

## Effect of Gardner Multiple Intelligence on Students English Learning

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**Abstract** This article reports a quasi-experimental quantitative study which investigated the effects of vocabulary teaching techniques based on Multiple Intelligence Theory on learning and retention of English vocabulary. For the study, two of the 11th grade classrooms were randomly assigned as an Experimental and a Control Group. Multiple Intelligence Inventory was applied to Experimental Group to identify their dominant intelligences and prepare classroom activities accordingly. Both groups were pre-tested at the beginning of the study by using a vocabulary test. In the Experimental Group vocabularies were taught through activities based on Multiple Intelligence Theory while in the Control Group they were taught by using traditional teaching techniques. Both of the groups were post-tested at the end of the study. In order to determine the long-term retention, the vocabulary test was applied again two weeks after the study. The data has been analyzed by ANCOVA using SPSS. The results of the study suggest that Multiple Intelligence Theory based activities have a significant effect on language learners' achievement and retention of English vocabulary.

**Keywords:** Multiple Intelligence Theory, Vocabulary Teaching, ELT, Long-term Retention

### Introduction

Multiple Intelligence Theory (MI) which is introduced by Howard Gardner in 1983 has many implications for teaching and learning a foreign language. Gardner's model ([H. Gardner, 2011](#)) which is based on findings from both cognitive science (the study of the mind) and neuroscience (the study of the brain) treats intelligence as multifaceted. "Theory of Multiple Intelligences" is a learner centred approach which gives importance to the abilities-intelligences in each individual. According to Gardner (1983), there are at least eight distinct forms of human intelligence which are *Linguistic*, *Logical-Mathematical*, *Spatial*, *Bodily-Kinesthetic*, *Musical*, *Interpersonal*, *Intrapersonal*, and *Naturalist Intelligence*.

Verbal/Linguistic Intelligence involves perceiving or generating spoken or written language. It allows communication and sense-making through language. Logical/Mathematical Intelligence allows individuals to use abstract relations. The use of numbers and logical thinking are characteristics of this intelligence. Berman ([1998](#)) states that "Logical-Mathematical Intelligence enables us to perceive relationships and connections, to use

abstract, symbolic thought, sequential reasoning skills, inductive and deductive thinking processes" (p.3). Visual/Spatial Intelligence involves perceiving and using visual or spatial information. Gardner, Wilson, and Reeder, ([A. Gardner, Wilson, & Reeder, 1993](#)) state that "Spatial problem solving is required for navigation and in the use of the notational system of maps. The visual arts also employ this intelligence in the use of space" (p.21). Bodily/Kinesthetic Intelligence allows an individual to use all or part of his/her body to "create". It includes athletic, creative, fine, and gross motor movement. Berman ([1998](#)) claims that this intelligence involves a sense of timing and the perfection of skills through mind-body union"(p.4).Musical Intelligence involves communicating, and understanding meanings made out of sound. Gardner states that "Certain parts of brain play important roles in perception and production of music" (p.17). Naturalist Intelligence involves the ability to understand the natural world. It allows people to distinguish among, classify, and use features of the environment. Interpersonal Intelligence involves the capacity to recognize and make

distinctions among the feelings, beliefs, and intentions of other people. Gardner states that “Interpersonal Intelligence builds on a core of capacity to notice distinctions among others; in particular, contrasts in their moods, temperaments, motivations, and intentions”(p.23). Intrapersonal Intelligence enables individuals to understand themselves. Therapists and poets can show this intelligence. Gardner claims that “A person with good Intrapersonal Intelligence has a viable and effective model of himself or herself”(p.25).

In terms of teaching English, Multiple Intelligence Theory presents a wide variety of teaching strategies that can be implemented in the classroom to support the existing ones. It assists teachers to expand their teaching repertoire to include a broader range of materials and techniques for reaching more diverse range of learners. The principle in Multiple Intelligence Theory is to meet individual students’ different needs.

Education can be more adequate when the individual is given a focus. As each person has distinct features so Multiple Intelligence theory can be helpful in teaching any different subject. In teaching language the effects of Multiple Intelligence Theory are studied by many researchers ([Anderson, 1998](#); [Bulut, 2003](#); [Ünal & Özer](#)). As a result of their studies, all agreed that Multiple Intelligence Theory is helpful in language teaching.

