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THE EFFECTS OF MULTIPLE INTELLIGENCES ACTIVITIES ON VOCABULARY ACHIEVEMENT AND ATTITUDES OF LEARNERS OF ENGLISH

Berna YAVUZ

İzmir
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Doktora tezi olarak hazırladığım “The Effects of Multiple Intelligences Activities on Vocabulary Achievement and Attitudes of Learners of English” adlı çalışmanın bilimsel ahlak ve geleneklere aykırı düşecek bir yardıma başvurmaksızın tarafımdan yazıldığını ve yararlandığım eserlerin kaynakçada gösterilenlerden oluştuğunu onurumla onaylarım.

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DOKTORA TEZ ÖZÜ

ÇOKLU ZEKÂ ETKİNLİKLERİNİN İNGİLİZCE ÖĞRENCİLERİNİN SÖZCÜK DAĞARCIĞI VE TUTUMLARI ÜZERİNDEKİ ETKİSİ

Berna Yavuz

Yabancı Diller Eğitimi Anabilim Dalı

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Sözcük edinimi ikinci dil sınıflarındaki temel görevlerden biridir. Birçok dil öğretmeni sözcük edinimini öğretimlerinin başlıca parçası yapmaları gerektiğinin farkındadırlar. İngiliz dili öğretimi sınıflarındaki sözcük öğretiminin öneminin artması ve bu süreçte karşılaşılan sorunlar bu doktora tezini şekillendirmiştir. Araştırmacının ana hedefi Gardner'ın zeki olmak için birden çok yol olduğunu ve bir kişinin bunların çoğuna sahip olduğunu savunan Çoklu Zekâ Kuramı'nı kullanarak İngilizce sınıflarında sözcük öğretiminde daha iyi bir yol önermektir. Böylece, çoklu zekâ etkinliklerinin başarı ve kalıcılık üzerine etkisi bu çalışmanın temelini oluşturmuştur. Çoklu zekâ etkinliklerinin öğrencilerin İngilizce'ye yönelik tutumunu etkileyip etkilemediği bu araştırmanın cevaplamaya çalıştığı ikinci soruydu. Bu çalışmada ayrıca örneklemdeki öğrencilerin zekâ profilleri belirlenmiştir.

Çoklu zekâ etkinliklerinin başarı, hatırlanma oranı ve tutum üzerindeki etkisini ölçmek için ön-test, son test ve geciktirilmiş son test ile deneysel bir çalışma yürütülmüştür. Çalışmanın örneklemi Söke Cumhuriyet Anadolu Lisesi'nde 2007-2008 akademik yılının bahar yarıyılında 10 sınıfta okumakta olan öğrenciler oluşturmuştur. Bu öğrenciler bir önceki akademik yılda hafta on saat İngilizce dersi görmüşlerdi. Çalışmanın yürütüldüğü yılda ise haftada dört saat İngilizce dersleri

vardı. Eğitimsel uygulama zamanında öğrenciler ikinci dönemin başındaydılar. Katılımcıların belirlenmesi için hedef seçilen dilbilimsel bileşenle ilgili çoktan seçmeli bir tanıma testi uygulandı. Kazanımdaki sözcükleri bildiği tespit edilen öğrenciler çalışmadan çıkartılacaktı. Ancak tanıma testinden hiçbir öğrenci 50'nin üzerinde puan almadığı için öğrenci sayısı 56 olarak kaldı. Bu öğrenciler deney ve kontrol gruplarını oluşturmak üzere ikiye bölündüler. Böylece, bu araştırmanın örneklemini Söke Cumhuriyet Anadolu Lisesi Türkçe-matematik bölümü onuncu sınıflarından iki şube oluşturmuştur. Kontrol ve deney grupları rastlantısal olarak belirlenmiştir. Katılımcıların yaşı 15-16 arasında değişmektedir. Deney grubunda çoklu zekâ etkinlikleri sunumda, alıştırmada ve gerçekleştirme aşamalarında kullanılırken; öte yandan, kontrol grubunda hedef sözcükleri öğretmek için geleneksel yöntem kullanılmış ve sunum ile alıştırma aşamalarında kontrollü, gerçekleştirme aşamasında ise daha serbest etkinlikler kullanılmıştır. Her iki gruba da sekiz haftalık bir uygulama yapıldı.

Deney sonuçları çoklu zekâ etkinliklerinin İngilizce sözcük dağarcığı başarısında ve hedef sözcüklerin hatırlanma oranında olumlu yönde anlamlı bir etkisi olduğunu ortaya çıkarmıştır. Ancak çoklu zekâ etkinliklerinin sözcüklerin hatırlanma oranı üzerinde olumlu yönde bir etkisi bulunmamaktadır. Araştırmanın ikinci önemli sorusu öğrencilerin İngilizce'ye yönelik tutumları ile deney ve kontrol grubunda kullanılan etkinlikler arasında anlamlı bir ilişki olup olmadığı ile ilgilidir. Analizler her iki grupta da öğrencilerin İngilizceye yönelik tutumlarında istatistiksel olarak anlamlı olmayan bir düşüş olduğunu göstermiştir. Son olarak, örneklemdeki öğrencilerin baskın zekâ türünün sözel-dilsel olduğu bulunmuştur. Deney ve kontrol grubundaki ikinci baskın zekâ türü mantıksal-matematiksel zekâdır. Çoklu zekâ envanterindeki en düşük ortalama her iki grupta da kişilerarası zekâya aittir.

ABSTRACT

The acquisition of vocabulary is one of the main tasks in second language classrooms. Many language teachers are aware of the necessity of making vocabulary a main part of their teaching. The growing importance of vocabulary teaching in English Language Teaching (ELT) classrooms and the problems encountered in this process shaped this dissertation. The central aim of the researcher was to offer a better way to teach vocabulary in ELT classes using Gardner's Multiple Intelligences Theory (MIT), which suggests there are many ways to be intelligent and an individual has several of them. Therefore, the effects of multiple intelligences (MI) activities on vocabulary achievement and retention of the learnt items constituted the keystone of this study. Whether MI activities affect students' attitudes towards English was the second question this research intended to answer. This study also designated the intelligence profiles of the students in the sample group.

In order to test the effect of MI activities on achievement, retention and attitudes, an experimental study with a pre, post-test and delayed post test was conducted. The subjects of the study were 10th grade students of Söke Cumhuriyet Anatolian High School in the Spring Term of 2007-2008 academic years. These students had taken 10 hours of English lessons per week in the previous academic year. In the year the study was carried out, they had 4 hours of English lessons in a week. At the time of this educational treatment they were in the beginnings of the second semester. The selection of the participants was determined on the basis of a multiple-choice recognition test of the chosen target linguistic component. The students who showed any sign of knowledge of the target vocabulary items would have been excluded from the study. However, since none of the students scored over 50 in the recognition test, the number of the students in the sample remained 56. These students were divided into two groups in order to form the control and experimental groups. Thus, the sample of this research was composed of the sophomores of two Turkish-Mathematics department classes in Söke Cumhuriyet Anatolian High School. The control and experimental groups were assigned randomly. The age of the subjects ranged between 15 and 16 In the experimental group MI activities were used in presentation, practice and production. On the other

hand, in the control group traditional method was implemented and controlled activities in presentation and practice, and freer activities in production were used to teach target vocabulary items Both of the groups had an eight-week-treatment period.

The outcome of the experiment reveals that MI activities have a significant positive effect on vocabulary achievement. However, MI activities do not have significantly more positive effects on the retention of the vocabulary items. The second primary research question is related to whether the students' attitudes towards English vary significantly in terms of the activities in the control and experimental groups. The analyses indicate in both groups there is a decrease in the students' attitudes towards English which is not statistically significant. Finally, it is found out that the most dominant intelligence type of the students in the sample group is verbal-linguistic. The second dominant type in both experimental and control groups is logical-mathematical intelligence. The lowest mean score in the multiple intelligence inventory belongs to interpersonal intelligence in both groups.

CHAPTER 1

INTRODUCTION

In the globalizing world of the 21st century, English is gaining more and more importance. After the foundation of the European Union, it was aimed that all of the European countries were united under a single language, a single currency system and even a single management. The best way to combine different nations and to follow scientific and technological developments is determining a single language and teaching this language to everyone. This single language in Europe and in many other parts of the world is regarded as English.

Turkey, which wants to be a part of the European Union, is aware of the importance of English language teaching; however, this subject still contains several problems. Although foreign language teaching starts in the fourth year of the elementary school and goes on in the later years of the education period, it is not as effective as expected. This problem may be due to the heavy curriculum and inappropriate methods used in the ELT classroom.

In order to make English language teaching and also all of the other courses much more effective, the Ministry of National Education has been looking for new solutions. In accordance with this aim, Multiple Intelligences Theory, which considers the intelligence differences among students, is being adapted to the Turkish education system.

Multiple Intelligences Theory was first used by Howard Gardner in his book *Frames of Mind: The Theory of Multiple Intelligences* (1983). Gardner dealt with the concept of intelligence in a different way arguing that “intelligence” is not restricted

by only verbal and mathematical abilities. He enriched the term intelligence by claiming that all people have at least seven different types of intelligences. These intelligences can be strengthened or weakened by means of past experiences and education.

1.1. Statement of the Problem

The acquisition of a large and variety of vocabulary is one of the main tasks in second language classrooms and it is inevitable for communicative competence and performance (McCrostia, 2007). The recent focus on lexical competence and the impact of this has affected language teaching and many language teachers are now aware of the importance of making vocabulary a central part of their teaching (Fowle, 2002). Nevertheless, language learners encounter some challenges with unfamiliar vocabulary while using the target language in communication outside the classroom. The learners are ill-equipped to meet these difficulties in classrooms where the teacher controls the introduction of new language forms, and controlled practice precedes freer communicative use of the new forms (Newton, 2001).

The growing importance of vocabulary teaching in English Language Teaching classrooms and the problems encountered in this process, as mentioned above, constituted the keystone of this dissertation. This study, which is named "The Effects of Multiple Intelligences Activities on Vocabulary Achievement and Attitudes of Learners of English", has investigated English vocabulary achievement of the Turkish Learners in the ELT classroom where multiple intelligences activities were used. With this dissertation, it has been intended to offer a better way to teach vocabulary in ELT classes using Multiple Intelligences Theory. What is more, the study aims to discern the effects of MI activities on the attitudes of learners of English.

1.2. Objectives and Significance of the Study

The Theory of Multiple Intelligences has been accepted by many researchers from different fields since its development in the 1980s. This theory especially drew the attention of educators because it was revolutionary in the definition of "intelligence". It opened new perspectives for both teachers and students. Thanks to Multiple Intelligences Theory, it was understood that there were several other ways to learn besides linguistic and mathematical.

The MI Theory, which regards learners as unique individuals and claims that they should be taught in accordance with this fact, has been adapted to many areas. English language teaching is one of these fields. Turkish Ministry of National Education included some principles of MI in the English curriculum. Basic Law of National Education no 1739 emphasizes the importance of educating a student according to his/her interests and skills:

> The general purpose of the Turkish National Education is to raise all Turkish citizens in line with their own interests and abilities, to prepare them for life by helping them to acquire the required knowledge, skills, behaviour and cooperative working habits and to ensure they have a profession which will make them happy and contribute to the happiness of society.

Therefore, the Ministry of Education's notification related to the course design with Multiple Intelligences Activities has underlined the importance of this theory. However, it is seen that especially in the field of English Language Teaching there is a lack of research related to MIT. Besides, there are some doubts about the effective implementation of this theory in ELT. Barrington (2004) complains that teaching and learning in tertiary (any post secondary) institutions is often conservative and teacher-centred and it puts too much emphasis on certain kinds of intelligences. Thus, MI theory has not been attached enough importance. Nevertheless, it is also

overt that the "Westist, Bestist, Testist"[1] approach has not been beneficial for tertiary students because it does not consider the diverse intelligences and different socio-cultural values of students (Barrington, 2004).

Consequently, with this dissertation it is aimed to find out the effects of the MI activities on the English vocabulary achievement and attitudes of the students towards English. The results of this research will hopefully help to motivate teachers of English to utilize MI activities in their classes, and contribute to the literature in the field of MI practice in SLA.

1.3. Variables of the Study

Dependent Variables: Scores gained by the subjects on the post-test and delayed post-test in the achievement test after the educational treatment. Besides, the post-test scores of the subjects in the attitude scale towards English.

Independent Variables: MI activities, multiple intelligences types of the subjects, gender, mother and father education levels of the subjects.

Control Variables: Proficiency level, L1 background, age of the subjects and the time spent for the treatments.

[1] Westist, Bestist, Testist are the three biases that are claimed to disturb Western society (Gardner, 2006) nicknamed. Westist means the tendency of Western societies to proclaim one or two qualities over others. Testist indicates a bias toward focusing upon testable human abilities or approaches. Bestist implies the belief that the answer to any problem can be found in one approach (Barrington, 2004).

1.4. Statement of the Research Questions

The research questions which this study will answer are based on the results of the prior empirical research. Principally, there are three research questions that this study will pose. These are as follows:

1) What are the effects of Multiple Intelligences Activities on Söke Cumhuriyet Anatolian High School 10th grade students' vocabulary achievement?

   Sub-questions:

   a) Is there a difference between the post-test results of the control group and those of the experimental group?

   b) Is there a difference between the pre-test and post-test results of the control group?

   c) Is there a difference between the pre-test and post-test results of the experimental group?

2) What is the effect of Multiple Intelligences Activities on Söke Cumhuriyet Anatolian High School students' attitudes towards English?

   Sub-questions:

   a) Is there a significant difference between the attitudes of the students in the environmental and control groups towards English before and after the educational treatment?

   b) Is there a significant difference between the attitudes of the students in the experimental group towards English before and after the educational treatment?

3) What are the effects of Multiple Intelligences Activities on Söke Cumhuriyet Anatolian High School students' vocabulary retention?

1.5. Assumptions of the Study

It is assumed that participants that are in the same group are nearly equal with regards to their cognitive and physical abilities. The socio-economic differences they have will not be included in the study. It is also assumed that the findings of this study will reflect the effects of MI activities.

1.6. Limitations of the Study

This study is limited to the tenth graders of two classes of the Söke Cumhuriyet Anatolian High School which will be carried out in the spring term of 2007-2008 academic years. The efficacy of the MI activities should also be tested in other schools and in other subjects.

1.7. Operational Definitions

Attitude: Allport (cited in Lindzey and Aronson, 1985) explains attitude as a mental and neural state of readiness, which is organized with experience, putting forth a directive or dynamic effect on the individual's response to all objects and situations with which it is related.

Motivation: Motivation is a state of cognitive and emotional stimulation which leads to a conscious decision to act and which entails a period of maintained intellectual and physical effort for achieving a previously set goal (Williams and Burden, 1997). It is a type of internal drive which encourages somebody to pursue a course of action. On the condition that a person perceives a goal and if that goal is attractive enough that person will be motivated to do all required things to reach that goal (Harmer: 1991).

Multiple Intelligences: A theory developed in 1983 by Dr. Howard Gardner, professor of education at Harvard University suggesting that the traditional notion of

intelligence, based on I.Q. testing, is far too limited. Instead, Gardner proposes eight different intelligences to account for a broader range of human potential in children and adults.

1.8. Abbreviations

EFL: English as a Foreign Language

ELT: English Language Teaching

ESL: English as a Second Language

MI: Multiple Intelligences

MIT: Multiple Intelligences Theory

SLA: Second Language Acquisition

1.9. Outline and Organization of the Study

Chapter 1: Introduction to the problem, the significance of the study, variables of the problem, and the statement of the research questions to be answered.

Chapter 2: A review of literature is given in this part. This chapter continues with detailed information on multiple intelligences types and attitudes.

Chapter 3: The subjects who have participated, the method; instruments, and data collection procedures, and data analysis procedures are given here.

Chapter 4: Results and findings of the study are presented in this chapter.

Chapter 5: Discussions and conclusions are presented and suggestions are given for further studies.

CHAPTER 2

REVIEW OF LITERATURE

2.1. Learning and Individual Differences

The two concepts, which are closely related to education, "intelligence" and "learning" have altered immensely during the last century. In the 1900s, learning used to be explained as the production of correct responses to stimuli under the effect of Pavlov's classical behaviourism (Mandler, 1996). This behaviourist approach has changed greatly and learning has been defined in many different ways. Throughout this time cognitive (i.e. Ausubel's meaningful learning theory) and constructivist (i.e. Roger's Humanistic Psychology) theories were accepted in succession. Afterwards, more learner-centred and more communicative theories and methods became popular. One of them is Gardner's "Multiple Intelligences Theory" which was proposed in 1983. In the development of this theory the radical change in the definition of "intelligence" played a central role (Brown, 2000).

2.1.1. Factors Affecting Second Language Learning

Intelligence is one of the factors that play an important role among factors affecting second language learning. The others can be summarized as aptitude, personality factors, motivation and attitudes, age of acquisition, learner preferences and learner beliefs (Lightbown and Spada, 2003).

1. Aptitude: Carroll (cited in Ellis, 1994: 494) defines aptitude as "capability of learning a task which depends on some combination of more or less enduring characteristics of the learner". Dörnyei and Skehan (2003) suggest that language

aptitude is a specific talent in order to learn foreign languages which exhibits considerable variation between learners. They also argue that for many years, aptitude has been isolated from the area of foreign language learning and acquisition. However, the research indicated that aptitude is a central form when there is a focus on form in SLA.

2. Personality factors:

- Empathy: It is the "interpersonal sharing of emotional states brought by knowledge or observation by one person of the other person's experience or emotional state" (Hutman & Dapretto, 2009: 367). Empathy is one of the affective factors that influence language learning. Zwiers (2006) carried out a research which analyzed possibilities for scaffolding academic language and historical thinking for non-native English speaking students in two classrooms. The teaching approach centred on six dimensions of historical thinking; one of which was empathy. It is found out that multi-modal scaffolds for both thinking and language developed cognitive and communication skills.
- Self-esteem: Coopersmith (cited in Brown, 2000) states that self-esteem is a personal judgement of worthiness that is expressed in the attitudes that individuals have about their beings. There is no successful cognitive or affective activity without some degree of self-esteem, self-confidence, knowledge of yourself, and belief in your own capacities (Brown, 2000).
- Extroversion: Extroversion/ introversion exhibits a continuum, however, it is possible to identify idealized types (Ellis, 1994). Eysenck and Chan, as cited in Ellis (1994: 520) state that extroverts are generally "sociable people

who like parties, have several friends and need excitement. They are sensation-seekers and risk-takers, like practical jokes and are lively and active".

- Introversion: Introverts are quiet people who prefer reading to meeting people, have few but close friends and mostly avoid excitement (cited in Ellis, 1994).
- Inhibition: Some individuals build sets of defences to protect themselves from the threats to their existence (Brown, 2000). This defence phenomenon is called inhibition. Inhibition affects the learning period negatively since it does not allow production.
- Language anxiety: Horwitz, Horwitz and Cope indicated that in foreign language classrooms, anxious learners had problems in speaking and in discriminating the sounds and structures of a target language message (cited in Yan and Horwitz, 2008). Horwitz states that studies which have focused on the construct of language anxiety have found a consistent relationship between anxiety and second language achievement (cited in Yan and Horwitz, 2008). Horwitz (2000) also claims that some people might be anxious about learning a second language due to their cognitive, subtle or first language disabilities. Yan and Horwitz (2008) interviewed twenty-one students with varying degrees of anxiety and they indicated a sequential order of influence among the major affinities. Their qualitative study confirmed previous quantitative findings which indicated the negative impact of anxiety on second language achievement. Aida (1994) tried to develop a fuller understanding of language anxiety by including a non-

Western language; Japanese. He found out that language anxiety was negatively related to students' performance in Japanese, which is consistent with other findings using Western languages.

- Risk-taking: Learners should gamble a bit and take some risks in order to improve their second language. The silent student in the classroom probably does not want to appear foolish when mistakes are made (Brown, 2000).

3. Motivation: motivation is a kind of internal drive which pushes a person to do things in order to achieve something (Harmer, 2001). Lightbown and Spada (2003) define motivation in second language learning in terms of two factors; namely, learners' communicative needs and their attitudes towards the second language community. On the condition that learners need to speak the second language in a wide range of social situations or to achieve professional goals, they will grasp the communicative value of the second language and they will be motivated to acquire it.

4. Attitudes: Learning a second language can be a source of enrichment or a source of resentment due to the learner's attitudes (Lightbown and Spada, 2003).

