (1996) were in line with this

notion as they stated that this was one of the characteristics that successful learners used. They also claimed that most successful learners use a variety of vocabulary learning strategies.

There have been many classifications of vocabulary learning strategies (Cook & Mayer, 1983; Fan, 2003; Gu & Johnson, 1996; Nation, 1990; Nation, 2001; Schmitt, 1997; Stöffer, 1995). Fan (2003) stated that there is not only one perfect classification, and strategies may be subsumed under many categories regarding the aspects to be focused on.

Gu and Johnson's classification

Following Oxford (1990)'s language learning strategies classification, Gu and Johnson's (1996) list of vocabulary learning strategies were grouped under metacognitive regulation and cognitive strategies. These strategies were further categorized as metacognitive regulation, guessing strategies, dictionary strategies, note-taking strategies and rehearsal strategies, encoding strategies and activation strategies. Gu and Johnson (1996) conducted their research based on a questionnaire consisting of 91 items in order to investigate the English vocabulary learning strategies that advanced learners used. They also used a section to obtain demographic information of the participants and their beliefs about vocabulary learning. They conducted their study by applying the questionnaire on a group of 850 sophomore non-English major students at Beijing Normal University. Their aim was to investigate if there were correlations between the strategies used and the learners' vocabulary size as well as their proficiency. The results showed a positive correlation between them. Another aim of their study was to see what type of learners these

participants were, and they came up with five types of learners as readers, active strategy users, non-encoders, encoders and passive strategy users. They highlighted the importance of these types rather than individual language learning strategies.

Schmitt's classification

Schmitt (1997) developed his taxonomy based on Oxford's (1990) language learning strategies. He explained his reason for using Oxford's (1990) taxonomy as it is best suitable for capturing and organizing a large variety of vocabulary learning strategies. Schmitt's (1997) taxonomy consisted of two major groups of strategies: discovery strategies and consolidation strategies. From the sub-strategy categories in Oxford's (1990) taxonomy, Schmitt (1997) found it useful to include social strategies, memory strategies, cognitive strategies and metacognitive strategies into his taxonomy. Schmitt (1997) asserted that Oxford's (1990) taxonomy was insufficient in categorizing strategies about vocabulary in particular, such as the strategies that Japanese students use when they discover the meaning of a new word without asking someone. For this reason, Schmitt (1997) added a new sub-category called the determination strategies. He compiled his taxonomy by examining textbooks and vocabulary reference books, asking students to report how they studied English vocabulary, and asked teachers whether they could add new strategies to the list. The list of strategies at the beginning included 40 strategies which were later used in a survey conducted with Japanese learners. At the end of the survey, six more strategies were added according to the responses given. The last version of the survey contained 58 strategies after a final research and talking to teachers. The survey was used in a research conducted in 1997 with Japanese students and company workers with 600 participants to determine the vocabulary

learning strategies that these participants use and their usefulness. The majority of the participants indicated that using a bilingual dictionary as a discovery strategy was the most useful and helpful strategy. The strategies of using a bilingual dictionary, written repetition, verbal repetition, saying a new word aloud, studying a word's spelling and taking notes in class were found as both most used and helpful strategies.

Nation's classification

Nation (2001) developed a taxonomy of vocabulary learning strategies that has three major strategy groups as planning vocabulary learning, sources: finding information about words, and processes: establishing vocabulary knowledge. The first category is about selection of focus area as well as how and how often learners give attention to lexical items. The second category consists of strategies about understanding and getting information about unknown words. The last category includes strategies to remember words and using them in the future.

Schmitt's taxonomy of vocabulary learning strategies

Schmitt's (1997) taxonomy is divided into two main categories as discovery strategies and consolidation strategies. He stated that discovery strategies are "strategies that are useful for the initial discovery of a word's meaning" (Schmitt, 2000, p. 135). As for consolidation strategies, he claimed that these strategies are "those useful for remembering that word once it has been introduced" (Schmitt, 2000, p. 135). He further explained that these strategies are used when consolidating one's own memory to understand a word's meaning.

Discovery strategies

Schmitt (1997) defined discovery strategies as strategies when learners use to try to understand a word's meaning when they encounter it for the first time. He subsumed determination strategies and social strategies under discovery strategies.

Determination strategies

Schmitt (1997) claimed that learners use these strategies when they do not know the meaning of a word and try to guess its meaning. He also stated that these individuals do not ask for somebody else's knowledge (Schmitt, 2000). The list of determination strategies are given below:

- analyze part of speech,
- analyze affixes and roots,
- check for L1 cognate,
- analyze any available pictures or gestures,
- guess from textual context,
- bilingual dictionary,
- monolingual dictionary,
- word lists,
- flash cards. (Schmitt, 1997, p.207)

Among these strategies, Schmitt (2000) indicated that *checking for L1 cognate* can be an "excellent resource" to guess and remember the meaning of a word (p.209). He also stated that *guessing from textual context* may be a "major way" to learn new vocabulary even though this has some preconditions such as learner having a certain level of English to be able to use this strategy or the context being rich enough (p. 209).

Social strategies

Social strategies are used when learning new words through interaction with others (Schmitt, 1997). Learners can ask teachers to use the word in an example sentence,

or they can learn the word's meaning by asking their classmates. Schmitt (2000) indicated that learners mostly ask their teachers when trying to discover a word's meaning. The list of social strategies as determination strategies are given below:

- 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. (Schmitt, 1997, p.207)

Schmitt (2000) stated that providing an L1 translation has some assets as it is a fast way and learners can understand it easily. However, it may also lead to mistakes as some words do not have equivalents in another language.

Consolidation strategies

Consolidation strategies are strategies that learners use when they try to remember the meaning of a new word. Schmitt (1997) divided consolidation strategies into four subcategories as social strategies, memory strategies, cognitive strategies and metacognitive strategies.

Social strategies

Schmitt (1997) stated that social strategies could also be used to practice vocabulary. Social strategies used for consolidating are given as follows:

- study and practice meaning in a group,
- teacher checks students' flash cards or word lists for accuracy,
- interact with native speakers. (Schmitt, 1997, p.207)

Schmitt (1997) highlighted the importance of *interacting with native speakers* and claimed that it could be "an excellent way to gain vocabulary" (p. 211).

Memory strategies

Memory strategies, known as mnemonics, are used when learners relate the word by using their previous knowledge to remember the word's meaning (Schmitt, 1997). According to Schmitt (2000), previously learned words or knowledge could be helpful for retaining words. Learners may also consult imagery or grouping when they are practicing vocabulary (Schmitt, 1997). Schmitt listed 27 memory strategies as follows:

- study word with a pictorial representation of its meaning,
- imagine word's meaning,
- connect word to a personal experience,
- associate word with its coordinates,
- connect the word to its synonyms and acronyms,
- 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 word in sentences,
- group words together within a storyline,
- study the spelling of a word,
- study the sound of a word,
- say new word aloud when studying,
- imagine word form,
- underline initial letter of the word,
- configuration,
- use keyword method,
- affixes and roots (remembering),
- part of speech (remembering),
- paraphrase the word's meaning,
- use cognates in study,
- learn the words of an idiom together,
- use physical action when learning a word,
- use semantic feature grids. (Schmitt, 1997, p.207-208)

Schmitt (2000) asserted that memory strategies could be helpful for long-term retention especially for learners who are studying on high-frequency or technical

words. Among the memory strategies, Schmitt (1997) pointed out that imagery could be effective for learning vocabulary.

Cognitive strategies

Similar to memory strategies, cognitive strategies also include "manipulative mental processing" but not specifically focused on them (Schmitt, 1997, p. 215). Strategies that Schmitt listed under the subcategory of cognitive strategies are given as follows:

- verbal repetition,
- written repetition,
- word lists,
- flash cards,
- take notes in class,
- use the vocabulary section in your textbook,
- listen to tape of word list,
- put English labels on physical objects,
- keep a vocabulary notebook. (Schmitt, 1997, p.208)

Schmitt (1997) stated that using *verbal repetition* is one of the most common strategies used in many countries. He also explained that learners used these strategies to gain high-level proficiency.

Metacognitive strategies

Metacognitive strategies are used when learners try to be in control of their own learning and evaluate it (Schmitt, 1997). Schmitt's list of metacognitive strategies is given as follows:

- 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. (Schmitt, 1997, p.208)

Related studies focusing on VLSQ

In her article titled "Sex differences in L2 vocabulary learning strategies," Catalán (2003) pointed out the results of her descriptive quantitative study that focused on identifying the difference vocabulary learning strategies that students used. The research that she conducted included 581 Spanish speaking students, 279 of whom were male and 302 were female. Catalán (2003) used an adapted version of Schmitt's (1997) taxonomy, and added two new items. As for the reliability of the taxonomy, Catalán (2003) indicated a summary of the results that Schmitt's (1997) study with Japanese students, and claimed that the questionnaire and the sample size showed similarities. Catalán (2003) also pointed out the advantages of Schmitt's (1997) taxonomy to show why she used that specific taxonomy to conduct her research. For the analysis process, Catalán (2003) used dBase IV to analyze the data by applying a z-test. The results showed that male and female students used different vocabulary learning strategies, but they used some similar strategies as well. Among discovery strategies, the most frequently used discovery strategies by both males and females are *using bilingual dictionary, guessing from textual context* and *asking teacher for an L1 translation* respectively. As for consolidation strategies, the results show that *taking notes about the word in class, connecting the word to cognates,* and *using English-language media* was the most frequently used strategies by females while it is *taking notes about the word in class, saying new word aloud when studying* and *connecting the word to cognates* for males.

A correlational study was conducted by Kafipour and Naveh (2011) who aimed to find out the vocabulary learning strategies that 164 EFL undergraduate students studying in Kerman Province, and aimed to find a possible correlation between the

usage of strategies and reading comprehension. There were only two state universities that had English studies, and one of them was chosen randomly. For the study, the researchers used Schmitt's (1997) *Vocabulary Learning Strategy Questionnaire (VLSQ),* and they adopted the questionnaire from Bennett (2006). The researchers conducted a reliability test, and the score they found was 0.73. After the questionnaire, the participants were also given a TOEFL test about reading comprehension. The data were analyzed through SPSS, and a multiple regression test was applied to investigate whether reading comprehension had an effect vocabulary learning strategies. The results showed that only social strategies had a correlation between reading comprehension.

Chawannakul (2011) carried out a study on the most and least used vocabulary learning strategies by using an adapted version of Schmitt's (1997) VLSQ. The participants of the study were 180 Thai high school learners studying in different types of academic programs as English-Science, English-Math and French-English. At the end of the study, it was found that memory strategies were the most frequently used strategy group.

Amirian and Heshmatifar's (2013) did a mixed research study by administering a survey with 74 EFL students which consisted of 56 females and 13 males. The aims of the researchers were to find out the most and least used vocabulary learning strategies of Iranian postgraduate and undergraduate EFL learners. After the survey, the researchers did semi structured interviews with 10 of the participants to validate the results of the survey. The questionnaire that the researchers used was adapted

from Schmitt (1997). The results showed that students mostly used determination strategies.

In the aim of conducting research on the use of vocabulary learning strategies, Rabadi (2016) used Schmitt's (1997) VLSQ to investigate the most and least used strategies by Jordanian undergraduate students. The participants were from eight different Jordanian universities. The results of the study indicated that memory strategies were the most frequently used ones among these students. The mean of metacognitive strategies was found to be the lowest in relation to the use of other types of strategies.

Manuel (2017) conducted research on the relationship between the use of vocabulary learning strategies and gender. To this end, he used a three-point scale version of Schmitt's (1997) VLSQ. He did research among Angolan EFL students aged between 18 and 21. The most remarkable result to emerge from the data was the use of metacognitive strategies and memory strategies. The results indicated that male Angolan EFL students used metacognitive strategies more than female Angolan EFL students.

Sazvar and Varmaziyar (2017) used Schmitt's (1997) questionnaire to investigate the vocabulary learning strategies both monolingual and bilingual Iranian EFL students used. Data collection also included another instrument to investigate participants' proficiency level. The researchers also conducted interviews after using these instruments. The results of their study showed that monolingual students used social strategies most frequently while for bilingual students cognitive strategies were the

most frequently used strategies. The researchers found significant differences in terms of the use of cognitive, metacognitive, determination and memory strategies between bilingual and monolingual students. However, the use of social strategies showed no significant difference between these students.

Studies on EFL learners in Turkey

Sahbazian (2004) did an extensive research on the vocabulary learning strategies that 934 Turkish university students used, and investigated their strategy use with respect to gender, proficiency, number of years studying English, educational background, the year of enrolling a university and school type. His research also included the most and least frequently used strategies of the students, and explored whether learners who receive vocabulary learning strategies instruction use these strategies more than other learners. The results of the study showed that female students use vocabulary learning strategies significantly more than males.

Cengizhan (2011) used Schmitt's VLSQ to investigate the most and least used vocabulary learning strategies of high school students in an Anatolian high school. Another aim of her study was to investigate whether there is a difference in the use of strategies between genders as well as the 10^{th} and 11^{th} graders. The results of the study showed that the most frequently used strategy group by females was determination strategies whereas males mostly used metacognitive strategies. Both genders used cognitive strategies the least.

Tanyer and Öztürk (2014) conducted a cross-sectional and mixed research study in Turkey. The researchers not only identified the strategies that the participants used

but also tried to identify if there is a relationship between pre-service English teachers' vocabulary size and the vocabulary learning strategies that they used. The participants of the study were 80 university students, who were also pre-service teachers studying English Language Teaching. Tanyer and Öztürk (2014) collected data for three weeks by using three different instruments. First, they employed *Vocabulary Levels Test* (VLS) by Schmitt et al. (2001) to find the vocabulary size of the participants. One week later, they applied an adapted version of Schmitt's (1997) *Vocabulary Learning Strategy Questionnaire* (VLSQ) to find out the vocabulary learning strategies that participant used. The researchers justified the reason for using VLSQ as it is the most used taxonomy in the field of vocabulary learning strategies. Finally, the researchers used the *Vocabulary Learning Strategy Survey* (VLSS) to find out if there are some other strategies that are not included in the VLSQ. VLSS consisted of five real life-like situations. For the reliability of the survey, the researchers measured Cronbach's Alpha and found it to be 0.914. For data analysis, the researchers conducted ANOVA with repeated measures, and also conducted a multiple regression test. The results showed that there was a significant relationship between the strategies that participants most frequently used and their vocabulary size.

Kırmızı and Topçu (2014) used an adapted version of Gu and Johnson's (1996) questionnaire in order to investigate the most frequently used vocabulary learning strategies of 158 Turkish EFL students at Karabük University, and whether these strategies had a correlation with their departments, achievement, and student status which are indicated as regular or evening students. The results of the study indicated that the participants gave high ratings in the use of bottom up strategies as the most

frequently used vocabulary learning strategies. Note-taking strategy had the lowest rating among the all participants.

Kocaman and Cumaoğlu (2014) developed their own scale in the aim of investigating vocabulary learning strategies. Researchers based their scale on Oxford's (1990) scale as they indicated that it gave them flexibility to add more and new items. They did a research to ensure the reliability of their scale with 470 students from sixth and seventh grades of four different state schools.

The research that Şener (2015) conducted focused on the vocabulary learning strategies that pre-service English teachers employed and their vocabulary size. 304 pre-service English teachers from a state school participated in the research. As for data collection, Şener (2015) used Vocabulary Learning Strategies Questionnaire (VLSQ) by Schmitt (1997) to explore the strategies that they used, and Vocabulary Levels Test by Nation (2001) to measure their vocabulary size. The results of the study showed that pre-service English teachers used determination strategies the most, and cognitive strategies the least. *Guessing from textual context, taking notes in the class* and *interacting with native speakers* were the most used strategies respectively among all strategies. *Using semantic feature grids, keeping a diary* and *reviewing flashcards* were the least used strategies respectively among all strategies. From the determination strategies that they used, the results indicated that the most frequently used determination strategies were *guessing from textual context, analysing affixes and roots, analysing any available pictures* or *gestures* respectively. As for the social strategies, *asking classmates for meaning* was the most preferred strategy. The least used social strategy was *asking teacher for an L1*

translation. From the memory strategies, it was found that *paraphrasing* was the most used strategy. When cognitive strategies were analyzed, it was found that *taking notes in class* was the most preferred, and *keeping a diary* was the least preferred strategy. As for the metacognitive strategies, *interacting with native speakers* was the most used and *expanding rehearsal* was the least used strategy.

In conclusion, there have been many studies conducted in the aim of investigating vocabulary learning strategies that learners used. Schmitt stated that due to different patterns the results may change from culture to culture, context to context and linguistic level to level (Schmitt & McCarthy, 1997, as cited in Schmitt, 2000). Therefore, it is important to consider different backgrounds when comparing the results of different studies.

CHAPTER 3: METHOD

Introduction

This chapter describes the research design, and provides information about high school students participated in the study. It also explains the data collection tool used in the study as well as the methods used for data collection and data analyses.

Research design

The research design for this study is based on cross sectional survey method. Cross sectional survey was defined by Wallen and Fraenkel (2003) as a research method that is used to collect "information from a sample that has been drawn from a predetermined population" (p. 363). Malhotra (2010) also defined it as "a structured questionnaire given to a sample of a population and designed to elicit specific information from respondents" (p. 211). This research method was used to identify the vocabulary learning strategies that high school students use and investigate differences, if any, between the strategies used with respect to their gender, grade level, school type and age. Descriptive and inferential statistics were also used in this study. Glass and Hopkins (1989) explained the descriptive research design as a study that focuses on gathering, organizing, and describing the data.

Participants

The participants of this study are 9^{th}, 10^{th}, 11^{th} and 12^{th} grade Turkish students from three different types of schools within the Çankaya province in Ankara (Table 1).

Table 1 demonstrates the distribution of the voluntary participants according to different school types and gender.

Table 1
Gender distribution across school types

School Type	Female	Male	Total
Science High School	83	110	193
Anatolian High School	108	85	193
Private High School	89	80	169
Total	280	275	555

In total, 280 of the participants are female and 275 of the participants are male. 83 of the participants from the science high school are female while 110 of them are male. As for the participants from the Anatolian high school, 108 of them are female and 85 of them are male. The participants from the private high school are consisted of 89 female and 80 male students. One of the participants did not indicate their gender.

Table 2 demonstrates the distribution of the participants' grade levels across different school types.

Table 2
Grade levels across school types

School Type	Grade 9	Grade 10	Grade 11	Grade 12	Total
Science High School	59	52	47	36	194
Anatolian High School	63	50	38	42	193
Private High School	45	40	42	42	169
Total	167	142	127	120	556

As it is also shown in Table 1, 194 of the participants study in a science high school, 193 of the participants study in an Anatolian high school, and 169 of the participants study in a private high school. From all the participants, the number of 9^{th} graders is 167, of 10^{th} graders is 142, of 11^{th} graders is 127, and of 12^{th} graders is 120.

Table 3 shows the distribution of age groups of participants according to different types of schools.

Table 3
Age groups across school types

School Type	Age 14	Age 15	Age 16	Age 17	Total
Science High School	44	50	57	38	189
Anatolian High School	52	49	37	53	191
Private High School	31	47	44	47	169
Total	127	146	138	138	549

In terms of the age distribution, the number of 14-year-olds is 127, of 15-year-olds is 146, of 16-year-olds is 138, and of 17-year-olds is 138. Two of the participants indicated that they were 13, and five of the participants indicated that they were 18.

Instrumentation

This study used Schmitt's (1997) Vocabulary Learning Strategies Questionnaire (VLSQ), which consists of 58 five-point Likert scale questions, to collect data from the participants, and to answer the research questions (see Appendix A & B). The questionnaire consisted of two main strategy groups, namely, discovery and consolidation strategies. Under discovery strategies, there are two strategies which are determination strategies and social strategies. Under consolidations strategies, there are four subcategories which are social strategies, memory strategies, cognitive strategies, and metacognitive strategies. The Cronbach's Alpha was measured for internal consistency and reliability of the questions and the answers given and was found as 0.923. When reliability scores were further analyzed for subcategories, it was seen that the Cronbach's Alpha was greater than 0.5 for each subcategory. The analyses also showed that question 57 had negative correlation within the other

questions in the category; hence it was not included in the analyses. None of the questions were recoded. Kurtosis and skewness values of the items in the questionnaire were checked. The values for skewness and kurtosis "between -2 and +2 are considered acceptable in order to prove normal univariate distribution" (George & Mallery, 2010). For questions 35 and 52, kurtosis values were significantly above +2, hence the questions were not further analyzed.

Method of data collection

The survey was conducted in the first semester of the 2017-2018 academic year. The questionnaires were distributed to students by the researcher. The participants completed the Turkish version of the Vocabulary Learning Strategies Questionnaire (VLSQ) adapted from Schmitt (1997). The questionnaire was translated from English to Turkish by the researcher. During the translation process, the concepts of the meanings of the items in the questionnaire were checked with a native English speaker.

Method of data analysis

The data collected from the questionnaire were descriptively and inferentially analyzed by using Statistical Package for Social Sciences (SPSS). Descriptive analysis was used to determine the most and least used vocabulary learning strategies by the participants. Inferential analysis was used to focus on gender, age, grade level and school type to answer the second research question. To these ends, the data was analyzed by using independent samples t-test and One-Way ANOVA. Assumptions were checked before each analysis.

One-way ANOVA was used to investigate whether there was a statistically significant difference between vocabulary learning strategies used with respect to age, grade level and school type. Independent samples t-test was used to investigate whether there is a statistically significant difference in the use of vocabulary learning strategies used with respect to gender. When a statistically significant difference was found by ANOVA, post hoc analyses were conducted to further investigate the significant mean differences between pairs of groups. The homogeneity of variances and Welch test results were checked before conducting post-hoc tests. When equal variances assumed, the Scheffe post-hoc test was used for further investigation of the significant mean differences. When equal variances not assumed, the Games Howell post hoc test was used. In three items only, the researcher used another post-hoc test, namely Tukey, as a statistically significant mean difference was found but the other post-hoc tests did not yield powerful results.

CHAPTER 4: RESULTS

Introduction

This chapter presents the results of the study as well as the findings regarding discovery and consolidation strategy use. The findings are presented with descriptive and inferential analyses conducted in order to investigate whether there is a statistically significant difference between the strategies used with respect to gender, grade level, school type and age.

Discovery and consolidation strategies: Gender

Schmitt (1997) classified vocabulary learning strategies as discovery and consolidation strategies. Discovery strategies are strategies that are used when learners first encounter with a word and try to understand its meaning. Consolidation strategies are strategies that learners use when they try to remember a word's meaning after being introduced to a word. Table 4 below demonstrates the means of discovery and consolidation strategy use for each gender. As the table suggests, the use of discovery and consolidation strategies are at moderate level for both genders.

Table 4
Overall discovery and consolidation strategies: Gender

		Female (n=280)	Male (n=275)
Discovery Strategies			
	M	3.17	2.92
	SD	0.58	0.60
Consolidation Strategies			
	M	2.88	2.64
	SD	0.58	0.58

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

It can be seen from Table 4 that the mean scores of females in the use of both discovery and consolidation strategies are higher than those of males. Table 5 shows the results of independent samples t-test carried out to investigate whether there is a statistically significant difference between the mean scores of genders.

Table 5
Independent samples t-test for overall discovery and consolidation strategies: Gender

	df	t
Discovery Strategies	553	4.99*
Consolidation Strategies	553	4.83*

* $p < .05$

Table 5 demonstrates a statistically significant difference between genders in terms of discovery and consolidation strategy use in favor of females.

Table 6 below shows the mean scores of each gender in terms of determination, social, memory, cognitive and metacognitive strategies under the categories of discovery and consolidation strategies. As also seen in the table, all genders employ strategies at moderate level except for both females and males who use social strategies (cons.) at low level.

Table 6
Discovery and consolidation strategies: Gender

		Female (n=280)	Male (n=275)
Determination Strategies			
	M	3.21	2.96
	SD	0.60	0.65
Social Strategies (disc.)			
	M	3.10	2.85
	SD	0.81	0.82

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 6 (cont'd)
Discovery and consolidation strategies: Gender

		Female (n=280)	Male (n=275)
Social Strategies (cons.)			
	M	2.00	1.98
	SD	0.91	0.81
Memory Strategies			
	M	2.90	2.74
	SD	0.59	0.63
Cognitive Strategies			
	M	3.05	2.43
	SD	0.85	0.80
Metacognitive Strategies			
	M	3.09	2.90
	SD	0.89	0.74

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

The mean scores of females are higher than those of males across all strategies (Table 6).

Table 7 below demonstrates the results of the independent samples t-test conducted to see whether there is a statistically significant mean difference between genders regarding discovery and consolidation strategies.