Multiple Intelligence Theory may provide a framework to teach English vocabulary and the monotony of a traditional English class can be broken with activities. It is possible that achievement and retention of vocabulary learning can be easier when the suitable activities are chosen for the students depending on their intelligences. For instance, when the students have bodily/kinesthetic intelligence, stirring activities which keep the students awake

can be chosen, or if the interpersonal intelligence is dominant in the classroom, pair-work, group work activities can be applied. Teachers can apply activities based on different intelligences of the students. These activities can help the students to learn and remember the vocabulary easily.

This study examines the effects of vocabulary teaching techniques based on Multiple Intelligence Theory on 11th grade students’ learning and retention of English vocabulary. A quasi-experimental study was conducted to investigate whether an implementation of activities based on Multiple Intelligence Theory improves 11th grade students’ learning and retention of English vocabulary in an Anatolian High School.

Vocabulary has a vital role in the process of language learning but generally it is ignored so language learning becomes too difficult because of the lack of vocabulary knowledge. McCarthy states that without words to express a wide range of meanings, communication in a Second Language (L2) cannot happen in any meaningful way although the students learn the grammar or the sounds of the L2. Cook states that grammar enables the learners to use the overall patterns but vocabulary is needed to put the material in practice. Vocabulary knowledge helps to relate all the words in a sentence not just knowing the words’ meanings. Wallace (1988) claims that learning a foreign language is also a matter of learning the vocabulary of that language. Wilkins (1974) states that “without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (p.111). Thus, vocabulary teaching has a special part in language teaching. Vocabulary has not been given importance in programs for teachers during much of the twentieth century (Allen, 1983). According to Allen (1983) grammar was being given too much time

in language classrooms, so vocabulary teaching was neglected. Celce-Murcia (1979) states that grammatical items are meaningless without words and words are not enough without grammatical items. Thus, the place of the vocabulary is as important as the place of grammar in language teaching and learning ([Thornbury, 2016](#)).

Multiple Intelligence Theory may provide a good framework to use in ensuring good teaching practices and improved outcomes for students. It is not meant to pigeon-hole students into categories such as “bodily-kinesthetic,” or “logical-mathematical”. Any individual can develop any intelligence to a reasonably high level with particular environments, stimulation and encouragement. According to Gardner, any person can exhibit sensitivity and strength in all or some of the linguistic abilities such as word meanings, word order, word sounds, and language function (Gardner, 1983).

Multiple Intelligence Theory and its effect were studied widely([Abhimanyu, Bottiger, & Singh, 2016](#); [Aleksić & Ivanovićb, 2016](#); [Bulut, 2003](#); [Gündüz & Ünal, 2016](#); [Lai & Yap, 2016](#); [Petrides, 2016](#)). Geimer, Getz, Pochert, Pullam (2000) studied on improving student achievement in Language Arts through implementation of Multiple Intelligences strategies. The students were taught through using both Multiple Intelligence based activities and traditional language teaching techniques. The study took four months. The results indicated that compared to traditional teaching techniques, Multiple Intelligence based techniques provided more successful results in terms of both grammar and reading comprehension. Anderson (1998) conducted an experimental study with 100 seventh and eighth grade Latin students to improve the retention of foreign language vocabulary through Multiple Intelligence

Theory and Memory Enhancement Tools. The results indicated that using Multiple Intelligence techniques in the learning and retention of vocabulary can be very helpful.

In Turkey, Multiple Intelligence Theory was also studied in different researchers. Temel,(2008) explored the impact of activities based on the Multiple Intelligence Theory on the success of first grade primary school students in English lessons. Another study about Multiple Intelligence Theory is the thesis carried out by Hamurlu (2007). This study’s aim was to analyze the effects of the instruction based on Multiple Intelligences Theory on the students’ achievements in English classes, and the students’ attitudes towards the English classes. He conducted the study with ninth grade students at foreign language based high school. At the end of the study, he found that the instructions based on multiple intelligences theory increased the students’ achievement in English classes and made positive effects on the students’ attitudes towards English. Karadeniz (2006) studied the effects of Multiple Intelligence Theory based instruction on the English language achievement and the permanence of the learned knowledge of the ninth grade students in Anatolian high school. The study lasted five weeks and the researcher found a significant difference between the Experimental Group and Control Group. Experimental Group, which was taught through Multiple Intelligence based techniques, was more successful in achievement and retention of learned knowledge in English lessons. Bulut (2003) aimed to identify the advantages of applying Multiple Intelligence Theory in teaching English as a foreign language to children. The participants of the study were 71 fifth-grade students. At the beginning of the study, the intelligences of the students were identified. Then, their