5. Age of Acquisition: The relationship between a learner's age and his or her capacity to become successful in second language acquisition is a controversial issue. Several adult second language learners are able to communicate efficiently in the language; however, they may become unsuccessful in accent, word choice, or grammatical features. These subjects differentiate them from young second language learners. This fact is explained by the critical period hypothesis which argues that there is a time in human development when the brain is predisposed for success in language learning (Lightbown and Spada, 2003).

6. Intelligence: Intelligence was traditionally defined and measured in terms of linguistic and logical-mathematical abilities (Brown, 2000). These two domains were taken into consideration in Intelligence Quotient (IQ) Tests based on the research of Alfred Binet. These traditional thoughts related to intelligence were changed radically by Gardner's Multiple Intelligences Theory. Gardner mentioned eight different intelligence types; namely;

- Verbal-linguistic intelligence
- Logical-mathematical intelligence
- Bodily-kinaesthetic intelligence
- Visual-spatial intelligence
- Musical intelligence
- Interpersonal intelligence
- Intrapersonal intelligence
- Naturalist intelligence

Gardner claims that considering only the first two intelligence types means ruling out a great number of the human's abilities. Thus, Gardner's theory provides a much more comprehensive picture of intelligence and a learner-centred approach (Brown, 2000).

7. Learner Preferences: Learners have certain preferences related to the way they learn a new material. These preferences can also be called learning styles which can be defined as an individual's natural and habitual way of retaining new information and skills.

8. Learner Beliefs: Learners may have strong beliefs based on their previous learning experiences. These beliefs can be strong mediating factors in their second language learning process (Lightbown and Spada, 2003).

2.2. Intelligence

Defining intelligence has always been a subject of discussion throughout the history of humankind. The Latin word "intelligence" was firstly used by Cicero as a synonym to Aristotle's "dia-noesis" in the scientific literature (Göğebakan, 2003). Plato argued that the knowledge people acquired was only an unimportant abstraction of a much larger and perfect truth. Plato's student Aristotle disagreed with him. In Aristotle's view, gathering information was a venture of the human soul rather than a search after unattainable ideals (Silver, Strong and Perini, 2000: 5-6).

> Buddhist philosophy speaks of three qualities of mind- wisdom, morality and meditation- that guide humans to correctly view. Later, Renaissance thinkers as diverse as Niccola Machiavelli, Leonardo Da Vinci, and Thomas More brought the human capacities of reason and creativity back to the foreground, portraying them as forces capable of controlling and even remarking the world. Since the Renaissance, nearly every philosophical and cultural movement has pondered the role of human thought and the meaning of humans' unique capacities of mind. This evolving quest stays with us today. No other century has seen such a shift in the definition of intelligence as we have in the 20th century. This recent evolution corresponds with our increasing understanding of the human brain and its cognitive processes. Jean Piaget's theories on how humans construct knowledge have become important foundations for understanding the brain's natural learning capacities. The 20th century also saw the advent of psychometric indicators of intelligence such as IQ testing. Yet our initial question remains: what is human intelligence?

Although, "intelligence" has been concerned in terms of theoretical and applied issues, it has always been one of the main subjects of psychology (cited in Çakır, 2003). According to some researchers; intelligence is either accepted to be the

result of a test, adaptation to the environment or problem-solving capacity. In the following part different definitions of intelligence are mentioned.

As Binet and Simon (cited in Göğebakan, 2003) claimed, in intelligence there was a basic faculty and lack of it was very important for daily life. Thus, intelligence was the judgement or practical sense to adapt oneself to a situation. Vygotsky (1978) points out that social origin determined all intellectual abilities. Parents and teachers form the development process of the child.

Psychologists of intelligence mainly discussed three subjects. The first is whether intelligence is singular or there are various independent intellectual faculties. Purists[2] such as Charles Spearman, Richard Herrnstein and Charles Murray asserted the notion of a single supervening "g" or general intelligence (Gardner, 2006). Spearman's theory was (http://www.indiana.edu/~intell/spearman.shtml) a two-factor theory of intelligence. His claim was that the performance of any intellectual act necessitates some combination of "g", that is available to the same individual to the same degree for all intellectual acts, and of "specific factors" or "s" which are specific to that act and which varies in strength from one act to another". "g factor" covers a wide range of mental abilities such as reasoning and problem solving whereas "s factor" consists of narrow, single mental ability tests. Therefore, the most important information to have about a person's intellectual ability is an estimate of their "g".

Fox-like pluralists[3] like Thurstone and Guilford explain intelligence as composed of some or many dissociable components (Gardner, 2006). To Thurstone (cited in

[2] Purist is a person who adheres strictly and excessively to a tradition, especially one preoccupied with the purity of language and its protection (http://www.merriam-webster.com)

[3] A term used for the pluralists affected by Alan Fox, a distinguished industrial sociologist. Fox (cited in Topham, 2002) suggests a pluralistic perspective which asserts the legitimacy of employer and

Göğebakan, 2003) intelligence has several primary mental abilities rather than general specific factors. In his multiple-factors theory a person could be intelligent in many ways. There are seven mental abilities namely;

1. Verbal Comprehension
2. Word Fluency
3. Number Facility
4. Spatial Visualization
5. Associative Memory
6. Perceptual Speed
7. Reasoning

While Thurstone listed seven vectors of the mind, Guilford distinguished 150 factors of the intellect (Gardner, 2006).

Another distinction is made by Cattell (cited in Göğebakan, 2003) between fluid and crystallized intelligence. Fluid intelligence is involved in tests that have very little cultural content; however, crystallized intelligence loads abilities that have obviously been acquired, such as verbal and numerical ability, mechanical aptitude and social skills.

Among the most important figures of the twentieth-century Jean Piaget wrote a personal journal entitled *Recherche* (Exploration) whose hero dreams of a course synthesizing the sciences of life. With the help of this hero Piaget investigated the possibilities of a biological explanation of mental processes. Piaget invented the field of cognitive development by charting the minds of children. His main contribution was to describe knowledge forms peculiar to each stage of development (Gardner,

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trade union interests and their equal social and moral status is more congruent with modern reality. However, in 1970s Fox argued that the ideological nature of pluralism legitimised the unequal relationship between hired labour and capital, and he reinforced the status quo.

2006). Gardner (2006: 49) states that "Piaget, the great developmental psychologist, thought he was basically studying all intelligence, but I believe he was studying the development of logical-mathematical intelligence".

According to Sternberg, R.J.'s (1985) "Triarchic Intelligence Theory", intelligence involves:

a. Mental skills, componential aspect; ability to acquire new knowledge; to solve problems effectively,
b. Insight, experiential aspect; ability to adapt creatively in new situations; to use insight,
c. Environmental responsiveness, contextual aspect; ability to select contexts in which to excel, to shape the environment to fit one's strengths.

Another way to get the true meaning of intelligence is to consider those who use their intelligence in exceptional ways. Howard Gardner followed this way when he started his work on human intelligences. Gardner (Silver *et al*, 2000) changed the concept of intelligence profoundly because of the way in which he expanded the parameters of intelligent behaviour to include a diversity of human abilities. According to Silver *et. al* (2000:5-6):

> Gardner's process is different from IQ testing or other means of measuring intelligence. Rather than looking for a single, quantifiable measurement of intelligence, Gardner's method explores the way in which particular cultures value individuals and the way individuals create different products or serve their cultures in various capacities.

The Theory of Multiple Intelligences "challenges the classical view of intelligence that most of us have absorbed explicitly or implicitly" (Gardner, 1983:5). Gardner defines intelligence as "the ability to solve problems or to create products that are

valued within one or more cultural settings" (Gardner, 1983:60). Gardner (1987: 80) tells how he developed this theory as cited below:

> In developing this theory I did not start with an examination of existing tests…I was not interested in predicting success or failure in school…Instead, my initial intuition that there were different kinds of minds led me to sample the range of cognitive end-states as thoroughly as I could, and then to seek a model that might help us to progress in explaining how these different competences develop.

To try to answer the question "what is intelligence?" Gardner and his colleagues investigated a wide set of sources which have never been considered before. One source is the development of different kinds of skills in normal children. Another source is information on the ways that these abilities break down under brain damage conditions. Gardner's research group also looked at other special populations such as prodigies, idiot savants, autistic children, children with learning disabilities. All of these different cognitive profiles were difficult to explain with a unitary view of intelligence (Gardner, 2006).

By adding an "s" to "intelligence," Gardner broke from the tradition of IQ theory, which previously adhered to two fundamental principles:

- Human cognition was unitary.
- Individuals can adequately be described as having a single, quantifiable intelligence.

This view of intelligence was degrading intelligence to a simple faculty. Contrary to this reductionist view of intelligence, Gardner (cited in Silver *et al,* 2000) defined intelligence as:

- The skill to solve problems that a person might encounter in real life.
- The skill to procreate new problems to be solved.

- The skill to produce something or suggest a service that is valued within one's culture.

In this way, intelligence was freed from the reductionist perspective which regards it as a single faculty to adapt oneself to a situation. Gardner not only multiplied the functions of intelligence, but also the ways to be intelligent. What is important was the path going to intelligence, not the quantity of it. Therefore; the question "How intelligent are students?" has changed into "How are students intelligent?" (Chan, D.W. 2003).

Gardner (2006) introduced three different uses of the term intelligence:

- A property of all individuals (all human beings have these eight or nine intelligences
- A dimension on which people differ (nobody have exactly the same intelligence profiles)
- The way in which one performs a task in virtue of one's aims.

Armstrong (1999) underlines the importance of context in the definition of the term intelligence and states that intelligence is the capacity to behave successfully in new situations and the ability to learn from one's past experiences in life. Armstrong states that the most intelligent person in a situation when your car breaks down on the highway is a car mechanic with a junior high school education rather than someone with a PhD from a major university. Armstrong (1999: 8) continues to ask: "If you become lost in a large city, who is likely to be of greatest help to you? An absentminded professor or a little boy with a great sense of direction?". Therefore, intelligence is closely related to the context, the tasks, and the requirements of life.

The other factors such as an IQ test score, a prestigious reputation or a collage degree are not important (Armstrong, 1999).

Khalfa (1994) points out that although everyone agrees that there could be no science without intelligence, the very existence of intelligence has often been seen and used as an argument against the modern scientific explanation of the world. He adds that intelligence makes living beings act in a non-mechanical and often unpredictable way. Intelligence was a general means of explanation. Khalfa (1994) states when the dominant model of the universe became the mechanical interaction of non-living things, intelligence obviously had to be explained in another way. There were two explanations. Firstly, according to dualists, intelligence was a faculty exclusive to beings ruled by an immaterial substance, a soul, of which one of the clearer manifestations is language. Tool-making is another distinctive property of intelligent beings.

Intelligence is a characteristic which can only be seen in human beings. Khalfa (1994:3) states that "While intelligence had formerly been the dominant principle of explanation, exhibited in various degrees in the amazing properties of even the smallest creatures, the generalisation of the mathematical approach to science made it privilege of a single species in the natural world: man".

When all different definitions of intelligence are taken into consideration a comparison can be made between traditional and contemporary intelligences (Saban, 2001):

Table 1.1. Comparing the Traditional and Contemporary Intelligences:

The traditional intelligence understanding	**The contemporary intelligence understanding**
• Intelligence is constant • Intelligence can be measured in quantity • There is one intelligence in general • Intelligence is measured by isolating it from real life. • Intelligence is used to classify students and predict their possible success.	• Intelligence can be developed. • Intelligence is not estimated with numerical values displayed in any performance or problem-solving process. • Intelligence can be exhibited in many ways. • Intelligence is measured in real-life situations. • Intelligence is used to understand the potential strengths of individuals and the areas that they will be successful.

Gardner (2006) does not include *emotional intelligence* to his list. There are two reasons for Gardner's decision. First of all, emotions are not contents to be processed; we know human beings who possess and experience emotions by means of cognition. Secondly, emotional intelligence is conflated with a certain preferred pattern of behaviour. Therefore, Gardner prefers the term *emotional sensitivity*, which may apply to the individuals who are sensitive to emotions in themselves and in others. Nevertheless, there is a distinction between emotional sensitivity and being a good person. A person may be sensitive to the emotions of others; however, he can use it to manipulate, deceive or create hatred.

Gardner's intelligence definition includes the full range of contents to which human beings are sensitive; but at the same time, one which designs as off limits valued but separate human characteristics like creativity, morality, or emotional appropriateness. This kind of definition is scientific and epistemological (Gardner, 2006).

2.2.1. Intelligence Tests

Around 1900s the city fathers of Paris required Afred Binet to devise some kind of measure which would predict which youngsters would succeed and which would fail in the primary grades of Paris schools. Binet's colleagues in England and Germany contributed to the conceptualization and instrumentation of intelligence testing which is named as the IQ test. An Intelligence Quotient indicates the ratio between mental age and chronological age. The IQ started to be used in the United States and was quite successful until World War I. With IQ, intelligence seemed to be quantifiable and the IQ test has seemed to be psychology's biggest success. By the 1920s the intelligence test had become an indispensable part of education in the United States and much of Western Europe (Gardner, 2006). On the other hand, early versions of intelligence tests were criticized too. Journalist Walter Lipmann published a series of debates with the father of IQ testing, Lewis Terman. Lippman (Gardner, 2006) underlined the superficiality of the questions, their possible cultural biases, and the risks of assessing an individual's intellectual potential by means of a short oral or paper-and-pencil measure However, psychometricians were able to defend their intelligence tests.

There have been other ways to test intelligence. For instance, Arthur Jensen (Gardner, 1993) claimed that we should look at reaction time to assess intelligence. The British psychologist Hans Eysenck (Gardner, 1993) suggests that brain waves could be a definite way to measure intelligence. More sophisticated versions of the IQ test emerged throughout the century. One of them is called the Scholastic Aptitude Test (SAT) which claims to be a similar kind of measure, adding up a person's verbal and math scores, you can rate him along a single dimension. In parallel with this one dimensional view of assessment, a corresponding view of school that is called the "uniform view" has been formed. This school has a core curriculum, a set of facts that everybody should know and very few electives. On the other hand, there is an alternative vision with a different view of the mind and a different view of school suggesting that people have different cognitive strengths and styles. Individual-centred school is based on findings from sciences that emerged after Binet's time: cognitive science (the study of the mind) and neuroscience (the study of the brain) (Gardner, 1993; Gardner 2006). One such approach is called The Theory of Multiple Intelligence.

The psychologist's version of intelligence was successful in the long run; however, it started to face its biggest threat in 1990s. Several scholars and observers began to feel that intelligence is too important to leave to the psychometricians. Experts have extended the breadth of intelligence, suggesting many intelligences, including emotional and moral intelligence. They are forcing society to discuss some questions such as "What is intelligence?", "How it should be assessed?", "How do our notions of intelligence fit with what we value about human beings?"(Gardner, 2006). Gardner (1993: 7) states that:

> Dissatisfaction with the concept of IQ and with unitary views of intelligence is fairly widespread. However, these criticisms do not suffice; the whole concept has to be changed. Think of surgeons and engineers, hunters and fisherman, dancers and choreographers, athletes and athletic coaches, tribal chiefs and sorcerers. All of these different roles need to be taken into account if we accept the way I define intelligence-that is, as the ability to solve problems, or to fashion products, that are valued in one or more cultural or community settings.

Gardner (2006) believes that tests and correlations among tests should be abolished. Instead of these tests, more naturalistic sources of information about how people develop skills which are important for their lives should be investigated. Intelligence is the capacity to solve problems and to fashion products no matter it is inborn or developed (Gardner, 2006). Gardner regarded intelligence as something much more than a quantitative factoring of abilities and skills (O'Brien and Burnett, 2000). Gardner's seven intelligences is a preliminary attempt to organize this mass of information. Even though he puts the linguistic and logical-mathematical first, Gardner believes that all seven of the intelligences are equal in importance. Nevertheless, in most of the societies, linguistic and logical-mathematical intelligences are given priority. Much of the testing is based on this high valuation of verbal and mathematical intelligences (Gardner, 1993; Gardner, 2006). On the condition that you do well in language and logic, you will do well in IQ tests and SATs and you can get into a prestigious collage; however, after you leave, your success is dependant on the extent of your other intelligences (Gardner, 2006). In other words, although IQ tests are quiet successful in predicting school performance they cannot foresee success degree in a profession after formal schooling. According to Armstrong (1999) one study of highly successful professional people revealed that fully a third of them had low IQ scores. Therefore, IQ tests have been measuring something that might be called *schoolhouse giftedness*, while real

intelligence takes in a much wider range of skills. The reason of this deficiency can be the fact that IQ tests concentrate just on two types of intelligences; logical-mathematical and linguistic. No matter these two intelligences are important, they are not sufficient in real life situations. Based on this idea, The Theory of Multiple Intelligences presents a variety of intelligences. This new construct of intelligence, which suggested that there were at least seven intelligences, has been somewhat a respectable theory (O'Brien and Burnett, 2000). Gardner (1993:14) states that:

> As the name MI indicates, we believe that human cognitive competence is better described in terms of a set of abilities, talents, or mental skills, which we call "intelligences". All normal individuals possess each of these skills to some extent; individuals differ in the degree of skill and in the nature of their combination.

Barrington (2004) also highlights the fact that everyone has all eight intelligences. However, each has their own combination of intelligences, while some are dominating others; they are subject to change in time (Barrington, 2004).

Another deficiency of IQ tests is related to the fact that they disregard the importance of culture. Gardner, Sternberg and Berry (Dedeoğlu, 2006) believe that intelligence differs not only from culture to culture, but also within one culture. Therefore, standard IQ tests are not suitable to measure a person's intelligence. Pyle (Dedeoğlu, 2006) asserts that intelligence which is evaluated in isolated ways or which separate an individual from the society he is living in is doomed to failure.

Gardner (2006) indicates a struggle between opposing forces related to the assessment of intelligence. One position belongs to the traditionalists who once defended paper-and-pencil tests and now look to computers to obtain the same information more quickly and more accurately. However, other camps are numerous. Purists are scornful of psychological tasks and they look at reaction time, brain

waves, neuro-imaging profiles and other purer psychological measures of intellect. Simulators are in the opposite direction. They have realistic measures similar to the actual abilities that are valued. Skeptics warn against the expansion of testing that goes on. They draw attention to the damage done to individual life chances and self-esteem by psychological testing. They suggest more humane methods such as self-assessment, students' portfolio examination and selection in the service of social equality.

2.3. The Theory of Multiple Intelligences

Many generations of educators have dealt with understanding what individual children know, rather than they do not know. However, daily life in classrooms hardly focuses on discovering the full capacities of each individual (Stefakanis, 2002).

Likewise, Gardner, who is the founder of MI theory, aimed to understand the capacities of human beings. Thus, he tried to synthesize what he was learning from his study of brain damage with what he was learning of his study of cognitive development. Gardner and his colleagues gathered the information from brain study, genetics, anthropology, and psychology in an effort to ascertain the optimal taxonomy of human abilities (Gardner, 2006).

Gardner began his work by asking two questions: the evolutionary question, "how did the human mind/brain evolve over millions of years?" and the comparative question, "how can we account for the diverse skills and capacities that are or have been valued in different communities around the world?" (Gardner, 2006: 67). In the light of these questions Gardner (2006) claimed that all human beings possess at least eight intelligences: linguistic and logical mathematical (these are the most prized and

central to success on intelligence-test-type instruments), musical, spatial, bodily-kinaesthetic, naturalist and two forms focusing on human beings (interpersonal and intrapersonal).

In Frames of Mind: The Theory of Multiple Intelligences (1983), Gardner proposed a new view of natural human talent. With this book the ideas and assumptions about intelligence and learning have changed greatly. The central idea of MI is the fact that there are many ways to be intelligent (Barrington, 2004). Before this work simple intelligence tests and a single IQ number (Intelligence Quotient) used to label a person either as intelligent or not. What is more, these tests were based on only an individual's verbal/linguistic and logical/mathematical abilities. However, with Gardner's MI theory, it is accepted that there are a number of relatively independent human intelligences and except for abnormal people, intelligences are always in harmony and an adult has several of them.

Gardner (1993) describes the difference between traditional view of intelligence and the intelligence. In a traditional view, intelligence is the capacity to answer items on intelligence tests. The apparent correlation of these test scores across ages and across different tests reinforces the belief that g, the general faculty of intelligence, is independent of factors such as age, training or experience. It is innate ability of the individual. On the other hand, Multiple Intelligences Theory pluralizes the traditional concept. In Multiple Intelligences Theory, intelligence entails the ability to solve problems or fashion products that are of consequence in a particular cultural setting or community (Gardner, 1993).