Table 7
Independent samples t-test for discovery and consolidation strategies: Gender

	df	t
Determination Strategies	553	4.75*
Social Strategies (disc.)	553	3.55*
Social Strategies (cons.)	553	0.38
Memory Strategies	553	3.06*
Cognitive Strategies	551	8.83*
Metacognitive Strategies	550	2.77*

* $p < .05$

As shown in Table 7, there is a statistically significant mean difference between genders in the use of all strategies in favor of females except for social strategies that are used as discovery strategies.

Discovery strategies and gender

Table 8 indicates the mean and standard deviation scores of determination and social strategies used for discovery strategies. The mean scores of both males and females in the use of determination and social strategies are at moderate level.

Table 8
Discovery strategies and gender

		Female (n=280)	Male (n=275)
Determination Strategies			
	M	3.21	2.96
	SD	0.60	0.65
Social Strategies (disc.)			
	M	3.10	2.85
	SD	0.81	0.82

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Based on the means shown in Table 8, the mean scores of females regarding both determination and social strategy use are higher than those of males.

Table 9 below demonstrates if there is a statistically significant difference between females and males in terms of determination and social strategy use.

Table 9
Independent samples t-test for discovery strategies concerning gender

	df	t
Determination Strategies	553	4.77*
Social Strategies (disc.)	553	3.55*

* $p < .05$

As also seen in Table 9, there seems to be a statistically significant mean difference between genders in terms of determination and social strategies use in favor of females.

Determination strategies concerning gender

Table 10 below lists the strategies of determination strategies. According to the table, the use of all determination strategies of females is at moderate level except for *using flashcards* which is at low level. Males also use all determination strategies at moderate level except for *using monolingual dictionary*, *using word lists* and *using flash cards* which are at low level (Table 10).

Table 10
Determination strategies and gender

		Female (n=280)	Male (n=275)
Q1 Analyze part of speech			
	M	2.56	2.58
	SD	1.20	1.23
Q2 Analyze affixes and roots			
	M	3.22	3.22
	SD	1.31	1.43
Q3 Check for L1 cognate			
	M	3.93	3.79
	SD	1.11	1.23
Q4 Analyze any available pictures or gestures			
	M	3.60	3.33
	SD	1.24	1.26
Q5 Guess from textual context			
	M	3.99	4.03
	SD	1.00	1.06

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 10 (cont'd)
Determination strategies and gender

		Female (n=280)	Male (n=275)
Q6 Bilingual dictionary			
	M	4.02	3.31
	SD	1.17	1.36
Q7 Monolingual dictionary			
	M	2.60	2.28
	SD	1.38	1.37
Q8 Word lists			
	M	2.78	2.32
	SD	1.37	1.27
Q9 Flash cards			
	M	2.19	1.74
	SD	1.32	1.03

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

As also indicated in Table 10, *using bilingual dictionary* and *guessing from textual context* has the highest mean scores for females. As for males, the item *guessing from textual context* has also the highest mean score.

Table 11 shows the results of the test conducted to see whether there is a statistically significant mean difference between genders.

Table 11
Independent samples t-test for determination strategies concerning gender

	df	t
Q1 Analyze part of speech	552	-0.15
Q2 Analyze affixes and roots	552	-0.05
Q3 Check for L1 cognate	552	1.43
Q4 Analyze any available pictures or gestures	552	2.48*
Q5 Guess from textual context	553	-0.49
Q6 Bilingual dictionary	538	6.59*
Q7 Monolingual dictionary	551	2.73*
Q8 Word lists	547	4.09*
Q9 Flash cards	545	4.46*

* $p < .05$

As Table 11 also suggests, there is a statistically significant mean difference between genders in the use of *analyzing any available pictures or gestures*, *using bilingual dictionary*, *using monolingual dictionary*, *using word lists* and *using flash cards*. Females seem to use these strategies significantly more than males.

Social strategies (discovery) concerning gender

Table 12 presents the mean and standard deviation scores of social strategies under the category of discovery strategies. According to Table 12, *asking teacher for an L1 translation* and *asking classmates for meaning* are at high level for females. Females also seem to use the strategies of *asking teacher for paraphrase or synonym of new word* and *asking teacher for a sentence including the new word* at moderate level. All the mean scores of males are at moderate level except for *discovering new meaning through group activities*, which is at low level for both genders.

Table 12
Social strategies (discovery) concerning gender

		Female (n=280)	Male (n=275)
Q10 Ask teacher for an L1 translation			
	M	3.70	3.47
	SD	1.20	1.29
Q11 Ask teacher for paraphrase or synonym of new word			
	M	2.87	2.72
	SD	1.39	1.31
Q12 Ask teacher for a sentence including the new word			
	M	2.85	2.70
	SD	1.35	1.33

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 12 (cont'd)
Social strategies (discovery) concerning gender

		Female (n=280)	Male (n=275)
Q13 Ask classmates for meaning			
	M	3.81	3.24
	SD	1.19	1.26
Q14 Discover new meaning through group work activity			
	M	2.26	2.11
	SD	1.27	1.17

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

As it can be seen from Table 12, *asking classmates for meaning* has the highest mean score for females while *asking teacher for an L1 translation* has the highest mean score for males.

Table 13 shows whether there is a statistically significant mean difference between genders in the use of social strategies under the category of discovery strategies.

Table 13
Independent samples t-test for social strategies (discovery) concerning gender

	df	t
Q10 Ask teacher for an L1 translation	551	2.21*
Q11 Ask teacher for paraphrase or synonym of new word	552	1.26
Q12 Ask teacher for a sentence including the new word	552	1.30
Q13 Ask classmates for meaning	553	5.43*
Q14 Discover new meaning through group work activity	551	1.39

* $p < .05$

As also seen from Table 13, there is a statistically significant mean difference between genders in the strategies of *asking teacher for an L1 translation* and *asking classmates for meaning.* Females seem to employ these strategies significantly more than males.

Consolidation strategies and gender

Table 14 lists the mean and standard deviation scores of males and females for the subcategories of consolidation strategies. The table indicates that the mean scores of memory and metacognitive strategies are at moderate level for both genders. As the table suggests, the mean scores of males and females in the use of social strategies are at low level. As for cognitive strategies, the mean score of females is at moderate level while the mean score of males is at low level.

Table 14
Consolidation strategies and gender

		Female (n=280)	Male (n=275)
Social Strategies (cons.)			
	M	2.00	1.98
	SD	0.91	0.81
Memory Strategies			
	M	2.90	2.74
	SD	0.59	0.63
Cognitive Strategies			
	M	3.05	2.43
	SD	0.85	0.80
Metacognitive Strategies			
	M	3.09	2.90
	SD	0.89	0.74

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

As also seen in Table 14, females seem to use consolidation strategies more than males.

Table 15 demonstrates whether there is a statistically significant mean difference between genders in terms of the use of social, memory, cognitive and metacognitive strategies under the category of consolidation strategies.

Table 15
Independent samples t-test for consolidation strategies concerning gender

	df	t
Social Strategies	553	0.38
Memory Strategies	553	3.06*
Cognitive Strategies	551	8.83*
Metacognitive Strategies	550	2.77*

* $p < .05$

The results reveal a statistically significant difference between genders regarding memory, cognitive and metacognitive strategies in favor of females (Table 15).

Social strategies (consolidation) concerning gender

Table 16 lists the strategies of social strategies under the category of consolidation strategies. According to the results, both males and females use social strategies as consolidation strategies at low level.

Table 16
Social strategies (consolidation) concerning gender

		Female (n=280)	Male (n=275)
Q15 Study and practice meaning in a group			
	M	2.03	1.85
	SD	1.21	1.04
Q16 Teacher checks students' flash cards or word lists for accuracy			
	M	1.89	1.85
	SD	1.13	1.13
Q17 Interact with native speakers			
	M	2.09	2.23
	SD	1.35	1.38

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 16 indicates that *interacting with native speakers* has the highest mean, though at low level, for both males and females.

Table 17 demonstrates the results of the test conducted to see whether there is a statistically significant mean difference between genders regarding the use of social strategies under the category of consolidation strategies.

Table 17
Independent samples t-test for social strategies (consolidation) concerning gender

	df	t
Q15 Study and practice meaning in a group	552	1.93
Q16 Teacher checks students' flash cards or word lists for accuracy	552	0.40
Q17 Interact with native speakers	551	1.19

As the results in Table 17 suggests, there is no statistically significant mean difference between genders in terms of social strategies used as consolidation strategies.

Memory strategies concerning gender

Table 18 demonstrates the list of memory strategies, and the mean and standard deviation scores for each gender. As also seen in the table, both males and females use the strategies of *using new words in sentences, studying the sound of a new word, saying new word aloud when studying*, and *imagining word form* at high level. The strategies *of imagining word's meaning* and *connecting word to a personal experience* is also at high level according to the mean scores of females. The table shows that both males and females use strategies of *using semantic maps, using peg method, grouping words together within a storyline, using keyword method, learning the words of an idiom together* and *using semantic feature grids* at low level. Males also use the strategies of *grouping words to study them, grouping words together spatially on a page, using configuration*, and *using physical action when learning a word* at low level.

Table 18
Memory strategies concerning gender

		Female (n=280)	Male (n=275)
Q18 Study word with a pictorial representation of its meaning			
	M	2.75	2.62
	SD	1.35	1.29
Q19 Imagine word's meaning			
	M	3.63	3.45
	SD	1.22	1.32
Q20 Connect word to a personal experience			
	M	3.50	3.33
	SD	1.25	1.33
Q21 Associate the word with its coordinates			
	M	3.44	3.26
	SD	1.28	1.26
Q22 Connect the word to its synonyms and antonyms			
	M	2.96	2.83
	SD	1.29	1.22
Q23 Use semantic maps			
	M	2.03	1.91
	SD	1.13	1.09
Q24 Use scales for gradable adjectives			
	M	2.57	2.75
	SD	1.22	1.29
Q25 Peg method			
	M	1.87	1.96
	SD	1.17	1.24
Q26 Loci method			
	M	2.96	2.94
	SD	1.34	1.31
Q27 Group words together to study them			
	M	2.54	2.36
	SD	1.29	1.25
Q28 Group words together spatially on a page			
	M	2.81	1.37
	SD	1.41	1.33

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 18 (cont'd)
Memory strategies concerning gender

		Female (n=280)	Male (n=275)
Q29 Use new word in sentences			
	M	3.59	3.53
	SD	1.21	1.21
Q30 Group words together within a storyline			
	M	1.97	2.06
	SD	1.11	1.17
Q31 Study the spelling of a word			
	M	3.37	2.99
	SD	1.47	1.39
Q32 Study the sound of a word			
	M	4.08	3.55
	SD	1.11	1.28
Q33 Say new word aloud when studying			
	M	4.23	3.62
	SD	1.09	1.31
Q34 Imagine word form			
	M	4.20	3.73
	SD	1.13	1.30
Q36 Configuration			
	M	2.58	2.18
	SD	1.53	1.42
Q37 Use keyword method			
	M	2.12	2.05
	SD	1.38	1.30
Q38 Affixes and roots (remembering)			
	M	2.55	2.50
	SD	1.30	1.22
Q39 Part of speech (remembering)			
	M	2.58	2.58
	SD	1.31	1.29
Q40 Paraphrase the words meaning			
	M	2.99	2.89
	SD	1.36	1.27

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 18 (cont'd)
Memory strategies concerning gender

		Female (n=280)	Male (n=275)
Q41 Use cognates in study			
	M	3.44	3.27
	SD	1.33	1.36
Q42 Learn the words of an idiom together			
	M	1.96	2.01
	SD	1.13	1.09
Q43 Use physical action when learning a word			
	M	2.51	2.35
	SD	1.40	1.37
Q44 Use semantic feature grids			
	M	2.24	2.08
	SD	1.33	1.21

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

The results of the analyses show that *imagining word's meaning* has the highest mean score for females *while imagining word form* has the highest mean score for males. It can be seen from the table that the mean scores of females are higher than males in the use of all memory strategies except for *using scales for gradable adjectives, using peg method*, *grouping words together within a storyline,* and *using cognates in study*.

Table 19 demonstrates the results of the tests conducted to see if there is a statistically significant mean difference between genders in terms of the use of memory strategies.

Table 19
Independent samples t-test for memory strategies concerning gender

	df	t
Q18 Study word with a pictorial representation of its meaning	552	1.14
Q19 Imagine word's meaning	549	1.57
Q20 Connect word to a personal experience	549	1.46
Q21 Associate the word with its coordinates	549	1.64
Q22 Connect the word to its synonyms and antonyms	547	1.22
Q23 Use semantic maps	551	1.26
Q24 Use scales for gradable adjectives	551	-1.67
Q25 Peg method	552	-0.89
Q26 Loci method	553	0.10
Q27 Group words together to study them	551	1.65
Q28 Group words together spatially on a page	551	3.81*
Q29 Use new word in sentences	551	0.53
Q30 Group words together within a storyline	551	-0.96
Q31 Study the spelling of a word	549	3.06*
Q32 Study the sound of a word	550	5.15*
Q33 Say new word aloud when studying	550	5.84*
Q34 Imagine word form	551	4.50*
Q36 Configuration	550	3.19*
Q37 Use keyword method	550	0.65
Q38 Affixes and roots (remembering)	551	0.48
Q39 Part of speech (remembering)	551	0.41
Q40 Paraphrase the words meaning	540	0.85
Q41 Use cognates in study	550	1.45
Q42 Learn the words of an idiom together	547	-0.45
Q43 Use physical action when learning a new word	550	1.38
Q44 Use semantic feature grids	548	1.48

* $p < .05$

The results show that there is a statistically significant mean difference in the strategies of *grouping words together spatially on a page, studying the spelling of a word, studying the sound of a word, saying new word aloud when studying, imagining word form* and *using configuration*. Females seem to prefer these strategies more than males.

Cognitive strategies concerning gender

The mean scores of females and males in terms of the use of cognitive strategies are given in Table 20. As it can be seen from the table, the mean score of females is at

high level in the use of verbal repetition. The strategies of *using written repetition*, *using word lists*, *taking notes in class* and *using the vocabulary section in your textbook* are at moderate level for both males and females. Females also use the strategy of *keeping a vocabulary notebook* at moderate level. *Using flash cards* and *listening to the tape of word lists* are used at low level for both males and females. Males also use the strategy of *keeping a vocabulary notebook* at low level.

Table 20
Cognitive strategies concerning gender

		Female (n=280)	Male (n=275)
Q45 Verbal repetition			
	M	4.17	3.37
	SD	1.07	1.35
Q46 Written repetition			
	M	3.45	2.53
	SD	1.38	1.31
Q47 Word lists			
	M	3.31	2.35
	SD	1.49	1.40
Q48 Flash cards			
	M	2.20	1.68
	SD	1.32	1.07
Q49 Take notes in class			
	M	3.21	2.46
	SD	1.41	1.31
Q50 Use the vocabulary section in your textbook			
	M	3.04	2.69
	SD	1.44	1.35
Q51 Listen to tape of word lists			
	M	2.29	1.98
	SD	1.43	1.25
Q53Keep a vocabulary notebook			
	M	2.74	2.32
	SD	1.48	1.39

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

According to the table, *using verbal repetition* has the highest mean scores for both males and females. As it can be seen from the table, the mean scores of females are higher than males in the use of all cognitive strategies except for *word lists*.

Table 21 below illustrates whether there is a statistically significant mean difference among genders in terms of the use of cognitive strategies.

Table 21
Independent samples t-test for cognitive strategies concerning gender

	df	t
Q45 Verbal repetition	549	7.65*
Q46 Written repetition	551	7.97*
Q47 Word lists	546	7.72*
Q48 Flash cards	551	5.00*
Q49 Take notes in class	548	6.36*
Q50 Use the vocabulary section in your textbook	551	2.91*
Q51 Listen to tape of word lists	551	2.66*
Q53 Keep a vocabulary notebook	550	3.42*

* $p < .05$

The results show that there is a statistically significant mean difference between genders in the use of all cognitive strategies (Table 21). Females seem to employ these strategies significantly more than males.

Metacognitive strategies concerning gender

The means and standard deviation scores for the use of metacognitive strategies are shown in Table 22. As Table 22 suggests, both males and females use the strategies of *using English-language media* and *continuing to study word over time* at high level. Both genders also use the strategy of *using spaced word practice* at low level.

Table 22
Metacognitive strategies concerning gender

		Female (n=280)	Male (n=275)
Q54 Use English-language media (songs, movies, newscasts, etc.)			
	M	3.74	3.60
	SD	1.30	1.34
Q55 Testing oneself with word tests			
	M	2.87	2.36
	SD	1.47	1.36
Q56 Use spaced word practice			
	M	2.04	1.90
	SD	1.22	1.10
Q58 Continue to study word over time			
	M	3.72	3.73
	SD	1.16	1.15

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 23 demonstrates whether there is a statistically significant mean difference between genders in the use of metacognitive strategies.

Table 23
Independent samples t-test for metacognitive strategies concerning gender

	df	t
Q54 Use English-language media (songs, movies, newscasts, etc.)	550	1.21
Q55 Testing oneself with word tests	549	4.22*
Q56 Use spaced word practice	550	1.35
Q58 Continue to study word over time	550	-0.10

* $p < .05$

It can be seen from Table 23 that there is a statistically significant mean difference between genders in the use of *testing oneself with word tests* in favor of females.

Discovery and consolidation strategies: Grade level

Table 24 demonstrates the mean and standard deviation scores among grade levels for the use of discovery and consolidation strategies. As also seen in the table, all grade levels use both discovery and consolidation strategies at moderate level.

Table 24
Overall discovery and consolidation strategies: Grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Discovery Strategies					
	M	3.09	2.97	3.11	3.00
	SD	0.62	0.57	0.63	0.57
Consolidation Strategies					
	M	2.90	2.66	2.74	2.70
	SD	0.61	0.59	0.60	0.55

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

As it can be seen in Table 24, the mean scores of 10th graders are less than other grade levels. The mean score difference between grade levels are highest between 9th and 10th grade scores in the use of consolidation strategies.

Table 25 demonstrates the results of the test conducted to see whether there is a statistically significant mean difference between grade levels in terms of using discovery and consolidation strategies.

Table 25
ANOVA for overall discovery and consolidation strategies: Grade level

	df_1	df_2	F
Discovery Strategies	3	552	1.88
Consolidation Strategies	3	552	4.64*

* $p < .05$

As it can also be seen from the results of the test, there is a statistically significant mean difference between grade levels in terms of consolidation strategies.

Table 26 shows the results of the test conducted to further investigate the difference between grade levels for the use of consolidation strategies.

Table 26
Results of post hoc tests for discovery and consolidation strategies: Grade level

	Grade Level (i)	Grade Level (j)	Mean Difference
Discovery Strategies	9	10	0.12
		11	-0.01
		12	0.09
	10	11	-0.14
		12	-0.03
	11	12	0.10
Consolidation Strategies	9	10	0.23*
		11	0.16
		12	0.19
	10	11	-0.07
		12	-0.03
	11	12	0.03

* $p < .05$

The results of the post hoc test reveal a statistically significant mean difference between 9^{th} graders and 10^{th} graders (Table 26). 9^{th} graders seem to employ consolidation strategies significantly more than 10^{th} graders.

Table 27 lists the strategies under the category of discovery and consolidation strategies. The table reveals that all strategies are used at moderate level across all grade levels. According to the results, the means of 9^{th} graders in the use of memory, cognitive and metacognitive strategies are considerably higher than all other grade levels.

Table 27
Discovery and consolidation strategies: Grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Determination Strategies					
	M	3.15	2.98	3.13	3.06
	SD	0.66	0.64	0.65	0.59
Social Strategies (disc.)					
	M	3.15	2.98	3.13	3.06
	SD	0.66	0.63	0.65	0.59
Social Strategies (cons.)					
	M	2.91	1.85	1.99	2.11
	SD	0.89	0.81	0.83	0.90
Memory Strategies					
	M	2.91	2.73	2.83	2.81
	SD	0.63	0.61	0.61	0.58
Cognitive Strategies					
	M	3.03	2.61	2.67	2.57
	SD	0.84	0.90	0.84	0.87
Metacognitive Strategies					
	M	3.30	2.98	2.84	2.76
	SD	0.83	0.77	0.84	0.73

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 28 demonstrates the results of the test done to see whether there is a statistically significant mean difference between grade levels in the use of determination, social, memory, cognitive and metacognitive strategies.

Table 28
ANOVA for overall discovery and consolidation strategies: Grade level

	df_1	df_2	F
Determination Strategies	3	552	2.11
Social Strategies (disc.)	3	552	1.10
Social Strategies (cons.)	3	552	2.04
Memory Strategies	3	552	2.12
Cognitive Strategies	3	550	9.10*
Metacognitive Strategies	3	549	13.21*

* $p < .05$

The results of the test demonstrate a statistically significant mean difference among grade levels in the use of cognitive and metacognitive strategies.

Discovery strategies and grade level

Determination and social strategies are under the category of discovery strategies. As shown in Table 29, both the use of discovery and consolidation strategies are at moderate level across all grade levels.

Table 29
Discovery strategies and grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Determination Strategies					
	M	3.15	2.98	3.13	3.06
	SD	0.66	0.63	0.65	0.59
Social Strategies					
	M	2.99	2.93	3.08	2.90
	SD	0.83	0.78	0.84	0.86

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

The means of determination and social strategy use do not show much difference across grade levels as shown in Table 29. It can be seen from the table that the mean score of 9th graders is highest for determination strategies while the mean score of 11th graders is highest for social strategies.

Table 30 shows the results of the test done to investigate whether there is a statistically significant mean difference between grade levels.

Table 30
ANOVA for overall discovery strategies and grade level

	df_1	df_2	F
Determination Strategies	3	552	2.11
Social Strategies (disc.)	3	552	1.10

* $p < .05$

The results of the test show that there is no statistically significant mean difference among grade levels.

Determination strategies concerning grade level

Table 31 lists the strategies under the subcategory of determination strategies. It can be observed from the table that *checking for L1 cognate*, *guessing from textual context*, and *using bilingual dictionary* are used at high level across all grade levels. However, the strategy of *using flash cards* is at low level for all grade levels.

Table 31
Determination strategies concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q1 Analyze part of speech					
	M	2.60	2.41	2.74	2.52
	SD	1.32	1.10	1.18	1.20
Q2 Analyze affixes and roots					
	M	3.16	3.20	3.36	3.17
	SD	1.44	1.37	1.34	1.33
Q3 Check for L1 cognate					
	M	3.80	3.73	4.07	3.88
	SD	1.19	1.27	1.04	1.16
Q4 Analyze any available pictures or gestures					
	M	3.64	3.35	3.34	3.42
	SD	1.17	1.36	1.22	1.30
Q5 Guess from textual context					
	M	4.01	3.99	3.93	4.12
	SD	1.04	0.96	1.14	0.97
Q6 Bilingual dictionary					
	M	3.62	3.52	3.81	3.74
	SD	1.29	1.43	1.27	1.26
Q7 Monolingual dictionary					
	M	3.36	2.41	2.52	2.50
	SD	1.44	1.39	1.42	1.25

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 31 (cont'd)
Determination strategies concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q8 Word lists					
	M	3.00	2.31	2.40	2.35
	SD	1.35	1.32	1.30	1.24
Q9 Flash cards					
	M	2.16	1.92	1.88	1.84
	SD	1.29	1.21	1.14	1.10

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 32 shows the results of the test conducted to see whether there is a statistically significant difference between grade levels regarding determination strategies.

Table 32
ANOVA for determination strategies concerning grade level

	df_1	df_2	F
Q1 Analyze part of speech	3	298.79	1.97
Q2 Analyze affixes and roots	3	551	0.59
Q3 Check for L1 cognate	3	299.49	2.33
Q4 Analyze any available pictures or gestures	3	295.64	1.66
Q5 Guess from textual context	3	552	0.71
Q6 Bilingual dictionary	3	298.70	1.15
Q7 Monolingual dictionary	3	550	0.45
Q8 Word lists	3	548	9.33*
Q9 Flash cards	3	546	2.17

* $p < .05$

As it can be seen from the results shown in Table 32, there is no statistically significant mean difference among grade levels in the use of determination strategies except for *using word lists*. Post hoc test results show a statistically significant mean difference between grade levels in the use of *using word lists* (Table 33).