English course book “Enjoy English 5” was evaluated to identify activities for each intelligence. As a result of this study, Bulut (2003) found that Multiple Intelligence Theory based activities seemed to be helpful in English lessons may provide a framework to teach English vocabulary and the monotony of a traditional English class can be broken with these activities. It is possible that achievement and retention of vocabulary learning can be easier when the suitable activities are chosen for the students depending on their intelligences (Abhimanyu, et al., 2016; Gündüz & Ünal, 2016; Lai & Yap, 2016; Petrides, 2016; Schou, 2016). Erdir (2005) aimed to find the benefits of Multiple Intelligence Theory in terms of vocabulary teaching to improve reading and listening skills. The hypothesis of this study was that the success rate of the vocabulary teaching by Multiple Intelligences Theory to improve reading and listening skills would be higher than the ones taught by traditional method. This study was carried out in the army academy to the second year cadets. The applications made in the 2003-2004 academic year lasted for four months, and the success rates between two groups were observed. Multiple Intelligence Theory based instruction was found to be far more successful than the traditional methods. Aleksić & Ivanović (2016) studied on the relationship between learning and teaching vocabulary and Multiple Intelligences. It was a comparative study on vocabulary teaching regarding and disregarding Multiple Intelligences. The results of the study indicated that teaching vocabulary regarding Multiple Intelligence Theory has positive effects on students’ learning vocabulary.

### Methodology

In this study, Quasi-Experimental

non-equivalent control group design was used (Karasar, 1991). Quasi-experimental designs are commonly employed in the evaluation of educational programs when random assignment of subjects to groups is not possible or practical. Since the classrooms were already formed, it was not possible to assign individual students to groups instead intact classrooms were randomly assigned as Control and Experimental Groups.

### Procedure

In this study, two intact classrooms at the same proficiency level (upper intermediate) were chosen randomly. One class was randomly assigned as an Experimental Group and the other one as Control Group. A Multiple Intelligence Inventory was applied to Experimental Group. The results of the inventory enabled to see the most dominant intelligences in the classroom. The most dominant intelligences were Musical, Bodily-Kinesthetic and Linguistic Intelligences. The activities based on Multiple Intelligence Theory were prepared to teach vocabulary in the Experimental Group according to these dominant intelligences. This study was carried out four weeks-two hours for each week. In Control Group, the words were taught to the students by using traditional teaching techniques and in Experimental Group by using activities based on Multiple Intelligence Theory. In both Experimental and Control Groups, the Reading Texts were taken from the students’ course book *New Bridge to Success 4* which is at upper intermediate level. The topics of the chosen Reading Texts were Seasons, Eskimos, Natural Disasters and Global Warming. In the Experimental Group, the first lesson’s title was “Seasons”. For this lesson, the students were expected to learn vocabulary items such as *cycles, annual, flow, drop, recognize, foretell, tend, appreciate, bloom, prospect, etc.* The

teacher followed the below stages to teach these vocabular:

Stage one is awakening the intelligence through multisensory experiences such as touching, smelling, tasting, seeing and so on learners can be sensitized to the many-faceted properties of objects and events in the world that surrounds them. At this stage, the teacher brought colourful pictures, newspaper articles, and posters to attract the attention of the students, and to appeal to different senses.

Stage two is amplifying the intelligence. Students strengthen and improve the intelligence by volunteering objects and events of their own choosing and defining with others the properties and contexts the experience of these objects and events. At this stage, the teacher asked for volunteers to find the season or weather condition that another student described by using different words. Then, he distributed worksheets and asked students to write the appropriate word for the season or weather condition under the pictures.

Stage three is teaching with / for the intelligence. At this stage the intelligence is linked to the focus of the class, that is, to some aspect of language learning. This is done via worksheets and small-group projects and discussion. At this stage, the teacher explained the aim of the lesson and read the passage. While reading the passage, the teacher used his body language, and various tones of voice to attract the attention of the students. After that, the teacher and the students played guessing game which was followed by information gap activity.

Stage 4 is transferring of the Intelligence. Students reflect on the learning experiences of the previous three stages and relate these to issues and challenges in the out-of-class world. Students are asked to reflect on both the content of the lesson and its operational procedures (Richards& Rodgers, 2001:118).At this last stage, the

teacher gave students a homework and asked students to describe a season or weather condition either in groups or individually.