According to Gardner (1983), MI human intelligence has three main features:

1. A set of abilities that enable a person to find a solution to genuine problems encountered in life.
2. The skill to create an effective product or suggest a service that is valuable in particular culture.
3. The capacity for recognizing or creating problems, in this way, preparing necessary conditions for the new knowledge.

As Gardner states above, intelligence is a combination of potential, skill and ability for recognizing and solving problems according to the needs of a particular culture. Like Gardner, Berry (Dedeoğlu, 2006) states that intelligence is closely related to culture and some anthropologists believe that nothing is universal. Each culture has different physical environments and different experiences to develop and show abilities. Therefore, Berry, Sternberg and Gardner believe that intelligence differs from culture to culture. Even in one particular culture the conception of intelligence may vary. As cited in Dedeoğlu (2006) Gardner gives Boby Ficher, who is an important chess player, as example. Fischer has the innate potential to play chess; however, if he had lived in a culture without chess this great talent would have never been realised. What is more, creativity is an indispensable part of intelligence. It is a trademark of intelligence used both for creating new problems and for solving them.

MI theory is very closely linked to the biological origins of each problem-solving skill. The theory deals with the skills that are universal to the human species. Certain kinds of internally or externally presented information activate or trigger

each intelligence. Besides, intelligence should be susceptible to encoding in a symbol system; that is, a culturally contrived system of meaning, which captures and conveys important forms of information (Gardner, 1993).

There are some turning points in Gardner's investigation related to the concept "intelligence". First of all, the fact that he used the term "multiple intelligences" instead of abilities or gifts draw the attention of the world. Gardner (2006: 88) states that "This seemingly minor lexical substitution proved very important; I am quite confident that if I had written a book called *Seven Talents* it would not have received the attention that *Frames of Mind* received". Secondly, the creation of a definition of an intelligence and the identification of a set of criteria which define what is an intelligence has been an important point. The criteria were not fixed a priori. As a result of continuous fitting and refitting of what Gardner was learning about human abilities, eight discrete criteria were established (Gardner, 2006).

Intelligences always work in harmony, except for abnormal people and an adult will meld all of them successfully. Gardner (1993) thinks that the intelligences are raw, biological potentials, which can be seen in pure form only in individuals who are freaks. He adds that:

> In almost everybody else the intelligences work together to solve problems, to yield various kinds of cultural end states-vocations, avocations and the like. This is in my theory of multiple intelligence in a capsule form. In my view, the purpose of school should be to develop intelligences and to help people reach vocational and avocational goals that are appropriate to their particular spectrum of intelligences. People who are helped to do so feel more engaged and competent, and therefore more inclined to serve the society in a constructive way.
>
> (Gardner, 1993: 9)

Gardner (1997, 2006) has two complementary claims related to Multiple Intelligences. The first is that all human beings possess all eight intelligences. Instead of explaining human as a "rational animal", Gardner suggests a new definition of a human being; *homo sapiens* is an animal that has eight forms of mental representation. The second claim is that just as we all look different and have unique personalities and temperaments, we also have different profiles of intelligences due to the accidents of heredity, environment and their interactions. No two individuals, not even identical twins or clones, have exactly the same strengths and weaknesses. Even in the case of identical genetic heritage, individuals undergo different experiences and their profiles are different from one another (Gardner, 1997, 2006). The fact that our intelligence profiles are different presents both some challenges and some opportunities for our educational system. There are two optional ways to follow in this situation: we can either ignore the differences, pretending that we are all the same or we can constitute an educational system that tries to use these differences, individualizing instruction and assessment as much as possible (Gardner, 2006).

Gardner argues that his view of intelligence(s) is culture-free and avoids the conceptual narrowness peculiar to traditional models of intelligence. Gardner firstly named seven different intelligences, later on, this number increased to eight. In his interview with Kurtzman (cited in Arıkan 2003) Gardner suggests that he can name nine different intelligences. Nevertheless, the number of the intelligences is not important. The point is that everyone has different ways of thinking and that no two people will therefore think exactly the same way. All people possess all these intelligences and they use all of them in different situations and they can develop

each intelligence. However, most people demonstrate a high ability in one or two intelligences.

All human intelligences and all combinations of intelligences should be recognized. If we understand that we are all different because we all have different combinations of intelligences, we will have a better chance to deal with many problems that we face in the world (Gardner, 2006).

The Theory of Multiple Intelligences takes its strength from a rich research base that gives credence to the work. Gardner utilizes a system of criteria through which a skill, talent, or mental capacity has to pass before it is regarded as true intelligence. Some of these criteria include the following:

- A matchless symbol system through which the intelligence can be made explicit such as verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinaesthetic, musical, interpersonal, intrapersonal and natural.
- Individual past experiences which help the development within an individual.
- A biological basis that might change through injury to the brain.
- Expression of the intelligence in products which are meaningful and valuable in a particular culture.

(Silver *et al,* 2000)

Gardner regularly emphasizes that the seven intelligences are not representative of the full scope of human capacities. Therefore, in 1994 and 1995 Gardner (2006) reviewed evidence for the existence of new intelligences. He concluded that there was ample evidence for a naturalist intelligence; and suggestive evidence for a possible existential intelligence which is defined as the intelligence of big questions (Gardner, 1999, 2006). As a result of his work on four recent candidate intelligences:

naturalist, spiritual, existential, and moral intelligences, Gardner classified naturalist as the eighth intelligence, but rejected spiritual, existential, and moral intelligences (Silver *et al,* 2000).

Gardner (Armstrong, 1999) established several requirements that each intelligence had to meet in order to be included in this theory. Here are four of these criteria:

a) Each intelligence can be symbolized: While logical mathematical thinkers use numbers and Greek letters; musicians frequently use notes of the bass and treble clef to symbolize melodies and rhythms. Marcel Marceau, world wide known pantomime master, uses complex gestures and expressions as bodily-kinaesthetic symbols to represent concepts like freedom and loneliness. Besides, there are also social symbols such as waving hands.

b) Each intelligence has a developmental history: At a certain point in childhood, each intelligence emerges. It has periods of potential blossoming during the life time, and contains its own matchless pattern of either gradual or rapid decline as a person ages. Musical genius shows itself earliest among the seven intelligences. Logical-mathematical thinking, however, has a different developmental pattern. It arises somewhat later in childhood, peaks in adolescence or early adulthood, and then declines in later life.

c) Each intelligence is unprotected against impairment through insult or injury to specific areas of the brain: Gardner points out that in order to be viable, any theory of intelligence must be biologically based-that is, rooted in the physiology of brain structure. The theory of intelligences suggests the existence of seven relatively autonomous brain systems. Linguistic

intelligence appears to function primarily in the left hemisphere in most people, while musical, spatial, and interpersonal intelligences tend to be more right-hemispheric functions. Bodily-kinaesthetic intelligence involves the motor cortex, the basal ganglia, and the cerebellum. The frontal lobes are particularly important for the personal intelligences.

d) Each intelligence has its own end-states that are valued in that culture: The theory of multiple intelligences indicates that intelligent behaviour can best be viewed by looking at civilization's highest accomplishments- and not by scoring responses to standardized test items. When was the last time you heard a grandparent take a grandchild up on her knee and say, "I want to share something with you that's meant a lot to me, I hope it's meaningful to you: 23, 16, 94, 3, 12 …" On the other hand, what does get passed along from generation to generation are myths, legends, literature, music, great art, scientific discoveries, and physical skills. The theory of multiple intelligences says that we can best learn what it means to be intelligent by studying examples of culture's most accomplished work in each of the seven intelligences.

Besides these characteristics, the MI theory suggests that each intelligence has its own separate cognitive processes in the areas of memory, attention, perception, and problem solving. The intelligences are different from each other; however, at the same time they function together in complex ways as stated below. Armstrong (1999) summarized some facts related to multiple intelligences as follows:

1. Every individual possess all seven intelligences. MI theory is not prescriptive rather it is a theory of cognitive functioning, and it suggests that each person has capacities in all seven intelligences. These intelligences function together in ways unique to each person.
2. Most people are able to develop each intelligence to an adequate level of competency. Despite the fact that we may have certain deficiencies in a certain area, MI theory claims that everyone has a capacity to develop all eight intelligences to a reasonably high level of performance if given the appropriate encouragement and instruction.
3. Intelligences work together in complex ways. Each intelligence can be regarded as a fiction; in other words, no intelligence exists by itself in life, they always interact with each other. For instance; while cooking; one must read the recipe (linguistic), divide the recipe into half (logical-mathematical), develop a menu that satisfies all members of the family (interpersonal), and placate one's own appetite as well (intrapersonal).
4. There is not just one way to be intelligent within each category. A person may not be able to read but be a highly linguistic person because he can tell a terrific story or has a large oral vocabulary. MI theory focuses on the rich diversity of ways in which people show their gifts within intelligences as well as between intelligences.

Multiple Intelligences Theory argues that all individuals have different types of intelligences that work together in a complicated manner. Everyone have the capacity to develop these intelligences and s/he can do this in different ways.

Stefakanis (2002) shares some of these ideas and adds some key points in the application of Multiple Intelligences which can be summarized as follows:

1. All learners have all eight intelligences which are combined as channels for learning, not ways to label student abilities.
2. One can understand the multiple intelligences from what children do since these intelligences are underlying information processing systems.
3. Multiple intelligences are combined uniquely in each learner as a profile; they are not connected.
4. Each individual has a unique profile based on all of the multiple intelligences; areas of strength can become ways to address areas of weaknesses.

Gardner's ideal school is founded on two assumptions. The first assumption is that not all people have the same interests and abilities; which means that we do not learn in the same way. The second assumption is that there is no one who can learn everything. This ideal student centred-school is rich in assessment of individual abilities and it would seek to match individuals with the various kinds of life and work options that are available in their culture (Gardner, 1993)

Gardner also designs this school by giving different roles to the educators:

> First of all, we might have what I will call "assessment specialists." The job of these people would be to try to understand as sensitively and comprehensively as possible the abilities and interests of the students in a school. In addition to the assessment specialist, the school of the future might have the "student-curriculum broker". It would be his or her job to help match students' profiles, goals, and interests to particular curricula and to particular styles of learning. There should also be a "school-community broker," who would match students to learning opportunities in the wider community. It would be this person's job to find

> situations in the community, particularly options not available in the school, for children who exhibit unusual cognitive profiles.

(Gardner, 1993: 10, 11)

Gardner's model contributes to the education field in many ways. Although there is not a single program of the theory, teachers can implement multiple intelligences to help students learn and achieve in school. As Silver *et al* (2000:13) states "Good teaching strives to use multiple methods of implementing this theory". Below are some ways to use multiple intelligences to accommodate students and diversify their learning experiences:

a) Aiming the development of specific intelligences: In classroom settings, teachers generally aim at specific intelligences through activity centres by arranging stations throughout the classroom with learning tools relating to each intelligence.

b) Modifying and enriching instruction with by using all of the intelligence types

c) Expanding curriculum in a way that is intelligence-rich and intelligence-fair

d) Giving students the chance to choose activities and assessments

e) Encouraging student learning in a specific intelligence by allowing students to use another more-developed intelligence to increase their understanding of content

f) Intelligences as pathways to understanding comprehensive topics: Gardner argues that curriculum should be designed around topics or phenomena that he calls "icebergs"- topics like evolution, the music of Mozart, which is a rich

> source of learning. Therefore, teachers and students should be engaged in developing a deep understanding of the universal concepts of truth, beauty, and goodness as they relate to the topic.
>
> (Silver *et al*, 2000)

Stefakanis (2002) adds that MI Theory necessitates teachers who shift from a notion of measuring a single set of intelligence to a new notion of understanding each individual's profile of multiple intelligences. Thus, teachers should understand how each child is smart with the help of MI theory as an analytic guide.

Gardner has eight types of intelligences: linguistic, logical-mathematical, visual-spatial, musical, bodily-kinaesthetic, interpersonal, intrapersonal, and naturalistic intelligence. The features of these intelligences are listed in Figure 2.1. (Stefakanis, 2002:2):

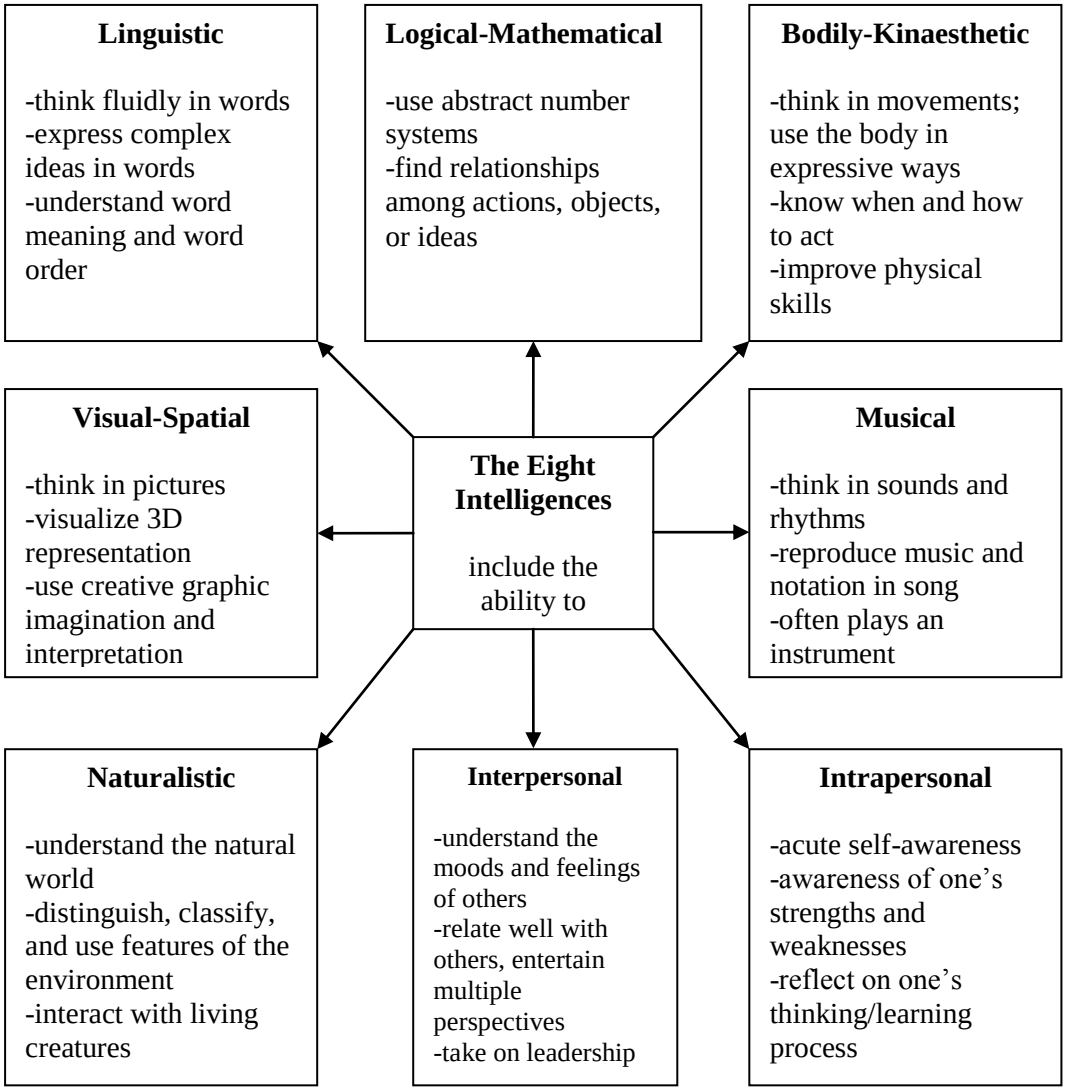

Figure 2.1. The Eight Intelligences

Gardner was critical of current views of intelligences within the discipline of psychology. Therefore, he was expecting some controversial ideas, which was realized. What surprised him more was the positive reaction to the theory among educators. He was content with many attempts to institute an MI approach to education in schools and classrooms and let MI to take on a life of its own. Gardner had issued an "ensemble of ideas" (memes) and allowed them to defend for themselves. Nevertheless, thinking that he should issue a new set of memes Gardner

discusses eight myths about MI and seven complementary realities. In the following part Gardner (2006) does not attempt to isolate MI theory from MI practice. Multiple Intelligences began as a theory but put to practical use and this relationship between theory and practice has been continuous and productive.

- **Myth 1:** Since seven (or more) intelligences have been identified, one can and perhaps should create seven tests and seven or more scores.
- **Reality 1:** A battery of MI tests is not consistent with the major tenets of the theory.
- **Comment:** The assessment of multiple intelligences is not necessary in every setting. When it is needed, it is best to do so in a comfortable setting with materials familiar to the individual. It is also very important to examine the intelligence directly rather than through the lens of linguistic or logical intelligence.
- **Myth 2:** Intelligence is equal to a discipline or a domain.
- **Reality 2:** Intelligence is a new construct and it is not the same as a discipline or domain.
- **Comment:** An intelligence is a biological and psychological potential; that potential can be realized to some extent as a result of the experiential, cultural, and motivational factors that affect a person. However, a domain is an organized set of activities within a culture, for instance, chess, gardening, rap music are some domains of Western culture. Any domain can be realized through the use of seven intelligences.
- **Myth 3:** An intelligence is the same as a cognitive style, a learning style or a working style.

- **Reality 3:** Style means an approach that an individual can apply equally to every conceivable content. An intelligence is a capacity that is geared to a specific content in the world.
- **Comment:** On the condition that a person is said to have a reflective or an intuitive style, this designation assumes that the individual will be reflective with the content ranging from language to social analysis.
- **Myth 4:** MI theory is not empirical.
- **Reality 4:** MI theory is based on empirical evidence and can be revised according to the new empirical findings.
- **Comment:** In Frames of Mind hundreds of empirical studies were reviewed and the actual intelligences were identified on the basis of empirical findings.
- **Myth 5:** MI theory is not compatible with g (general intelligence), with hereditary factors, or with environmental contents.
- **Reality 5:** MI theory does not question the existence but the explanatory power of "g". MI theory is neutral on the question of heritability of specific intelligences and underscores the importance of environmental interactions.
- **Comment:** Gardner's interest centres on those intelligences and intellectual processes that are not covered by "g". He does not doubt that human abilities have a genetic base. However, he rejects the inherited versus learned dichotomy and underlines the interaction between genetic and environmental factors.
- **Myth 6:** MI theory broadens the notion of intelligence so much that it includes all psychological constructs and vitiates the usefulness of the term.

- **Reality 6:** This statement is wrong according to Gardner. Only the standard definition of intelligence narrowly constricts our view and disdains those who are not psychometrically bright.
- **Comment:** MI theory is about the intellect and the human mind in its cognitive aspects. MI theory does not make any claim to deal with issues beyond the intellect. MI theory is not about personality, will, morality, attention, motivation and other psychological constructs. An intelligence may be put to an ethical or an anti-social use.
- **Myth 7:** There are additional intelligences such as spiritual or humour intelligence.
- **Reality 7:** Gardner continues to work on this issue.
- **Comment:** Gardner argues that he could add naturalist and existential intelligences to MI theory. His statements about this subject are given below (Gardner, 2006: 58)

> If I were to rewrite Frames of Mind today, I would add an eighth intelligence: the intelligence of the naturalist. It seems to me that the individual who is able readily recognize flora and fauna, to make other consequential distinctions in the natural world, and to use this ability productively is exercising an important intelligence…I have become interested in understanding better what is meant by spirituality and by spiritual individuals. At present I prefer to speak about a possible existential intelligence-an intelligence that denotes the human capacity to raise and ponder large questions.

- **Myth 8:** There is a single educational approach based on MI theory
- **Reality 8:** Gardner does not subscribe to this myth. In contrast MI theory is not an educational prescription. In educational discussions Gardner defends the idea that educators are in the best position to determine the uses to which MI theory should be put.

Gardner (2006) argues that while there is no right way to conduct an MI education, some current efforts go against the spirit of his formulation. There a few application which disturb Gardner that are listed below:

- The attempt to teach all concepts using all intelligences. Most topics can be powerfully approached in several ways. Nonetheless, each topic may not be taught effectively using all intelligences and it is a waste of time and effort to do so.
- The belief that it is enough to go through motions of exercising certain intelligence. Classes where children are encouraged to move their arms or to run around are not necessarily MI classes. Random muscular movements are neither related to the cultivation of the mind nor the body.
- The utilization of materials associated with an intelligence as background. For instance, some teachers use background music while students are doing math exercises. The music has almost no function in such a case where it is not used for performance.
- Using intelligences as mnemonic devices. It may be easier to remember a list if one sings it. On the other hand, these uses of the materials of an intelligence are essentially trivial. What is important is to think musically or to draw on some of the structural aspects of music to teach different concepts such as biological evolution etc.
- The combination of intelligences with other desiderata. For instance, interpersonal intelligence is frequently distorted as a license for cooperative learning and intrapersonal intelligence is distorted as a rationale for self-esteem programs or applied to introverted individuals.