Table 33
Results of post hoc tests for determination strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q1 Analyze part of speech	9	10	0.18
		11	-0.14
		12	0.08
	10	11	-0.33
		12	-0.10
	11	12	0.22
Q2 Analyze affixes and roots	9	10	-0.04
		11	-0.19
		12	-0.01
	10	11	-0.15
		12	0.02
	11	12	0.18
Q3 Check for L1 cognate	9	10	0.06
		11	-0.27
		12	-0.08
	10	11	-0.33
		12	-0.14
	11	12	0.19
Q4 Analyze any available pictures or gestures	9	10	0.29
		11	0.21
		12	0.22
	10	11	-0.08
		12	-0.07
	11	12	0.00
Q5 Guess from textual context	9	10	0.02
		11	0.08
		12	-0.10
	10	11	0.05
		12	-0.13
	11	12	-0.18
Q6 Bilingual dictionary	9	10	0.10
		11	-0.18
		12	-0.11
	10	11	-0.28
		12	-0.21
	11	12	0.06
Q7 Monolingual dictionary	9	10	-0.04
		11	-0.16
		12	-0.14
	10	11	-0.11
		12	-0.09
	11	12	0.01

* $p < .05$

Table 33 (cont'd)
Results of post hoc tests for determination strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q8 Word lists	9	10	0.68*
		11	0.59*
		12	0.65*
	10	11	-0.68*
		12	-0.09
	11	12	0.05
Q9 Flash cards	9	10	0.23
		11	0.28
		12	0.32
	10	11	0.04
		12	0.08
	11	12	0.03

* $p < .05$

According to Table 33, there is a statistically significant mean difference between 9th graders and other grade levels regarding the use of *word lists*. 9th graders seem to use this strategy significantly more than other grade levels. There is also a statistically significant mean difference between 10th and 11th graders for the use of *word lists*. 11th graders seem to employ this strategy significantly more than 10th graders.

Social strategies (discovery) concerning grade level

Table 34 presents the mean and standard deviation scores of 9th, 10th, 11th and 12th graders in the use of social strategies. The mean scores given in the table shows that all social strategies under the category of discovery strategies are used at high level across all grade levels except for the strategy of *discovering new meaning through group work activity*. All grade levels use this strategy at low level.

Table 34
Social strategies (discovery) concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q10 Ask teacher for an L1 translation					
	M	3.69	3.32	3.66	3.68
	SD	1.19	1.24	1.30	1.27
Q11 Ask teacher for paraphrase or synonym of new word					
	M	2.95	2.83	2.81	2.55
	SD	1.39	1.33	1.32	1.34
Q12 Ask teacher for a sentence including the new word					
	M	2.82	2.86	2.82	2.58
	SD	1.37	1.37	1.29	1.33
Q13 Ask classmates for meaning					
	M	3.31	3.61	3.78	3.48
	SD	1.30	1.20	1.23	1.24
Q14 Discover new meaning through group work activity					
	M	2.18	2.05	2.32	2.24
	SD	1.27	1.10	1.28	1.26

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

The mean scores for the strategy of *asking teacher for L1 translation* show that the mean scores of 10th graders are considerably lower than other grade levels. For the strategy of *asking classmates for meaning*, the results show a remarkable difference between the scores of 9th and 10th graders. Table 36 demonstrates the test conducted to see whether there is a statistically significant mean difference between grade levels.

Table 35
ANOVA for social strategies (discovery) concerning grade level

	df_1	df_2	F
Q10 Ask teacher for an L1 translation	3	550	2.89*
Q11 Ask teacher for paraphrase or synonym of new word	3	551	2.09
Q12 Ask teacher for a sentence including the new word	3	551	1.15
Q13 Ask classmates for meaning	3	552	3.78*
Q14 Discover new meaning through group work activity	3	296.40	1.20

* p < .05

From Table 35, it can be seen that there is a statistically significant mean difference in the use of strategies of *asking teacher for an L1 translation*, and *asking classmates for meaning*.

Table 36 shows the test conducted to further investigate the mean differences among grade levels regarding the use of these social strategies.

Table 36
Results of post hoc tests for social strategies (discovery) and grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q10 Ask teacher for an L1 translation	9	10	0.37*
		11	0.02
		12	0.01
	10	11	-0.34
		12	-0.35
	11	12	-0.01
Q11 Ask teacher for paraphrase or synonym of new word	9	10	0.12
		11	0.13
		12	0.40
	10	11	0.01
		12	0.28
	11	12	0.26
Q12 Ask teacher for a sentence including the new word	9	10	-0.03
		11	-0.00
		12	0.24
	10	11	0.03
		12	0.28
	11	12	0.24

* p < .05

Table 36 (cont'd)
Results of post hoc tests for social strategies (discovery) and grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q13 Ask classmates for meaning	9	10	-0.30
		11	-0.47*
		12	-0.17
	10	11	-0.16
		12	0.13
	11	12	0.30
Q14 Discover new meaning through group work activity	9	10	0.12
		11	-0.14
		12	-0.06
	10	11	-0.26
		12	-0.18
	11	12	0.08

* $p < .05$

Table 36 indicates a statistically significant mean difference between 9th and 10th grades for the strategy of *asking a teacher for an L1 translation*. 9th graders seem to use this strategy significantly more than 10th graders. As for the strategy of *asking classmates for meaning*, the results of the test show that there is a statistically significant mean difference between 9th and 11th graders. 11th graders seem to employ this strategy significantly more than 9th graders.

Consolidation strategies and grade level

Consolidation strategies are divided into four subcategories as social strategies, memory strategies, cognitive strategies and metacognitive strategies. Table 37 lists the mean and standard deviation scores of these strategies across grade levels. The mean scores of social strategies are at low level across all grade levels as it can be seen from the table. The table also shows that memory, cognitive and metacognitive strategies are at moderate level across all grade levels.

Table 37
Consolidation strategies and grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Social Strategies					
	M	2.01	1.85	1.99	2.11
	SD	0.89	0.81	0.83	0.90
Memory Strategies					
	M	2.91	2.73	2.83	2.81
	SD	0.63	0.61	0.61	0.58
Cognitive Strategies					
	M	3.03	2.61	2.67	2.57
	SD	0.84	0.90	0.84	0.87
Metacognitive Strategies					
	M	3.30	2.98	2.84	2.76
	SD	0.83	0.77	0.84	0.73

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

It can be seen from the table that the mean score of 9th graders in the use of memory, cognitive and metacognitive strategies are higher than other grade levels. Table 38 demonstrates whether there is a statistically significant mean difference across grade levels regarding consolidation strategies.

Table 38
ANOVA for consolidation strategies and grade level

	df_1	df_2	F
Social Strategies (cons.)	3	552	2.04
Memory Strategies	3	552	2.12
Cognitive Strategies	3	552	9.10*
Metacognitive Strategies	3	549	13.21*

* $p < .05$

According to the results, there is a statistically significant mean difference between grade levels in terms of cognitive and metacognitive strategies.

Table 39 shows the results of the post hoc test conducted to further investigate the differences between grade levels.

Table 39
Results of post hoc test for consolidation strategies and grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Social Strategies	9	10	0.16
		11	0.02
		12	-0.09
	10	11	-0.14
		12	-0.25
	11	12	-0.11
Memory Strategies	9	10	0.17
		11	0.07
		12	0.09
	10	11	-0.09
		12	-0.07
	11	12	0.02
Cognitive Strategies	9	10	0.42*
		11	0.35*
		12	0.46*
	10	11	-0.06
		12	0.04
	11	12	0.10
Metacognitive Strategies	9	10	0.32*
		11	0.46*
		12	0.54*
	10	11	0.14
		12	0.22
	11	12	0.08

* $p < .05$

According to the results, there is a statistically significant difference between 9th and other grade levels in terms of cognitive and metacognitive strategies (Table 39). 9th graders seem to employ these strategies significantly more than other grade levels. 9th graders seem to use these strategies significantly more than other grade levels.

Social strategies (consolidation) concerning grade level

When the means of social strategies under the category of consolidation strategies are analyzed, we can observe that all these strategies are used at low level. (Table 40)

Table 40
Social strategies (consolidation) concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q15 Study and practice meaning in a group					
	M	1.87	1.79	2.07	2.09
	SD	1.05	1.08	1.19	1.20
Q16 Teacher checks students' flash cards or word lists for accuracy					
	M	2.09	1.71	1.73	1.09
	SD	1.23	1.03	1.03	1.15
Q17 Interact with native speakers					
	M	2.08	2.06	2.19	2.35
	SD	1.39	1.28	1.35	1.44

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

It can be seen from Table 40 that the mean of 9th graders for *teacher checking students' flash cards or word lists for accuracy* is higher than other grade levels.

Table 41 demonstrates the results of the test conducted to investigate whether there is a statistically significant mean difference between grade levels regarding social strategies under the category of consolidation strategies.

Table 41
ANOVA for social strategies (consolidation) concerning grade level

	df_1	df_2	F
Q15 Study and practice meaning in a group	3	293.85	2.17
Q16 Teacher checks students' flash cards or word lists for accuracy	3	299.44	3.66*
Q17 Interact with native speakers	3	550	1.20

* $p < .05$

According to the results of the analysis, there is a statistically significant mean difference in only one of the strategies which is *teacher checking students' flash cards or word lists for accuracy* (Table 41). Table 42 shows the post hoc test results of a further investigation on the mean differences between grade levels.

Table 42
Results of post hoc tests for social strategies (consolidation) concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q15 Study and practice meaning in a group	9	10	0.07
		11	-0.19
		12	-0.21
	10	11	-0.27
		12	-0.29
	11	12	-0.02
Q16 Teacher checks students' flash cards or word lists for accuracy	9	10	0.38*
		11	0.36*
		12	0.19
	10	11	-0.02
		12	-0.18
	11	12	-0.16
Q17 Interact with native speakers	9	10	0.02
		11	-0.10
		12	-0.26
	10	11	-0.13
		12	-0.28
	11	12	-0.15

* $p < .05$

Table 42 indicates that there is a statistically significant mean difference between 9^{th} and 10^{th} graders, and 9^{th} and 11^{th} graders regarding *teaching checking students' flash cards or word lists for accuracy*. 9^{th} graders seem to use this strategy significantly more than 10^{th} and 11^{th} graders.

Memory strategies concerning grade level

The means of memory strategies across grade levels are listed in Table 43. As the table suggests, *using semantic maps, using peg method, grouping words together within a story line, using keyword method, learning the words of an idiom together,* and *using semantic feature grids* are at low level across all grade levels. The mean scores of *imagining a word's meaning, connecting word to a personal experience* and *use new word in sentences* are at high level across all grade levels except for 10th graders which are at moderate level. The mean scores given in Table 43 indicates that *using new words in sentences, studying the spelling of a word, saying new word aloud when studying,* and *imagining word form* are at high level across all grade levels.

Table 43
Memory strategies concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q18 Study word with a pictorial representation of its meaning					
	M	2.77	2.49	2.70	2.79
	SD	1.32	1.30	1.30	1.36
Q19 Imagine word's meaning					
	M	3.69	3.30	3.48	3.68
	SD	1.17	1.33	1.36	1.20
Q20 Connect word to a personal experience					
	M	3.36	3.28	3.53	3.52
	SD	1.34	1.38	1.19	1.22
Q21 Associate the word with its coordinates					
	M	3.35	3.30	3.49	3.26
	SD	1.31	1.28	1.22	1.27

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 43 (cont'd)
Memory strategies concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q22 Connect the word to its synonyms and antonyms	M	2.78	2.89	3.05	2.90
	SD	1.29	1.27	1.25	1.20
Q23 Use semantic maps					
	M	2.00	1.97	1.96	1.95
	SD	1.10	1.12	1.19	1.05
Q24 Use scales for gradable adjectives					
	M	2.84	2.49	2.66	2.62
	SD	1.30	1.25	1.22	1.24
Q25 Peg method					
	M	2.11	1.75	1.89	1.85
	SD	1.35	1.07	1.19	1.13
Q26 Loci method					
	M	3.08	3.06	2.72	2.90
	SD	1.37	1.33	1.23	1.33
Q27 Group words together to study them					
	M	2.70	2.45	2.37	2.23
	SD	1.35	1.28	1.21	1.21
Q28 Group words together spatially on a page					
	M	2.64	2.43	2.65	2.68
	SD	1.36	1.41	1.37	1.41
Q29 Use new word in sentences					
	M	3.59	3.51	3.50	3.65
	SD	1.19	1.23	1.21	1.23
Q30 Group words together within a storyline					
	M	2.01	1.92	2.10	2.06
	SD	1.16	1.03	1.25	1.13
Q31 Study the spelling of a word					
	M	3.37	3.00	3.12	3.21
	SD	1.56	1.33	1.44	1.41

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 43 (cont'd)
Memory strategies concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q32 Study the sound of a word					
	M	4.06	3.58	3.79	3.81
	SD	1.17	1.32	1.22	1.16
Q33 Say new word aloud when studying					
	M	4.18	3.71	3.89	3.87
	SD	1.15	1.32	1.21	1.24
Q34 Imagine word form					
	M	4.23	3.76	3.95	3.85
	SD	1.07	1.29	1.22	1.35
Q36 Configuration					
	M	2.36	2.38	2.64	2.14
	SD	1.47	1.53	1.58	1.34
Q37 Use keyword method					
	M	2.12	2.04	2.18	2.03
	SD	1.37	1.35	1.39	1.27
Q38 Affixes and roots (remembering)	M	2.60	2.35	2.55	2.60
	SD	1.28	1.21	1.27	1.28
Q39 Part of speech (remembering)					
	M	2.81	2.42	2.55	2.45
	SD	1.41	1.22	1.27	1.25
Q40 Paraphrase the words meaning					
	M	3.17	2.95	2.78	2.79
	SD	1.33	1.32	1.26	1.32
Q41 Use cognates in study					
	M	3.41	3.22	3.33	3.45
	SD	1.32	1.46	1.32	1.27
Q42 Learn the words of an idiom together					
	M	1.93	1.92	2.09	2.03
	SD	1.02	1.09	1.17	1.19

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 43 (cont'd)
Memory strategies concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q43 Use physical action when learning a word					
	M	2.36	2.54	2.37	2.46
	SD	1.41	1.43	1.36	1.34
Q44 Use semantic feature grids					
	M	2.14	2.20	2.14	2.17
	SD	1.27	1.30	1.19	1.33

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

As also seen in the table, the mean scores of 9th graders are higher than other grade levels in the strategies of *imagining word's meaning, associating the word with its coordinates, using semantic maps, using scales for gradable adjectives, using peg method, using loci method, groping words together to study them, studying the spelling of a word, studying the sound of a word, saying new word aloud when studying, imagining word form, part of speech (remembering)* and *paraphrasing the words meaning* (Table 43).

Table 44 demonstrates the result of the analysis done to investigate if there are mean differences among grade levels regarding memory strategies.

Table 44
ANOVA for memory strategies concerning grade level

	df_1	df_2	F
Q18 Study word with a pictorial representation of its meaning	3	551	1.49
Q19 Imagine word's meaning	3	548	2.96*
Q20 Connect word to a personal experience	3	548	1.25
Q21 Associate the word with its coordinates	3	548	0.81
Q22 Connect the word to its synonyms and antonyms	3	548	1.13
Q23 Use semantic maps	3	546	0.04
Q24 Use scales for gradable adjectives	3	550	2.00

* $p < .05$

Table 44 (cont'd)
ANOVA for memory strategies concerning grade level

	df_1	df_2	F
Q25 Peg method	3	299.70	2.31
Q26 Loci method	3	552	2.24
Q27 Group words together to study them	3	550	3.40*
Q28 Group words together spatially on a page	3	550	0.90
Q29 Use new word in sentences	3	550	0.41
Q30 Group words together within a storyline	3	550	0.62
Q31 Study the spelling of a word	3	295.97	1.71
Q32 Study the sound of a word	3	298.27	3.70*
Q33 Say new word aloud when studying	3	295.68	3.96*
Q34 Imagine word form	3	291.47	4.74*
Q36 Configuration	3	297.51	2.38
Q37 Use keyword method	3	549	0.32
Q38 Affixes and roots (remembering)	3	550	1.27
Q39 Part of speech (remembering)	3	550	2.83*
Q40 Paraphrase the words meaning	3	539	2.76
Q41 Use cognates in study	3	549	0.77
Q42 Learn the words of an idiom together	3	546	0.75
Q43 Use physical action when learning a word	3	549	0.54
Q44 Use semantic feature grids	3	547	0.07

* $p < .05$

As it can be seen from Table 44, the results of the test indicate a statistically significant mean difference in six of the memory strategies as *imagining word's meaning*, *grouping words together to study them*, *studying the sound of a word*, *saying new word aloud when studying*, *imagining word form*, and *part of speech (remembering)*.

Post-hoc tests were conducted to further investigate the mean differences regarding memory strategies. Table 45 yields the results of mean differences across all grade levels in terms of memory strategies.

Table 45
Results of post hoc tests for memory strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q18 Study word with a pictorial representation of its meaning	9	10	0.28
		11	0.07
		12	-0.01
	10	11	-0.20
		12	-0.29
	11	12	-0.09
Q19 Imagine word's meaning	9	10	0.38*
		11	0.20
		12	0.00
	10	11	-0.17
		12	-0.37
	11	12	-0.19
Q20 Connect word to a personal experience	9	10	0.08
		11	-0.16
		12	-0.15
	10	11	-0.25
		12	-0.24
	11	12	0.01
Q21 Associate the word with its coordinates	9	10	0.05
		11	-0.13
		12	0.09
	10	11	-0.19
		12	0.04
	11	12	0.23
Q22 Connect the word to its synonyms and antonyms	9	10	-0.11
		11	-0.27
		12	-0.12
	10	11	-0.16
		12	-0.01
	11	12	0.14
Q23 Use semantic maps	9	10	0.02
		11	0.03
		12	0.05
	10	11	0.00
		12	0.02
	11	12	0.01
Q24 Use scales for gradable adjectives	9	10	0.34
		11	0.17
		12	0.21
	10	11	-0.17
		12	-0.13
	11	12	0.04

* $p < .05$

Table 45 (cont'd)
Results of post hoc tests for memory strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q25 Peg method	9	10	0.36
		11	0.21
		12	0.25
	10	11	-0.14
		12	-0.10
	11	12	0.03
Q26 Loci method	9	10	0.02
		11	0.33
		12	0.16
	10	11	0.33
		12	0.16
	11	12	-0.17
Q27 Group words together to study them	9	10	0.24
		11	0.32
		12	0.46*
	10	11	0.07
		12	0.21
	11	12	0.13
Q28 Group words together spatially on a page	9	10	0.20
		11	-0.00
		12	-0.03
	10	11	-0.21
		12	-0.24
	11	12	-0.02
Q29 Use new word in sentences	9	10	0.07
		11	0.09
		12	-0.05
	10	11	0.01
		12	-0.13
	11	12	-0.14
Q30 Group words together within a storyline	9	10	0.08
		11	-0.09
		12	-0.05
	10	11	-0.17
		12	-0.14
	11	12	0.03
Q31 Study the spelling of a word	9	10	0.36
		11	0.24
		12	0.16
	10	11	-0.11
		12	-0.20
	11	12	-0.08

* $p < .05$

Table 45 (cont'd)
Results of post hoc tests for memory strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q32 Study the sound of a word	9	10	0.47*
		11	0.26
		12	0.24
	10	11	-0.20
		12	-0.22
	11	12	-0.01
Q33 Say new word aloud when studying	9	10	0.47*
		11	0.29
		12	0.31
	10	11	-0.17
		12	-0.15
	11	12	0.02
Q34 Imagine word form	9	10	0.46*
		11	0.28
		12	0.38
	10	11	-0.18
		12	-0.08
	11	12	0.10
Q36 Configuration	9	10	-0.01
		11	-0.27
		12	0.22
	10	11	-0.26
		12	0.23
	11	12	0.50
Q37 Use keyword method	9	10	0.07
		11	-0.05
		12	0.08
	10	11	-0.13
		12	0.01
	11	12	0.14
Q38 Affixes and roots (remembering)	9	10	0.25
		11	0.05
		12	0.00
	10	11	-0.19
		12	0.24
	11	12	-0.04
Q39 Part of speech (remembering)	9	10	0.38*
		11	0.25
		12	0.35
	10	11	-0.12
		12	-0.02
	11	12	0.10

Table 45 (cont'd)
Results of post hoc tests for memory strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q40 Paraphrase the words meaning	9	10	0.21
		11	0.38
		12	0.37
	10	11	0.17
		12	0.16
	11	12	-0.01
Q41 Use cognates in study	9	10	0.19
		11	0.07
		12	-0.03
	10	11	-0.11
		12	-0.22
	11	12	-0.11
Q42 Learn the words of an idiom together	9	10	0.01
		11	-0.16
		12	-0.10
	10	11	-0.17
		12	-0.11
	11	12	0.06
Q43 Use physical action when learning a word	9	10	-0.17
		11	-0.00
		12	-0.09
	10	11	0.17
		12	0.08
	11	12	-0.09
Q44 Use semantic feature grids	9	10	-0.05
		11	0.00
		12	-0.02
	10	11	0.06
		12	0.03
	11	12	-0.03

* $p < .05$

As it can be seen from Table 45, the test results shows that there is a statistically significant mean difference between 9th and 10th grades in the strategies of *imagining word's meaning, part of speech (remembering), studying the sound of a word, saying new word aloud when studying* , and *imagining word form*. 9th graders seem to use these strategies significantly more than 10th graders. The analysis also shows that there is a statistically significant mean difference between 9th and 12th grades for the

strategy of *grouping words together to study them*. 9th graders seem to use this strategy significantly more than 12th graders.

Cognitive strategies concerning grade level

Table 46 includes the list of cognitive strategies with the mean and standard deviation scores of four grade levels. As it can be seen from the table, *verbal repetition* is at high level for all grade levels. The table also indicates that the mean scores of *using flash cards* and *listening to tape of word lists* are at low level for all grade levels.

Table 46
Cognitive strategies concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q45 Verbal repetition					
	M	4.07	3.66	3.62	3.65
	SD	1.20	1.33	1.29	1.26
Q46 Written repetition	M	3.33	2.85	2.92	2.78
	SD	1.39	1.42	1.42	1.43
Q47 Word lists					
	M	3.22	2.69	2.70	2.64
	SD	1.50	1.54	1.48	1.51
Q48 Flash cards					
	M	2.28	1.84	1.74	1.80
	SD	1.35	1.13	1.14	1.18
Q49 Take notes in class					
	M	3.23	2.65	2.71	2.64
	SD	1.41	1.34	1.43	1.38
Q50 Use the vocabulary section in your textbook					
	M	2.89	2.80	3.12	2.67
	SD	1.39	1.50	1.39	1.32

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 46 (cont'd)
Cognitive strategies concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q51 Listen to tape of word lists					
	M	2.33	2.01	2.13	2.04
	SD	1.45	1.29	1.37	1.23
Q53 Keep a vocabulary notebook	M	2.90	2.36	2.45	2.33
	SD	1.51	1.44	1.42	1.33

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

According to the results, the mean scores of 9th grades are considerably higher than other grades in the strategies of *verbal repetition, written repetition, using word lists, using flash cards, taking notes in class, listening to tape of word lists* and *keeping a vocabulary notebook* (Table 46).

Table 47 shows the results of the test done to see whether there is a statistically significant mean difference between grade levels.

Table 47
ANOVA for cognitive strategies concerning grade level

	df_1	df_2	F
Q45 Verbal repetition	3	548	4.27*
Q46 Written repetition	3	550	4.71*
Q47 Word lists	3	295.76	5.03*
Q48 Flash cards	3	300.22	5.46*
Q49 Take notes in class	3	547	6.38*
Q50 Use the vocabulary section in your textbook	3	550	2.28
Q51 Listen to tape of word lists	3	300.16	1.70
Q53 Keep a vocabulary notebook	3	549	5.13*

* $p < .05$

As it can be seen from Table 47, there is a statistically significant mean difference in six of the cognitive strategies when grade levels are compared.

Post-hoc tests conducted to investigate the mean differences between grade levels yields the results in Table 48 given below.

Table 48
Results of post hoc tests for cognitive strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q45 Verbal repetition	9	10	0.40
		11	0.45*
		12	0.41
	10	11	0.04
		12	0.01
	11	12	-0.03
Q46 Written repetition	9	10	0.48*
		11	0.41
		12	0.55*
	10	11	-0.07
		12	0.06
	11	12	0.14
Q47 Word lists	9	10	0.53*
		11	0.52*
		12	0.58*
	10	11	-0.01
		12	0.06
	11	12	0.06
Q48 Flash cards	9	10	0.43*
		11	0.53*
		12	0.47*
	10	11	0.09
		12	0.03
	11	12	-0.06
Q49 Take notes in class	9	10	0.57*
		11	0.52*
		12	0.59*
	10	11	-0.05
		12	0.01
	11	12	0.07
Q50 Use the vocabulary section in your textbook	9	10	0.09
		11	-0.22
		12	0.22
	10	11	-0.32
		12	0.12
	11	12	0.45

* $p < .05$

Table 48 (cont'd)
Results of post hoc tests for cognitive strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q51 Listen to tape of word lists	9	10	0.32
		11	0.20
		12	0.29
	10	11	-0.11
		12	-0.02
	11	12	0.09
Q53 Keep a vocabulary notebook	9	10	0.53*
		11	0.44
		12	0.56*
	10	11	-0.08
		12	0.03
	11	12	0.12

* $p < .05$

According to the results of the test, there is a statistically significant mean difference between 9th graders and other grades in *using word lists*, *using flash cards*, and *taking notes in class* (Table 48). 9th graders seem to employ these strategies significantly more than other grade levels. In the use of *keeping a vocabulary notebook*, a significant mean difference can be seen between 9th grades and 10th grades, and 9th grades 12th grades. 9th graders seem to use these strategies significantly more than 10th and 12th graders. There is also a statistically significant mean difference between 9th and 11th graders in the use of *verbal repetition* strategy. 9th graders seem to use this strategy significantly more than 11th graders. As for the strategy of *written repetition*, there is a significant mean difference between 9th and 10th, and 9th and 12th graders. 9th graders seem to employ this strategy significantly more than 10th and 12th graders.