In the Control Group, the same lesson was taught by using traditional drilling techniques. The classroom was mainly teacher-centered. First, the teacher read the passage and the students underlined the unknown words. Then, the teacher explained the meaning of these words. After the students wrote down the list of the words and their meaning, the teacher pronounced the words and the students repeated after the teacher.

Data was collected in three stages: Before the instruction, immediately after the instruction and two weeks after the instruction. Before the instruction, Multiple Intelligence Inventory was applied to Experimental Group, and Vocabulary test was applied to both Experimental and Control Group as a Pre-test. Immediately after the instruction, Vocabulary test was applied to the both groups as a Post-test. Two weeks after the instruction, Vocabulary test was applied as a Delayed Post – test.

#### **Participants**

There were 49 participants in the study. They were 11th grade students at an Anatolian High School in Afyon. These students were enrolled the Anatolian High Schools after passing the Nationwide High Schools Entrance examination. Since Anatolian High Schools give importance to teaching foreign languages, these students were interested in learning English. There were 23 students in one class majoring in Social Science, and 26 in another class majoring in Science – Maths. The researcher randomly assigned Social class as a Control Group and Science-Maths class as an Experimental Group. Both groups were at upper-intermediate level.

#### **Data Collection Instruments**

In this study, Data Collection Instruments were “Multiple Intelligence Inventory” and “Vocabulary Test”. “Multiple Intelligence Inventory” consisted of 8 sections.

Logical/Mathematical Intelligence, Bodily/Kinesthetic Intelligence, Visual/Spatial Intelligence, Interpersonal Intelligence, Intrapersonal Intelligence, Musical Intelligence, Naturalist Intelligence. There were ten statements under the subtitle of each intelligence. Students answered each item by choosing whether they strongly agree, agree or disagree with each statement. An example item for Verbal/Linguistic Intelligence is “I read something almost every day that isn't related to my schoolwork”

The “Vocabulary Test” which was prepared by the researcher was used to assess the students’ vocabulary knowledge before and after the study. At the beginning of the study 50 questions in the form of multiple choices were prepared. For the validity of the instrument, expert opinion was sought. After the test was revised depending on the expert opinion, it was applied to an 11th grade students who were not part of the original study to test the reliability of the test. Reliability analysis of the instrument revealed Kuder-Richardson 20 (K-R 20) coefficients of 0.71, after eliminating the

problematic items, the reliability raised to KR –20 coefficients of 0.73 which was decided to be acceptable for the study.

**Data Analysis**

In order to analyse the quantitative data, SPSS 11.0 was used. Descriptive Statistics and Analysis of covariance (ANCOVA) were conducted. Descriptive Statistics were used to get the Mean scores and Standard Deviation of the Pre-Test, Post-Test and Delayed Post-test. ANCOVA is used in examining the differences in the mean values of the dependent variables that are related to the effect of the controlled independent variables while taking into account the influence of the uncontrolled independent variables(Fraenkel & Wallen, 2000).

**Results**

In this study, it was aimed to find out whether there was a significant difference between traditional teaching methods and Multiple Intelligence based activities in vocabulary learning and retention. There were three research question:

**Research Question 1**

Does vocabulary teaching through traditional techniques contribute positively to the 11th grade students’ achievement and retention of English vocabulary learning?

**Table 1.**Pre-Test and Post-Test Results of the Control Group

	N	M	SD
<b>Pre- Test</b>	23	10.48	4.220
<b>Post –Test</b>	23	12.96	4.139
<b>Delayed Post –Test</b>	23	11.17	4.158

The mean score of the control group was 10.48 out of 40 questions at the end of the Pre-test. The mean score in post – test of the control group was 12.96 out of 40. Before the instruction, students in Control Group were able to answer 10 questions

out of 40. After the instruction, students were able to answer approximately 13 questions out of 40. Two weeks after the instruction, when the vocabulary test was applied for retention, 11 questions out of 40 were answered. It can be said that

vocabulary teaching through traditional techniques did not contribute positively to the 11th grade students' achievement and retention of English vocabulary learning.

**Research Question 2**

Does vocabulary teaching through activities based on Multiple Intelligence theory contribute positively to the 11th grade students' achievement and retention of English vocabulary learning?