- The direct evaluation of intelligences of intelligences regardless of context or content. Intelligences should be seen at work when individuals are doing productive activities that are valued in a culture. There is little point in grading individuals as linguistic or bodily-kinaesthetic. Furthermore, this may lead to another labelling. Indicating that a child seems to have a relative strength in one intelligence and a relative weakness in another is reasonable. However, these descriptions should be used in order to help students perform better in meaningful activities.

Gardner (2006) points out that there are three struggles between opposing forces in the landscape of intelligence. The first struggle is about *the breadth* of Gardner's definition of intelligence. One camp consists of *traditionalists* who defend a single form of intelligence and who predict achievement in school and in school-like activities. On the opposite side of the argument the *progressive pluralists* are situated. They argue that there are several forms of intelligence. They want to broaden the definition of intelligence embracing the abilities to create, to lead, and to stand out in terms of emotional sensitivity or moral excellence.

The second struggle is related to the *assessment of intelligence*. Here again there is a traditionalist camp who are sympathetic to paper-and-pencil tests. On the other side positions abound. *Purists* disdain psychological tasks, choosing to observe reaction time, brain waves, neuro-imaging profiles. *Simulators* prefer more realistic life-sized measures that resemble the actual abilities that are prized. *Skeptics* highlight the damage often done to individual life chances as a *result* of psychological testing (Gardner, 2006).

The last struggle subject is the *relationship between intelligence and what qualities we value in human beings*. Although nobody would equate intellect and human value, nuanced positions have emerged on this topic. Some regard intelligence as closely related to a person's ethical and value system and they expect that brighter individuals are more likely to appreciate moral complexity and to behave prudently. Some make a sharp distinction between the realm of intellect, on the one hand, and character, morality, ethics on the other (Gardner, 2006).

Multiple intelligences theory claims that there are eight different types of intelligences; namely, verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinaesthetic, musical, interpersonal, intrapersonal and naturalist. These intelligence types and their usage in classroom will be analyzed in the following pages.

2.3.1. Verbal/Linguistic Intelligence

Linguistic intelligence is the ability to think rationally and to use language to accomplish some goals, the capacity to learn languages, to be sensitive to spoken and written language. This intelligence also includes the ability to use language to express oneself rhetorically or poetically. It is suggested that writers, poets, lawyers, editors, interpreters and speakers are strong in this type of intelligence. Armstrong (1999: 9) defines linguistic intelligence as follows:

> Linguistic intelligence is the intelligence of words. This is the intelligence of the journalist, storyteller, poet, and lawyer…People who are particularly smart in this area can argue, persuade, entertain, or instruct effectively through the spoken word. They often love to play around with the sounds of language through puns, word games, and tongue twisters. Sometimes they're also trivia experts because of their ability to retain facts in their mind. Or alternatively, they're masters of literacy. They read voraciously, can write clearly, and can gain meaning in other ways from the medium of print.

Verbal-linguistic intelligence indicates the ability to use words effectively either orally or in writing (Chan, 2003). In Gardner's view, 'Linguistic intelligence is the kind of ability exhibited in its fullest form, perhaps, by poets' (Gardner, 1993: 8). He adds that verbal intelligence is firstly the ability to use language to convince other individuals. Secondly, it is the capacity to use this tool to help one remember information, rules of a game, directions for finding one's way, understand procedures for operating a new machine. Lastly, verbal intelligence is the ability to explain, giving oral instructions through the word in its written form. Silver *et al* (2000:7) explain verbal linguistic intelligence as follows:

> Verbal-linguistic intelligence manifests itself in the ability to manipulate words for a variety of purposes: debate, persuasion, story-telling, poetry, prose writing, and instruction. People with this intelligence love to play with words and use such devices as puns, metaphors, similes, and the like. Very often people who have strong verbal-linguistic intelligence can read for hours at a time. Their auditory skills tend to be highly developed, and they learn best when they can speak, listen, read, or write.

Armstrong (1999) argues that ultimate arbiter of intelligence in his culture- the IQ test- draws heavily upon verbal elements. Nevertheless, true linguistic intelligence is much more complex than the simple ability to parrot back answers on a standardized test. It has various components such as phonology, syntax, semantics, and pragmatics.

2.3.1.1. Verbal/Linguistic Intelligence in the Classroom

Five strategies that can activate a learner's verbal-linguistic intelligence are given below:

1. Story telling: Story telling is of crucial importance in the classroom. By listing the essential elements, ideas, and then adding some imagination,

colourful characters and a plot in the story, a teacher can help his/her students to visualize and also impress teacher's willingness to be creative.

2. Brainstorming: Brainstorming can be about anything such as suggestions, thoughts, and dreams. This strategy allows all students to participate and reflect their ideas.
3. Tape Recording: Tape recorder offers students to talk aloud about a problem and hear their own pronunciation, intonation, inner feelings and it can also be used to provide information or as a reporter of information.
4. Journal Writing: This involves students in writing about anything they feel and think during the class day or about a specific situation. They can be shared between teachers and students or be kept private.
5. Publishing: Students' writing should be published in a magazine or sent to a real friend so that students will see that others care their writings and write an answer. In this way, they will be highly motivated to continue writing (Arıkan, 2003).

2.3.2. Logical/Mathematical Intelligence

Gardner defines Logical/Mathematical Intelligence as "the capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically" (Gardner, 1999:42). Chan (2003) also underlines the importance of using numbers effectively and reasoning well in logical/mathematical intelligence. Therefore; it is mainly related to problem-solving in a scientific way.

Armstrong (1999) points out that logical-mathematical intelligence is closely connected with numbers and logic. According to Armstrong (1999:9); "Traits of a

logical-mathematically-inclined individual include the ability to reason, sequence, think in terms of cause-and effect, create hypothesis, look for conceptual regularities or numerical patterns, and enjoy a generally rational outlook on life."

This intelligence has been studied by traditional psychologists especially by Jean Piaget. Piaget explained the progression of logical intelligence starting with a child's interactions with objects in the environment; to the transition from concrete objects to abstract symbols, to the manipulation of abstractions and to the consideration of hypothetical statements with their implications. (cited in Arıkan, 2003)

Gardner (1993: 20) states that 'In logical mathematical intelligence the process of problem solving is often remarkably rapid-the successful scientist copes with many variables at once and creates numerous hypotheses that are each evaluated and then accepted or rejected in turn'. As Silver claims:

> Logical-mathematical intelligence is the basis for the hard sciences and all types of mathematics. People who use this intelligence emphasize the rational: they are usually good at finding patterns, establishing cause-and-effect relationships, conducting controlled experiments, and sequencing. Generally, they think in terms of concepts and questions and love to put ideas to the test
>
> (Silver *et al*, 2000: 8)

This intelligence is generally seen in scientists, mathematicians, engineers, accountants, computer programmers and detectives.

2.3.2.1. Logical/Mathematical Intelligence in the Classroom

Armstrong (1994) states that logical-mathematical intelligence process includes categorization, classification, inference, generalization, calculation, and hypotheses testing. With the help of this intelligence people can recognize familiar objects in

pictures and pick them out of pictures containing many other unfamiliar objects. The strategies below may bring out the logical/mathematical intelligence in the learner:

1. Calculations and qualifications: In order to involve logical/mathematical students the teacher should discover opportunities to talk about numbers. It is interesting that several stories and novels make reference to numbers. If we tune into numbers during the nonmathematical subjects, the students will understand that math belongs to real life.
2. Classifications and categorizations: Organizing ideas always makes them easier to remember, discuss and think about it.
3. Socratic Questioning: In this strategy the teacher questions students' point of view. The purpose is to question the rightness or wrongness of their beliefs and to sharpen students' critical thinking.
4. Heuristics: It helps the learners to find their way in a problem. For instance, separating the various parts of the problem, offering a solution, finding a related problem etc.
5. Science Thinking: It aims to look at events from a scientific point of view. To exemplify, students can study ideas which have an effect on history such as how the atomic bomb influenced the outcome of World War II (Arıkan, 2003).

2.3.3. Visual-Spatial Intelligence

Visual/Spatial Intelligence involves "thinking in pictures and images and the ability to perceive, transform, and re-create different aspects of the visual-spatial world" (Armstrong, 1999: 10). Gardner (1999:42) states that this kind of smart "features the potential to recognize and manipulate the patterns of wide space (those used by navigators and pilots) as well as more confined areas (such as those of importance to sculptors, surgeons, chess players, graphic artists or architects)". In other words, visual/spatial intelligence is the ability to be sensitive to form, shape, space, colour and line. It requires the capacity to perceive form different angles, image manipulation, active imagination and visual perception. Painters, sculptures, architects, interior designers, photographers, sailors, surgeons, pilots, carpenters, mechanical engineers and football coaches all have highly developed visual/spatial intelligence.

According to Gardner (1993: 9) "Spatial intelligence is the ability to form a mental model of a spatial world and to be able to manoeuvre and operate using that model". It is the capacity to perceive the visual-spatial world accurately and to perform transformations on those perceptions (Chan, 2003). Another definition is given by Silver:

> Spatial intelligence involves a high capacity for perceiving, creating, and re-creating pictures and images. Photographers, artists, engineers, architects, and sculptors all use spatial intelligence. People who are spatially intelligent are keenly perceptive of even slight visual details; can usually sketch ideas out with graphs, tables, or images; and are often able to convert words or impressions into mental images. They think in images and have a sense of location and direction.
>
> (Silver *et al,* 2000: 8)

Additionally, people who are highly visual-spatial can visualize vividly and express themselves in three-dimensional space with ease. They are also good at drawing and sketching their ideas graphically (Armstrong, 1999).

There is a difference between the spatial intelligence and visual perception, and Gardner suggests that blind people provide an example to this difference. A blind person shapes by an indirect technique; running a hand along the object translates into length of time and movement, which in turn is translated into the size of the object.

2.3.3.1. Visual-Spatial Intelligence in the Classroom

Armstrong (1994:72) suggests five teaching strategies which can activate visual/spatial intelligence:

1. Visualisation: This strategy involves having students close their eyes and see images or pictures of what they have read or studied. Then, they can be asked to draw or talk about it.
2. Colour cues: It is known that highly visual-spatial students are sensitive to colour. This strategy offers teachers to avoid black and white texts, worksheets and black board markers. There are, however, lots of creative ways of putting variety, colour into the classroom setting as a learning tool. For instance, using different colours of board markers, transparencies to emphasize patterns, rules and classifications during instruction; coloured pens on which to write assignments …etc.
3. Picture metaphors: A picture metaphor expresses an idea in a visual image. This strategy is based on establishing connections between what a student

already knows and what is being presented. For instance; if the major organs in the body were animals, which ones would they be?

4. Idea Sketching: this strategy involves building a relationship between drawings and the subject matter. So, the students can be asked to draw rapid drawings that reveal central ideas.
5. Graphic Symbols: It is an undeniable fact that pictures and graphics are extremely important to the understanding of visual/spatial student. Teachers who can support their teaching with drawings and graphic symbols cannot only reach a wider range of learners but also be a model for students who feel shy about sharing their own drawing with the class.

2.3.4. Bodily-Kinaesthetic Intelligence

Gardner (1999:42) defines Bodily/Kinaesthetic Intelligence in his book Intelligence Reframed as mentioned in the following sentences:

> Bodily/Kinaesthetic Intelligence entails the potential of using one's whole body or parts of the body to solve problems or fashion products. Dancers, actors and athletes foreground bodily/kinaesthetic intelligence. However, this form of intelligence is also important for craftspersons, surgeons, bench-top scientists, mechanics and many other technically oriented professionals.

Chan (2003) states that bodily-kinaesthetic intelligence is represents the capacity to use the body to express feelings and ideas, and the facility in using one's hands to produce or transform things. According to Campbell (1996) Bodily/Kinaesthetic Intelligence is the ability to combine body and mind to perfect performance. With the help of automatic and voluntary movements, kinaesthetic intelligence improves and leads to using our bodies in highly differentiated and skilled ways. Gardner (1983:235) points out that "Body is more than simply another machine indistinguishable from the artificial objects of the world. It is also the vessel of the

individual's sense of self, his most personal feelings and aspirations, as well as that entity to which others respond in a special way." This intelligence covers physical skills like mind-body balance, flexibility, coordination, mimetic abilities, speed and strength.

Armstrong (1999: 10) states that "Bodily-kinaesthetic intelligence is the intelligence of the physical self. It includes talent in controlling one's body movements and also in handling objects skilfully". He also states that bodily-kinaesthetic learners can be skilled at sewing, carpentry, or model-building. Alternatively, they may like physical activities such as hiking, dancing, jogging, camping, swimming or boating.

Silver *et al* (2000) claim that bodily-kinaesthetic intelligence is related to the physical self and the manipulation of one's own body. What is more, "Those who are kinaesthetically intelligent can generally handle objects or make precise bodily movements with relative ease. These learners learn best by doing, moving, and acting things out" (Silver *et al*, 2000:8).

Gardner explains why bodily-kinaesthetic is an intelligence in his following words:

> Control of bodily movement is localized in the motor cortex, with each hemisphere dominant or controlling bodily movements on the contra-lateral side. The evaluation of specialized body movements is of obvious advantage to the species, and in humans this adaptation is extended through the use of tools. Body movement undergoes a clearly defined developmental schedule in children. And there is little question of its universality across cultures. Thus it appears that bodily-kinaesthetic "knowledge" satisfies many of the criteria for an intelligence.
>
> (Gardner, 1993: 19)

2.3.4.1. Bodily-Kinaesthetic Intelligence in the Classroom

Armstrong (1994:74) explains why bodily/kinaesthetic intelligence is important in teaching by stating that "Students may leave their textbooks and folders behind when they leave school, but they take their bodies with them wherever they go." Thus, with the help of this intelligence retention and understanding of the students can be increased.

The strategies that can be used to develop bodily/kinaesthetic intelligence in the classroom are:

1. Body answers: This strategy involves responding the teacher's instruction by using bodies such as holding up fingers, blinking one eye instead of raising hands etc.
2. The Classroom Theatre: By dramatizing, role-playing or producing puppet shows students may show what they have learnt in a communicative and enjoyable way.
3. Kinaesthetic Concepts: This requires students to translate information from linguistic or logical symbol system to bodily-kinaesthetic expression such as physical gestures, pantomimes.

2.3.5. Musical Intelligence

Music is certainly one of the oldest art forms, utilizing the human voice and body as natural instruments and means of self expression (Campbell *et al,* 2004). It includes the ability to perceive, discriminate, transform and express musical forms (Chan, 2003). For Gardner;

> Musical intelligence entails skills in the performance, composition and appreciation of musical patterns. In my view, musical intelligence is almost parallel structurally to linguistic intelligence and it makes neither scientific nor logical sense to call one (usually linguistic) an intelligence and the other (usually musical) a talent.

(Gardner, 1999:42)

Music can be regarded as an aural language which consists of three basic components: pitch, rhythm and timbre or the quality of a sound. A highly musically-inclined person is sensitive to this aural language.

According to Armstrong (1994, 1999) musical intelligence is the capacity to perceive, appreciate, transform and express musical forms such as rhythms and melodies. Besides this definition, Armstrong (1999: 10) explains musical intelligence as follows:

> It's the intelligence of a Bach, Beethoven, or Brahms, and also that of a Balinese gamelan player or a Yugoslavian epic singer. Yet musical intelligence also resides in the mind of any individual who has a good ear, can sing in tune, keep time to music, and listen to different musical selections with some degree of discernment.

Therefore, musical intelligence does not need to be the talent of a professional musician. It can also cover a good sense of music, hearing and singing in tune.

Silver *et al* (2000) state that musical intelligence is the ability of not only producing melody and rhythm, but also understanding and appreciating music. Musically intelligent people are good at singing in key, keeping tempo, analyzing musical forms, or creating musical expression. Besides, they are sensitive to all types of nonverbal sound and the rhythms of everyday noise. Singers, composers, conductors, musicians, dancers, disc jockeys have a highly well-developed musical intelligence.

Musical intelligence is taken under the category of multiple intelligences because certain parts of the brain are effective in the production of music. This feature of musical skill is similar to other types of intelligences. Gardner discloses this view in the lines below:

> Evidence suggests that musical skill passes the other tests for an intelligence. For example, certain parts of the brain play important roles in perception and production of music. These areas are characteristically located in the right hemisphere, although musical skill is not as clearly "localized", or located in a specifiable area, as language.

(Gardner, 1993:17)

2.3.5.1. Musical Intelligence in the Classroom

Musical intelligence can be utilized for various purposes such as creating an appropriate learning situation and motivating musically-inclined students. Campbell, B., Campbell, L. and Dickinson (2004:129) state that:

> Because of strong ties to emotions, music in the classroom can promote a positive environment that is conductive to learning. It can intentionally be used to heighten the suspense, sadness, tragedy or joy of stories from great literature and history. Music can even be used for humorous purposes.

As a result of these advantages of musical intelligence in the classroom, it should not be ignored during teaching process. Armstrong (1994:77) gives some strategies to activate musical intelligence in the classroom:

1. Rhythms, Songs, Raps and Chants: This strategy suggests to identify the main point you want to stress in a rhythmic format. Another alternative is that students can be invited to create songs, raps or chants that summarise the subjects or the text they have studied.

2. Discographies: This strategy requires collecting related tapes, compact discs, video cassettes with the subject beforehand. The class can discuss the significance of the songs in relation to the topic of the unit.
3. Supermemory Music: In this strategy it is claimed that students can easily get the information if they listen to the teacher's instructions against musical background.
4. Mood Music: The music which includes sound effects, nature sounds, classical or contemporary pieces helps teachers to create an appropriate mood and positive atmosphere for a lesson.

2.3.6. Interpersonal Intelligence

Gardner proposes two forms of personal intelligence- "not well understood, elusive to study, but immensely important" (Gardner, 2006). One of these is interpersonal intelligence. Interpersonal intelligence is the capacity to understand other people; that is, what motivates them, how they work, how to work cooperatively with people. Interpersonally intelligent people can be successful salespeople, politicians, teachers, clinicians, and religious leaders (Gardner, 1993; Gardner, 2006).

Silver *et al* (2000) define the characteristics of interpersonally intelligent people as working with others and being sensitive to slight variations in people's moods, attitudes, and desires. Besides being friendly and outgoing, interpersonal people are good at reacting to the temperaments of others. They are successful team players and managers and they can learn very well by relating to other people. In Armstrong's (1999:11) words;

> Interpersonal intelligence is the ability to understand and work with other people. In particular, it requires a capacity to perceive and be responsive to the moods, temperaments, intentions, and desires of others. An interpersonally intelligent individual may be very compassionate and socially responsible like Mahatma Gandhi, or manipulative and cunning like Machiavelli. But they have the ability to get inside the skin of another person and view the world from that individual's perspective. As such they make wonderful networkers, negotiators, and teachers.

According to Gardner "interpersonal intelligence denotes a person's capacity to understand the intentions, motivations and desires of other people and consequently to work effectively with others."(1999:43). Campbell *et al* (2004), like Gardner, claim that interpersonal intelligence enables a person to understand and communicate with other people. This intelligence can also be defined as the capacity to understand how others' moods, feelings, intentions and motivations work.

Empirical research proves the existence of interpersonal intelligence. Gardner (1993:23) argues that "Damage in the frontal lobes can cause profound personality changes while leaving other forms of problem solving unharmed- a person is not the same person after such an injury".

Campbell *et al* (2004:154) define the characteristics of people with high level of interpersonal intelligence:

> This intelligent is evident in people with polished social skills such as political or religious leaders, skilled parents, teachers, therapists, or counsellors. Interpersonally skilled students enjoy interacting with others of similar or diverse ages. With a capacity to influence their peers, they often excel at group work, team efforts, and collaborative projects. Some are sensitive to the feelings of others, curious about multicultural variations in lifestyles, or interested in the social relevance of classroom studies. Interpersonal intelligence is also exhibited through humour whenever students make their friends and teachers laugh.