Metacognitive strategies concerning grade level

Table 49 shows the mean and standard deviation scores among four grade levels as 9th, 10th, 11th and 12th grades in the use of metacognitive strategies. As the table

suggests, the mean scores of *using English-language media (songs, movies, newscasts, etc.)* are at high level among all grade levels. The mean scores of *continuing to study word over time* are at high level across all grade levels except for 12th grades. The strategy of *using spaced word practice* is at low level across all grade levels. All the mean scores of *testing oneself with word tests* is at moderate level except for 12th graders which is at low level.

Table 49
Metacognitive strategies concerning grade level

		9th Grade (n=167)	10th Grade (n=142)	11th Grade (n=127)	12th Grade (n=120)
Q54 Use English-language media (songs, movies, newscasts, etc.)					
	M	3.76	3.70	3.62	3.59
	SD	1.36	1.34	1.44	1.34
Q55 Testing oneself with word tests					
	M	3.03	2.56	2.45	2.29
	SD	1.48	1.44	1.44	1.25
Q56 Use spaced word practice					
	M	2.36	1.95	1.74	1.70
	SD	1.19	1.13	0.98	0.87
Q58 Continue to study word over time					
	M	4.07	3.71	3.56	3.46
	SD	1.09	1.12	1.15	1.18

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

As it can be seen from Table 49, the mean scores of 9th graders are higher than other grade levels in all of the metacognitive strategies.

Table 50 demonstrates the results of the analyses done to see whether the mean scores differ significantly among grade levels.

Table 50
ANOVA for metacognitive strategies concerning grade level

	df_1	df_2	F
Q54 Use English-language media (songs, movies, newscasts, etc.)	3	549	0.46
Q55 Testing oneself with word tests	3	296.98	7.47*
Q56 Use spaced word practice	3	295.76	9.35*
Q58 Continue to study word over time	3	549	8.02*

* $p < .05$

As also seen in Table 50, there is a statistically significant mean difference in three out of four metacognitive strategies. Table 51 shows the results of post-hoc analyses to further investigate the mean differences.

Table 51
Results of post hoc tests for metacognitive strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q54 Use English-language media (songs, movies, newscasts, etc.)	9	10	0.05
		11	0.14
		12	0.17
	10	11	0.08
		12	0.11
	11	12	0.03
Q55 Testing oneself with word tests	9	10	0.46*
		11	0.57*
		12	0.73*
	10	11	0.11
		12	0.27
	11	12	0.16
Q56 Use spaced word practice	9	10	0.41*
		11	0.62*
		12	0.66*
	10	11	0.21
		12	0.24
	11	12	0.03

* $p < .05$

Table 51 (cont'd)
Results of post hoc tests for metacognitive strategies concerning grade level

	Grade Level (i)	Grade Level (j)	Mean Difference (i-j)
Q58 Continue to study word over time	9	10	0.35
		11	0.50*
		12	0.60*
	10	11	0.14
		12	0.24
	11	12	0.10

* $p < .05$

The results of the post hoc analysis indicates statistically significant mean differences between 9^{th} grades to all other grade levels in the strategies of *testing oneself with word tests,* and *using spaced word practice* (Table 51). 9^{th} graders seem to employ this strategy significantly more than other grade levels. There is also a statistically significant mean difference between 9^{th} and 11^{th} graders, and 9^{th} and 12^{th} graders in the use of *continuing to study the word over time*. 9^{th} graders also seem to employ *continuing to study word over time* significantly more than 12^{th} graders.

Discovery and consolidation strategies: School type

Table 52 demonstrates the mean scores of discovery and consolidation strategies for three different school types as science, Anatolian, and private high schools. The mean scores of discovery and consolidation strategies are at moderate level across all school types.

Table 52
Overall discovery and consolidation strategies: School type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Discovery Strategies				
	M	3.02	2.91	3.24
	SD	0.56	0.52	0.68
Consolidation Strategies				
	M	2.85	2.68	2.74
	SD	0.58	0.53	0.67

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

The table shows that the mean score of discovery strategies is highest for private high school (Table 52). It can be also seen from the table that the mean score of science high school is higher than Anatolian and private high schools regarding consolidation strategies.

Table 53 presents the results of the test conducted to see whether there is a statistically significant difference among school types.

Table 53
ANOVA for overall discovery and consolidation strategies: School type

	df_1	df_2	F
Discovery Strategies	2	354.84	13.02*
Consolidation Strategies	2	356.57	4.34*

* $p < .05$

A significant difference was found in the use of discovery and consolidation strategies (Table 53). Post hoc test results listed in Table 54 demonstrates the significant mean differences between school types.

Table 54
Results of post hoc tests for discovery and consolidation strategies: School type

	School type (i)	School type (j)	Mean Difference (i-j)
Discovery Strategies	Science	Anatolian	0.11
	Science	Private	-0.21*
	Anatolian	Private	-0.33*
Consolidation Strategies	Science	Anatolian	0.16*
	Science	Private	0.11
	Anatolian	Private	-0.05

* $p < .05$

According to the tests done, there is a statistically significant difference between science and private high school, and Anatolian and private school regarding discovery strategies (Table 54). Private school students seem to employ these strategies significantly more than other school types. In terms of consolidation strategies, there is a statistically significant mean difference between science and Anatolian high schools. Science high school students seem to use these strategies significantly more than Anatolian high school students.

Table 55 lists the subcategory of strategies under discovery and consolidation strategies and the mean and standard deviation scores of three different school types. As it can be seen from the table, all strategies are used at moderate level across all school types.

Table 55
Overall discovery and consolidation strategies: School type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Determination Strategies				
	M	3.12	2.97	3.17
	SD	0.61	0.58	0.71
Social Strategies (disc.)				
	M	2.83	2.79	3.36
	SD	0.77	0.71	0.89

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 55 (cont'd)
Overall discovery and consolidation strategies: School type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Social Strategies (cons.)				
	M	1.88	1.79	2.34
	SD	0.74	0.75	0.99
Memory Strategies				
	M	2.91	2.74	2.81
	SD	0.61	0.56	0.67
Cognitive Strategies				
	M	2.89	2.72	2.60
	SD	0.86	0.82	0.95
Metacognitive Strategies				
	M	3.12	2.97	2.88
	SD	0.83	0.79	0.84

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

As also indicated in Table 55, the mean scores of science high school are highest except for determination and social strategies used as consolidation strategies which are highest for private school. Table 56 shows the results of the test done to investigate whether there is a statistically significant mean difference between school types regarding the subcategories of discovery and consolidation strategies.

Table 56
ANOVA for overall discovery and consolidation strategies: School type

	df_1	df_2	F
Determination Strategies	2	357.80	5.28*
Social Strategies (disc.)	2	357.53	24.57*
Social Strategies (cons.)	2	352.87	18.43*
Memory Strategies	2	359.11	4.07*
Cognitive Strategies	2	551	5.10*
Metacognitive Strategies	2	550	3.96*

* $p < .05$

As shown in Table 56, there is a statistically significant mean difference between school types in the use of all strategies.

Discovery strategies and school type

Table 57 demonstrates the mean and standard deviation scores of different school types regarding discovery strategies. As the table indicates, all the mean scores are at moderate level.

Table 57
Discovery strategies and school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Determination Strategies				
	M	3.12	2.97	3.17
	SD	0.61	0.58	0.71
Social Strategies				
	M	2.83	2.79	3.36
	SD	0.77	0.71	0.89

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

When the mean and standard deviation scores of determination and social strategies are analyzed (Table 57), the mean scores of private school regarding determination and social strategies was found higher comparing other school types.

Table 58 demonstrates the results of the analyses done to see if there is a statistically significant mean difference among school types.

Table 58
ANOVA for discovery strategies and school type

	df_1	df_2	F
Determination Strategies	2	357.80	5.28*
Social Strategies	2	357.53	24.57*

* $p < .05$

The results of the analyses conducted shows that there is a statistically significant mean difference among school types both in the use of determination and social

strategies (Table 58). Table 59 demonstrates the results of the post hoc test done to determine the significant mean differences among school types.

Table 59
Results of post hoc tests for discovery strategies and school type

	School type (i)	School type (j)	Mean Difference (i-j)
Determination Strategies	Science	Anatolian	0.15*
	Science	Private	-0.04
	Anatolian	Private	-0.20*
Social Strategies	Science	Anatolian	0.04
	Science	Private	-0.52*
	Anatolian	Private	-0.56*

* $p < .05$

As it can be seen from Table 59, there is a statistically significant mean difference between science and Anatolian high school, and Anatolian and private high school regarding determination strategies. Science high school students seem to employ determination strategies significantly more than Anatolian high school students. There is also a statistically significant difference between Anatolian and private high school in favor of private high school. In the use of social strategies, the results show that there is a statistically significant mean difference between science and private high school, and Anatolian and private high school. Private high school students seem to use social strategies as discovery strategies significantly more than other school types.

Determination strategies concerning school type

Table 60 lists the determination strategies and demonstrates the mean and standard deviation scores of four different types of schools. As it can be seen from the table, the mean scores of *checking for L1 cognate, analyzing any available pictures or*

gestures, and *guessing from textual context* are at high level among all school types. The mean scores of *using flash cards* are at low level across all school types.

Table 60
Determination strategies concerning school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Q1 Analyze part of speech				
	M	2.55	2.55	2.60
	SD	1.16	1.18	1.30
Q2 Analyze affixes and roots				
	M	3.36	2.96	3.34
	SD	1.37	1.36	1.36
Q3 Check for L1 cognate				
	M	3.97	3.76	3.85
	SD	1.16	1.17	1.20
Q4 Analyze any available pictures or gestures				
	M	3.43	3.39	3.60
	SD	1.27	1.22	1.30
Q5 Guess from textual context				
	M	3.93	3.86	4.28
	SD	1.02	1.12	0.88
Q6 Bilingual dictionary				
	M	3.81	3.73	3.43
	SD	1.24	1.24	1.44
Q7 Monolingual dictionary				
	M	2.17	2.19	3.03
	SD	1.38	1.25	1.35
Q8 Word lists				
	M	2.91	2.39	2.29
	SD	1.41	1.24	1.27
Q9 Flash cards				
	M	1.97	1.86	2.07
	SD	1.20	1.09	1.31

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

According to Table 60, the mean score of *using bilingual dictionary* as a vocabulary learning strategy is the highest for science high school results while it decreases when looking at Anatolian and private high schools respectively. The mean score of

private high school regarding *using monolingual dictionary* and *guessing from contextual context* is higher than science and Anatolian high schools (Table 60).

Table 61 demonstrates the results of the test conducted to see whether there is a statistically significant mean difference among school types regarding determination strategies.

Table 61
ANOVA for determination strategies concerning school type

	df_1	df_2	F
Q1 Analyze part of speech	2	552	0.07
Q2 Analyze affixes and roots	2	552	5.22*
Q3 Check for L1 cognate	2	552	1.51
Q4 Analyze any available pictures or gestures	2	553	1.41
Q5 Guess from textual context	2	368.14	10.24*
Q6 Bilingual dictionary	2	359.53	3.74*
Q7 Monolingual dictionary	2	551	23.88*
Q8 Word lists	2	362.60	10.97*
Q9 Flash cards	2	547	1.27

* $p < .05$

As it can be seen from the table (Table 61), there is a statistically significant mean difference in the strategies of *analyzing affixes and roots, guessing from textual context*, *using bilingual dictionary*, *using monolingual dictionary*, and *using word lists*. Table 62 shows the results of the post hoc tests conducted to see among which school types there is a statistically significant mean difference.

Table 62
Results of post hoc tests for determination strategies concerning school type

	School type (i)	School type (j)	Mean Difference (i-j)
Q1 Analyze part of speech	Science	Anatolian	-0.00
	Science	Private	-0.04
	Anatolian	Private	-0.04
Q2 Analyze affixes and roots	Science	Anatolian	0.40*
	Science	Private	0.01
	Anatolian	Private	-0.38*
Q3 Check for L1 cognate	Science	Anatolian	0.20
	Science	Private	0.11
	Anatolian	Private	-0.09
Q4 Analyze any available pictures or gestures	Science	Anatolian	0.03
	Science	Private	-0.17
	Anatolian	Private	-0.21
Q5 Guess from textual context	Science	Anatolian	0.07
	Science	Private	-0.35*
	Anatolian	Private	-0.42*
Q6 Bilingual dictionary	Science	Anatolian	0.08
	Science	Private	0.38*
	Anatolian	Private	0.29
Q7 Monolingual dictionary	Science	Anatolian	-0.01
	Science	Private	-0.85*
	Anatolian	Private	-0.84*
Q8 Word lists	Science	Anatolian	0.52*
	Science	Private	0.61*
	Anatolian	Private	0.09
Q9 Flash cards	Science	Anatolian	0.11
	Science	Private	-0.09
	Anatolian	Private	-0.20

* $p < .05$

For the strategy of *analyzing affixes and roots*, a significant mean difference was found between science and Anatolian, and Anatolian and private high schools (Table 62). Science and private high school students seem to employ this strategy significantly more than Anatolian high school students. There is also a statistically significant mean difference between science and private, and Anatolian and private regarding the strategy of *guessing from textual context*. Private high school students seem to use this strategy significantly more than other school types. A significant mean difference was found in the strategy of *using bilingual dictionary* between

science and private high schools in favor of science high school. For *using monolingual strategy*, a significant mean difference was found between science and private, and Anatolian and private high schools. Private high school students seem to use this strategy significantly more than other school types. The mean scores of science high school was also found to be statistically significant comparing to other school types regarding the strategy of *using word lists*. Science high school students seem to use this strategy significantly more than other school types.

Social strategies (discovery) concerning school type

Table 63 lists the items of social strategies under the category of discovery strategies. According to the table, the mean scores of *asking teacher for an L1 translation* are at high level across all school types. For the strategy of *discovering new meaning through group work activity*, the mean scores of all school types are at low level except for private high school which is at moderate level.

Table 63
Social strategies (discovery) concerning school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Q10 Ask teacher for an L1 translation				
	M	3.55	3.59	3.63
	SD	1.22	1.17	1.38
Q11 Ask teacher for paraphrase or synonym of new word				
	M	2.59	2.36	3.54
	SD	1.23	1.28	1.26
Q12 Ask teacher for a sentence including the new word				
	M	2.72	2.56	3.10
	SD	1.32	1.33	1.34

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 63 (cont'd)
Social strategies (discovery) concerning school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Q13 Ask classmates for meaning				
	M	3.30	3.58	3.74
	SD	1.24	1.26	1.23
Q14 Discover new meaning through group work activity				
	M	2.00	1.87	2.77
	SD	1.10	1.02	1.37

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

The results of the test done to investigate whether there is a statistically significant mean difference among school types can be seen in Table 64.

Table 64
ANOVA for social strategies (discovery) concerning school type

	df_1	df_2	F
Q10 Ask teacher for an L1 translation	2	358.84	0.20
Q11 Ask teacher for paraphrase or synonym of new word	2	551	43.25*
Q12 Ask teacher for a sentence including the new word	2	552	7.79*
Q13 Ask classmates for meaning	2	553	5.68*
Q14 Discover new meaning through group work activity	2	353.19	25.50*

* $p < .05$

As Table 64 suggests, there is a statistically significant mean difference among school types in the use of all social strategies under the category of discovery strategies except for the strategy of *asking a teacher for an L1 translation*. Table 65 demonstrates the results of the post hoc test done to determine the significant mean differences between school types.

Table 65
Results of post hoc tests for social strategies (discovery) concerning school type

	School type (i)	School type (j)	Mean Difference (i-j)
Q10 Ask teacher for an L1 translation	Science	Anatolian	-0.04
	Science	Private	-0.08
	Anatolian	Private	-0.04
Q11 Ask teacher for paraphrase or synonym of new word	Science	Anatolian	0.22
	Science	Private	-0.95*
	Anatolian	Private	-1.17*
Q12 Ask teacher for a sentence including the new word	Science	Anatolian	0.15
	Science	Private	-0.38*
	Anatolian	Private	-0.54*
Q13 Ask classmates for meaning	Science	Anatolian	-0.27
	Science	Private	-0.43*
	Anatolian	Private	-0.16
Q14 Discover new meaning through group work activity	Science	Anatolian	0.13
	Science	Private	-0.76*
	Anatolian	Private	0.90*

* $p < .05$

Table 65 shows that there is a statistically significant mean difference between science and private, and Anatolian and private high schools for the strategies of *asking teacher for paraphrase or synonym of a new word, asking teacher for a sentence including the new word* and *discovering new meaning through group work activity*. Private high school students seem to use these strategies significantly more than students from other school types. A statistically significant mean difference was found between science and private high schools in the use of *asking classmates for meaning*. Private high school students also seem to employ this strategy significantly more than science high school students.

Consolidation strategies and school type

Table 66 lists the strategies under the category of consolidation strategies. As it can be seen from the table, the means of social strategies under the category of

consolidation strategies are at low level among all school types. For memory, cognitive and metacognitive strategies, all of the mean scores are at moderate level.

Table 66
Consolidation strategies and school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Social Strategies (cons.)				
	M	1.88	1.79	2.34
	SD	0.74	0.75	0.99
Memory Strategies				
	M	2.91	2.74	2.81
	SD	0.61	0.56	0.67
Cognitive Strategies				
	M	2.89	2.72	2.60
	SD	0.86	0.82	0.95
Metacognitive Strategies				
	M	3.12	2.97	2.88
	SD	0.83	0.79	0.84

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 67 demonstrates the results of the test conducted to see whether there is a statistically significant difference between school types regarding consolidation strategies.

Table 67
ANOVA for consolidation strategies and school type

	df_1	df_2	F
Social Strategies (cons.)	2	352.87	18.43*
Memory Strategies	2	359.11	4.07*
Cognitive Strategies	2	551	5.10*
Metacognitive Strategies	2	550	3.96*

* $p < .05$

As Table 67 indicates, there is a statistically significant mean difference among school types regarding all the sub categories of consolidation strategies. Table 68

shows the results of the post hoc test conducted to further investigate the mean differences.

Table 68
Results of post hoc tests for consolidation strategies and school type

	School type (i)	School type (j)	Mean Difference (i-j)
Social Strategies	Science	Anatolian	0.08
	Science	Private	-0.46*
	Anatolian	Private	-0.55*
Memory Strategies	Science	Anatolian	0.17*
	Science	Private	0.10
	Anatolian	Private	-0.06
Cognitive Strategies	Science	Anatolian	0.16
	Science	Private	0.29*
	Anatolian	Private	0.12
Metacognitive Strategies	Science	Anatolian	0.15
	Science	Private	0.23*
	Anatolian	Private	0.08

* P < 0.05

As it can be seen from Table 68, there is a statistically significant difference between science and private, and Anatolian and private high schools regarding social strategies under the category of consolidation strategies. Private high school students seem to employ these strategies significantly more than other school types. In terms of memory strategies, a statistically significant difference was found between science and Anatolian high schools in favor of science high school. There is also a statistically significant mean difference between science and private high schools in the use of cognitive and metacognitive strategies in favor of science high school.

Social strategies (consolidation) concerning school type

Table 69 lists the social strategies under the category of consolidation strategies. According to the mean scores given in the table, all strategies are at low level except

for the strategy of *interacting with native speakers* which is at moderate level for private high school.

Table 69
Social strategies (consolidation) concerning school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Q15 Study and practice meaning in a group				
	M	1.82	1.79	2.26
	SD	0.97	1.07	1.29
Q16 Teacher checks students' flash cards or word lists for accuracy				
	M	1.85	1.66	2.13
	SD	1.08	1.01	1.25
Q17 Interact with native speakers				
	M	1.97	1.92	2.65
	SD	1.33	1.32	1.34

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

It can be seen from Table 69 that the mean scores of science and Anatolian high schools seems to be considerably lower than private high school. Table 70 demonstrates the results of the test conducted to see whether there is a statistically significant mean difference among school types.

Table 70
ANOVA for social strategies (consolidation) concerning school type

	df_1	df_2	F
Q15 Study and practice meaning in a group	2	354.41	8.08*
Q16 Teacher checks students' flash cards or word lists for accuracy	2	356.70	7.25*
Q17 Interact with native speakers	2	551	16.68*

* $p < .05$

According to the test conducted, there seems to be a statistically significant mean difference among school types for all social strategies under the category of

consolidation strategies. Table 71 shows the results of the post hoc tests done to further investigate the mean differences.

Table 71
Results of post hoc tests for social strategies (consolidation) concerning school type

	School type (i)	School type (j)	Mean Difference (i-j)
Q15 Study and practice meaning in a group	Science	Anatolian	0.03
	Science	Private	-0.43*
	Anatolian	Private	-0.46*
Q16 Teacher checks students' flash cards or word lists for accuracy	Science	Anatolian	0.18
	Science	Private	-0.28
	Anatolian	Private	-0.46*
Q17 Interact with native speakers	Science	Anatolian	0.05
	Science	Private	-0.68*
	Anatolian	Private	-0.73*

* $p < .05$

As Table 71 suggests, there is a statistically significant mean difference between science and private, and Anatolian and private regarding the strategies of *studying and practicing meaning in a group* and *interacting with native speakers*. Private high school students seem to use these strategies significantly more than other school types. For the strategy of *teacher checking students' flash cards or word lists for accuracy,* there is a statistically significant mean difference between Anatolian and private high school in favor of private high school.

Memory strategies concerning school type

The list of memory strategies and the mean and standard deviation scores for three different school types are given in Table 72. Across all school types, the mean scores of *studying the spelling of a word, saying new word aloud when studying,* and *imagining word form* are at high level. According to the table, the mean scores of all school types are at low level regarding the strategies of *using semantic maps, using*

peg method, grouping words together within a storyline, learning the words of an idiom together and *using semantic feature grids.*

Table 72
Memory strategies concerning school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Q18 Study word with a pictorial representation of its meaning				
	M	2.58	2.59	2.92
	SD	1.27	1.20	1.48
Q19 Imagine word's meaning				
	M	3.58	3.59	3.45
	SD	1.25	1.19	1.38
Q20 Connect word to a personal experience				
	M	3.53	3.43	3.27
	SD	1.23	1.24	1.42
Q21 Associate the word with its coordinates				
	M	3.59	3.19	3.26
	SD	1.27	1.23	1.29
Q22 Connect the word to its synonyms and antonyms				
	M	3.17	2.73	2.77
	SD	1.20	1.24	1.29
Q23 Use semantic maps				
	M	2.08	1.86	1.97
	SD	1.13	1.05	1.16
Q24 Use scales for gradable adjectives				
	M	2.87	2.56	2.53
	SD	1.22	1.28	1.25
Q25 Peg method				
	M	1.96	1.95	1.82
	SD	1.19	1.23	1.19
Q26 Loci method				
	M	3.05	2.93	2.86
	SD	1.30	1.30	1.37
Q27 Group words together to study them				
	M	2.65	2.44	2.27
	SD	1.28	1.29	1.23

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 72 (cont'd)
Memory strategies concerning school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Q28 Group words together spatially on a page				
	M	2.85	2.41	2.52
	SD	1.43	1.34	1.35
Q29 Use new word in sentences				
	M	3.44	3.32	3.96
	SD	1.20	1.22	1.22
Q30 Group words together within a storyline				
	M	1.91	1.87	2.30
	SD	1.06	1.08	1.25
Q31 Study the spelling of a word				
	M	3.18	3.22	3.14
	SD	1.41	1.43	1.51
Q32 Study the sound of a word				
	M	3.81	3.80	3.85
	SD	1.23	1.22	1.24
Q33 Say new word aloud when studying				
	M	3.94	4.01	3.82
	SD	1.26	1.14	1.32
Q34 Imagine word form				
	M	4.13	4.06	3.66
	SD	1.11	1.13	1.43
Q36 Configuration				
	M	2.50	2.30	2.34
	SD	1.52	1.44	1.51
Q37 Use keyword method				
	M	2.25	2.13	1.87
	SD	1.45	1.33	1.23
Q38 Affixes and roots (remembering)				
	M	2.70	2.41	2.44
	SD	1.19	1.19	1.28
Q39 Part of speech (remembering)				
	M	2.85	2.43	2.43
	SD	1.33	1.20	1.33

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 72 (cont'd)
Memory strategies concerning school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Q40 Paraphrase the words meaning				
	M	3.00	2.56	3.31
	SD	1.30	1.25	1.29
Q41 Use cognates in study				
	M	3.37	3.38	3.30
	SD	1.36	1.32	1.37
Q42 Learn the words of an idiom together				
	M	2.00	1.77	2.21
	SD	1.09	1.00	1.21
Q43 Use physical action when learning a word				
	M	2.48	2.32	2.50
	SD	1.35	1.36	1.46
Q44 Use semantic feature grids				
	M	2.21	2.04	2.24
	SD	1.22	1.23	1.36

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

According to Table 72, the mean scores of private high school are higher comparing to science and Anatolian high schools for the strategies of *paraphrasing the words meaning* and *learning the words of an idiom together*. Table 73 shows the results of the test conducted to investigate whether there is a statistically significant mean difference among school types.