**Table 2.**Pre-Test and Post-Test Results of the Experimental Group

	N	M	SD
<b>Pre- Test</b>	26	13.46	5.368
<b>Post –Test</b>	26	29.73	4.754
<b>Delayed Post –Test</b>	26	28.08	4.640

The mean score of the experimental group was 13.46 out of 40 before the study. The mean score in the post –test of the experimental group was 29.73 in 40. Before the instruction, students in Experimental Group answered 13 questions out of 40. After the instruction, which was based on activities designed according to Multiple Intelligence Theory, students answered 29 questions out of 40 questions. Two weeks after the study, when the vocabulary test was applied for retention 28 questions out of 40 were answered. This result indicated that

vocabulary teaching through activities based on Multiple Intelligence Theory contributed positively to the 11th grade students' achievement and retention of English vocabulary learning.

**Research Question 3**

Is there a significant difference between the high school 11th grade students who received instructions based on Multiple Intelligence Theory and who received traditional instruction in terms of their achievement and retention of English vocabulary?

**Table 3.**Analysis of Covariance of MI Vocabulary Achievement

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
<b>Corrected Model</b>	642,820a	2	321,410	48,829	,000
<b>Intercept</b>	739,549	1	739,549	64,280	,000
<b>Covariate</b>	43,066	1	43,066	1,591	,213
<b>Treatment</b>	181,762	1	2181,762	30,621	,000
<b>Error</b>	244,854	46	27,062		
<b>Total</b>	425,000	49			
<b>Corrected Total</b>	3887,673	48			

When the results of ANCOVA (Analysis of Covariance), which can be seen at Table 3, were evaluated, it was observed that there was a statistically significant difference between the Post-test scores of the Control

and Experimental Groups. Students at Experimental Group were beter at learning vocabulary compared to the students at Control Group. This indicated that when vocabulary was taught through the

activities based on Multiple Intelligence theory, students learned more vocabulary

than when they were taught through traditional teaching techniques.

**Table 4.** Analysis of Covariance of Vocabulary Retention

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
<b>Corrected Model</b>	3464,604	2	1732,302	87,433	,000
<b>Intercept</b>	2509,186	1	2509,186	126,644	,000
<b>Covariate</b>	30,676	1	30,676	1,548	,220
<b>Treatment</b>	2946,339	1	2946,339	148,708	,000
<b>Error</b>	911,396	46	19,813		
<b>Total</b>	27785,000	49			
<b>Corrected Total</b>	4376,000	48			

In order to assess the difference between Control and Experimental Groups in terms of long-term retention of the vocabulary, the researchers conducted ANCOVA again. At Control Group, the mean score of retention – test was 11.17 out of 40; and at Experimental Group, the mean score of retention – test was 28.08 out of 40. As can be seen at Table 4, there was a statistically significant difference between the mean scores of Control and Experimental Groups. Two weeks after the study, students at Experimental Group retained more vocabulary than the students at Control Group.

### Conclusion

In this study, traditional vocabulary teaching and vocabulary teaching through activities based on Multiple Intelligence Theory were compared. At the end of 6 weeks, when the results were compared, it was observed that activities based on Multiple Intelligence Theory had positive effect on vocabulary teaching. When the post-test mean scores of the students in Experimental Group and Control Group were compared, it was clear that the mean score of the students in Experimental Group were higher than the mean scores of

the students in Control Group. The mean score of the students in Experimental Group increased fifteen questions more than their pre-test mean scores. When the Delayed Post-test was applied, the mean scores of the students in the Experimental Group showed that the students in the Experimental Group retained more vocabulary than the students in Control Group. When the traditional vocabulary teaching methods were used, the students did not learn much vocabulary. There was not a considerable increase in the mean scores of the students. On the other hand, when Multiple Intelligence Theory based activities were used, the mean scores of the students increased and they did not forget as much. On the whole, after achievement and retention scores were analyzed it was found out that there were significant differences between the mean scores of the students who received traditional instruction and instruction based on Multiple Intelligence Theory. These 11th grade students learned and retained more vocabulary when they were taught through activities based on Multiple Intelligence Theory

The results of this experimental study carried out in an Anatolian High School

have confirmed that teaching vocabulary by using activities based on multiple intelligence theory have increased the achievement and retention level of the students. It is more effective than traditional vocabulary teaching. Moreover, after students have learned the words they do not forget them easily.

Using Multiple Intelligence Theory based activities can be helpful in teaching four skills and grammar in addition to teaching vocabulary. Because activities based on learners' intelligences can attract the attention of the students and it can appeal to their needs. Further studies can be conducted to explore the effect of Multiple Intelligence Theory based activities on teaching four skills in different age groups.

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