In a study carried out by Chan (2003) it was found out that secondary school teachers in the sample group had highest scores in interpersonal intelligence which is consistent with the suggestion of MI theory.

2.3.6.1. Interpersonal Intelligence in the Classroom

It is argued that today, lots of students are cut off close relationships and unfortunately, schools may prefer to overlook students' social and emotional needs (Campbell, 1996). As a result, teachers should focus on this intelligence type more than ever and the following strategies can be helpful to this aim:

1. Peer-Sharing: The aim of this strategy is to encourage students to share their knowledge with different members of the class.
2. People Sculptures: This strategy enables students to represent things that were represented only in their students' book or lectures; in theoretical contexts. Students have a chance to place the information in its social setting.
3. Cooperative Groups: This strategy involves studying in small groups of three to eight members. The group can work collectively in which each member contributes ideas and shares the responsibility. This is appropriate for MI teaching because students can share their responsibilities according to their dominant intelligences.
4. Simulations: It involves a group of students coming together to create an "as-if" environment. The teacher can provide a scenario and costumes of that time and ask the students to act out the scenario.

(Armstrong, 1994:79)

2.3.7. Intrapersonal Intelligence

Oliver Wendell Holmes states that "What lies behind us and what lies before us are tiny matters compared to what lies within us" (cited in Campbell et al, 2004: 185). This citation gives us the core of intrapersonal intelligence; the strengths we rely on to understand ourselves and other people, to imagine, plan and solve problems are placed in our inner world. Intrapersonal intelligence involves qualities such as motivation, determination, ethics, integrity, empathy, and altruism. On the condition that a person lacks these, it would be hard to live a happy life. Gardner argues that "Intrapersonal ability is based on the knowledge of the internal aspects of a person; access to one's own feeling life, one's range of emotions, the capacity to effect discriminations among these emotions and to label them and to draw upon them as a means of understanding and guiding one's own behaviour" (Gardner, 1993:25). It is a correlative ability, which is turned inward, to form accurate and veridical model of oneself and to be able to use that model to live effectively (Gardner 1993; Gardner, 2006).

Silver et al (2000:8) state that "Intrapersonal intelligence is the ability to gain access to one's own feelings and emotional states. Intrapersonally intelligent people usually choose to work on their own, as they use and trust their self-understanding to guide them." Another definition of intrapersonal intelligence is done by Chan (2003) as the capacity to act adaptively relying on self-knowledge.

According to Armstrong (1999) a person with this smart knows her own feelings very well and discriminate between many different kinds of inner emotional states, and uses her self-understanding to enrich and guide her life. Intrapersonally-

smart individuals include counsellors, theologians, and self-employed businesspeople. These people are generally good at mediation, introspection and other forms of soul-searching. Besides, they can be independent, highly goal-directed, and intensely self-disciplined. However, they are generally in a class of their own and they prefer to work by themselves rather than working in a group (Armstrong, 1999).

Green and Taner (2005) state that intrapersonal learners enjoy working alone and are talented at reflecting on their experiences and feelings, and learning from these reflections.

2.3.7.1. Intrapersonal Intelligence in the Classroom

Intrapersonal learners are inclined to work by themselves. Thus, in the classroom the teacher should provide activities that will give intrapersonal this chance. Armstrong (1994:82) gives some strategies to help teachers to develop their students' intrapersonal intelligence:

1. One-Minute Reflection Periods: After a presentation of a new structure or a new topic, one minute reflection periods offer students time to think about it to build a connection between the new information and their own lives. Silence or background thinking music is offered as the best environment for reflections.
2. Personal Connections: The aim of this strategy is to make connections between what is being taught and the students' lives. Students should use the given information in one way or another in real life. For instance; for a lesson on world geography, they can find the countries they have studied on the map.

3. Choice Time: It includes offering opportunities for students to make decisions about their learning experiences. They can either choose to work on the problems on a specific page in their students' book or they can choose an open ended project.
4. Feeling-Toned Moments: As it is known, all human beings have an emotional brain consisting subcortical structures; so this strategy suggests educators to teach with feeling in their classrooms. For instance, there should be moments where students laugh, feel angry or get excited.
5. Goal-Setting Sessions: One of the most significant peculiarities of intrapersonal learners is their capacity to set realistic goals for themselves. Educators should allow time everyday for students to set short-term or long-term goals and may ask them to present the progress at the end of the term or year.

2.3.8. Naturalist Intelligence

Gardner explains this intelligence type as the ability to recognise and be sensitive to all variety of flora and fauna**.** He suggests that "the very term naturalist combines a description of the core ability with a characterization of a role that many cultures value. A naturalist demonstrates expertise in the recognition and classification of the numerous species-the flora and fauna-of his or her environment."(1999:48) In this way, Gardner hypothesized that the naturalist deserved recognition as a distinct intelligence.

Silver et al (2000) point out that naturalist intelligence is seen in people highly devoted to the natural world of plants and animals. People with naturalist

smart, like natural geography and natural object like rocks, clouds and stars. Furthermore, they tend to notice patterns, features, and anomalies in the ecological settings they encounter.

The naturalistic intelligence can be defined as the ability to recognise and classify plants, minerals and animals. In other words, it is the capacity to observe patterns in nature, identify, and classify objects, and understand natural and human made systems (Chan, 2003). Naturalist people classify, collect or read about things from their environment. Furthermore, they are interested in the subjects such as biology, zoology, geology, meteorology or astronomy. Campbell *et al* (2004:221,222) suggest that:

> We are all born as naturalists eager to explore the world through our senses. With the inherent faculties of the human mind and body, we experience our environments through our sensory perceptions, through active observation, and by reflecting on and questioning our perceptions. It is likely that a person with well developed naturalist intelligence Explores human and natural environments with interest and enthusiasm.
>
> 1. Seeks out opportunities to observe, to identify, interact with, or care for objects, plants, or animals.
> 2. Categorizes or classifies objects according to their characteristics**.**
> 3. Recognizes patterns among members of a species or classes of objects.
> 4. Pursues learning about life cycles of flora and fauna or the production of human made objects.
> 5. Wants to understand how things work.

Naturalist Intelligence is well-developed in scientists, zoologists, biologists, astronauts and scouts.

2.3.8.1. Naturalist Intelligence in the Classroom

Berman (1998) states that naturalist intelligence can be satisfied in the ELT classroom by noticing relationships, categorising and classifying. The observation of plants, animals and collection of rocks would not seem directly relevant to the ELT

classroom; however, in order to create an atmosphere conducive to the students' feeling, the natural sounds can be used in the background (Berman, 1998). According to Göğebakan (2003:28) lesson plans for naturalist intelligence may include activities such as:

1. Using outdoors as a classroom for inspiration for creating a play, concert, dance or visual art work
2. Learning about and understanding animals and incorporating them into an art work or production.
3. Listening to animal sounds and movements and creating works of art.
4. Observing and using plants to create and interpret texture and form in an art work.

Çakır (2003) suggests the following naturalist exercises and materials used in the EFL classroom: labelling and mounting specimens from nature, organizing patterns and collections, gardening and observing nature, collecting objects from the natural world, grouping and classifying of items in nature, music related to nature, field studies, measurement of items, reading articles on biology, zoology, geology, hiking, experiential learning, writing poems and songs.

2.3.9. Existential Intelligence

In recent years another intelligence type, in addition to above mentioned eight intelligences, "existential intelligence" is mentioned in this classification. Existential intelligence is defined as the ability to be sensitive to conceptualizing or tackling deeper or larger questions about human existence, such as "What is the meaning of life?", "Why are we born?", "Why do we die?", "What is consciousness?", and so

on. However, Gardner's theory depends upon careful examination of the available data and scientific evidence. Therefore, at this point, Gardner (1999:54) states that "Despite the attractiveness of a ninth intelligence, I am not adding existential intelligence to the list. I find the phenomenon perplexing enough and the distance from the other intelligences vast enough to dictate prudence-at least for now. At most, I am willing, Fellini-style, to joke about 8-1/2 intelligences".

2.3.10. The Role of Multiple Intelligences Theory in Education

The relationship between education and multiple intelligences theory will be focused on under this title. Besides, this part looks at multiple intelligences theory in different learning situations. MI theory has motivated educators and parents to view children as equal and regardless of an intelligence exam score or of academic areas for which they develop competence (Stanford, P. 2003). Therefore, Gardner's theory is regarded as a philosophy of education, not a set program of fixed techniques and strategies (Armstrong, 1994). Due to this characteristic of MI theory, educators have been able to adapt its principles to any number of educational settings (Stanford, 2003).

As a matter of fact, doing MI should not be an educational goal. Educational goals ought to reflect one's own values and these are not a simple and direct result of a scientific theory. On the other hand, MI can be very helpful if one reflects on one's educational values and states one's educational goals (Gardner, 2006). Therefore, the priority should be given to the individual's educational aims.

Gardner (2006) states that what he is describing are a tall order, which can even be called utopian. There is a serious risk of premature billeting about this

programme, for instance, people may say “Well, Johnny is four, he seems to be musical, so we are going to drop everything else and send him to Juilliard” (Gardner, 2006: 52). On the contrary, it is argued that early identification of strengths can be very helpful in showing what kind of experiences children might benefit from, but early identification of weaknesses can be equally important. Only if a weakness is identified it can be attended before it is too late and alternative teaching ways can be developed (Gardner, 2006).

Gardner (2006) believes that in American society they suffer from three biases that are named as “Westist, Testist, Bestist”. Westist includes putting some Western cultural values on a pedestal. For instance, logical thinking and rationality are important; however, they are not the only virtues. Testist implies a bias toward focusing upon testable human approaches and abilities. It sometimes seems that if it cannot be tested it is not worth paying attention to. Thus, Gardner (2006) insists on a much broader and humane assessment and that psychologists should spend less time ranking people and more time trying to help them. Bestist generally implies the best ones with logical-mathematical intelligence, which is dangerous.

Gardner (2006) names three positive ways in which MI can be and has been used in schools.

1. <u>The cultivation of desired end states.</u> Schools ought to cultivate skills and capacities that are valued in the community. Some of these desired roles are likely to highlight specific intelligences. If the community thinks that children should be able to perform on a musical instrument, the cultivation of musical intelligence becomes a value of the school.

2. Approaching a concept, subject matter, or discipline in a variety of ways. Almost every topic can be approached in a number of ways, ranging from telling of a story, through a formal argument, to an artistic exploration. If a topic is approached from a number of perspectives, three desirable results emerge. Firstly, since children do not learn in the same way, more children will be reached. Secondly, students guarantee a sense of what it is like to be an expert when they observe that a teacher can represent knowledge in multiple ways. Thirdly, because understanding can be indicated in more than one way, a pluralistic approach opens up the possibility that students can demonstrate their new understandings in comfortable ways. Performance-based examinations and exhibitions are suitable for the foregrounding of a student's MI.
3. The personalization of education. One of the main reasons of why MI theory attracted the educational community is its proposition: we are not all the same; therefore, we should not be educated so. MI theory suggests that education works most effectively if the differences in mental processes and strengths are considered rather than denied. Gardner (2006) looks for an evidence of personalization whenever he visits an MI school. He would be happy to send his children to a school with the following features:

> Differences among youngsters are taken seriously; knowledge about differences is shared with children and parents; children gradually assume responsibility for their own learning; and materials are worth knowing are presented in ways that afford each child the maximum opportunity to master those materials and to show others (and themselves) what they have learned and understood.
>
> (Gardner, 2006: 62)

Barrington (2004) argues that despite the fact that MI has been popular since 1980s and has been actively used in primary and secondary schools, it has received little interest in higher education except some debates on whether or not the theory can be applied to students in tertiary (any post secondary) education. In his paper he looks for the reasons of this and suggests that because universities are undergoing rapid change, MI might help the realisation of some demands.

Green and Tanner (2005) investigated the applications of MI theory to online training of English language teachers. They concluded that MI theory is a helpful tool for evaluating an online course and designing tasks around MI theory encourages learners to engage and learn better.

Another study related to MI theory was carried out by O'Brien and Burnett (2000). The study presented a three-stage framework, which was based on MI theory, in the counselling of children. The results indicated that the use of MI theory when combined with the three-stage model of counselling may have a place in daily practice, especially in the counselling of young children.

Stanford (2003) presented three aspects of MI theory; namely, teaching strategies, curricular adaptations, and student assessment, relative to the infusion of the theory in general education classrooms to include students with mild to moderate disabilities. Stanford suggests teachers to use a broad range of teaching strategies because each learner is different from another and any strategy which works in a group of learners may be unsuccessful in another group. The study also indicates changing teaching strategies and curricula without changing assessment methods will be insufficient. MI theory offers several assessment strategies which include logs and

journals, graphic organizers, observational checklists, video samples, rubrics, miscue analyses, and portfolios (Stanford, 2003).

Another issue that has to be underlined in the role of MI theory in education is the fact that teachers also have unique profiles of intelligences. Teachers can be restricted by their own intelligence types and choose their most comfortable and accustomed ways of teaching (Chan, 2003). Thus it is important for teachers to be aware of their own intelligence profiles and know their strengths and weaknesses. Only in this way they can apply MI theory effectively in their classrooms. Chan (2003) carried out a study which assessed 96 Chinese secondary school teachers in Hong Kong and investigated the consistency between these teachers' multiple intelligences and their areas of teaching. He found out that teachers typically reported relative strengths in interpersonal and intrapersonal intelligences and weaknesses in visual-spatial and bodily-kinaesthetic intelligences. These results may be due to teachers' weaknesses in general or it may indicate the overemphasis of the Hong Kong school system on academic achievement, and underemphasize on arts, drama and physical activities. Therefore, Chan (2003) suggests that teacher education programmes should be more balanced and team teaching should be established in MI approach. Nevertheless, language teachers had highest scores in verbal-linguistic intelligence; math teachers had highest scores in logical-mathematical intelligence and art/music/sport teachers had highest scores in musical, visual-spatial and bodily-kinaesthetic intelligences. The parallelism between teachers' intelligences and their areas of responsibilities supported Gardner's theory.

According to Gardner (2006) the aim of school ought to be to develop intelligences and to assist people reach both vocational and avocational goals that are

appropriate to their intelligence profiles. If people are helped in this way they will be more engaged and competent; thus, they will feel more enthusiastic to serve society in a constructive way. The design of Gardner's ideal school is based on two assumptions:

1. Not all people have the same interests and abilities; therefore, we do not learn in the same way.
2. Nobody can learn everything there is to learn. People have to make a choice about which subject they will learn. (Gardner, 2006).

Gardner (2006) suggests a new set of roles for educators that can realize the vision of individual-centred school. These educator roles are explained below;

1. Assessment specialists: their job is to understand as sensitively as possible the abilities and interests of the students in a school.
2. Student curriculum broker: their job is to help match students' profiles, goals, and interests to particular curricula and to particular styles of learning.
3. School-curriculum broker: they will match students to learning opportunities in the wider community. They will find situations in the community, especially options not available in the school, for children with unusual cognitive profiles.

Researchers should work on the question of how the intelligences can best be mobilized to achieve specific pedagogical goals. Gardner claims that well-choreographed design experiments can display the kinds of educational enterprise where MI is suitable and where it is not. To exemplify, Gardner defends that MI approaches are helpful when a student is trying to master a difficult new concept such as gravity in physics or the Zeitgeist in history (Gardner, 2006).

Several studies indicate that multiple intelligences theory has positive effects on achievement, attitudes and motivation of learners. In this way, they provide evidence for the effectiveness of Gardner's theory in education. One of these studies, carried out by Baş (2010), investigates the impacts of a multiple intelligences-based teaching method on students' academic achievement and their attitudes towards English lesson. The study which was conducted in 2008-2009 education-instruction year in two secondary schools in Konya indicated that the multiple intelligences approach activities have significantly more positive effect on students' English achievement.

Likewise, a second teacher action research done by Haley (2004) aimed to investigate the use of MI theory in shaping and informing instructional strategies, curricula development, and alternative forms of assessment with second language learners. Haley's assumption was that on the basis of what they know about the educational needs of second language learners, all teachers must be better equipped to widen their pedagogical repertoire to accommodate linguistically, culturally, and cognitively diverse students. Outcomes of the study confirmed that students obtained greater achievement rates when the MI theory was implemented.

In another study which was carried out by Madkour (2009) the lived experiences of 20 qualified teachers who used the multiple intelligences theory for improving the teaching strategies of English as a Second Language (ESL) at university level were investigated. The results of the study revealed the significance of multiple intelligences to language acquisition. Therefore, Madkour suggested training strategies for ESL teachers to use multiple intelligences in order to improve students' second language acquisition.

Leeper (1996) carried out a case study in which she examined four elementary teachers in grades three, four, five and general music who began to use MI in their classes, following the district's staff development program. Classroom observations, teacher and administrator interviews, journal entries and an examination of the students' papers formed the data of this study. At the end of the process, students began to understand more complex information and were more engaged in their learning because they used more activities which triggered the multiple intelligences.

Oran (2006) conducted a study to understand students' perceptions of educational environment in relation to students' perceptions of learning, teacher, classroom environment, social self-concept, and academic self-concept in an EFL classroom where Multiple Intelligences Theory is used. The results indicated that Multiple Intelligences might encourage students to perceive themselves more successful in learning English as a foreign language.

Kuyumcu (2006) investigated whether drama activities of a play and multiple intelligences activities can be combined in order to be used in English language classes. She found out that since students actively participate in learning experiences, they may develop increased responsibility, self-direction, and independence in the classroom thanks to MI theory.

Another study related to the effects of multiple intelligences theory in English language teaching classes is conducted by Şen (2006). The aim of the study was finding the effects multiple intelligences theory on students' motivation, self-efficacy, self-esteem and multiple intelligences. Related inventories were administered to 34 students in Başkent University, English Language Teaching

Department before and after the treatment. The results revealed that MI activities created positive change in intrinsic, extrinsic motivation, self-efficacy, persistence and self-esteem.

Bellflower (2008) inquired the impact of multiple intelligences theory on the students' learning in a 5th grade social studies classroom. During the 12-week case study, the control group received instruction on the Civil War using direct, traditional instruction, and the treatment group received instruction using multiple intelligence instruction. The statistical analysis showed that multiple intelligence instruction had a positive effect on students' attitudes toward the multiple intelligence lessons and on their achievement.

The role of multiple intelligences theory in education has been an attractive issue since Gardner first mentioned this theory in 1983. Numerous researchers and educators worked on the application of MI and they questioned its effectiveness. Thus, this theory influenced educational theory and practices, specifically in elementary education (Çakır, 2003). All in all, multiple intelligences theory can be a solution to extricate the learners from the monotony of the traditional teaching methods.

The concept "attitude" constitutes another important part of this study besides achievement. Therefore, in the following section, it will be defined in detail.

2.4. Attitude

There have been numerous definitions of the term “attitude”. In this part some of the striking examples of these definitions and some characteristics of “attitude” will be given to shed a light on this important concept.

While Droba regards attitude as a trait of the individual to act for or against a particular object, Allport explains it as a mental and neural state of readiness, which is shaped by past experience, having a directive or dynamic effect upon the individual’s response to all objects and situations with which it is related (cited in Lindzey and Aronson, 1985). Attitude is defined by Azjen (cited in Chambers, 1999) as the individual’s positive or negative evaluation of performing a specific behaviour. With a similar behavioural perspective, Warren, as cited in Lindzey and Aronson (1985), argues that attitude is the specific mental disposition toward an incoming experience, whereby that experience is altered; or, a condition of readiness for a certain type of activity.

The above mentioned definitions emphasized the relationship between attitude and behaviour. However, Newcomb, Turner, and Converse (cited in Lindzey and Aranson, 1985) introduced a completely nonbehavioural approach in which attitude is described as a state of readiness for motive arousal.

According to Gardner (cited in Chambers, 1999), attitude is an evaluative response to some referent or attitude object, inferred on the basis of the individual’s beliefs or opinions about the referent. Attitudes are regarded as cognitive and affective orientations towards an object, person, idea, and a situation (Reed, Drjvers and Kirschner: 2009).

Lindzey and Aranson (1985) who define attitude as the most striking and indispensable concept in contemporary American social psychology state that it is the only term that is seen in experimental and theoretical literature so frequently. They claim that it is a concept which avoids the commitments of both the instinct theory and environmentalism because it can combine instinct and habit. Lindzey and Aranson (1985) add attitude is a term which is elastic enough to apply both to the dispositions of single individuals or to wide range of culture patterns.