Table 73
ANOVA for memory strategies concerning school type

	df_1	df_2	F
Q18 Study word with a pictorial representation of its meaning	2	357.41	3.41*
Q19 Imagine word's meaning	2	357.98	0.58
Q20 Connect word to a personal experience	2	355.55	1.72
Q21 Associate the word with its coordinates	2	549	5.50*
Q22 Connect the word to its synonyms and antonyms	2	547	7.04*
Q23 Use semantic maps	2	551	1.75

* $p < .05$

Table 73 (cont'd)
ANOVA for memory strategies concerning school type

	df_1	df_2	F
Q24 Use scales for gradable adjectives	2	551	4.07*
Q25 Peg method	2	552	0.74
Q26 Loci method	2	553	0.92
Q27 Group words together to study them	2	551	3.99*
Q28 Group words together spatially on a page	2	551	5.28*
Q29 Use new word in sentences	2	366.13	15.00*
Q30 Group words together within a storyline	2	358.24	6.90*
Q31 Study the spelling of a word	2	549	0.08
Q32 Study the sound of a word	2	550	0.13
Q33 Say new word aloud when studying	2	359.36	1.09
Q34 Imagine word form	2	354.07	6.48*
Q36 Configuration	2	550	0.90
Q37 Use keyword method	2	366.00	3.87*
Q38 Affixes and roots (remembering)	2	551	3.05
Q39 Part of speech (remembering)	2	551	6.46*
Q40 Paraphrase the words meaning	2	540	14.96*
Q41Use cognates in study	2	550	0.16
Q42 Learn the words of an idiom together	2	355.77	7.13*
Q43 Use physical action when learning a word	2	550	0.89
Q44 Use semantic feature grids	2	548	1.31

* $p < .05$

According to the results of the analyses, there is a statistically significant mean difference among school types in the strategies of *studying word with a pictorial representation of its meaning, associating the word with its coordinates, connecting the word to its synonyms and antonyms, using scales for gradable adjectives, grouping words together to study them, grouping words together spatially on a page, using new words in sentences, grouping words together within a storyline, imagining word form, using keyword method, using part of speech (remembering), paraphrasing the words meaning*, and *learning the words of an idiom together* (Table 73).

A further analysis was done to investigate the significant mean differences among school types. Table 74 indicates the results of the post hoc tests conducted.

Table 74
Results of post hoc tests for memory strategies concerning school type

	School type (i)	School type (j)	Mean Difference (i-j)
Q18 Study word with a pictorial representation of its meaning	Science	Anatolian	-0.00
	Science	Private	-0.34
	Anatolian	Private	-0.33*
Q19 Imagine word's meaning	Science	Anatolian	-0.01
	Science	Private	0.12
	Anatolian	Private	0.13
Q20 Connect word to a personal experience	Science	Anatolian	0.10
	Science	Private	0.26
	Anatolian	Private	0.15
Q21 Associate the word with its coordinates	Science	Anatolian	0.40*
	Science	Private	0.33*
	Anatolian	Private	-0.07
Q22 Connect the word to its synonyms and antonyms	Science	Anatolian	0.43*
	Science	Private	0.39*
	Anatolian	Private	-0.03
Q23 Use semantic maps	Science	Anatolian	0.21
	Science	Private	0.11
	Anatolian	Private	-0.10
Q24 Use scales for gradable adjectives	Science	Anatolian	0.30
	Science	Private	0.33*
	Anatolian	Private	0.03
Q25 Peg method	Science	Anatolian	0.01
	Science	Private	0.14
	Anatolian	Private	0.13
Q26 Loci method	Science	Anatolian	0.11
	Science	Private	0.18
	Anatolian	Private	0.06
Q27 Group words together to study them	Science	Anatolian	0.21
	Science	Private	0.37*
	Anatolian	Private	0.16
Q28 Group words together spatially on a page	Science	Anatolian	0.44*
	Science	Private	0.33
	Anatolian	Private	-0.10
Q29 Use new word in sentences	Science	Anatolian	0.11
	Science	Private	-0.51*
	Anatolian	Private	-0.63*
Q30 Group words together within a storyline	Science	Anatolian	0.03
	Science	Private	-0.39*
	Anatolian	Private	-0.42*
Q31 Study the spelling of a word	Science	Anatolian	-0.04
	Science	Private	0.03
	Anatolian	Private	0.07

* $p < .05$

Table 74 (cont'd)
Results of post hoc tests for memory strategies concerning school type

	School type (i)	School type (j)	Mean Difference (i-j)
Q32 Study the sound of a word	Science	Anatolian	0.01
	Science	Private	-0.03
	Anatolian	Private	-0.05
Q33 Say new word aloud when studying	Science	Anatolian	-0.06
	Science	Private	0.12
	Anatolian	Private	0.19
Q34 Imagine word form	Science	Anatolian	0.07
	Science	Private	0.47*
	Anatolian	Private	0.40*
Q36 Configuration	Science	Anatolian	0.19
	Science	Private	0.15
	Anatolian	Private	-0.03
Q37 Use keyword method	Science	Anatolian	0.11
	Science	Private	0.37*
	Anatolian	Private	0.26
Q38 Affixes and roots (remembering)	Science	Anatolian	0.29
	Science	Private	0.25
	Anatolian	Private	-0.03
Q39 Part of speech (remembering)	Science	Anatolian	0.41*
	Science	Private	0.41*
	Anatolian	Private	0.00
Q40 Paraphrase the words meaning	Science	Anatolian	0.43*
	Science	Private	-0.31
	Anatolian	Private	-0.74*
Q41 Use cognates in study	Science	Anatolian	-0.01
	Science	Private	0.06
	Anatolian	Private	0.07
Q42 Learn the words of an idiom together	Science	Anatolian	0.23
	Science	Private	-0.20
	Anatolian	Private	-0.44*
Q43 Use physical action when learning a word	Science	Anatolian	0.15
	Science	Private	-0.02
	Anatolian	Private	-0.17
Q44 Use semantic feature grids	Science	Anatolian	0.16
	Science	Private	-0.03
	Anatolian	Private	-0.20

* $p < .05$

Table 74 shows that there is a statistically significant mean difference between Anatolian and private high schools in terms of the strategy of *studying word with a pictorial representation of its meaning, paraphrasing the words meaning* and

learning the words of an idiom together. Private high school students seem to use these strategies significantly more than other school types. According to the results of the test, there is a statistically significant mean difference between science and Anatolian, and science and private high schools in the strategies of *associating the word with its coordinates*, *connecting the word to its synonyms and antonyms,* and *part of speech (remembering)*. Science high school students seem to employ these strategies significantly more than other school types. The results of the analysis also indicates a significant mean difference between science and private high schools in the strategies of *using scales for gradable adjectives,* and *grouping words together to study them, using keyword method*. Science high school students seem to use these strategies significantly more than other school types. Between science and private, and Anatolian and private high school there is also a statistically significant mean difference in the strategies of *using new word in sentences* and *grouping words together within a storyline*. Private high school students seem to employ these strategies significantly more than other school types. Regarding the significant mean difference in the use of *imagining word form*, it can be said that science and Anatolian high school students use this strategy significantly more than private high school. It can be seen from the results of the analysis that there is a statistically significant mean difference between science and Anatolian, and Anatolian and private high school regarding the strategy of *paraphrasing the words meaning*. Private and science high school students seem to use this strategy significantly more than Anatolian high school students. Regarding the strategy of *grouping words together spatially on a page*, a significant difference was found between science and Anatolian high school in favor of science high school.

Cognitive strategies concerning school type

Table 75 lists the mean and standard deviation scores of three different school types as science, Anatolian, and private high schools regarding cognitive strategies. According to the table, the mean scores of *verbal repetition* are at high level across all school types. Table 76 also indicates that the mean scores of *using flash* cards and *listening to tape of word lists* are at low level among all school types.

Table 75
Cognitive strategies concerning school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Q45 Verbal repetition				
	M	3.88	3.79	3.62
	SD	1.22	1.17	1.44
Q46 Written repetition				
	M	3.12	2.99	2.86
	SD	1.43	1.36	1.48
Q47 Word lists				
	M	3.29	2.62	2.57
	SD	1.50	1.48	1.49
Q48 Flash cards				
	M	1.93	1.95	1.95
	SD	1.25	1.18	1.26
Q49 Take notes in class				
	M	2.84	2.84	2.82
	SD	1.38	1.43	1.43
Q50 Use the vocabulary section in your textbook				
	M	3.13	2.93	2.50
	SD	1.40	1.40	1.37
Q51 Listen to tape of word lists				
	M	2.10	2.21	2.10
	SD	1.37	1.35	1.34
Q53 Keep a vocabulary notebook				
	M	2.81	2.43	2.34
	SD	1.52	1.38	1.40

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

It can be seen from Table 75 that the mean scores of science high school is considerably higher than other school types regarding the strategies of *verbal repetition, written repetition, using word lists, using the vocabulary section in your textbook,* and *keeping a vocabulary notebook.*

Table 76 demonstrates the results of the analysis conducted to investigate whether there is a statistically significant difference among school types regarding cognitive strategies.

Table 76
ANOVA for cognitive strategies concerning school type

	df_1	df_2	F
Q45 Verbal repetition	2	354.50	1.63
Q46 Written repetition	2	551	1.49
Q47 Word lists	2	546	13.32*
Q48 Flash cards	2	551	0.01
Q49 Take notes in class	2	548	0.01
Q50 Use the vocabulary section in your textbook	2	551	9.50*
Q51 Listen to tape of word lists	2	551	0.39
Q53 Keep a vocabulary notebook	2	550	5.74*

* $p < .05$

According to the results of the analyses, there is a statistically significant mean difference in the strategies of *using word lists, using the vocabulary section in your textbook* and *keeping a vocabulary notebook.*

Table 77 demonstrates the results of a further analysis done to investigate the significant mean differences between school types regarding the use of cognitive strategies.

Table 77
Results of post hoc tests for cognitive strategies concerning school type

	School type (i)	School type (j)	Mean Difference (i-j)
Q45 Verbal repetition	Science	Anatolian	0.09
	Science	Private	0.25
	Anatolian	Private	0.16
Q46 Written repetition	Science	Anatolian	0.12
	Science	Private	0.25
	Anatolian	Private	0.13
Q47 Word lists	Science	Anatolian	0.66*
	Science	Private	0.71*
	Anatolian	Private	0.04
Q48 Flash cards	Science	Anatolian	-0.01
	Science	Private	-0.01
	Anatolian	Private	0.00
Q49 Take notes in class	Science	Anatolian	0.00
	Science	Private	0.02
	Anatolian	Private	-0.00
Q50 Use the vocabulary section in your textbook	Science	Anatolian	0.20
	Science	Private	0.63*
	Anatolian	Private	0.42*
Q51 Listen to tape of word lists	Science	Anatolian	-0.10
	Science	Private	0.00
	Anatolian	Private	0.10
Q53 Keep a vocabulary notebook	Science	Anatolian	0.38*
	Science	Private	0.47*
	Anatolian	Private	0.08

* $p < .05$

As it can be seen from Table 77, there is a statistically significant mean difference between science and Anatolian, and science and private high school regarding the strategy of *using word lists* and *keeping a vocabulary notebook* in favor of science high school. For the strategy of *using the vocabulary section in your textbook*, there is a statistically significant mean difference between science and private, and Anatolian and private high schools. Science and Anatolian high school students seem to use these strategies significantly more than private high school students.

Metacognitive strategies concerning school type

Table 78 includes the list of metacognitive strategies within the mean and standard deviation scores for three different school types as science, Anatolian and private high schools. As the table suggests, the strategies of *using English-language media (songs, movies, newscasts, etc.)* and *continuing to study word over time* are at high level for all school types. *Using spaced word practice* is at low level as it can be seen from the table.

Table 78
Metacognitive strategies concerning school type

		Science (n=194)	Anatolian (n=193)	Private (n=169)
Q54 Use English-language media (songs, movies, newscasts, etc.)				
	M	3.54	3.73	3.77
	SD	1.41	1.32	1.37
Q55 Testing oneself with word tests				
	M	3.04	2.54	2.22
	SD	1.50	1.36	1.32
Q56 Use spaced word practice				
	M	2.12	1.90	1.88
	SD	1.24	1.09	1.15
Q58 Continue to study word over time				
	M	3.79	3.72	3.66
	SD	1.14	1.10	1.23

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

It can be observed from Table 78 the mean score of science high school is higher than other school types regarding the strategy of *testing oneself with word tests, using spaced word practice* and *continuing to study word over time*. Table 79 demonstrates the results of the analyses done to investigate whether there is a statistically significant mean difference among school types.

Table 79
ANOVA for metacognitive strategies concerning school type

	df_1	df	F
Q54 Use English-language media (songs, movies, newscasts, etc.)	2	550	1.46
Q55 Testing oneself with word tests	2	364.69	15.19*
Q56 Use spaced word practice	2	550	2.55
Q58 Continue to study word over time	2	360.16	0.55

* p < .05

As it can be seen from the table (Table 79), there is a statistically significant mean difference only in the strategy of *testing oneself with word tests*. Table 80 presents the further investigation of the post hoc test regarding the mean differences between school types.

Table 80
Results of post hoc tests for metacognitive strategies concerning school type

	School type (i)	School type (j)	Mean Difference (i-j)
Q54 Use English-language media (songs, movies, newscasts, etc.)	Science	Anatolian	-0.18
	Science	Private	-0.22
	Anatolian	Private	-0.04
Q55 Testing oneself with word tests	Science	Anatolian	0.49*
	Science	Private	0.81*
	Anatolian	Private	0.31
Q56 Use spaced word practice	Science	Anatolian	0.22
	Science	Private	0.24
	Anatolian	Private	0.01
Q58 Continue to study word over time	Science	Anatolian	0.07
	Science	Private	0.13
	Anatolian	Private	0.05

* p < .05

According to the analyses conducted, there is a statistically significant mean difference between science and Anatolian, and science and private high schools in terms of the strategy of *testing oneself with word tests* in favor of science high school.

Discovery and consolidation strategies: Age

Table 81 demonstrates that both the use of discovery and consolidation strategies are at moderate level across the age groups.

Table 81
Overall discovery and consolidation strategies: Age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Discovery Strategies					
	M	3.13	2.99	3.06	3.05
	SD	0.59	0.60	0.61	0.60
Consolidation Strategies					
	M	2.93	2.70	2.73	2.70
	SD	0.59	0.62	0.61	0.55

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

As it can be seen from Table 81, the mean scores of 14-year-olds are higher than other age groups in terms of overall discovery and consolidation strategy use. Table 82 demonstrates the results of the tests conducted to see whether there is a statistically significant mean difference among age groups regarding discovery and consolidation strategies.

Table 82
ANOVA for overall discovery and consolidation strategies: Age

	df_1	df_2	F
Discovery Strategies	3	545	1.48
Consolidation Strategies	3	545	4.56*

* $p < .05$

As Table 82 suggests, there is a statistically significant difference in the use of consolidation strategies. To further analyze the mean differences between age groups, post hoc analyses were conducted (Table 83).

Table 83
Results of post hoc tests for discovery and consolidation strategies: Age

	Age (i)	Age (j)	Mean Difference (i-j)
Discovery Strategies	14	15	0.14
		16	0.07
		17	0.12
	15	16	-0.06
		17	-0.01
	16	17	0.05
Consolidation Strategies	14	15	0.23*
		16	0.19
		17	0.23*
	15	16	-0.03
		17	-0.00
	16	17	0.03

* p < .05

The post hoc analysis indicates that there is a statistically significant mean difference between 14 and 15-year-olds, and 14 and 17-year-olds in favor of 14-year-olds.

Table 84 lists the subcategories of discovery and consolidation strategies within the mean and standard deviation scores of each age group. The table shows that all strategies are used at moderate level across all age groups.

Table 84
Discovery and consolidation strategies: Age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Determination Strategies					
	M	3.02	3.01	3.08	3.06
	SD	0.61	0.65	0.66	0.63
Social Strategies (disc.)					
	M	3.02	2.96	3.02	2.91
	SD	0.83	0.80	0.79	0.88
Social Strategies (cons.)					
	M	1.99	1.87	1.97	2.13
	SD	0.87	0.81	0.84	0.90
Memory Strategies					
	M	2.93	2.76	2.81	2.79
	SD	0.61	0.63	0.63	0.58

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 84 (cont'd)
Discovery and consolidation strategies: Age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Cognitive Strategies					
	M	3.11	2.62	2.72	2.58
	SD	0.83	0.88	0.87	0.86
Metacognitive Strategies					
	M	3.35	3.08	2.83	2.78
	SD	0.83	0.82	0.80	0.73

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

As it can be seen from Table 84, the mean scores of 14-year-olds are higher than other age groups in the use of all strategies except for determination strategies and social strategies. Table 85 demonstrates the results of the tests done to see if there is a statistically significant mean difference between age groups.

Table 85
ANOVA for overall discovery and consolidation strategies: Age

	df_1	df_2	F
Determination Strategies	3	545	1.93
Social Strategies (discovery)	3	545	0.57
Social Strategies (consolidation)	3	545	2.13
Memory Strategies	3	545	1.97
Cognitive Strategies	3	543	9.90*
Metacognitive Strategies	3	542	13.90*

* $p < .05$

The result of the test shows that there is a statistically significant mean difference among age groups regarding cognitive and metacognitive strategies.

Discovery strategies and age

According to the overall means given in Table 86, all age groups are at moderate level regarding the use of determination and social strategies under the category of discovery strategies.

Table 86
Discovery strategies and age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Determination Strategies					
	M	3.20	3.01	3.08	3.06
	SD	0.61	0.65	0.66	0.63
Social Strategies					
	M	3.02	2.96	3.02	2.91
	SD	0.83	0.80	0.79	0.88

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 87 shows the results of the test done to see whether there is a statistically significant mean difference between age groups.

Table 87
ANOVA for overall discovery strategies and age

	df_1	df_2	F
Determination Strategies	3	545	1.97
Social Strategies	3	545	0.57

The results of the test show that there is no statistically significant mean difference among age groups regarding determination and social strategies (Table 87).

Determination strategies concerning age

Table 88 demonstrates the mean and standard deviation scores of all the age groups regarding determination strategies. It can be seen from the table that the strategies of *checking for L1 cognate*, *guessing from textual context*, and *using bilingual dictionary* are at high level across all age groups. All the age groups are at low level regarding the strategy of *using flash cards*.

Table 88
Determination strategies concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q1 Analyze part of speech					
	M	2.67	2.39	2.72	2.47
	SD	1.30	1.18	1.14	1.21
Q2 Analyze affixes and roots					
	M	3.23	3.16	3.24	3.21
	SD	1.40	1.43	1.34	1.34
Q3 Check for L1 cognate					
	M	3.77	3.78	3.99	3.90
	SD	1.17	1.26	1.09	1.18
Q4 Analyze any available pictures or gestures					
	M	3.73	3.48	3.32	3.39
	SD	1.13	1.30	1.32	1.24
Q5 Guess from textual context					
	M	4.03	3.99	3.94	4.09
	SD	1.06	0.97	1.08	1.01
Q6 Bilingual dictionary					
	M	3.70	3.56	3.70	3.70
	SD	1.26	1.36	1.32	1.33
Q7 Monolingual dictionary					
	M	2.33	2.35	2.57	2.50
	SD	1.44	1.36	1.44	1.30
Q8 Word lists					
	M	3.09	2.37	2.41	2.38
	SD	1.33	1.36	1.28	1.28
Q9 Flash cards					
	M	2.17	2.00	1.83	1.90
	SD	1.30	1.24	1.13	1.15

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Regarding the strategy of *analyzing any available pictures or gestures* and *using word lists*, it can be seen from Table 88 that the mean score of 14-year-olds is higher than other age groups. Table 89 demonstrates the results of the analyses done to see whether there is a statistically significant mean difference among age groups.

Table 89
ANOVA for determination strategies concerning age

	df_1	df_2	F
Q1 Analyze part of speech	3	544	2.49
Q2 Analyze affixes and roots	3	544	0.10
Q3 Check for L1 cognate	3	300.93	1.07
Q4 Analyze any available pictures or gestures	3	302.38	2.87*
Q5 Guess from textual context	3	545	0.49
Q6 Bilingual dictionary	3	545	0.40
Q7 Monolingual dictionary	3	543	0.96
Q8 Word lists	3	541	9.28*
Q9 Flash cards	3	539	1.97

* $p < .05$

The results of the analysis show that there is a statistically significant mean difference between age groups regarding the strategy of *analyzing any available pictures or gestures* and *using word lists* (Table 89). Post hoc tests were conducted to further analyze the significant mean differences between age groups. The results of these analyses are shown in Table 90.

Table 90
Results of post hoc tests for determination strategies concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q1 Analyze part of speech	14	15	0.28
		16	-0.05
		17	0.20
	15	16	-0.33
		17	-0.08
	16	17	0.25
Q2 Analyze affixes and roots	14	15	0.07
		16	-0.00
		17	0.02
	15	16	-0.08
		17	-0.05
	16	17	0.02

* $p < .05$

Table 90 (cont'd)
Results of post hoc tests for determination strategies concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q3 Check for L1 cognate	14	15	-0.00
		16	-0.21
		17	-0.12
	15	16	-0.20
		17	-0.11
	16	17	0.08
Q4 Analyze any available pictures or gestures	14	15	0.24
		16	0.40*
		17	0.33
	15	16	0.16
		17	0.08
	16	17	-0.07
Q5 Guess from textual context	14	15	0.04
		16	0.09
		17	-0.05
	15	16	0.04
		17	-0.10
	16	17	-0.14
Q6 Bilingual dictionary	14	15	0.13
		16	-0.00
		17	-0.00
	15	16	-0.14
		17	-0.14
	16	17	0.00
Q7 Monolingual dictionary	14	15	-0.01
		16	-0.23
		17	-0.17
	15	16	-0.22
		17	-0.15
	16	17	0.06
Q8 Word lists	14	15	0.72*
		16	0.68*
		17	0.71*
	15	16	-0.03
		17	-0.01
	16	17	0.02
Q9 Flash cards	14	15	0.16
		16	0.34
		17	0.27
	15	16	0.17
		17	0.10
	16	17	-0.07

* $p < .05$

As it can be seen from Table 90, there is a statistically significant mean difference between 14-year-olds and 16-year olds in the use of *analyzing any available pictures or gestures*. In terms of the strategy of *using word lists*, the results of the analysis show a statistically significant mean difference between 14-year olds and each other age group. 14-year-olds seem to employ these strategies significantly more than other age groups.

Social strategies (discovery) concerning age

Table 91 demonstrates the mean scores across age groups in terms of social strategies under the category of discovery strategies. According to the table, all age groups are at high level regarding the strategy of *asking teacher for an L1 translation* except for 15-year-olds of which the mean score is at moderate level. In terms of the strategy of *asking classmates for meaning*, all age groups are at moderate level except for 16-year-olds of which the mean score is at high level. *Discover new meaning through group work activity* is at low level across all age groups.

Table 91
Social strategies (discovery) concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q10 Ask teacher for an L1 translation					
	M	3.72	3.43	3.57	3.65
	SD	1.14	1.27	1.28	1.33
Q11 Ask teacher for paraphrase or synonym of new word					
	M	2.94	2.87	2.81	2.59
	SD	1.37	1.36	1.33	1.35

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 91 (cont'd)
Social strategies (discovery) concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q12 Ask teacher for a sentence including the new word					
	M	2.91	2.80	2.78	2.62
	SD	1.38	1.37	1.29	1.36
Q13 Ask classmates for meaning					
	M	3.33	3.56	3.71	3.49
	SD	1.28	1.25	1.22	1.27
Q14 Discover new meaning through group work activity					
	M	2.23	2.11	2.22	2.21
	SD	1.28	1.15	1.24	1.25

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

According to Table 91, the mean scores of 14-year-olds are higher than other age groups in terms of all the social strategies under the category of discovery strategies except for the strategy of *asking classmates for meaning*. Regarding this strategy, the mean score is highest for 16-year-olds.

Table 92 shows the results of the tests conducted to investigate if there is a statistically significant mean difference between age groups.

Table 92
ANOVA for social strategies (discovery) concerning age

	df_1	df_2	F
Q10 Ask teacher for an L1 translation	3	543	1.33
Q11 Ask teacher for paraphrase or synonym of new word	3	544	1.69
Q12 Ask teacher for a sentence including the new word	3	544	1.05
Q13 Ask classmates for meaning	3	545	2.00
Q14 Discover new meaning through group work activity	3	543	0.25

The results of the analyses given in Table 92 show that there is no statistically significant difference among age groups.

Consolidation strategies and age

Table 93 shows the mean and standard deviation scores across age groups regarding consolidation strategies. The table demonstrates that all age groups are at low level regarding social strategies. As for the memory, cognitive and metacognitive strategies, all age groups are at moderate level.

Table 93
Consolidation strategies and age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Social Strategies (cons.)					
	M	1.99	1.87	1.97	2.13
	SD	0.87	0.81	0.84	0.90
Memory Strategies					
	M	2.93	2.76	2.81	2.79
	SD	0.61	0.63	0.63	0.58
Cognitive Strategies					
	M	3.11	2.62	2.72	2.58
	SD	0.83	0.88	0.87	0.86
Metacognitive Strategies					
	M	3.35	3.08	2.83	2.78
	SD	0.83	0.82	0.80	0.73

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

When the overall means of consolidation strategies are analyzed (Table 93), it can be observed that the mean scores of 14-year-olds are highest in memory, cognitive and metacognitive strategies. Regarding social strategies, the mean score of 17-year-olds is the highest than other age groups.

Table 94 demonstrates the results of the analyses done to investigate whether there is a significant mean difference among age groups.

Table 94
ANOVA for consolidation strategies and age

	df_1	df_2	F
Social Strategies	3	545	2.13
Memory Strategies	3	545	1.97
Cognitive Strategies	3	543	9.09*
Metacognitive Strategies	3	542	13.90*

* p < .05

As the table suggests (Table 94), there is a statistically significant mean difference between age groups regarding cognitive and metacognitive strategies. Table 95 demonstrates the results of post hoc tests done to further investigate the mean differences among age groups.

Table 95
Results of post hoc tests for consolidation strategies and age

	Age (i)	Age (j)	Mean Difference (i-j)
Social Strategies	14	15	0.11
		16	0.02
		17	-0.13
	15	16	-0.09
		17	-0.25
	16	17	-0.15
Memory Strategies	14	15	0.17
		16	0.11
		17	0.14
	15	16	-0.05
		17	-0.02
	16	17	0.02
Cognitive Strategies	14	15	0.48*
		16	0.38*
		17	0.52*
	15	16	-0.09
		17	0.03
	16	17	0.13
Metacognitive Strategies	14	15	0.27
		16	0.51*
		17	0.57*
	15	16	0.24
		17	0.30*
	16	17	0.05

* p < .05

The results of the post hoc analysis shown in Table 95 indicate that the mean scores of 14-year-olds are significantly different to all other age groups. Regarding metacognitive strategies, 14-year-olds seem to have a statistically significant mean difference to 16 and 17-year-olds. 14-year-olds seem to use these strategies significantly more than other age groups. There is also a statistically significant mean difference between 15 and 17-year-olds regarding metacognitive strategies. 15-year-olds seem to favor this strategy more than 17-year-olds.

Social strategies (consolidation) concerning age

It can be seen from Table 96 that all social strategies under the category of consolidation strategies are at low level.

Table 96
Social strategies (consolidation) concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q15 Study and practice meaning in a group					
	M	1.82	1.83	1.99	2.10
	SD	1.00	1.08	1.19	1.20
Q16 Teacher checks students' flash cards or word lists for accuracy					
	M	2.10	1.71	1.78	1.91
	SD	1.23	1.02	1.05	1.20
Q17 Interact with native speakers					
	M	2.05	2.06	2.13	2.37
	SD	1.38	1.30	1.34	1.44

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

The mean scores of 17-year-olds in the strategy of *studying and practicing meaning in a group*, and 14-year-olds in the strategy of *teacher checking students' flash cards*

or word lists for accuracy have the same and the highest mean scores comparing to other age groups. 17-year-olds also has the highest score in the strategy of *interacting with native speakers*.

The results of the analyses done to investigate whether there is a statistically significant mean difference between age groups are shown in Table 97.

Table 97
ANOVA for social strategies (consolidation) concerning age

	df_1	df_2	F
Q15 Study and practice meaning in a group	3	301.07	1.95
Q16 Teacher checks students' flash cards or word lists for accuracy	3	298.20	2.82*
Q17 Interact with native speakers	3	543	1.57

* $p < .05$

According to the results, there is a statistically significant mean difference regarding the strategy of *teacher checking students' flash cards or word lists for accuracy* (Table 97). In order to further investigate the mean differences among age groups, post hoc analyses were done. The results of the tests can be seen in Table 98.

Table 98
Results of post hoc tests for social strategies (consolidation) concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q15 Study and practice meaning in a group	14	15	-0.01
		16	-0.16
		17	-0.28
	15	16	-0.15
		17	-0.27
	16	17	-0.11

* $p < .05$

Table 98 (cont'd)
Results of post hoc tests for social strategies (consolidation) concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q16 Teacher checks students' flash cards or word lists for accuracy	14	15	0.38*
		16	0.31*
		17	0.19
	15	16	-0.07
		17	-0.19
	16	17	-0.12
Q17 Interact with native speakers	14	15	-0.01
		16	-0.08
		17	-0.31
	15	16	-0.07
		17	-0.30
	16	17	-0.23

* p < .05

The results of the tests indicate significant mean differences between 14 and 15-year olds, and 14 and 16-year-olds regarding the strategy of *teacher checking students' flash cards or word lists for accuracy* in favor of 14-year-olds (Table 98).

Memory strategies concerning age

Table 99 lists the memory strategies, and the mean and standard deviation scores across age groups. The table indicates that the strategies of *studying the spelling of a word, saying new word aloud when studying,* and *imagining word form,* are at high level across all grade groups. As for the strategies of *using semantic maps, using peg method, grouping words together within a storyline, using keyword method, learning the words of an idiom together,* and *using semantic feature grids* all age groups are at low level.

Table 99
Memory strategies concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q18 Study word with a pictorial representation of its meaning					
	M	2.90	2.48	2.68	2.76
	SD	1.30	1.30	1.32	1.35
Q19 Imagine word's meaning					
	M	3.80	3.36	3.48	3.56
	SD	1.10	1.34	1.34	1.25
Q20 Connect word to a personal experience					
	M	3.47	3.24	3.36	3.56
	SD	1.27	1.40	1.29	1.19
Q21 Associate the word with its coordinates					
	M	3.33	3.28	3.50	3.29
	SD	1.24	1.34	1.20	1.29
Q22 Connect the word to its synonyms and antonyms	M	2.75	2.85	3.12	2.82
	SD	1.27	1.28	1.25	1.21
Q23 Use semantic maps					
	M	1.97	1.97	2.02	1.93
	SD	1.07	1.13	1.20	1.05
Q24 Use scales for gradable adjectives					
	M	2.77	2.67	2.57	2.58
	SD	1.30	1.29	1.18	1.25
Q25 Peg method					
	M	2.14	1.78	1.94	1.76
	SD	1.37	1.07	1.25	1.08
Q26 Loci method					
	M	3.18	2.98	2.81	2.86
	SD	1.34	1.33	1.34	1.27

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 99 (cont'd)
Memory strategies concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q27 Group words together to study them					
	M	2.67	2.52	2.48	2.17
	SD	1.34	1.29	1.27	1.17
Q28 Group words together spatially on a page					
	M	2.57	2.56	2.65	2.61
	SD	1.37	1.37	1.42	1.39
Q29 Use new word in sentences					
	M	3.60	3.60	3.37	3.65
	SD	1.19	1.21	1.25	1.20
Q30 Group words together within a storyline					
	M	2.04	1.95	1.99	2.08
	SD	1.18	1.04	1.24	1.12
Q31 Study the spelling of a word					
	M	3.46	3.05	3.03	3.24
	SD	1.56	1.38	1.42	1.40
Q32 Study the sound of a word					
	M	4.11	3.69	3.68	3.84
	SD	1.15	1.26	1.30	1.16
Q33 Say new word aloud when studying					
	M	4.25	3.81	3.78	3.91
	SD	1.04	1.36	1.25	1.23
Q34 Imagine word form					
	M	4.29	3.80	3.94	3.84
	SD	0.99	1.33	1.22	1.32
Q36 Configuration					
	M	2.42	2.30	2.64	2.15
	SD	1.53	1.44	1.62	1.36
Q37Use keyword method					
	M	2.20	1.95	2.22	2.05
	SD	1.36	1.30	1.42	1.31

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 99 (cont'd)
Memory strategies concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q38 Affixes and roots (remembering)					
	M	2.63	2.43	2.47	2.55
	SD	1.24	1.25	1.25	1.30
Q39 Part of speech (remembering)					
	M	2.82	2.55	2.48	2.45
	SD	1.40	1.29	1.18	1.31
Q40 Paraphrase the words meaning					
	M	3.14	3.11	2.74	2.80
	SD	1.37	1.29	1.29	1.28
Q41 Use cognates in study					
	M	3.40	3.28	3.34	3.42
	SD	1.32	1.40	1.38	1.31
Q42 Learn the words of an idiom together					
	M	1.98	1.86	2.10	1.96
	SD	1.01	1.07	1.17	1.12
Q43 Use physical action when learning a word					
	M	2.42	2.35	2.55	2.41
	SD	1.41	1.40	1.40	1.35
Q44 Use semantic feature grids					
	M	2.08	2.28	2.13	2.18
	SD	1.22	1.35	1.18	1.33

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 100 shows the analyses conducted to see whether there is a statistically significant mean difference between age groups regarding the use of memory strategies.

Table 100
ANOVA for memory strategies concerning age

	df_1	df_2	F
Q18 Study word with a pictorial representation of its meaning	3	544	2.45
Q19 Imagine word's meaning	3	300.30	3.21*
Q20 Connect word to a personal experience	3	541	1.60
Q21 Associate the word with its coordinates	3	541	0.93
Q22 Connect the word to its synonyms and antonyms	3	539	2.24
Q23 Use semantic maps	3	543	0.13
Q24 Use scales for gradable adjectives	3	543	0.69
Q25 Peg method	3	297.47	2.56
Q26 Loci method	3	545	2.02
Q27 Group words together to study them	3	543	3.64*
Q28 Group words together spatially on a page	3	543	0.14
Q29 Use new word in sentences	3	543	1.43
Q30 Group words together within a storyline	3	543	0.34
Q31 Study the spelling of a word	3	299.55	2.31
Q32 Study the sound of a word	3	297.97	3.61*
Q33 Say new word aloud when studying	3	301.06	4.80*
Q34 Imagine word form	3	301.41	5.35*
Q36 Configuration	3	298.14	2.57
Q37 Use keyword method	3	542	1.24
Q38 Affixes and roots (remembering)	3	543	0.62
Q39 Part of speech (remembering)	3	543	2.13
Q40 Paraphrase the words meaning	3	532	3.31
Q41 Use cognates in study	3	542	0.32
Q42 Learn the words of an idiom together	3	539	1.13
Q43 Use physical action when learning a word	3	542	0.50
Q44 Use semantic feature grids	3	540	0.65

* $p < .05$

It can be seen from Table 100 that there is a statistically significant mean difference among age groups in terms of the strategies of *imagining word's meaning*, *grouping words together to study them*, *studying the sound of a word*, *saying new word aloud when studying*, and *imagining word form*. Table 101 demonstrates the results of the post hoc analyses conducted to further investigate the mean differences between age groups.

Table 101
Results of post hoc tests for memory strategies concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q18 Study word with a pictorial representation of its meaning	14	15	0.42
		16	0.22
		17	0.13
	15	16	-0.19
		17	-0.28
	16	17	-0.08
Q19 Imagine word's meaning	14	15	0.44*
		16	0.31
		17	0.23
	15	16	-0.12
		17	-0.20
	16	17	-0.07
Q20 Connect word to a personal experience	14	15	0.22
		16	0.11
		17	-0.09
	15	16	-0.11
		17	-0.32
	16	17	-0.20
Q21 Associate the word with its coordinates	14	15	0.05
		16	-0.16
		17	0.04
	15	16	-0.22
		17	-0.01
	16	17	0.21
Q22 Connect the word to its synonyms and antonyms	14	15	-0.10
		16	-0.37
		17	-0.07
	15	16	-0.27
		17	0.02
	16	17	0.29
Q23 Use semantic maps	14	15	-0.00
		16	-0.04
		17	0.04
	15	16	-0.04
		17	0.04
	16	17	0.08
Q24 Use scales for gradable adjectives	14	15	0.09
		16	0.19
		17	0.18
	15	16	0.09
		17	0.09
	16	17	-0.00

* $p < .05$

Table 101 (cont'd)
Results of post hoc tests for memory strategies concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q25 Peg method	14	15	0.36
		16	0.20
		17	0.38
	15	16	-0.15
		17	0.01
	16	17	0.17
Q26 Loci method	14	15	0.19
		16	0.36
		17	0.31
	15	16	0.17
		17	0.12
	16	17	-0.05
Q27 Group words together to study them	14	15	0.15
		16	0.19
		17	0.50*
	15	16	0.03
		17	0.34
	16	17	0.30
Q28 Group words together spatially on a page	14	15	0.00
		16	-0.08
		17	-0.04
	15	16	-0.09
		17	-0.05
	16	17	0.04
Q29 Use new word in sentences	14	15	-0.00
		16	0.22
		17	-0.05
	15	16	0.23
		17	-0.04
	16	17	-0.27
Q30 Group words together within a storyline	14	15	0.08
		16	0.05
		17	-0.03
	15	16	-0.03
		17	-0.12
	16	17	-0.09
Q31 Study the spelling of a word	14	15	0.40
		16	0.42
		17	0.22
	15	16	0.01
		17	-0.18
	16	17	-0.20

* $p < .05$

Table 101 (cont'd)
Results of post hoc tests for memory strategies concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q32 Study the sound of a word	14	15	0.42*
		16	0.42*
		17	0.26
	15	16	0.00
		17	-0.15
	16	17	-0.16
Q33 Say new word aloud when studying	14	15	0.44*
		16	0.46*
		17	0.34
	15	16	0.02
		17	-0.09
	16	17	0.12
Q34 Imagine word form	14	15	0.48*
		16	0.34
		17	0.44*
	15	16	-0.14
		17	-0.03
	16	17	0.10
Q36 Configuration	14	15	0.11
		16	-0.22
		17	0.26
	15	16	-0.34
		17	0.14
	16	17	0.49
Q37 Use keyword method	14	15	0.24
		16	-0.02
		17	0.14
	15	16	-0.27
		17	-0.10
	16	17	0.16
Q38 Affixes and roots (remembering)	14	15	0.19
		16	0.16
		17	0.08
	15	16	-0.03
		17	-0.11
	16	17	-0.07
Q39 Part of speech (remembering)	14	15	0.26
		16	0.33
		17	0.36
	15	16	0.06
		17	0.09
	16	17	0.02

* $p < .05$

Table 101 (cont'd)
Results of post hoc tests for memory strategies concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q40 Paraphrase the words meaning	14	15	0.03
		16	0.40
		17	0.34
	15	16	0.37
		17	0.30
	16	17	-0.06
Q41 Use cognates in study	14	15	0.12
		16	0.06
		17	-0.01
	15	16	-0.05
		17	-0.14
	16	17	-0.08
Q42 Learn the words of an idiom together	14	15	0.11
		16	-0.12
		17	0.02
	15	16	-0.24
		17	-0.09
	16	17	0.14
Q43 Use physical action when learning a word	14	15	0.06
		16	-0.13
		17	0.01
	15	16	-0.19
		17	-0.05
	16	17	0.14
Q44 Use semantic feature grids	14	15	-0.20
		16	-0.05
		17	-0.10
	15	16	0.15
		17	0.10
	16	17	-0.04

* p < .05

Regarding the strategies of *studying the sound of a word* and *saying new word aloud when studying*, there is a statistically significant mean difference between 14 and 15-year-olds, and 14 and 16-year olds (Table 101). The results of the analyses also show a statistically significant mean difference between 14 and 15-year-olds in terms of the strategy of *imagining word's meaning*, and *imagining word form*. As for the strategies of *grouping words to study them* and *imagining word form* statistically

significant mean difference was found between 14 and 17-year-olds. 14-year-olds seem to employ these strategies significantly more than other age groups.

Cognitive strategies concerning age

Table 102 demonstrates a list of the mean and standard deviation scores of cognitive strategies across age groups. According to the table, the mean scores of all age groups are at high level regarding the strategy of *verbal repetition*. In terms of the strategies of *using flash cards* and *using the vocabulary section in your textbook* are at low level across all age groups.

Table 102
Cognitive strategies concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q45 Verbal repetition					
	M	4.20	3.67	3.67	3.62
	SD	1.08	1.34	1.31	1.28
Q46 Written repetition	M	3.41	2.90	3.00	2.77
	SD	1.39	1.42	1.42	1.40
Q47 Word lists					
	M	3.31	2.70	2.84	2.54
	SD	1.45	1.57	1.48	1.49
Q48 Flash cards					
	M	2.34	1.89	1.78	1.82
	SD	1.36	1.17	1.17	1.18
Q49 Take notes in class					
	M	3.28	2.71	2.81	2.64
	SD	1.41	1.35	1.41	1.40
Q50 Use the vocabulary section in your textbook					
	M	3.00	2.65	3.12	2.78
	SD	1.37	1.46	1.41	1.36

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

Table 102 (cont'd)
Cognitive strategies concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q51 Listen to tape of word lists					
	M	2.38	2.01	2.09	2.15
	SD	1.46	1.33	1.35	1.28
Q53 Keep a vocabulary notebook	M	2.97	2.44	2.47	2.34
	SD	1.51	1.47	1.43	1.36

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

When the means of cognitive strategies across all age groups are analyzed, it can be observed that the mean scores of 14-year-olds are highest in each item comparing to other age groups (Table 102). Table 103 shows the results of the analyses conducted to investigate whether there is a statistically significant mean difference between age groups.

Table 103
ANOVA for cognitive strategies concerning age

	df_1	df_2	F
Q45 Verbal repetition	3	300.30	7.25*
Q46 Written repetition	3	543	4.97*
Q47 Word lists	3	538	6.26*
Q48 Flash cards	3	297.92	4.84*
Q49 Take notes in class	3	540	5.40*
Q50 Use the vocabulary section in your textbook	3	543	3.15*
Q51 Listen to tape of word lists	3	543	1.80
Q53 Keep a vocabulary notebook	3	542	4.92*

* $p < .05$

The results of the analysis indicate a statistically significant mean difference between age groups in all items regarding the use of cognitive strategies except for the strategy of *listening to tape of word lists* (Table 103). The results of post hoc

analyses done to further investigate the mean differences among age groups are given in Table 104.

Table 104
Results of post hoc tests for cognitive strategies concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q45 Verbal repetition	14	15	0.52*
		16	0.52*
		17	0.58*
	15	16	0.00
		17	0.05
	16	17	0.05
Q46 Written repetition	14	15	0.51*
		16	0.41
		17	0.64*
	15	16	-0.09
		17	0.12
	16	17	0.22
Q47 Word lists	14	15	0.60*
		16	0.46
		17	0.77*
	15	16	-0.14
		17	0.16
	16	17	0.30
Q48 Flash cards	14	15	0.44*
		16	0.55*
		17	0.51*
	15	16	0.10
		17	0.07
	16	17	-0.03
Q49 Take notes in class	14	15	0.56*
		16	0.47
		17	0.63*
	15	16	-0.09
		17	0.07
	16	17	0.16
Q50 Use the vocabulary section in your textbook	14	15	0.34
		16	-0.12
		17	0.21
	15	16	-0.47*
		17	-0.13
	16	17	0.33

* $p < .05$

Table 104 (cont'd)
Results of post hoc tests for cognitive strategies concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q51 Listen to tape of word lists	14	15	0.37
		16	0.28
		17	0.22
	15	16	-0.08
		17	-0.14
	16	17	-0.06
Q53 Keep a vocabulary notebook	14	15	0.53*
		16	0.50
		17	0.62*
	15	16	-0.02
		17	0.09
	16	17	0.12

* p < .05

According to Table 104, there is a statistically significance between 14-year-olds and all other age groups regarding the strategies of *verbal repetition* and *using flash cards*. As for the strategies of *written repetition*, *using word lists*, *taking notes in class*, and *keeping a vocabulary notebook*, a statistically significant mean difference can be seen between 14-year-olds and 15-year-olds, and 14-year-olds and 17-year-olds. 14-year-olds seem to employ these strategies significantly more than other age groups. Regarding the strategy of *using the vocabulary section in your textbook*, there is a statistically significant mean difference between 15 and 16-year-olds in favor of 16-year-olds.

Metacognitive strategies concerning age

When the mean scores of metacognitive strategies are analyzed across age groups, it can be seen that the strategies of *using English-language media (songs, movies, newscasts, etc.)* and *continuing to study word over time* are at high level in all age groups (Table 105). As for the strategy of *using spaced word practice* is at low level across age groups.

Table 105
Metacognitive strategies concerning age

		14 (n=127)	15 (n=146)	16 (n=138)	17 (n=138)
Q54 Use English-language media (songs, movies, newscasts, etc.)					
	M	3.79	3.73	3.57	3.63
	SD	1.32	1.38	1.19	1.39
Q55 Testing oneself with word tests					
	M	3.15	2.60	2.55	2.23
	SD	1.51	1.45	1.40	1.25
Q56 Use spaced word practice					
	M	2.36	2.15	1.76	1.68
	SD	1.35	1.31	0.94	0.90
Q58 Continue to study word over time					
	M	4.11	3.84	3.47	3.56
	SD	1.08	1.07	1.20	1.15

(High: 3.50 to 5.00; Moderate: 2.40 to 3.49; Low: 1.00 to 2.39) - adapted from Oxford's (1997, 2001) scoring system

According to Table 105, the mean scores of 14-year-olds are highest in terms of all metacognitive strategies across all age groups. Table 106 shows the test conducted to see whether there is a statistically significant mean difference between age groups.

Table 106
ANOVA for metacognitive strategies concerning age

	df_1	df_2	F
Q54 Use English-language media (songs, movies, newscasts, etc.)	3	542	0.66
Q55 Testing oneself with word tests	3	297.60	9.49*
Q56 Use spaced word practice	3	294.25	10.05*
Q58 Continue to study word over time	3	542	8.53*

* $p < .05$

As it can be seen from Table 106, there is a statistically significant mean difference between age groups regarding all cognitive strategies except for the strategy of *using*

English-language media (songs, movies, newscasts, etc.). Table 107 shows the results of post hoc analyses done to further investigate the mean differences.

Table 107
Results of post hoc tests for metacognitive strategies concerning age

	Age (i)	Age (j)	Mean Difference (i-j)
Q54 Use English-language media (songs, movies, newscasts, etc)	14	15	0.06
		16	0.21
		17	0.15
	15	16	0.15
		17	0.09
	16	17	-0.06
Q55 Testing oneself with word tests	14	15	0.54*
		16	0.59*
		17	0.92*
	15	16	0.05
		17	0.37
	16	17	0.32
Q56 Use spaced word practice	14	15	0.20
		16	0.59*
		17	0.67*
	15	16	0.39*
		17	0.46*
	16	17	0.07
Q58 Continue to study word over time	14	15	0.27
		16	0.64*
		17	0.54*
	15	16	0.37
		17	0.27
	16	17	-0.09

* $p < .05$

As it can be seen from Table 107, there is a statistically significant mean difference between 14-year-olds and other age groups regarding the strategies of *testing oneself with word tests*. 14-year-olds seem to use the strategy of *testing oneself with word* test significantly more than other age groups. As for the strategy of *using spaced word practice,* a significant mean difference was found between all age groups except for 14 and 15-year-olds, and 16 and 17-year-olds. 14-year-olds seem to

employ these strategies significantly more than 16 and 17-year-olds. 15-year-olds also seem to use these strategies more than 16 and 17-year-olds. There is also a statistically significant mean difference between 14 and 16-year-olds, and 14 and 17-year-olds in terms of the strategy of *continuing to study word over time* in favor of 14-year-olds.