Lett (cited in Rosenbuch, 1985) defines attitude as the amount of positive or negative influence that one holds toward a specific social object or class of social objects. For Thomas and Znanniecki (cited in Lindzey and Aronson, 1985), the study of attitudes should be the field of social psychology since attitudes are individual mental processes which determine both the actual and potential responses of each person in the social world. These definitions underline the social part of attitudes. Attitudes are closely related to values and they are affected by social factors.

Katz (Lindzey and Aronson, 1985) portrays attitude as susceptibility of a person to evaluate some symbol or aspect of his world in either a favourable or unfavourable way. Attitudes involve the affective core of liking or disliking and the cognitive elements which describe the effect of the attitude, its characteristics, and its relation to other objects.

Henerson, Morris and Fitz-Gibbon (1987) use “attitude” to describe all the objectives they want to measure that have to do with feelings, beliefs and values. They claim that attitude is a device that serves the human need to see order and consistency in what individuals think, say and do. In this way, if certain behaviours

are given, some predictions can be made about future behaviours. Azjen and Fishbein (cited in Reed, *et.al:* 2009) also agree on the effect of attitudes on an individual's behaviour in the presence of attitude objects in predictable ways. Therefore, attitudes may be helpful for understanding the following acts of a person. On the other hand, Fiske and Taylor (cited in Reed *et.el*.: 2009) assert that these predictions may not be correct all the time and they highlight the fact that exhibited behaviours will correspond with predicted ones much more if attitudes are stable and strongly embedded in the individual's belief system, concern an area which the individual knows. Thus, predicting behaviours with the help of attitudes is only possible under certain conditions and this does not guarantee the correctness of the prediction.

When the nature of attitudes is taken into account, they are quite permanent and they can be learnt (Yavuz, 2004). Attitude can be defined as a learned predisposition to respond in a continuously favourable or unfavourable manner with respect to a given object (cited in Van Els et al, 1987). The concept "attitude" should be brought into application only to the affective component, which is the item measured in most attitude scales (Van Els et al., 1987).

Gardner (cited in Spolsky, 1989) puts forth that there are two kinds of attitude; namely, attitudes to the people who speak the target language and attitudes to the practical use to which the learner assumes he or she can put the language being learned. These two kinds of attitudes have different effects: The first set of attitudes is closely connected to achievement, the second displays a more variable set of relationships. Attitudes do not have direct influence on learning but they lead to motivation which does (cited in Spolsky, 1989).

Numerous researchers tried to define and construct the concept attitude, and most of them agreed on a tripartite model, which suggests that attitudes can be decomposed into three main components; cognitive, affective and behavioural (Vandewaetere and Desmet, 2009). The cognitive component refers to beliefs or perceptions about objects or situations which are related to the attitude. The affective component indicates the emotions that arise about the cognitive element and the appraisal of these feelings. Lastly, the evaluation of the affect is translated into a behavioural component that causes certain attitudes to prompt learners for adopting particular behaviours (Vandewaetere and Desmet, 2009). Even though the three components are generally closely related, there are some situations in which these components become inconsistent. To exemplify, a person who had bad experiences with American people in the past may have a negative affective component (feels hostile towards American people), but he might realize that he has to spend time with those people because of his profession, therefore, has positive behavioural component (Triandis,1971).

In the following part the reasons and the ways to measure attitudes will be analyzed.

2.4.1. The Measurement of Attitudes

We need to measure attitudes for a variety of reasons; to compare and contrast individuals or groups, to learn changes within the individual or group and to record attitude changes within the individual. The researcher directs some questions or gets the individual's response to certain statements, with the assumption that the individual is honest about his/her feelings and beliefs (Herriot, 1982; Kiesler, 1969). Since we cannot directly observe attitudes, we should analyze the behaviours.

Henerson *et. al* (1987) state that an attitude is not something like the cells of a person's skin or measure the rate of her heartbeat which can be observed easily and add that only words or actions can indicate the attitudes of a person. Therefore, the initial step of attitude measurement is to form a universe of the necessary behaviour and find the representatives for that group. Those representatives will form the sample group of the measurement and their attitudes will be understood by their answers to the scale questions (Herriot, 1982; Kiesler, 1969).

There is a wide range of attitude measurement devices. However, the important thing is to find the appropriate tool for the measurement of attitudes. In an attitude scale there may be irrelevant questions with the attitude that will be measured or that attitude may require open-ended questions for the measurement. The researcher should consider all these factors. Herriot (1982) states that there are more frequently utilized standardized statements which directly refer to the attitude. Even though there is a great variety of measurement tools such as interviews, surveys, stimulated recalls, open-ended questions, "Likert Type Scale" gained the greatest attention from researchers who desire to mesure attitudes directly (Kiesler, 1969).

There are some limitations of attitude measurement tools such as questionnaires and attitude rating scales. First of all, in the measurement of attitudes we must rely on inferences because we cannot measure attitudes directly. Secondly, behaviours, beliefs and feelings can be different and they may not match all the time. Lastly, measurement instruments might not reflect the real thoughts of the participant. It is difficult to understand whether the subject expresses his real opinion

without the pressure of the society. Therefore, attitude measurements should be valid and reliable enough to exclude dishonest individuals (Henerson et al, 1987).

General attitude foreign language attitude questionnaires adopt the tripartite model which asserts that attitudes may be divided into three components; namely, cognitive, affective and behavioural (Vandewaetere and Desmet, 2009). However, this three-component model has never been validated statistically. The BALLI (Beliefs About Language Learning Inventory), a questionnaire which was developed by Horwitz in 1988, was based on the five central areas; foreign language aptitude, the difficulty of language learning, the nature of language learning, effective learning, communication strategies and motivation. Another attitude scale is AMTB (Attitude/Motivation Test Battery), which is developed by Gardner in 1985, is composed of 19 subtests, dealing with factors like anxiety, parental encouragement, desire to learn, motivation and teacher influence (Vandewaetere and Desmet, 2009).

This dissertation also investigates the effects of multiple intelligences activities on the retention level of the students. In the section below, "memory" which ensures the retention of the learned items will be analyzed.

2.5. Memory

Memory is defined several ways. Stevick (1996) regarded as a product, a place, a power or as a process:

- Memory as product: What we remember is memory,
- Memory as a place: Where we put our knowledge,
- Memory as a power: Memory can mean the properties of our nervous system that give us that product
- Memory as a process: Memory is treated here as an action or an actor.

Memory is closely related to language, which is also a debatable topic among researchers:

> Language is the special treasure of our human race. It is a mystery linking one entire person to other entire persons over space and time. To learn a second language is to move from one mystery to another… But language, mystery that it is, rides on a deeper, broader mystery called "memory".

(Stevick, 1996:3)

There are some processes related to memory such as storage, encoding and retrieval. Storage is defined as the process of placing new information in memory. Encoding is the modification process of new information while people store it in memory. Encoding can be in three forms, namely; changing the form, adding to new information using one's existing knowledge and simplifying information. The last term in memory theory is retrieval that refers to the process by which people find information in their memory (Ormrod, 1999).

2.5.1. Types of Memory

The most frequent classification in memory is between "short-term" and "long-term memory"

and it is related to the physics and chemistry. The physical side of memory is described by Stevick (1996:24) as follows:

> In one series of experiments, individual monkeys were placed in an apparatus that limited their freedom of movement. First, they learned that an item of food might appear in either of two windows, and that they could get the food by pressing a lever under the window. In one experiment, a monkey was shown where the food was, and then a blind was lowered. Between the time it saw the food and the time when it was allowed to press the levers, the monkey had to remember where the food was. Electrodes inserted into the brains of the animals showed that the greatest electrical activity among the prefrontal neurons took place at the transition from the cue period to the delay…the same period

> during which electrical shocks applied to the brain cortex are most likely to disrupt memory.

In other words at least one component of the physical side of memory is electrical. Some of the research, on the other hand, show that memory has biochemical entities. In the language classroom it can be helpful to know the chemical processes and delay or prevent the consolidation of memories. Drugs, anaesthetics, or lowered body temperature can affect the memory.

The physical side of the memory may take two forms; an original and short-lived electrically disruptible storage is converted to a longer lasting nonelectrical storage pattern, which is more durable. For instance, the words at the end of a wordlist are among the ones most likely to be recalled if the subject is allowed to begin recall immediately. If there is some interruption this does not happen. The name of this phenomenon is the recency effect. The bend in the recall curve at about 15 to 18 seconds supports the idea of distinction, particularly for verbal material, between two discrete kinds of memory (Stevick, 1996).

Another classification is made between working and long-term memory. The active processing of information takes place in working memory. Working memory decides what information will be attended to in the sensory register, keeps that information for a longer period of time. This may be associated with short-term memory. Differing from the sensory register, working memory has a very limited capacity for storing information. Therefore, chunking, which means the process of combining pieces of information, increases the amount of information that working memory can hold. It seems that much of the information in working memory is stored in auditory form, regardless of the form in which information is received. The

duration of working memory is short, namely; approximately between 5 and 20 seconds (Ormrod, 1999).

Long-term memory, on the other hand, retains information for a relatively long period of time and its capacity is unlimited. If more information is stored in long-term memory it will be easier to store additional information there. Information is seldom stored in long-term memory as it was received. Furthermore, information kept in long-term memory is organized: related pieces of information are likely to be stored together. Theorists have two different views related to the duration of information in long-term memory. While some claim that information remains there permanently, others believe that information might disappear. As a matter of fact, some information can remain in long-term memory for long periods, however, not all information stored there remains permanently. Some information may be stored easily; nevertheless, most information must be consciously processed before it is stored.

CHAPTER 3

METHODOLOGY

The research model, the sample and the universe of the study, data collecting instruments used in the research, the analysis of the data gathered by means of measurement instruments and the statistical process have been described and examined in this chapter of the study.

This study aims to investigate the effects of Multiple Intelligences activities on the learning of vocabulary items. The achievement scores of the subjects in both control and experimental groups are compared in order to reveal whether MI activities are effective on the learning of vocabulary items. Accordingly, the main research question posed for this study intends to find out the most effective way in vocabulary teaching between teaching with MI activities and traditional teaching.

The second important research question asked in this study is if MI activities have an effect on the attitudes of the subjects towards English.

Besides investigating the effects of MI activities on the vocabulary achievement and attitudes of learners towards English, this experimental design study aims to find out the retention degree of the learned vocabulary items. For this purpose, the achievement test was applied to both groups three weeks after the treatment is over.

Although it is not related to any research question, this study investigated the multiple intelligences types that are dominant in the control and experimental groups in order to learn more about the participants of the study.

3.1. Target Linguistic Component

The importance of vocabulary teaching is accepted by most of the SLA teachers and researchers. Without words a learner cannot be expected to understand and produce utterances. The richer vocabulary a learner has the more successful he will be in second language acquisition. At this point, it can be argued that one of the indispensable parts of language learning is vocabulary items. Only in this way would there be effective language learning. Therefore, in this study the target linguistic form is chosen among the vocabulary items which are in the syllabus of the 10th grade learners in Anatolian High School.

3.2. The Present Study

3.2.1. The Participants

The participants of the study were chosen among 10th grade students of Söke Cumhuriyet Anatolian High School in the spring term of 2007-2008 academic years. The subjects are students who had had 10 hours of English lessons per week in the previous academic year. In the year the study was carried out, they had 4 hours of English lessons in a week. At the time of this educational treatment they were in the beginnings of the second semester.

The selection of the participants was determined on the basis of a multiple-choice recognition test of the chosen target linguistic component. The students who showed any sign of knowledge of the target vocabulary items would have been excluded from the study. Depending on the results of the recognition test, the number of the participants was decided and according to the number, these students were divided into two groups using a stratified random assignment procedure in order to form the experimental and control groups.

After the recognition test, the number of the participants which was 56 remained the same in both groups since the students did not score over 50. These 56 students were divided into two groups in order to form control and experimental groups. Thus, while the universe of the research is the students of Söke Cumhuriyet Anatolian High School in the spring term of 2007-2008 academic year, the group of participants is composed of the sophomores of two Turkish-Mathematics department classes in Söke Cumhuriyet Anatolian High School. The age of the participants in the sample group ranged between 15 and 16. The statistics related to number of participants in the control and the experimental groups are indicated in Table 3.1.

Table 3.1. Number of Participants

CLASSES	n
CONTROL	28
EXPERIMENTAL	28
TOTAL	56

Table 3.1. both control and experimental groups have 28 students. They are equal with regard to the participants they have. In total the sample group has 56 students.

In determining the control and experimental groups the gender of the students was not taken into account. The distribution of the students included in the sample group with regard to the gender of the students is shown in Table 3.2.

Table 3.2.The Distribution of the Students in the Sample with regard to Gender

GROUPS	FEMALE	MALE	TOTAL
CONTROL	16	12	28
EXPERIMENTAL	15	13	28
TOTAL	31	25	56
%	55.4	44.6	100.0

The distribution of the students in the control and experimental groups with regard to gender is given in Table 3.2. In control group there are 16 female students and in the experimental group there are 15 female students. When the male students are counted, it is observed that control group has 12 and experimental group has 13 male students. The difference between the number of the girls in the control and experimental group is very small. Likewise, the difference between the number of the male students in the control and experimental group is just one student. However, the difference between the number of the male students and female students in the sample group is larger; that is to say, girls more than boys with a six-student-difference. Total number of the female students in both groups is 34 and the number of the male students in the experimental group is 25. In other words, while 55.4 % of the students are female in the sample group, 44.6 % of them are male. In the following table the numbers of the control group students are given with the percentage of their gender.

Table 3.3. The Distribution and Percentages of the Students in the Sample Group with regard to Gender

	CONTROL		EXPERIMENTAL	
GENDER	n	%	n	%
FEMALE	16	57.1	15	53.6
MALE	12	42.9	13	46.4
TOTAL	28	100.0	28	100.0

In table 3.3 it is observed that 57.1 % of the students in the control group are female, 42.9 % of them are male. The number of the female students in the control group is 4 more than that of the male students in the same group. In the experimental group the number of the female students is two more than the number of the male students. Thus, 53.6 % of the students in the experimental group are female while 46.4 % of them are male.

3.2.1.1. Findings Related to Students' Multiple Intelligences Types

In this section the findings related to the multiple intelligences types of the participants will be analyzed. These findings are important in order to understand the dominant intelligence types in the sample group since this study is related to the effectiveness of multiple intelligences activities. In table 3.4., the descriptive statistics of the sample group students' multiple intelligence types are given. The distribution of the students in the control and experimental groups with regard to the arithmetic means of their multiple intelligences types is given in this table.

Table 3.4. indicates that the mean scores of the control group in the multiple intelligences inventory, from the highest to the lowest scores, are as follows; verbal-linguistic ($\overline{X}$=18.32), logical-mathematical ($\overline{X}$=17.85), bodily-kinaesthetic ($\overline{X}$=16.17), intrapersonal ($\overline{X}$=15.89), musical ($\overline{X}$=15.32), visual-spatial ($\overline{X}$=15.17) and interpersonal ($\overline{X}$=12.96).

In the control group this sequencing is slightly different. The mean scores of the experimental group related to their multiple intelligences types are as follows, beginning from the highest to the lowest; verbal-linguistic ($\overline{X}$=16.64), logical-mathematical ($\overline{X}$=16.03), intrapersonal ($\overline{X}$=15.42), bodily-kinaesthetic ($\overline{X}$=14.92), visual-spatial ($\overline{X}$=14.85), musical ($\overline{X}$=14.53) and interpersonal ($\overline{X}$=12.21).

The analysis of the multiple intelligences inventory revealed that the highest mean score in both control and experimental groups belongs to verbal-linguistic intelligence. The second highest mean can be observed in logical-mathematical intelligence type in both groups. The third highest mean in control group belongs to bodily-kinaesthetic ($\overline{X}$=16.17); whereas, in experimental group it is seen in

intrapersonal intelligence ($\overline{X}$=15.42). The forth highest mean score in control group is observed in intrapersonal and in experimental group it is observed in bodily-kinaesthetic intelligence.

Table 3.4. Descriptive Statistics of the Students in the Sample Group with regard to their Multiple Intelligences Types

INTELLIGENCE TYPE	GROUP	n	$\overline{X}$	Std. Deviation	Std. Error Mean
Verbal-linguistic	Control	28	18.32	3.559	0.672
	Experimental	28	16.64	2.921	0.552
Logical-mathematical	Control	28	17.85	3.341	0.631
	Experimental	28	16.03	3.305	0.624
Visual-spatial	Control	28	15.17	3.432	0.648
	Experimental	28	14.85	3.307	0.625
Musical	Control	28	15.32	4.363	0.824
	Experimental	28	14.53	4.077	0.770
Bodily-kinaesthetic	Control	28	16.17	3.692	0.697
	Experimental	28	14.92	2.651	0.501
Intrapersonal	Control	28	15.89	3.413	0.645
	Experimental	28	15.42	2.949	0.557
Interpersonal	Control	28	12.96	1.952	0.369
	Experimental	28	12.21	1.792	0.338

The fifth mostly seen intelligence is musical in the control group and visual-spatial in the experimental group. The following intelligence is visual-spatial in the control group and musical in the experimental group. The lowest mean score belongs to the interpersonal intelligence type not only in the control group but also in the experimental group.

3.2.2. Instruments

3.2.2.1. Pre-Post and Delayed Post-test

The recognition test (pre-test) was administrated to both control and experimental groups in Söke Cumhuriyet Anatolian High School. The test included 80 questions of different types like odd-one-out, sentence completion and matching questions, all of which are formed as multiple choice questions (see Appendix D). The researcher developed this recognition test for the study.

The data gathered from the pre-test scores of the students was compared with the results of the post-test, which was administered after the treatment to determine the effect of the treatment on the achievement of the learners. In order to test the retention effect of MI activities the same test has also been used as the delayed post-test which was administered to the subjects three weeks after the treatments.

3.2.2.1.1. Validity of the Test

Ekmekçi (1999:38) defines validity as "the extent to which the results of the procedures to be applied serve the intended purpose". In other words, it is the "extent to which a test measures what it is intended to measure" (Oruç, 2007:59).

According to Nunan (1992) there are some factors that affect the validity of a test such as;

- unclear directions within the text,

- too difficult vocabulary items or sentence structures within the text items,
- inappropriate level of difficulty of test items,
- ambiguity,
- test items inappropriate for the purpose of the test,
- insufficient number of items for objectives being tested

To minimize the negative factors that are mentioned above and to increase the content validity three experts in the dissertation committee were asked for their ideas on the test before the administration. In the beginning, the test included some ambiguous items related to the matching of pictures and words. As a result of the valuable comments of the committee members, these items were altered.

Besides, three teachers of English working at the school where the sample group is studying were asked to comment on the test. Since these teachers knew the participants' English background very well, they gave some suggestions related to some questions in the test. As a result of the feedback given by the teachers, the last version of the achievement test was prepared.

Internal validity was also increased by some precautions taken by the researcher. Internal validity is defined by Nunan (1992:15) as the interpretability of research and in experimental research; it is concerned with the question "can any differences which are found actually be ascribed to the treatments under scrutiny?" In order to increase the internal validity, all the variables such as treatments and sampling of subjects were controlled. Accordingly, the researcher did the educational treatment in both control and experimental groups.

Consequently, content and internal validity of the achievement test investigated comprehensively.

3.2.2.1.2. Reliability of the Test

Reliability is related to the extent to which a measurement instrument produces consistent results when administered under similar conditions. On the other hand, there are some factors such as student fatigue, measurement error, test setting problems that may contribute to unreliability (Ekmekçi, 1999). Besides, the factors listed below can affect the reliability of a test:

- length of the test: the longer the test, the more reliable it is
- homogeneity of items: if the test items are testing the same traits
- discriminatory power of items: items which discriminate well among students
- sufficient test taking time

(Ekmekçi, 1999:37)

The researcher has taken this list into account while preparing the test. What is more, the suggestions of the dissertation committee to increase the number of the questions and converting them into multiple choice questions were helpful for the reliability of the test.

35 students who took the test to monitor the validity were observed for the test time they needed. In accordance with the time they spent on the test, test-taking time has been decided to be 40 minutes for 80 questions.

In calculating the reliability degree of a test there are four ways that can be followed. These four types of reliability are:

- Inter-Rater or Inter-Observer Reliability: Used to assess the degree to which different raters/observers give consistent estimates of the same phenomenon.

- Test-Retest Reliability: Used to assess the consistency of a measure from one time to another.
- Parallel-Forms Reliability: Used to assess the consistency of the results of two tests constructed in the same way from the same content domain.
- Internal Consistency Reliability: Used to assess the consistency of results across items within a test.