CHAPTER 5: DISCUSSION

Introduction

This chapter presents the findings of the study and discusses the results (see Appendix C for a summary of significantly higher mean score results) with support from the related literature. The chapter also presents implications for practice, implications for further research, and limitations.

Overview of the study

In this study, Schmitt's *Vocabulary Learning Strategies Questionnaire* (VLSQ) was used to analyze the vocabulary learning strategies that high school students from different types of schools used. The researcher investigated if there is any difference in the use of vocabulary learning strategies with respect to gender, grade level, school type and age. This study aimed to answer the following research questions:

1. What discovery and consolidation vocabulary learning strategies are used by high school students coming from different types of schools?
2. Is there any difference in the use of vocabulary learning strategies based on gender, grade level, school type and age?

Discussion of the major findings

Conclusion 1: Strategy use and gender

When the overall discovery and consolidation strategy use results are analyzed, it can be seen that students from different types of school seem to employ both of these

strategies at moderate level. The results of the independent samples t-test conducted demonstrate a statistically significant mean difference between genders regarding discovery and consolidation strategies in favor of females. Table 108 summarizes the results of descriptive and inferential analyses of the present study.

Table 108
Strategy use and gender: Discovery and consolidation strategies

	Descriptive Analysis	Inferential Analysis
Discovery Strategies	Moderate level	Males and **Females**
Consolidation Strategies	Moderate level	Males and **Females**

Note. Words in bold indicate a significant higher mean score.

Determination strategies seem to be the most frequently used strategy group by both genders (Table 108). Determination strategies were also the most frequently used strategies by females in Cengizhan's (2011) study whereas it was metacognitive strategies for males. As for the least used vocabulary strategy categories, the present study indicates that females use social strategies as consolidation strategies the least while males use cognitive strategies the least. However, in Cengizhan's (2011) study, the least frequently used strategy was cognitive strategies by both genders.

The results of the descriptive analyses show that both males and females use determination and social strategies at moderate level. The independent samples t-test results also indicate that females use determination and social strategies more than males (Table 109).

Table 109
Strategy use and gender: Discovery strategies

	Descriptive Analysis	Inferential Analysis
Determination Strategies	Moderate level	Males and **Females**
Social Strategies (disc.)	Moderate level	Males and **Females**

Note. Words in bold indicate a significant higher mean score.

A significant mean score difference can be seen in the use of both strategies in favor of females (Table 109). When the mean scores of discovery strategies are further analyzed in detail, it can be observed that females tend to employ the strategy of *using bilingual dictionary* more than any other discovery strategies. Catalán's (2003) study also found that the most frequently used discovery strategy by both males and females was *using bilingual dictionary*. The results of inferential analysis indicated that females prefer *using bilingual dictionary* significantly more than males. It corroborates the findings of Omaar's (2016) study as he also found that females use this strategy more than males (as cited in Manuel, 2017).

Based on the analyses of subcategories, it can be said that the mean scores of females are higher than those of males except for metacognitive strategies in Cengizhan's (2011) study. The results of Manuel's (2017) study also show that males use metacognitive strategies more than females. However, in the present study, the results show that females tend to use metacognitive strategies more than males. Based on the analyses on consolidation strategies, the results show no significant difference between genders in the use of social strategies under the category of consolidation strategies (Table 110).

Table 110
Strategy use and gender: Consolidation strategies

	Descriptive Analysis	Inferential Analysis
Social Strategies (cons.)	Low level	-
Memory Strategies	Moderate level	Males and **Females**
Cognitive Strategies	Moderate level	Males and **Females**
Metacognitive Strategies	Moderate level	Males and **Females**

Note. Words in bold indicate a significant higher mean score.

As seen in Table 110, both genders use social strategies at low level whereas memory, cognitive and metacognitive strategies at moderate level. There seems to be no significant difference between males and females in the use of social strategies under the category of consolidation strategies. However, females use memory, cognitive and metacognitive strategies more than males. It can be observed by looking at the mean scores of consolidation strategies that the most frequently used strategy by females is *saying new word aloud when studying* whereas it is *continuing to study word over time* as for males.

This study concludes that females seem to use these strategies significantly more than males. Table 111 presents the list of all vocabulary learning strategies in which a statistically significant difference between genders were found.

Table 111
Summary list of strategy use and gender: Discovery and consolidation strategies

	Inferential Analysis
Determination Strategies	
Analyzing any available pictures or gestures	Males and **Females**
Using bilingual dictionary	Males and **Females**
Using monolingual dictionary	Males and **Females**
Using word lists	Males and **Females**
Using flash cards	Males and **Females**
Social Strategies (Discovery)	
Asking teacher for an L1 translation	Males and **Females**
Asking classmates for meaning	Males and **Females**
Memory Strategies	
Grouping words spatially on a page	Males and **Females**
Studying the spelling of a word	Males and **Females**
Studying the sound of a word	Males and **Females**
Saying new word aloud when studying	Males and **Females**
Imagining word form	Males and **Females**
Using configuration	Males and **Females**

Note. Words in bold indicate a significant higher mean score.

Table 111 (cont'd)
Summary list of strategy use and gender: Discovery and consolidation strategies

	Inferential Analysis
Cognitive strategies	
Verbal repetition	Males and **Females**
Written repetition	Males and **Females**
Using word lists	Males and **Females**
Using flash cards	Males and **Females**
Taking notes in class	Males and **Females**
Using the vocabulary section in your textbook	Males and **Females**
Listening to tape of word lists	Males and **Females**
Keeping a vocabulary notebook	Males and **Females**
Metacognitive strategies	
Testing oneself with word tests	Males and **Females**

Note. Words in bold indicate a significant higher mean score.

As also seen in Table 111, all the significant results of the tests conducted are in favor of females. The study that Ansari, Vahdany and Sabouri (2016) conducted with Iranian EFL university students indicated that female learners use metacognitive strategies more than males. Sahbazian's (2004) study also indicated that female university students employ social strategies significantly more than males. He attempted to explain the reason of it by focusing on Turkish culture, and claimed that females tend to ask their teachers more than males in Turkey.

Conclusion 2: Strategy use and grade level

Overall discovery and consolidation analyses shown in Table 112 indicate that all grade levels tend to use both of these strategies at moderate level. The results of the independent samples t-test conducted demonstrate a statistically significant mean difference between grade levels in the use of discovery and consolidation strategies. 9^{th} graders employ consolidation strategies more than 10^{th} graders according to the results of the tests (Table 112).

Table 112
Strategy use and grade level: Discovery and consolidation strategies

	Descriptive Analysis	Inferential Analysis
Discovery Strategies	Moderate level	-
Consolidation Strategies	Moderate level	**9th** and 10th graders

Note. Words in bold indicate a significant higher mean score.

As seen in Table 112, there seems to be no significant difference between grade levels regarding the use of discovery strategies. However, 9th graders seem to employ consolidation strategies more than 10th graders. When the subcategories of discovery and consolidation strategies are analyzed, it can be seen that determination strategies are the most employed strategy group across all grade levels. 9th graders employ this strategy the most when compared to other grade levels. As for the least used vocabulary strategy categories, the results of the present study show that all grade levels employ social strategies as consolidation strategies the least. 11th graders tend to use this strategy the least comparing to other grade levels.

The results of the descriptive analysis shown in Table 113 indicate that all grade levels employ determination and social strategies at moderate level. The independent samples t-test results indicate no difference between grade levels.

Table 113
Strategy use and grade level: Discovery strategies

	Descriptive Analysis	Inferential Analysis
Determination Strategies	Moderate level	-
Social Strategies (disc.)	Moderate level	-

Note. Words in bold indicate a significant higher mean score.

When the mean scores of discovery strategies are further analyzed in detail, it can be said that 9th graders seem to employ the strategy of *using word lists* significantly more than other grade levels (Table 113). In Schmitt's (1997) study, the results

showed that junior high school students use this strategy more than high school and university students as well as adult learners respectively.

All students seem to use social strategies as consolidation strategies at low level whereas memory, cognitive and metacognitive strategies at moderate level (Table 114).

Table 114
Strategy use and grade level: Consolidation strategies

	Descriptive Analysis	Inferential Analysis
Social Strategies (cons.)	Low level	-
Memory Strategies	Moderate level	-
Cognitive Strategies	Moderate level	**9th** and 10th graders
		9th and 11th graders
		9th and 12th graders
Metacognitive Strategies	Moderate level	**9th** and 11th graders
		9th and 12th graders

Note. Words in bold indicate a significant higher mean score.

9th graders seem to employ cognitive strategies significantly more than other grade levels (Table 114). As for metacognitive strategies 9th graders significantly differ from 11th and 12th graders and use these strategies significantly more than these grade levels.

Another conclusion of the study worth noting is that 9th graders seem to use most cognitive strategies significantly more than 10th and 12th graders. Table 115 presents the summary of items in which statistically significance mean difference was found between grade levels. As it can be also seen from the table, 9th graders seem to use these strategies significantly more than other grade levels.

Table 115
Summary list of strategy use and grade level: Discovery and consolidation strategies

	Inferential Analysis
Determination Strategies	
Using word lists	**9th** and 10th graders
	9th and 11th graders
	9th and 12th graders
	10th and **11th graders**
Social Strategies (Discovery)	
Asking teacher for an L1 translation	**9th** and 10th graders
Asking classmates for meaning	9th and **11th graders**
Social Strategies (Consolidation)	
Teacher checking students' flash cards or word lists	**9th** and 10th graders
for accuracy	**9th** and 11th graders
Memory Strategies	
Imagining words meaning	**9th** and 10th graders
Grouping words together to study them	**9th** and 12th graders
Studying the sound of a word	**9th** and 10th graders
Saying new word aloud when studying	**9th** and 10th graders
Imagining word form	**9th** and 10th graders
Part of speech (remembering)	**9th** and 10th graders
Cognitive strategies	
Verbal repetition	**9th** and 11th graders
Written repetition	**9th** and 10th graders
	9th and 12th graders
Using word lists	**9th** and 10th graders
	9th and 11th graders
	9th and 12th graders
Using flash cards	**9th** and 10th graders
	9th and 11th graders
	9th and 12th graders
Taking notes in class	**9th** and 10th graders
	9th and 11th graders
	9th and 12th graders
Keeping a vocabulary notebook	**9th** and 10th graders
	9th and 12th graders
Metacognitive strategies	
Testing oneself with word tests	**9th** and 10th graders
	9th and 11th graders
	9th and 12th graders
Using spaced word practice	**9th** and 10th graders
	9th and 11th graders
	9th and 12th graders
Continuing to study word over time	**9th** and 11th graders
	9th and 12th graders

Note. Words in bold indicate a significant higher mean score.

Among cognitive strategies, 9th graders seem to use most strategies significantly more than 10th and 12th graders. Junior high school students also use vocabulary learning strategies more than high school, university, and adult learners respectively according to the results of Schmitt's (1997) study. As Schmitt (1997) claimed, "the patterns of strategy use can change over time as a learner either matures or becomes more proficient in the target language" (p. 34).

Conclusion 3: Strategy use and school type

High school students from different types of schools seem to employ overall discovery and consolidation strategies at moderate level as also seen in Table 116.

Table 116
Strategy use and school type: Discovery and consolidation strategies

	Descriptive Analysis	Inferential Analysis
Discovery Strategies	Moderate level	Science and **private** Anatolian and **private**
Consolidation Strategies	Moderate level	**Science** and Anatolian

Note. Words in bold indicate a significant higher mean score.

The results of the inferential analyses indicate that private high school students tend to employ discovery strategies significantly more than other school types. As for consolidation strategies, science high school students seem to use them significantly more than Anatolian high school students.

When the subcategories of discovery and consolidation strategies are analyzed, it can be observed that determination strategies are the most frequently used strategy group across all school types. The results also show that the use of social strategies as

consolidation strategies are the least frequently used strategy group across all school types.

Table 117 summarizes the results of the analyses for the subcategories of discovery strategies. Both determination and social strategies as discovery strategies are used at moderate level. The independent samples t-test results are shown in Table 117.

Table 117
Strategy use and school type: Discovery strategies

	Descriptive Analysis	Inferential Analysis
Determination Strategies	Moderate level	**Science** and Anatolian
Social Strategies (disc.)	Moderate level	Anatolian and **private** Science and **private** Anatolian and **private**

Note. Words in bold indicate a significant higher mean score.

Using monolingual dictionary as a determination strategy is used more by private high school students when compared to science and Anatolian high schools. In Schmitt's (1997) study, *using bilingual dictionary* was found to be the most frequently used strategy by Japanese learners. As for *using bilingual dictionary*, science high school students prefer it more than private high school students, and private high school students use it the least.

Private high school students also differ from other school types in the strategy use of *guessing from textual context,* and use it significantly more. Nation (1990) considered *guessing from textual context* as "undoubtedly the most important vocabulary learning strategy" (p. 125, as cited in Rousoulioti and Mouti, p. 59). Schmitt (1997) also claimed that it is a "major way" in leaning new vocabulary (p.209).

Science high school students tend to employ the strategy of *using word lists* significantly more than students from other school types. The results of Sahbazian's (2004) study shows similarities to the findings of this present study as he also found that public high school students use this strategy significantly more than private high school students. The reason he claimed for this is because that "rote memorization is highly favored in the Turkish education system" (p. 95). The difference between these studies is that the present study shows a statistically significant difference between science and Anatolian high school students regarding the strategy of *using word lists*. This could be explained by the focus on exams in science high schools more than Anatolian high schools.

Table 118 shows the results of the analyses for the subcategories consolidation strategies. The table shows that all consolidation strategies, except for social which is used as low level, are used at moderate level.

Table 118
Strategy use and school type: Consolidation strategies

	Descriptive Analysis	Inferential Analysis
Social Strategies (cons.)	Low level	Science and **private** Anatolian and **private**
Memory Strategies	Moderate level	**Science** and Anatolian
Cognitive Strategies	Moderate level	**Science** and private
Metacognitive Strategies	Moderate level	-

Note. Words in bold indicate a significant higher mean score.

The inferential analyses of individual items show that science and private students seem to use most of the discovery and consolidation strategies significantly more than Anatolian school students (Table 119).

Table 119
Summary list of strategy use and school type: Discovery and consolidation strategies

	Inferential Analysis
Determination Strategies	
Analyzing affixes and roots	**Science** and Anatolian
	Anatolian and **private**
Guessing from textual context	Science and **private**
	Anatolian and **private**
Using bilingual dictionary	**Science** and private
Using monolingual dictionary	Science and **private**
	Anatolian and **private**
Using word lists	**Science** and Anatolian
	Science and private
Social Strategies (Discovery)	
Asking teacher for paraphrase or synonym of new word	Science and **private**
	Anatolian and **private**
Asking teacher for a sentence including the new word	Science and **private**
	Anatolian and **private**
Asking classmates for meaning	Science and **private**
Discover new meaning through group work activity	Science and **private**
	Anatolian and **private**
Social Strategies (Consolidation)	
Studying and practicing meaning in a group	Science and **private**
	Anatolian and **private**
Teacher checking students' flash cards or word lists for accuracy	Anatolian and **private**
Interacting with native speakers	Science and **private**
	Anatolian and **private**
Memory Strategies	
Studying word with a pictorial representation of its meaning	Anatolian and **private**
Associating the word with its coordinates	**Science** and Anatolian
	Science and private
Connecting the word to its synonyms and antonyms	**Science** and Anatolian
	Science and private
Using scales for gradable adjectives	**Science** and private
Grouping words together to study them	**Science** and private
Grouping words together spatially on a page	**Science** and Anatolian
Using new words in sentences	Science and **private**
	Anatolian and **private**
Grouping words together within a storyline	Science and **private**
	Anatolian and **private**
Imagining word form	**Science** and private
	Anatolian and private
Using keyword method	**Science** and private
Using part of speech (remembering)	**Science** and Anatolian
	Science and private
Paraphrasing the words meaning	**Science** and Anatolian
	Anatolian and **private**

Note. Words in bold indicate a significant higher mean score.

Table 119 (cont'd)
Summary list of strategy use and school type: Discovery and consolidation strategies

	Inferential Analysis
Learning the words of an idiom together	Anatolian and **private**
Cognitive strategies	
Using word lists	**Science** and Anatolian **Science** and private
Using the vocabulary section in your textbook	**Science** and private **Anatolian** and private
Keeping a vocabulary notebook	**Science** and Anatolian **Science** and private
Metacognitive strategies	
Testing oneself with word tests	**Science** and private

Note. Words in bold indicate a significant higher mean score.

According to the results, private high school students employ the strategy of *studying and practicing meaning in a group*, one of the social strategies used as consolidation strategies, significantly more than other school types (Table 119). One explanation of this may be that public schools mostly tend to apply the traditional teaching methods and "the traditional Turkish education system is for the most part based on individualism and so group works, collaborative learning are rarely promoted" (Sahbazian, 2004, p. 105).

A similar result can be seen in the use of *interacting with native speakers:* private high school students tend to employ this strategy more than other school types. Even though Schmitt (1997) emphasized its importance as a way of gaining new vocabulary, private high school students seem to get more benefit from it.

Among memory strategies, students at science high school use the strategy of *using keyword method* more than Anatolian high school students. Some scholars suggest that this strategy may be very useful to retrieve vocabulary if learners had encountered the word before (Paivio and Descrochers, 1979; Pressley and Levin,

1981; Levin and Presley, 1983; Cohen, 1987; Avila and Sadoski, 1996; Aureli, 2011). Pressley, Levin and Delaney (1982) further indicated that the effects of keyword method are "pervasive and of impressive magnitude (p. 71, as cited in Cohen, 1987).

Conclusion 4: Strategy use and age

Across all age groups, discovery and consolidation strategies are employed at moderate level as also seen in Table 120. The results of the independent samples t-test shows a statistically significant difference between 14 and 15-year-olds in favor of 14-year-olds regarding consolidation strategies whereas the test indicates no statistically significant difference among age groups in the use of discovery strategies.

Table 120
Strategy use and age: Discovery and consolidation strategies

	Descriptive Analysis	Inferential Analysis
Discovery Strategies	Moderate level	-
Consolidation Strategies	Moderate level	**14** and 15-year-olds

Note. Words in bold indicate a significant higher mean score.

When the subcategories of discovery strategies are analyzed, it can be seen that all age groups use determination and social strategies at moderate level within no significant difference among age groups (Table 121).

Table 121
Strategy use and age: Discovery strategies

	Descriptive Analysis	Inferential Analysis
Determination Strategies	Moderate level	-
Social Strategies (disc.)	Moderate level	-

Note. Words in bold indicate a significant higher mean score.

When the items under determination and social strategies are analyzed, it can be seen that *analyzing any available pictures or gestures* and *using word lists* and *using word lists* are the only strategies in which a statistically significant difference was found between age groups. 14-year-olds seem to employ the strategy of *analyzing any available pictures and gestures* significantly more than 16-year-olds. As for *using word lists,* 14-year-olds tend to use it significantly more than other age groups.

The results of analyses across age groups regarding the use of subcategories of consolidation strategies demonstrate that memory, cognitive and metacognitive strategies are used at moderate level (Table 122). However, it can be said that all age groups use social strategies at low level.

Table 122
Strategy use and age: Consolidation strategies

	Descriptive Analysis	Inferential Analysis
Social Strategies (cons.)	Low level	-
Memory Strategies	Moderate level	-
Cognitive Strategies	Moderate level	**14** and 16-year-olds
Metacognitive Strategies	Moderate level	**14** and 17-year-olds

Note. Words in bold indicate a significant higher mean score.

As also seen in Table 122, the independent t-test results suggest a statistically significant difference between 14 and 16-year-olds in the use of cognitive strategies whereas between 14 and 17-year-olds regarding metacognitive strategies in favor of 14-year-olds.

The results of the study conclude that 14-year-olds seems to use most of the discovery and consolidation strategies significantly more than 15, 16 and 17-year-olds (Table 123).

Table 123
Summary list of strategy use and age: Discovery and consolidation strategies

	Inferential Analysis
Determination Strategies	
Analyzing any available pictures or gestures	**14** and 16-year-olds
Using word lists	**14** and 15-year-olds
	14 and 16-year-olds
	14 and 17-year-olds
Social Strategies (Discovery)	
Social Strategies (Consolidation)	
Teacher checking students' flash cards or word lists	**14** and 15-year-olds
for accuracy	**14** and 16-year-olds
Memory Strategies	
Imagining word's meaning	**14** and 15-year-olds
Grouping words together to study them	**14** and 17-year-olds
Studying the sound of a word	**14** and 15-year-olds
	14 and 16-year-olds
Saying new word aloud when studying	**14** and 15-year-olds
	14 and 16-year-olds
Imagining word form	**14** and 15-year-olds
	14 and 17-year-olds
Cognitive strategies	
Verbal repetition	**14** and 15-year-olds
	14 and 16-year-olds
	14 and 17-year-olds
Written repetition	**14** and 15-year-olds
	14 and 17-year-olds
Using word lists	**14** and 15-year-olds
	14 and 17-year-olds
Using flash cards	**14** and 15-year-olds
	14 and 16-year-olds
	14 and 17-year-olds
Taking notes in class	**14** and 15-year-olds
	14 and 17-year-olds
Using the vocabulary section in your textbook	15 and **16-**year-olds
Keeping a vocabulary notebook	**14** and 15-year-olds
	14 and 17-year-olds
Metacognitive strategies	
Testing oneself with word tests	**14** and 15-year-olds
	14 and 16-year-olds
	14 and 17-year-olds
Using spaced word practice	**14** and 16-year-olds
	14 and 17-year-olds
	15 and 16-year-olds
	15 and 17-year-olds
Continuing to study word over time	**14** and 16-year-olds
	14 and 17-year-olds

Note. Words in bold indicate a significant higher mean score.

Among the memory strategies, a statistically significant mean difference was found between 14 and 17-year-olds in the use of *grouping words together to study them.* Many scholars claimed its importance in facilitating to recall words if words are studied in groups before memorization (Cofer, Bruce & Reicher, 1966; Craik & Tulving, 1975, as cited in Schmitt, 1997).

Analyzing the differences between age and the vocabulary learning strategies used is a limited area in the literature. Therefore, the results found for the differences between vocabulary learning strategy use based on grade level can be taken into consideration.

Implications for practice

Vocabulary learning strategies are teachable and language learners can be taught to use strategies that may be helpful and effective for them. Vocabulary learning strategies can be taught either via direct strategy training or embedded strategy training. For it to be effective, research in the field showed that vocabulary learning strategy instruction should be explicit (Jurković, 2006).

Gairns and Redman (1986) claimed that it is important for students to be aware of their own needs while learning vocabulary. Schmitt and Schmitt (1995) suggested that many and various strategies should be introduced to students so that they can choose the best for themselves. Schmitt (1997) saw age as a significant factor in choosing vocabulary learning strategies as some strategies may be more useful at certain ages. He further suggested that recommending strategies for learners should be in relevance with their age and language competence.

Schmitt (1997) suggested teachers to encourage their students to group work activities. Nation (2001) highlighted the importance of teaching students vocabulary learning strategies especially for learning low-frequency words as it would also result in saving class time. Learners than would be able to move on learning and practicing words individually having the control of their own learning.

Implications for further research

The results of this study are limited to the selected schools in Çankaya province in Ankara. There may be more studies conducted in more schools.

In addition to science, private and Anatolian high schools, vocabulary learning strategy use of students studying at other various school types could be investigated. Along with high school students, the vocabulary learning strategy use of primary and middle school students as well as undergraduate, graduate and post graduate students and pre-service teachers could also be explored.

The data that were collected from the participants is limited to the statements given in the questionnaire. Open ended questions could be asked to explore other vocabulary learning strategies that those employed by the students.

To investigate the possible reasons of vocabulary strategy use difference between genders in the use of discovery and consolidation strategies may be explored further.

To investigate the possible reasons of the vocabulary strategy use difference in the use of discovery and consolidation strategies between students from different grade levels and ages may further be explored.

Further research can be conducted to investigate the possible reasons of the use of vocabulary learning strategy difference between students from different types of schools.

A study like this could be enriched by conducting follow-up interviews with students to confirm, and further explore, any conclusions of the study.

Limitations

This study has several limitations. One of which is the sample size as the study is limited to Turkish high school students studying at science, Anatolian and private high schools. The results of the study are limited to the statements given by the students which are estimated as answered honestly. The questionnaire was translated by the researcher. Item 31 in the questionnaire unintentionally did not reflect its original meaning. Three of the questions were excluded from the analyses as the assumption of univariate normality was violated for these items.

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APPENDIX A: Questionnaire (Turkish)

Sevgili öğrenciler;
Kelime öğrenmek İngilizce öğrenmenin en önemli parçalarından biridir. Yeni kelimeleri daha iyi bir şekilde öğrenebilmek için kelime çalışma yöntemlerimizi gözden geçirmemiz gerekir. Kelime öğrenirken izlememiz gereken iki yol vardır. Öncelikle yeni kelimenin anlamını keşfetmemiz gerekir. İkinci olarak da unutmamak için yeni kelimeyi çalışmamız gerekir. Bu anket bu iki yolu nasıl izlediğinizi düşünmeniz için tasarlanmıştır. Ankette yeni bir kelimenin anlamını öğrenirken kullanılan bazı stratejilerin listesi bulunmaktadır.
Anket iki kısımdan oluşmaktadır. Birinci kısımda demografik bilgiler ile ilgili sorular, ikinci kısımda ise kullandığınız kelime stratejilerini belirleyen sorular yer almaktadır.

İkinci kısımda her ifadenin yanında 1'den 5'e kadar numaralandırmalar yapılmıştır. Numaralandırmalar ve temsil ettikleri anlamlar aşağıda belirtilmiştir.
1 – Bu stratejiyi **hiç** kullanmam.
2 – Bu stratejiyi **nadiren** kullanırım.
3 – Bu stratejiyi **bazen** kullanırım.
4 – Bu stratejiyi **genellikle** kullanırım.
5 – Bu stratejiyi **her zaman** kullanırım.

Kişisel bilgileriniz ve cevaplarınız gizli tutulacaktır. Ankette doğru veya yanlış bir cevap yoktur. Lütfen tüm soruları dürüstlük ve içtenlikle cevaplayınız. Herhangi bir sorunuz ya da öneriniz varsa Bilkent Üniversitesi, Eğitim Bilimleri Enstitüsü yüksek lisans öğrencisi Elif Derici ile iletişime geçiniz.

İletişim bilgileri:
e-posta: elif.derici@bilkent.edu.tr

Kısım 1: Demografik Bilgiler

1. **Cinsiyet**

   a) Kız **b)** Erkek

2. **Yaş:** _____

3. **Okuduğu okulun adı:** _____

4. **Sınıf:** _____

Kısım 2: Kelime Öğrenme Stratejileri Anketi
(Norbert Schmitt'in 1997 tarihli anketinden adapte edilmiştir.)

#	Her ifadenin yanında 1'den 5'e kadar numaralandırmalar yapılmıştır. Size en yakın gelen seçeneği yuvarlak içine alınız. Doğru ya da yanlış olan bir cevap yoktur. Bu yüzden cevaplarınızı dürüst bir şekilde değerlendirmeniz rica olunur.	**1** = Bu stratejiyi **hiç** kullanmam.	**2** = Bu stratejiyi **nadiren** kullanırım.	**3** = Bu stratejiyi **bazen** kullanırım.	**4** = Bu stratejiyi **genellikle** kullanırım.	**5** = Bu stratejiyi **her zaman** kullanırım.
	Yeni bir kelimenin anlamını öğrenmek için ne yaparsınız?					
1	Kelimenin türüne bakarım (isim, sıfat, vb).	**1**	**2**	**3**	**4**	**5**
2	Anlamını çözebilmek için kelimenin önekine, köküne ve aldığı takıya bakarım. (örneğin; unaccepted, -un, -accept, -ed).	**1**	**2**	**3**	**4**	**5**

3	Aynı kökene sahip kelimeleri düşünürüm. (örneğin; television – televizyon).	**1**	**2**	**3**	**4**	**5**
4	Anlamını çözebilmek için resim veya kullanılan jest ve mimiklere bakarım.	**1**	**2**	**3**	**4**	**5**
5	Kelimenin anlamını bulunduğu içerikten tahmin ederim.	**1**	**2**	**3**	**4**	**5**
6	İngilizce-Türkçe sözlük kullanırım.	**1**	**2**	**3**	**4**	**5**
7	İngilizce-İngilizce sözlük kullanırım.	**1**	**2**	**3**	**4**	**5**
8	Kelime listeleri kullanırım.	**1**	**2**	**3**	**4**	**5**
9	Kelime kartları kullanırım.	**1**	**2**	**3**	**4**	**5**
10	Bir öğretmene kelimenin Türkçe anlamını sorarım.	**1**	**2**	**3**	**4**	**5**
11	Bir öğretmenden kelimeyi İngilizce başka sözcüklerle açıklamasını veya kelimenin İngilizcede eş anlamlısını söylemesini isterim.	**1**	**2**	**3**	**4**	**5**
12	Bir öğretmenden yeni kelimeyi cümle içinde kullanmasını isterim.	**1**	**2**	**3**	**4**	**5**
13	Sınıf arkadaşlarıma sorarım.	**1**	**2**	**3**	**4**	**5**
14	Anlamı bir grup aktivitesi içinde öğrenirim.	**1**	**2**	**3**	**4**	**5**
#		**1**	**2**	**3**	**4**	**5**
Yeni öğrendiğiniz bir kelimeyi çalışmak ve pekiştirmek için ne yaparsınız?						
15	Kelimeyi bir grup arkadaş ile çalışırım.	**1**	**2**	**3**	**4**	**5**
16	Bir öğretmenden doğruluğuna bakmak için kelime kartlarımı veya kelime listelerimi kontrol etmesini isterim.	**1**	**2**	**3**	**4**	**5**
17	Kelimeyi ana dili İngilizce olan insanlar ile iletişime geçerek çalışırım.	**1**	**2**	**3**	**4**	**5**
18	Kelimenin anlamını resimsel temsili ile birlikte çalışırım.	**1**	**2**	**3**	**4**	**5**

19	Kelimenin anlamını aklımda resmederim.	**1**	**2**	**3**	**4**	**5**
20	Kelimeyi kişisel tecrübelerimden biriyle bağdaştırırım.	**1**	**2**	**3**	**4**	**5**
21	Kelimeyi aynı konudaki başka kelimeler ile bağdaştırırım (örneğin; furniture, table, chair).	**1**	**2**	**3**	**4**	**5**
22	Kelimeyi eş ve zıt anlamlarıyla bağdaştırırım.	**1**	**2**	**3**	**4**	**5**
23	Kavram haritaları kullanırım. (Birbirleriyle bağlantılı olan kelime ve kavramları gösteren diyagramlar)	**1**	**2**	**3**	**4**	**5**
24	Kelime sıfat ise anlamı için derecelendirmeler kullanırım (örneğin; burning-hot-warm-cool…)	**1**	**2**	**3**	**4**	**5**
25	Kelimeleri telaffuzu benzeyen sayılar veya harfler ile bağdaştırarak çalışırım. (one-fun, two-do, three-tree…)	**1**	**2**	**3**	**4**	**5**
26	Bir yer veya mekânı zihnimde canlandırırım. Kelimeyi ve kelimenin fiziksel temsilini bu yer veya mekândaki nesneler ile birlikte hayal ederim.	**1**	**2**	**3**	**4**	**5**
27	Kelimelerin hepsini tek bir grupta toplayarak çalışırım.	**1**	**2**	**3**	**4**	**5**
28	Kelimeleri bir sayfa üzerinde ayrı ayrı gruplandırarak çalışırım.	**1**	**2**	**3**	**4**	**5**
29	Kelimeyi cümle içinde kullanırım.	**1**	**2**	**3**	**4**	**5**
30	Kelimeleri bir hikaye içinde bir araya getiririm.	**1**	**2**	**3**	**4**	**5**
31	Kelimenin telaffuzunu çalışırım.	**1**	**2**	**3**	**4**	**5**
32	Kelimenin çıkardığı sesi çalışırım.	**1**	**2**	**3**	**4**	**5**
33	Kelimeyi sesli olarak okurum.	**1**	**2**	**3**	**4**	**5**

34	Kelimenin yazılı halini aklımda canlandırırım.	**1**	**2**	**3**	**4**	**5**
35	Kelimenin ilk harfinin altını çizerim.	**1**	**2**	**3**	**4**	**5**
36	Kelimenin etrafına çizgiler çizerek dikdörtgen, daire, yuvarlak vb. içine alırım. (örneğin; elephant)	**1**	**2**	**3**	**4**	**5**
37	İngilizce bir kelimeyi telaffuz açısından Türkçede benzer bir kelime ile birlikte düşünürüm. Daha sonra bu iki kelimenin anlamları ile tek bir zihinsel imge oluştururum. Bu "bağlantılı imge" bana yeni İngilizce kelimenin anlamını hatırlatır (örneğin; black – bilek).	**1**	**2**	**3**	**4**	**5**
38	Kelimenin kökü, öneki ve aldığı takıları çalışırım.	**1**	**2**	**3**	**4**	**5**
39	Kelimenin türünü çalışırım (isim, fiil, vb.).	**1**	**2**	**3**	**4**	**5**
40	Kelimenin anlamını farklı kelimeler ile açıklarım.	**1**	**2**	**3**	**4**	**5**
41	Farklı dillerdeki aynı kökene sahip olan ve anlam veya kelime yapısı açısından birbirine benzer kelimeleri çalışırım. (örneğin; television – televizyon).	**1**	**2**	**3**	**4**	**5**
42	Yeni kelimeleri bir deyim içinde birlikte ve aynı anda öğrenirim.	**1**	**2**	**3**	**4**	**5**
43	Kelimeyi fiziksel olarak ifade ederim (örneğin; 'throw' kelimesini çalışırken top atma hareketi yapmak).	**1**	**2**	**3**	**4**	**5**
44	Birbirine benzer kelimeleri anlam ve eşdizimleri (birlikte kullanıldıkları kelimeler; örneğin, take an exam, take a break, take a bus…) açısından farklılıklarını karşılaştıran bir tablo çizerim.	**1**	**2**	**3**	**4**	**5**
45	Kelimeyi kendi kendime sözlü olarak tekrar ederim.	**1**	**2**	**3**	**4**	**5**

46	Kelimeyi birçok kez yazarak çalışırım.	**1**	**2**	**3**	**4**	**5**
47	Yeni kelimeleri çalışmak için kelime listeleri kullanırım.	**1**	**2**	**3**	**4**	**5**
48	Yeni kelimeleri çalışmak için kelime kartları kullanırım.	**1**	**2**	**3**	**4**	**5**
49	Kelime hakkında notlar alırım.	**1**	**2**	**3**	**4**	**5**
50	Ders kitabımın kelime bölümünü kullanırım.	**1**	**2**	**3**	**4**	**5**
51	Kelime listelerinin ses kayıtlarını dinlerim.	**1**	**2**	**3**	**4**	**5**
52	Nesnelerin üzerine İngilizce kelimelerini gösteren etiketler yapıştırırım.	**1**	**2**	**3**	**4**	**5**
53	Kelime defteri tutarım.	**1**	**2**	**3**	**4**	**5**
54	İngilizce haber yayınları, film, müzik vb. ile kelimeleri çalışırım.	**1**	**2**	**3**	**4**	**5**
55	Kendimi kelime listeleri ile test ederim.	**1**	**2**	**3**	**4**	**5**
56	Kelimeyi öğrendikten sonra belli aralıklarla tekrar etmek için bir program ayarlarım.	**1**	**2**	**3**	**4**	**5**
57	Kelimeyi atlarım ya da es geçerim.	**1**	**2**	**3**	**4**	**5**
58	Kelimeyi zaman içinde öğrenmeye devam ederim.	**1**	**2**	**3**	**4**	**5**

APPENDIX B: Questionnaire (English)

Dear students;

Learning vocabulary is a very important part of learning English. To better learn new words, we should think about how we study vocabulary. There are two main steps. First, we must discover the new word's meaning. Second, we must study the new word to remember it. This survey is designed to help you think about how you do these two steps. Section 2 lists some strategies to learn a new word's meaning.

The survey consists of two sections: Section 1 for demographical information and Section 2 for identifying vocabulary learning strategies.

In Section 2, each statement follows numbers from 1 to 5. Numbers and their meanings are given below.

1 – I **never** do this.
2 – I **rarely** do this.
3 – I **sometimes** do this.
4 – I **generally** do this.
5 – I **always** do this.

Your personal information and your answers will be kept confidential. There is no right or wrong answer in the questionnaire. Please answer all of the questions honestly and sincerely. Should you have any questions or recommendations, please contact Elif Derici, Master's Candidate at Bilkent University Graduate School of Education.

Contact information:
e-mail: elif.derici@bilkent.edu.tr

Section 1: Demographic Information

1. **Gender**

   a) Female **b)** Male

2. **Age: _____**

3. **Name of the school: _____**

4. **Grade level: _____**

Section 2: Vocabulary Learning Strategies Questionnaire

Adapted from Norbert Schmitt (1997)

#	The statements are scaled from 1 to 5. Please circle the number that is closest to you. There is no right or wrong answer for each statement, so please give your answers honestly.	**1** = I **never** do this.	**2** = I **rarely** do this.	**3** = I **sometimes** do this.	**4** = I **generally** do this.	**5** = I **always** do this.
	What do you do to learn the meaning of new words?					
1	I check the part-of-speech (noun, verb, etc.).	**1**	**2**	**3**	**4**	**5**
2	I check prefixes, suffixes, and word roots to discover meaning (e.g., unaccepted, -un,-accept, -ed).	**1**	**2**	**3**	**4**	**5**
3	I think about cognate words (words in different languages which come from	**1**	**2**	**3**	**4**	**5**

	the same “parent” word and may have a similar meaning and form. e.g., television – televizyon).					
4	I look at pictures or gestures to understand meaning.	**1**	**2**	**3**	**4**	**5**
5	I guess the meaning from the context.	**1**	**2**	**3**	**4**	**5**
6	I use an English-Turkish dictionary.	**1**	**2**	**3**	**4**	**5**
7	I use an English dictionary.	**1**	**2**	**3**	**4**	**5**
8	I use flash cards.	**1**	**2**	**3**	**4**	**5**
9	I use word lists.	**1**	**2**	**3**	**4**	**5**
10	I ask a teacher for a Turkish translation.	**1**	**2**	**3**	**4**	**5**
11	I ask a teacher for a paraphrase or synonym.	**1**	**2**	**3**	**4**	**5**
12	I ask a teacher for a sentence using the new word.	**1**	**2**	**3**	**4**	**5**
13	I ask my classmates.	**1**	**2**	**3**	**4**	**5**
14	I learn the meaning in group work.	**1**	**2**	**3**	**4**	**5**
#		**1**	**2**	**3**	**4**	**5**
What do you do to study and remember new words?						
15	I study the word with a group of students.	**1**	**2**	**3**	**4**	**5**
16	I ask a teacher to check my word lists and flash cards for correctness.	**1**	**2**	**3**	**4**	**5**
17	I study the word by interacting with native-speakers.	**1**	**2**	**3**	**4**	**5**
18	I study the word with a pictorial representation of its meaning.	**1**	**2**	**3**	**4**	**5**
19	I imagine the word’s meaning.	**1**	**2**	**3**	**4**	**5**
20	I connect the word to a personal experience.	**1**	**2**	**3**	**4**	**5**

21	I associate the word with its coordinates (e.g., fruit = pears, cherries, peaches…)	**1**	**2**	**3**	**4**	**5**
22	I connect the word to its synonyms (e.g., irritated – annoyed) and antonyms (e.g., dead – alive).	**1**	**2**	**3**	**4**	**5**
23	I use semantic maps (i.e., diagrams that show the words and phrases which are connected to each other).	**1**	**2**	**3**	**4**	**5**
24	I use scales for gradable adjectives (e.g., burning-hot-warm-cool…)	**1**	**2**	**3**	**4**	**5**
25	I memorize the words by relating with numbers or letters that have similar pronunciation. (e.g., one-fun, two-do, three-tree…)	**1**	**2**	**3**	**4**	**5**
26	I picture a place or location in my mind, and then I attribute the word and its physical representation to the things in this place.	**1**	**2**	**3**	**4**	**5**
27	I group the words together to study them.	**1**	**2**	**3**	**4**	**5**
28	I group the words together spatially on a page.	**1**	**2**	**3**	**4**	**5**
29	I use the new word in a sentence.	**1**	**2**	**3**	**4**	**5**
30	I group the words together within a storyline.	**1**	**2**	**3**	**4**	**5**
31	I study the spelling of the word.	**1**	**2**	**3**	**4**	**5**
32	I study the sound of the word.	**1**	**2**	**3**	**4**	**5**
33	I say the new word aloud.	**1**	**2**	**3**	**4**	**5**
34	I imagine the word form.	**1**	**2**	**3**	**4**	**5**
35	I underline the initial letter of the word.	**1**	**2**	**3**	**4**	**5**
36	I draw a line around the word. (e.g elephant)	**1**	**2**	**3**	**4**	**5**

37	I think of a Turkish word that sounds similar to the new English word. Then make a single mental image of the meanings of Turkish and English words. This "linking image" reminds me of the new English word's meaning. (e.g. black – bilek)	**1**	**2**	**3**	**4**	**5**
38	I study the word's root, prefixes and suffixes.	**1**	**2**	**3**	**4**	**5**
39	I study the word's part-of-speech (noun, verb, etc.).	**1**	**2**	**3**	**4**	**5**
40	I paraphrase the meaning of the new word.	**1**	**2**	**3**	**4**	**5**
41	I study the cognate words (words in different languages which come from the same "parent" word and may have a similar meaning and form. e.g., television – televizyon).	**1**	**2**	**3**	**4**	**5**
42	I learn the new words in an idiom together at the same time.	**1**	**2**	**3**	**4**	**5**
43	I use physical action when studying words (do throwing action when studying the word "throw")	**1**	**2**	**3**	**4**	**5**
44	I create a grid to match the meaning or collocation (e.g., take an exam, take a break, take a bus etc.) differences of similar words.	**1**	**2**	**3**	**4**	**5**
45	I repeat the word to myself.	**1**	**2**	**3**	**4**	**5**
46	I write the word many times.	**1**	**2**	**3**	**4**	**5**
47	I use word lists to study new words.	**1**	**2**	**3**	**4**	**5**
48	I use flash cards to study new words.	**1**	**2**	**3**	**4**	**5**
49	I take notes about the new words.	**1**	**2**	**3**	**4**	**5**
50	I use the vocabulary section of my textbook.	**1**	**2**	**3**	**4**	**5**

51	I listen to the tape of word lists.	**1**	**2**	**3**	**4**	**5**
52	I put English labels on physical objects.	**1**	**2**	**3**	**4**	**5**
53	I keep a vocabulary notebook.	**1**	**2**	**3**	**4**	**5**
54	I use English-language media (songs, movies, newscasts, etc.) to study the words.	**1**	**2**	**3**	**4**	**5**
55	I test myself with word tests.	**1**	**2**	**3**	**4**	**5**
56	I develop a schedule to review the words at various intervals.	**1**	**2**	**3**	**4**	**5**
57	I skip or pass the new word.	**1**	**2**	**3**	**4**	**5**
58	I continue to study the word over time.	**1**	**2**	**3**	**4**	**5**

	Questions	Gender	Grade level	School type	Age
Q1	Analyze part of speech	-	**9th** and 10th **9th** and 11th **9th** and 12th 10th and **11th**	-	-
Q2	Analyze affixes and roots	-	-	**Science** and Anatolian Anatolian and **private**	-
Q3	Check for L1 cognate	-	-	-	-
Q4	Analyze any available pictures or gestures	Males and **Females**	-	-	**14** and 16-year-olds
Q5	Guess from textual context	-	-	Science and **private** Anatolian and **private**	-
Q6	Bilingual dictionary	Males and **Females**	-	**Science** and private	-

Q7	Monolingual dictionary	Males and **Females**	-	Science and **private** Anatolian and **private**	-
Q8	Word lists	Males and **Females**	-	**Science** and Anatolian **Science** and private	**14** and 15-year-olds **14** and 16-year-olds **14** and 17-year-olds
Q9	Flash cards	Males and **Females**	-	-	-
Q10	Ask for teacher for L1 translation	Males and **Females**	**9th** and 10th	-	-
Q11	Ask teacher for paraphrase or synonym of new word	-	-	Science and **private** Anatolian and **private**	-
Q12	Ask teacher for a sentence including new word	-	-	Science and **private** Anatolian and **private**	-
Q13	Ask classmates for meaning	Males and **Females**	9th and **11th**	Science and **private**	-
Q14	Discover new meaning through group work activity	-	-	Science and **private** Anatolian and **private**	-
Q15	Study and practice meaning in a group	-	-	Science and **private** Anatolian and **private**	-

Q16	Teacher checks students' flash cards or word lists for accuracy	-	**9th** and 10th 9th and **11th**	Anatolian and **private**	**14** and 15-year-olds **14** and 16-year-olds
Q17	Interact with native speakers	-	-	Science and **private** Anatolian and **private**	-
Q18	Study word with a pictorial representation of its meaning	-	-	Anatolian and **private**	-
Q19	Imagine word's meaning	-	**9th** and 10th	-	**14** and 15-year-olds
Q20	Connect word to a personal experience	-	-	-	-
Q21	Associate the word with its coordinates	-	-	**Science** and Anatolian **Science** and private	-
Q22	Connect the word to its synonyms and antonyms	-	-	**Science** and Anatolian **Science** and private	-
Q23	Use semantic maps	-	-	-	-
Q24	Use scales for gradable adjectives	-	-	**Science** and private	-

Q25	Peg method	-	-	-	-
Q26	Loci method	-	-	-	-
Q27	Group words together to study them	-	**9th** and 11th	**Science** and private	**14** and 17-year-olds
Q28	Group words together spatially on a page	Males and **Females**	-	**Science** and Anatolian	-
Q29	Use new word in sentences	-	-	Science and **private** Anatolian and **private**	-
Q30	Group words together within a storyline	-	-	Science and **private** Anatolian and **private**	-
Q31	Study the sound of a word	Males and **Females**	**9th** and 10th	-	**14** and 15-year-olds **14** and 16-year-olds
Q32	Study the spelling of a word	Males and **Females**	-	-	
Q33	Say new word aloud when studying	Males and **Females**	**9th** and 10th	-	**14** and 15-year-olds **14** and 16-year-olds
Q34	Imagine word form	Males and **Females**	**9th** and 10th	**Science** and private **Anatolian** and private	**14** and 15-year-olds **14** and 17-year-olds

Q36	Configuration	Males and **Females**	-	-	-
Q37	Use keyword method	-	-	**Science** and private	-
Q38	Affixes and roots (remembering)	-	-	-	-
Q39	Part of speech (remembering)	-	**9th** and 10th	**Science** and Anatolian **Science** and private	-
Q40	Paraphrase the words meaning	-	-	**Science** and Anatolian Anatolian and **private**	-
Q41	Use cognates in study	-	-	-	-
Q42	Learn the words of an idiom together	-	-	Anatolian and **private**	-
Q43	Use physical action when learning a word	-	-	-	-
Q44	Use semantic feature grids	-	-	-	-

Q45	Verbal repetition	Males and **Females**	**9th** and 11th	-	**14** and 15-year-olds **14** and 16-year-olds **14** and 17-year-olds
Q46	Written repetition	Males and **Females**	**9th** and 10th **9th** and 12th	--	**14** and 15-year-olds **14** and 17-year-olds
Q47	Word lists	Males and **Females**	**9th** and 10th **9th** and 11th **9th** and 12th	**Science** and anatolian **Science** and private	**14** and 15-year-olds **14** and 17-year-olds
Q48	Flash cards	Males and **Females**	**9th** and 11th **9th** and 12th	-	**14** and 15-year-olds **14** and 16-year-olds **14** and 17-year-olds
Q49	Take notes in class	Males and **Females**	**9th** and 10th **9th** and 11h **9th** and 12th	-	**14** and 15-year-olds **14** and 17-year-olds
Q50	Use the vocabulary section in your textbook	Males and **Females**	-	**Science** and private **Anatolian** and private	15 and **16**-year-olds
Q51	Listen to tape of word lists	Males and **Females**	-	-	-

Q53	Keep a vocabulary notebook	Males and **Females**	**9th** and 10th **9th** and 12th	**Science** and anatolian **Science** and private	**14** and 15-year-olds **14** and 17-year-olds
Q54	Use English-language media (songs, movies, newscasts, etc.)	-	-	-	-
Q55	Testing oneself with word tests	Males and **Females**	**9th** and 10th **9th** and 11th **9th** and 12th	**Science** and private	**14** and 15-year-olds **14** and 16-year-olds **14** and 17-year-olds
Q56	Use spaced word practice	-	**9th** and 10th **9th** and 11th **9th** and 12th	-	**14** and 16-year-olds **14** and 17-year-olds **15** and 16-year-olds **15** and 17-year-olds
Q58	Continue to study word over time	-	**9th** and 11th **9th** and 12th	-	**14** and 16-year-olds **14** and 17-year-olds