(http://www.socialresearchmethods.net/kb/reltypes.php)

In this study the main reliability type that was followed was "test-retest reliability". The 35 students who took the test were asked to take it after 3 weeks. Between these two applications of the test, the teacher did not teach any of the target vocabulary items. The analysis of this study indicated no significant change in the results. Consequently, the test was reliable in terms of test-retest reliability (See Appendix F for the pre-test and post-test scores of the students in the pilot study of the achievement test). The statistical analysis related to the test-retest reliability is indicated in table 3.5.

Table 3. 5. Results of Test-Retest Reliability of the Achievement Test

Tests	N	$\overline{X}$	Reliability Coefficient
Pre-test	35	31.45	0.809
Post-test	35	33.85	

As can be observed in table 3.5. the Reliability Coefficient indicates a level of reliability between the two scores.

In addition to the test-retest reliability intra-rater reliability was dealt with. The analysis for each of the tests was done two times by the researcher, to account for the intra-rater reliability at two weeks intervals. The results of these two analyses indicated no change in the results. Therefore, the scoring was reliable in terms of intra-rater reliability.

In conclusion, a detailed reliability analysis was conducted testing for the internal, test-retest and intra-rater reliability. The reliability level of the test was also increased by the suggestions of the four experts and 35 students used for the test time.

3.2.2.2. Attitude Scale towards English

The second important instrument administrated in this study is the Attitude Scale towards English which was developed by Altunay (2002). Initially, this scale is composed of five parts. The first part which is called "Personal Information Form" is composed of six questions related to the students themselves aiming to collect information about their gender, age, class, and their parents' education level, economic condition and profession. The other parts analyze the attitudes of the students towards English, towards exams, lesson programme and physical conditions. However, in the scope of this study only the personal information form and the part related to the attitudes towards English are utilized.

The attitude scale towards English consists of seventeen statements that attempted to determine the attitudes of the students towards English. This scale is a five-point Likert-Type Scale used to determine the level of the students' agreement or disagreement on the items. These items are both in affirmative and negative forms and they are presented randomly in order to enable the students to be honest.

Besides, for avoiding possible misunderstandings the questionnaire was prepared in the students' mother tongue.

The responses were evaluated by grading the statement sentences like:

A: Strongly Agree, B: Agree, C: Undecided, D: Disagree, E: Strongly Disagree.

The attitude scale towards "English" is presented in Appendix A.

3.2.2.2.1. Validity and Reliability of the Attitude Scale towards English

In the preparation of the "Attitude Scale towards English", first of all, a pool of items has been created. These items were formed by sentences which will distinguish whether the students have positive or negative opinions about English. The items which were found to be insufficient or unnecessary have been removed from the scale. The opinions of the specialists from different fields have been taken and the needed corrections have been made in the light of that advice. The pilot study of the questionnaire for reliability was conducted with 120 students in the preparatory classes of İzmir Yüksek Teknoloji Enstitüsü in December 2002. The findings of this administration revealed that the correlations of Alpha Reliability Coefficients were 0.96.

3.2.2.3. Multiple Intelligences Inventory

The Multiple Intelligences Inventory used in this study is based on Howard Gardner's Theory of Multiple Intelligences from his book Frames of Mind. It is adapted in Renaissance Project with the permission of Sue Teele and Anne Biro. The inventory includes total 105 items; 15 statements for each of the seven intelligence dimensions, these dimensions are verbal linguistic, logical-mathematical, intrapersonal, interpersonal, visual-spatial, musical, bodily-kinaesthetic. Participant

checks each statement if it describes him most, then the score of the participant on each intelligence dimension will be found by adding the checked items on the specific intelligence dimension. There is also a description paragraph at the end of the each intelligence dimension, and the participant rate himself according to how well this paragraph describes him on a 5 point Likert scale from "not like me" to "just like me". The total score for each of the intelligence dimensions is obtained by adding the score on the description paragraph to the total number of checked items on the related intelligence dimension (Uysal, 2004).

Gürçay and Eryılmaz (2002) adapted and translated the inventory into Turkish. After translation the inventory was controlled and retranslated into English by an assistant at the Department of the Foreign Languages Education at Hacettepe University. Then, a Turkish instructor at Hacettepe University controlled the translation of the inventory in terms of its appropriateness to Turkish and retranslated some of the statements. The inventory was also given to one ninth grade student and two research assistants, and the incomprehensible items were retranslated and adapted into Turkish and one item ("I am an accurate speller") was excluded from the inventory because of its unsuitability to Turkish language. After this process, a group of experts (one professor, one associate professor, one instructor, and three research assistants) examined the inventory. According to the suggestions of these experts, some of the items were revised and the inventory took its final form.

After this procedure, two assistant professors and one research assistant from the Department of Secondary Science and Mathematics Education of METU and two research assistants from the Department of Elementary Education of METU examined the inventory for the clarity of items and their appropriateness to the

specific intelligence dimensions. The experts were given the inventory, and they were asked to determine each item's intelligence dimension and also confusing items. The experts decided that some of the items might be placed under more than one dimension, whereas, some of them could not be placed under any of the dimensions, and some of the items were regarded as confusing. Later on, the principle component analysis and reliability analysis were performed separately for each intelligence dimension with the data of 395 ninth grade students. Items that were found to be problematic by the experts, which were also supported by the statistical analysis, were taken out from the inventory. The final version of the MI inventory includes 70 items, 10 items for each of the seven intelligence dimensions (see Appendix B). Figure 3.1 indicates which items correspond to which separate intelligence types.

Table 3.6. Multiple Intelligences Inventory Analysis

Intelligence Dimensions	**Inventory Items**
Verbal-Linguistic Intelligence	1, 5, 10, 11, 37, 43, 48, 63, 68, 70
Logical-Mathematical Intelligence	9, 18, 24, 26, 27, 28, 45, 46, 47, 57
Visual-Spatial Intelligence	7, 12, 15, 17, 21, 23, 34, 54, 56, 69
Musical Intelligence	6, 14, 29, 49, 50, 51, 52, 58, 59, 62
Bodily-Kinesthetic Intelligence	4, 8, 13, 16, 19, 30, 38, 44, 53, 66
Intrapersonal Intelligence	20, 22, 25, 31, 39, 40, 42, 55, 65, 67
Interpersonal Intelligence	2, 3, 32, 33, 35, 36, 41, 60, 61, 64

3.2.2.3.1. Validity of the MI Inventory

Gürçay and Eryılmaz (2002) checked the inventory for the content and face validity with the assistance of six experts; one professor, one associate professor, one instructor and three research assistants. Besides, the translation of the inventory was controlled by an assistant at the Department of Foreign Languages and by a Turkish language instructor at Hacettepe University. In order to increase the validity, Gürçay and Eryılmaz prepared a Parent Inventory and a Teacher Inventory. In the Parent Inventory, parents were asked to determine their children's position in each of the seven intelligence dimensions. 241 parents responded the inventories. In the Teacher Inventory, teachers were expected to evaluate their students in each of the intelligence dimensions to a three point scale.

To understand how well the students' responses in the inventory reflect their real status in each intelligence simple correlation analysis was conducted between the responses of the students and those of the parents and teachers. It was revealed that there were significant correlations between parent responses and student responses in each of the seven intelligences at .05 level, which means that the responses of both parts were in parallel. This was an evidence that increased validity of the inventory. However, there was no significant relationship between the responses of students and the responses of the teachers. The reason of this finding might be the fact that the classes are highly-populated and the teacher cannot interact with the students efficiently.

3.2.2.3.2. Reliability of the MI Inventory

A study was conducted by using the MI inventory with 395 ninth grade students, and Cronbach Alpha internal consistency coefficient of the inventory was reported as

0.86 by Gürçay and Eryılmaz (2002). She also reported Cronbach Alpha internal consistency coefficients for the seven sub-dimensions of the inventory. For the verbal-linguistic sub dimension the coefficient was found as 0.63 for logical mathematical sub dimension, it was found as 0.54, for visual-spatial sub-dimension, it was found as 0.61, for interpersonal sub-dimension, it was found as 0.63 for intrapersonal sub-dimension, it was found as 0.48, 0.60 for musical-rhythmic sub-dimension, it was found as 0.63, for intrapersonal sub-dimension, it was found as 0.76, and for bodily-kinaesthetic sub dimension it was found as 0.55.

3.2.3. Instructional Packets

In the educational treatment the researcher used the ordinary course book of the students which was *New Bridge to Success for Grade 10 (Pre-Intermediate)* (Bayral, Albayrak, Pınar, Baydar, İnci, Kındıroğlu *et. al.* 2007) and its workbook. On the other hand, for both of experimental group and control group an instructional packet was developed. In each instructional packet there was a lesson plan and related activities.

In the development of the packets, all of the conditions such as the amount of activities and the time given for these activities and the level of language were tried to be equalized between two groups. Consequently, in both groups the starting point of the lesson was the texts in their course books (see Appendix A Lesson Plans).

3.2.3.1. Multiple Intelligences Packet

MacRae (1988:16) points out that "education must cease its lean offerings and prepare glorious feast for all who come to partake" and she adds:

> What can we glean from these various areas of research as they apply to learning and teaching? What are the emerging components of new instructional models? Several items become immediately apparent. To develop our human capacities we must *use* our capacities. This may sound painfully obvious, but such opportunities are rarely offered

> in traditional academic settings. We now know that it is mandatory to incorporate the body, the mind, the feelings, the social and intuitive dimensions of the individual in the learning process and in *every* topic area.

Achievement is increased when collaborative and cooperative learning opportunities are emerged as suggested by the social implication of the MI Theory. The application of this theory in foreign language classroom has a positive effect on learning (Chambers, 1999; Çakır, 2003).

The adaptations of MI have a great variety such as the intelligence itself (Campbell: 1997). Gardner's theory is interpreted as suggesting many entry points into the traditional curriculum and it helps the teachers to transform their lessons into multimodel learning opportunities for their students (Çakır, 2003).

The multiple intelligences packet prepared for the experimental group considered this multimodel learning. The presentation, practice and production steps in vocabulary teaching were designed in the light of MI activities. Therefore, the experimental group received some tasks that are related to all seven intelligence types. For instance, for the first lesson of the treatment, of which title is "First Aid" the teacher plays background music and triggers the learners to answer some questions related to the music. Later, the teacher hangs some pictures related to "first aid" on the board and expects the students to guess what is happening in each picture. After that the students hand the related flashcards under the correct pictures. Then the students listen to a dialogue and complete the missing parts with the correct vocabulary items. Each student are required to write an individual report about the dialogue using the newly learnt vocabulary items. As for the verbal-linguistic intelligence, the students are asked to match the words with the meanings and they fill in a grid that is hanged on the board by the teacher. In order to fill this grid they

should firstly complete the gaps in the given sentences. In another activity, the students read through some extracts and rearrange them in the correct order to make a story, which is a logical-mathematical activity. In the next activity which is called "Find your missing half" the teacher divides the class into two groups and distributes the first parts of some sentences to the first group and the second part of these sentences to the second group. This MI activity is related to kinaesthetic and interpersonal intelligence types. The last activity is writing a paragraph related to an anecdote of an injury or an accident. In this activity the students should use at least three of the new vocabulary items. Since in this activity the students tell their life, this will trigger intrapersonal intelligence.

3.2.3.2. Control Group Instructional Packet

The interviews conducted by the Teachers of English working in Anatolian High Schools revealed that they could not spend the needed time for vocabulary teaching because of the curriculum full of grammar subjects. They generally teach the words in reading passages by giving the Turkish translations. If they have the chance to teach vocabulary items, they indicated that they follow traditional teaching. Namely, they begin presenting the subject and practice with some activities that go from controlled to the freer ones. This type of procedure which is called Presentation-Practice-Production (PPP) model is used by Communicative Language Teaching. According to the statements of the teachers, in the control group the Presentation-Practice and Production procedure was followed.

3.3. Procedures

The study is a quasi-experimental[4] study with a pre-test & post-test design. To this end, an experimental group and a control group were formed. First of all, both of the groups were given a pre-test which checked their English achievement, an attitude scale towards English lessons and a multiple intelligences inventory to learn their dominant intelligences.

While in experimental group Multiple Intelligences activities were being used, in control group traditional method was implemented to teach target vocabulary items.

In order to analyze the immediate learning degree of the new vocabulary items, at the end of each lesson an immediate achievement test which is composed of only the vocabulary items of that particular lesson was administrated. This was informative for the researcher in understanding the degree of learning and the problematic areas. However, these eight immediate tests were not taken into consideration in the statistical analysis of this study.

With the application of the post-test at the end of the experiment, the changes in their achievement were analyzed. Three weeks after the treatment was over, the delayed post-test was administrated to the participants in order to understand the retention effect of MI activities.

[4] This study is a quasi-experimental study because the subjects were not assigned to the experimental groups randomly. The researcher randomly assigned the experimental groups among the ones which were assigned by the manager of Söke Cumhuriyet Anatolian High School.

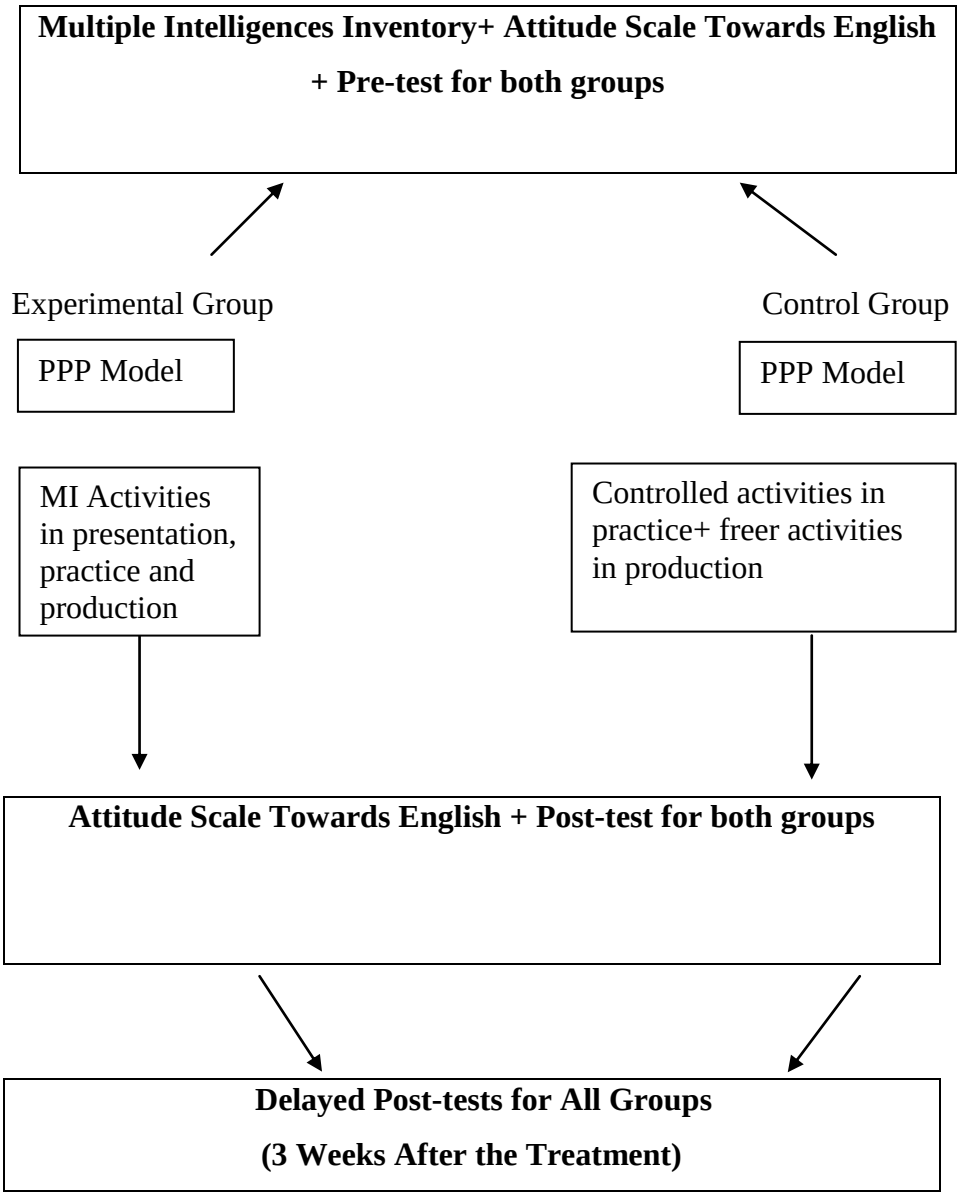

Figure 3.1. The schema of the research design

Figure 3.1 indicates the outline of this experimental design study briefly.

3.4. Data Analysis

The data collected will be analyzed with Paired Samples T-Test and One Way Analysis of Variance (ANOVA). Paired Samples T-Test assesses whether the mean scores of two groups are statistically different from each other (Büyüköztürk, 2002). Ekmekçi (1999) defines ANOVA as the simplest design applied to find out if there is a significant difference between two means/groups at a selected probability level. Since we have two groups and one treatment, ANOVA is the most appropriate statistical technique to employ.

5.3. Limitations of the Study

This study is limited to the tenth graders of two classes of the Söke Cumhuriyet Anatolian High School which will be carried out in the spring term of 2007-2008 academic years. The efficacy of the MI activities should also be tested in other schools and in other subjects.

CHAPTER 4

FINDINGS AND DISCUSSION

In this part of the study, the data obtained by the methods and techniques explained in the third chapter and the findings gathered as a result of the analysis done by statistical techniques in connection with each research question and interpretations based on those findings are presented in three sections; namely, the findings related to the "English Achievement", "Attitudes towards English" and "Multiple Intelligences".

This study aimed to find out the effects of MI activities on English vocabulary achievement and retention of the learnt vocabulary items. It also investigated the relationship between MI activities in second language acquisition classroom and attitudes of learners towards English. Besides, this research explored the relationship between English achievement and attitudes towards English with factors such as students' gender and their parents' education level. Lastly, the researcher presented the multiple intelligence types of the learners in the sample group.

Since this is a quasi-experimental study[5] with a pre-test and post-test design, one experimental and one control group were formed. The participants, 56 pre-intermediate level students of Söke Cumhuriyet Anatolian High School, were given a pre-test in order to determine the knowledge of the target vocabulary items and equality between experimental and control groups. Since none of the students from

[5] This study is a quasi-experimental study because the subjects were not assigned to the experimental groups randomly. The researcher randomly assigned the experimental groups among the ones which were assigned by the manager of Söke Cumhuriyet Anatolian High School.

the sample group scored over 50 from the recognition test, the number of the participants remained the same. These 56 participants were randomly assigned as the experimental and control group.

At the beginning of the educational investigation, all groups were given a pre-test which checked their English vocabulary achievement, an attitude scale towards English lessons and a multiple intelligences inventory to learn their dominant intelligences. The students were given two lesson hours to complete these three instruments.

After these pre-tests, both groups were taught the target linguistic component by the researcher using the lesson plans developed for each group. In the experimental group Multiple Intelligences activities were used, meanwhile traditional method was implemented in the control group to teach target vocabulary items.

In the end of each lesson an immediate achievement test which is composed of only the vocabulary items of that lesson was administrated for the analysis of the immediate learning degree. The researcher used these immediate achievement tests in understanding the learning degree and the problematic areas. Nonetheless, these eight immediate tests were not taken into consideration in the statistical analysis of this study.

Both groups were taught by the researcher for two lesson hours in a week during two months. In the end of the educational treatment, the post-test that checked the changes in their achievement and the attitude scale were administered again. Three weeks later, in order to understand the retention effect of MI activities, the delayed post-test was given to the participants.

4.1. Analysis of Data

The analysis of the data started with the assessment of the achievement test to another group different from the sample group with the aim of test-retest reliability. The analysis of this study indicated no significant change in the results. Consequently, the test was reliable in terms of test-retest reliability. In order to increase the intra-rater reliability, the test papers were scored twice by the researcher.

The achievement test used as pre-test, post-test and delayed post-test had 80 questions, including 20 odd-one-out, 30 sentence completion and 30 matching questions in the form of multiple choice type (see Appendix D). Each odd-one-out type question was given two points, while each of the other questions was given one point. Incorrect items received a score of zero.

4.2. The Findings Related to English Vocabulary Achievement

First of all, the results of English vocabulary achievement test before the educational treatment will be presented. Table 4.1. indicates the results of the pre-test for both control and experimental groups.

The mean scores which the students in control and experimental groups obtained from the pre-test ranged from 29.54 to 31.18 with a total mean score of 30.36. According to the table 4.1, the mean score of the traditional teaching group is 29.54 and the mean score of the multiple intelligences teaching group is 31.18. The difference among the mean scores of these two groups is 1.64.

Table 4.1. T-Test Results of All Groups in Pre-Test

GROUP	N	$\overline{X}$	sd	df	t	sig	Level of Significance
CONTROL	28	29.54	5.33				
				54	-1.10	0.72	p> 0.05
EXPERIMENTAL	28	31.18	5.78				
TOTAL	56	30.36	5.57				

The fact that the mean scores are so close indicates the similarity between the two groups. It can be stated that the participants' knowledge of the target vocabulary items are almost the same. Later on, t-test is was applied so as to find out whether the differences between the pre-achievement test scores of the students in the control and experimental groups are significant or not. The statistical analysis indicated that there was no significant difference between groups according to the results of the pre-test p≤ .72, which is higher than 0.05; therefore it is not significant. The fact that the difference is not significant means that the students in the control and experimental groups obtained similar results. As stated above, it designates the identical knowledge of the target vocabulary.

Table 4.2. T-Test Results of All Groups in Post-Test

GROUP	n	$\overline{X}$	sd	df	t	sig	Level of Significance
CONTROL	28	49.46	13.74				
				54	11.16	0.00	P< 0.05*
EXPERIMENTAL	28	85.25	9.92				
TOTAL	56	67.36	21.61				

* The mean difference is significant at .05 level.

It is clear from the table 4.2. that there is a significant difference between the post-test scores of the control group and those of the experimental group (t= 11.16, df= 54; p≤ 0.00), which means there are differences between the performances of the experimental group and control group students after the educational treatment. The mean scores of the post-test ranged from 49.46 and 85.25 with a total mean score of 67.36. The mean score of the control group in the post-test is 49.46; however, the mean score of the experimental group is 85.25. Thus, the analysis above let us conclude that, when MI activities are used in vocabulary teaching in ELT classroom, instead of traditional teaching, the students learn the target vocabulary better.

Table 4.3. T-Test Results of All Groups in Pre-Test and Post-Test

	GROUP	N	$\overline{X}$	sd	df	t	sig	Level of Sig.
Pre-test	CONTROL	28	29.54	5.33	54	-1.10	0.72	P> 0.05
	EXPERIMENTAL	28	31.18	5.78				
Post-test	CONTROL	28	49.46	13.74	54	11.16	0.00	P< 0.05*
	EXPERIMENTAL	28	85.25	9.92				

* The mean difference is significant at .05 level.

In table 4.3. the arithmetic means, standard deviations, degrees of freedom, t values, p values and the levels of significance of the scores of students' English achievement before and after the educational treatment are given. It is easy to see that there is a significant difference between the post-test scores of the control group and experimental group in the achievement test at .05 level ($t= 11.16$, $df= 54$; $p\leq 0.00$). Whereas, the difference in pre-test scores of the control and experimental groups is not statistically significant ($t= -1.10$, $df= 54$, $p\geq .72$). The mean scores of the control group in the pre-test, which is 29.54, have become 49.46 in the post-test with a 19.92-point-difference. In the experimental group this difference is very high. The mean score of the experimental group in the pre-test is 31.18, while in the post-test this score increased to 85.25 with a 54.07-point-difference.

Another research question was "What are the effects of Multiple Intelligences Activities on Söke Cumhuriyet Anatolian High School students' retention level of the target vocabulary items?". In order to answer this question t-test was conducted. Table 4.4. shows the comparison of post-test and delayed post-test of control and experimental groups.

Table 4.4. T-Test Results of All Groups in Post-Test and Delayed Post-Test

	GROUP	N	$\overline{X}$	Sd	df	t	sig	Level of Sig.
Post-test	CONTROL	28	49.46	13.74	54	11.1	0.00	P<.05*
	EXPERIMENTAL	28	85.25	9.92		6		
Delayed post-test	CONTROL	28	46.17	18.59	54	4.9	0.00	P<.05*
	EXPERIMENTAL	28	70.10	17.92				

* The mean difference is significant at .05 level.

Table 4.4. indicates that the post-test mean score of the control group is 49.46; whereas, in the experimental group it is 85.25. There is a significant difference between the post-test mean scores of the control and experimental groups at .05 level (t= 11.16, df= 54; p≤ 0.00). The post-test result of the experimental group is 4.82 points higher than that of the control group. This suggests that the treatment group in which multiple intelligences activities are used is significantly much more successful than the treatment group where traditional teaching is implemented. As for the delayed post-test, the mean score of the control group is 46.17 and the mean score of the experimental group is 70.10. There is a 23.93 point difference between the delayed post-test results of the control and experimental group students. This difference is also significant at .05 level. (t= 4.9, df= 54; p≤ 0.00). When the mean scores of the two groups are taken into account, this significant difference stems from the decrease in the experimental group. Because the experimental group members have scored less in the delayed post-test, we can say that they have not kept what they have learned in their interlanguage.

The arithmetic means, standard deviations, degrees of freedom, t values, p values and the levels of significance of the scores of the control group students' English achievement in post-test and delayed post-test are given in Table 4.5.

Table 4.5. T-Test Results of the Control Group Students in Post-Test and Delayed Post-Test

	N	$\overline{X}$	sd	F	t	sig	Level of Sig.
Post-test	28	49.46	13.74	4.16	0.75	0.45	p>.05
Delayed post-test	28	46.17	18.59				

The mean score of the control group in the English achievement test in the post test is 49.46. This mean score of the control group decreases to 46.17 in the delayed post test that is given three weeks after the treatment. There is a 3.29-point-difference between the post-test and delayed post-test mean scores of the control group. This difference is not statistically significant at .05 level ($t=0.75$, $df= 4.16$; $p \geq .05$). This result can be regarded as a sign of retention in the control group. Since the control group members have not scored less in the delayed post-test, we can conclude that they have kept what they have learned in their interlanguage.

T-test results of the experimental group in the post-test and delayed post-test are given in table 4.6. The arithmetic means, standard deviations, degrees of freedom, t values, p values and the levels of significance of the scores of the experimental group students' English achievement in post-test and delayed post-test are presented below.

Table 4.6. T-Test Results of the Experimental Group Students in Post-Test and Delayed Post-Test

	N	$\overline{X}$	sd	F	t	sig	Level of Sig.
Post-test	28	85.25	9.92	3.23	3.91	0.00	p<.05*
Delayed post-test	28	70.10	17.92				

* The mean difference is significant at .05 level.

The mean score for the experimental group has decreased from 85.25 to 70.10 in the delayed post-test. There is a 15.15-point-difference between post-test and delayed post-test of the experimental group. According to this table, this decrease is statistically significant (t= 3.91, f= 3.23; $p \leq 0.00$). This means that MI activities have not been successful to help learners to keep the newly learned vocabulary items in their interlanguage when compared to the traditional teaching. Unlike control group multiple intelligences do not indicate gains for the retention of the target vocabulary items.

Table 4.7. presents all results of all achievement tests for control and experimental groups. It gives the descriptive statistics of the control and experimental groups with regard to the scores they have obtained from pre-test, post-test and delayed post-test.

The pre-test scores of both groups are very close to each other. However, the highest mean score belongs to the experimental group in the post-test and in the delayed post-test.

Table 4.7. Descriptive Results of All Groups in Pre-Test, Post-Test and Delayed Post-Test

Group		Pre-test	Post-test	Delayed
CONTROL	Mean	29.54	49.46	46.18
	N	28	28	28
	Std. Deviation	5.337	13.748	18.593
EXPERIMENTAL	Mean	31.18	85.25	70.11
	N	28	28	28
	Std. Deviation	5.780	9.921	17.920
TOTAL	Mean	30.36	67.36	58.14
	N	56	56	56
	Std. Deviation	5.574	21.612	21.751

The mean score of the control group is 29.54 in pre-test, 49.46 in post-test and 46.18 in delayed post test. In the experimental group the mean score is 31.18 in pre-test, 85.25 in post-test and 70.11 in delayed post-test. The post-test result of the control group has decreased from 49.46 to 46.18 in delayed post-test. There is a 3.28-point-difference between these scores. However, in the experimental group this difference between post-test and delayed post-test is 15.14 points. The decrease in the experimental group's scores is higher than that of the control group. Nevertheless, when the results of the delayed post-tests are compared, it is seen that the mean score of the experimental group ($\overline{X}$ = 70.11) is still higher than the mean score of the control group in delayed post-test ($\overline{X}$ = 46.18).

In conclusion, at the end of the educational treatment the experimental group, namely, MI activities were more successful than control group in which traditional teaching was used.

The experimental group also outperformed the control group in delayed post-test. In order to understand whether there is significant difference between the scores of the two groups ANOVA was applied. Table 4.8. presents the degrees of freedom and the levels of significance of the scores of students' English achievement in pre-test, post-test and delayed post-test.

Table 4.8. Results of ANOVA for All Groups in Pre-test, Post-test and Delayed Post Test

		Sum of Squares	df	Mean Square	F	Sig.
Pre-test	Between Groups	37.78	1	37.78	1.22	0.27
	Within Groups	1671.07	54	30.94		
	Total	1708.85	55			
Post-test	Between Groups	17928.64	1	17928.64	124.75	0.00
	Within Groups	7760.21	54	143.70		
	Total	25688.85	55			
Delayed	Between Groups	8016.07	1	8016.07	24.04	0.00
	Within Groups	18004.78	54	333.42		
	Total	26020.85	55			

When we consider the ANOVA results of pre-test, post-test and delayed post-test of the students in the sample, it is possible to see that there is a significant difference between their post-test and delayed post-test results according to the control and experimental group means. There is no significant difference between the pre-test results of the control and experimental groups. However, between the post-test results of the control and experimental groups there is a significant difference. Likewise, the difference between the delayed post-test results of the control and experimental groups is significant.

4.3. Findings Related to Students' Attitudes towards English

In this section of the study, the findings related to the second main research question, namely "What are the effects of Multiple Intelligences Activities on Söke Cumhuriyet Anatolian High School students' attitudes towards English?" are presented. In order to obtain the data related to this question the "Attitude Scale towards English" which was developed by Altunay (2002) was administrated. This five-point Likert-Type Scale, which consists of seventeen statements, was used to determine the level of the students' agreement or disagreement on the items.

Table 4.7. indicates the mean scores of both experimental and control groups in the attitude scale towards English before the educational investigation.

Table 4.9. T-Test Results of All Groups in the Attitude Scale towards English Before the Educational Investigation

GROUP	N	$\overline{X}$	sd	df	t	p	Level of Significance
CONTROL	28	3.03	0.33	54	0.90	0.367	p>.05
EXPERIMENTAL	28	2.95	0.30				

Before the educational treatment, the mean score of the control group in the attitude scale is 3.03 and that of the experimental group is 2.5. Thus, we can state that the mean scores of these two groups in the attitude scale before the educational treatment is similar with a 0.53-point-difference. In order to understand whether the differences between the pre-test means of the experimental and control groups in the attitude scale towards English are significant or not t-test was applied.

The data gathered from t-Test shows that t-value is, 0.90 which means that there is no significant difference between the attitudes of the students towards English at the level of 0.05 before the educational treatment.

Table 4.10. T-Test Results of All Groups in the Attitude Scale towards English Before and After the Educational Investigation

	GROUP	n	$\overline{X}$	sd	df	t	p	Level of Sig.
Pre-test	CONTROL	28	3.03	0.33	54	0.90	0.367	p>.05
	EXPERIMENTAL	28	2.95	0.30				
Post-test	CONTROL	28	3.00	0.28	54	1.48	0.144	p>.05
	EXPERIMENTAL	28	2.80	0.66				

In Table 4.7. the arithmetic means, standard deviations, degrees of freedom, t values, p values and the levels of significance in the attitudes of the students towards English before and after the educational investigation with regard to their groups are given. This table indicates that there is a slight decrease in the attitudes of both groups when pre-test and post test results are taken into account. The difference between the pre-test scores of the control group and that of the experimental group is not significant

at p < .05 level. Likewise, the difference between the attitudes scores of the students in the control and experimental groups in the post-test is not significant at p<.05 level.

4.11. T-Test Results of the Experimental Group in the Attitude Scale towards English Before and After the Educational Investigation

	n	$\overline{X}$	Sd	df	t	p	Level of Sig.
Pre-test	28	2.95	0,30	28	1.105	0.274	p>.05
Post-test	28	2.80	0,66				

Table 4.11. indicates that the mean score of the students in the experimental group in the attitude scale is 2.95 before the educational treatment and after the educational treatment this score decreased to 2.80. Nevertheless, this decrease is not statistically significant. This result indicates that MI activities have neither positive nor negative effect on the attitudes of learners towards English.

4. 4. Discussion of the Findings

The results of this study reveal three major findings. First of all, the participants were engaged in the treatment during which multiple intelligences activities were used in vocabulary teaching outperformed the ones who were exposed to traditional teaching. In the English vocabulary achievement test, the students in the experimental group were much more advantageous compared to their peers in the traditional instruction group. The statistically significant difference between the post-test results of the group where multiple intelligences activities are used and those of

the traditional instruction group indicate this fact. This finding proves the positive effect of multiple intelligences in vocabulary achievement.

The fact that multiple intelligences accounts for all types of intelligences and presents a variety of activities can be the underlying reason of this success. Since MI pluralizes the traditional view which degrades intelligence into just two faculties; namely, logical-mathematical and verbal-linguistic, learning becomes much more effective. This finding related to the achievement of multiple intelligences theory is supported by some other studies. In a very similar study (Baş, 2010) the effects of multiple intelligences approach on the academic achievement of the secondary school students in English lessons and their attitudes towards English were investigated. The results revealed that multiple intelligences approach is significantly much more effective in creating achievement and positive attitudes towards English. Another study which shares similar results was carried out by Haley (2004). Haley tried to find out the place of multiple intelligences theory in forming instructional strategies, curricula development, and alternative forms of assessment with second language learners. In the end of this study, it is suggested that students gained greater achievement rates with MI theory. Madkour (2009) also recommends using multiple intelligences in order to improve students' second language acquisition as a result of his study with 20 teachers who used the multiple intelligences theory for improving teaching strategies in ESL classes.

Secondly, the effect of MI activities on the retention level of the students was analyzed. Retention which can be defined as the capacity to keep facts and figures in memory is an important factor in learning (Oruç, 2007). The results indicated that in both traditional teaching and teaching with MI activities there is a decrease in the

amount of the learned target vocabulary items. However, in MI group this difference is higher and statistically significant. On the other hand, the difference between the post-test and delayed post results of the traditional teaching group is not statistically significant. An explanation of this difference might be that the students in the traditional teaching group are more accustomed to the method used and it was easier to store the target vocabulary in their long-term memory. Another important point is that the difference between the delayed post-test results of the control and experimental groups is still very high. The delayed post test result of the experimental group is significantly higher than that of the control group. This suggests that in the long run the teaching with MI activities is more successful than traditional teaching. What is more, the traditional teaching group could not learn so much during the educational treatment and it might have been easier for them to keep the small amount of newly learned vocabulary items.

Third, contrary to expectations, it is observed that there is no significant relationship between MI activities and students' attitudes towards English. The outcome of the study revealed that there is a decrease in the attitude scale towards English scores of both groups after the educational treatment, which is not statistically significant. This slight decrease in both groups may be due to the continuous change of teachers. In both groups the researcher taught only two lesson hours which focused on vocabulary. In the remaining two hours their English teacher taught grammar subjects in the curriculum. This constant shift between teachers might have affected the sample group students negatively. Besides, the demanding vocabulary activities in both groups might be the reason of this decrease in students' attitudes. The studies in this area generally indicate the positive effect of MI

activities on students' attitudes, which contradicts with the findings of this research. The study which was carried out by Baş (2010) also investigated the effects of multiple intelligences-based teaching method on students' attitudes towards English lesson. As a result, it was indicated that the multiple intelligences activities were much more effective in the positive development of the students' attitudes. A similar result was obtained from Haley's (2001) research the aim of which was to identify, document and promote effective real-world applications of MI theory in foreign and second language classrooms. Analysis revealed that teachers were affected by MI approaches and they felt their teaching had become much more learner-centred. While teachers felt again energized and enthusiastic about their pedagogy, students also demonstrated not only an interest in MI concepts but also positive attitudes to the increased variety of instructional strategies used in their foreign language classrooms. Thus, an unexpected result of Haley's (2001) study was the positive effect it had on student attitudes and motivation to learn. In a case study, carried out by Leeper (1996), students started to understand more complex information and were more engaged in their learning since they used more activities which triggered their multiple intelligences.

The multiple intelligences types of the learners in the sample group were analyzed within the scope of this study to learn about the students' dominant intelligences. These results of the multiple intelligences inventory are quite understandable when we take into account the fact that the sample is formed by Turkish-Mathematics students.

CHAPTER 5

CONCLUSION

5.1. Summary of the Study

In this chapter the findings of this research will be dealt with briefly and some suggestions related to the further studies in this area will be given.

Gardner (2006:91) states that "I am less persuaded that MI theory can be useful in mastering a foreign language-though I admire those teachers of foreign languages who claim success using MI approaches". This study would also gain Gardner's admiration since it reveals the success of MI theory in foreign language teaching. In this study it is observed that MI activities have a significant positive effect on the 10^{th} grade students' vocabulary achievement in English. Nevertheless, MI activities do not affect the retention of the vocabulary items in a significant way. After the educational treatment had been finished, and post test had been applied, three weeks passed and delayed post-test was administered to the students in both groups. As a result of this delayed post-test it is found out that MI activities do not have a positive effect on the retention of the vocabulary items. On the other hand, the traditional teaching group are more successful in keeping the new vocabulary items in their interlanguage.

Another primary research question of this research is related to whether there is significant relationship between the students' attitudes towards English and MI activities. The statistical analysis indicated that there is a negative relationship between the students' attitudes and MI activities. In both control and experimental

groups there is a decrease in the students' attitudes towards English. However, the difference between the pre-test and post-test results in the attitude scale towards English in the experimental group is significant. This might be because during the treatment the students in the multiple intelligences instruction group were encouraged to listen, speak, read and write; in other words, MI activities urged them to actively participate in the learning process. The students, who had been educated in the Turkish Education system which is still traditional and based on memorisation, might have found MI activities demanding for themselves. The usual method they used in English lessons for new vocabulary items was translation alone. Furthermore, even though they did not want to be so, this new way of teaching required them to be communicative.

5.2. Suggestions for Further Research

MI theory has been developing since its creation with the help of new experiments. Like every other human experimentation its development is slow, painful and filled with zigs and zags (Gardner, 2006).

> The MI endeavour is a continuing and changing one. There have emerged over the years new thoughts about the theory, new understandings and misunderstandings, and new applications, some very inspired, some less so…This process is dynamic and interactive: no one, not even its creator, has a monopoly on MI wisdom or foolishness. Practice is enriched by theory, even as theory is transformed in the light of the fruits and frustrations of practice. The burgeoning of a community that takes MI issues seriously is not only a source of pride to me but also the best guarantor that the theory will continue to live in the years ahead.
>
> Gardner (2006: 62)

This study is one of the applications of MI theory in the field of foreign language teaching. It aims to contribute to the MI literature with the findings obtained as a

result of the experiment. In the light of its findings, a number of suggestions can be given to the future researchers and teachers of English;

- MI activities can be used in 10^{th} grade students' English lessons in the teaching of vocabulary items.
- MI activities can be utilized in order to increase the retention of the learned vocabulary items.
- The efficacy of MI activities on the English achievement of students can be tested in other grades of schools.
- The effects of MI activities on the attitudes of learners towards English should be analyzed in different levels of students.
- MI activities prepared for this study can be adjusted to other subjects and they can be utilized in different groups so that their effects can be questioned.
- The sample of this study can be altered and the retention effect of MI activities can be tested.
- The time given to the educational treatment can be lengthened and the effects of MI activities on achievement and attitudes can be investigated.

Gardner (2006: 68) underlines the importance of "intelligence" with the following words: "As the century of Binet and his successors draws to a close, it is apposite to take stock and to anticipate the course of thinking about intelligence. While my crystal ball is no clearer than anyone else's (The species may lack Future Intelligence) it seems safe to predict that interest in intelligence will not go away". As argued by Gardner "Intelligence" has always been and will most probably be a controversial subject in the future. Therefore, studies related to this subject will always be needed.

5.3. Conclusion

This study has aimed at investigating the effects of multiple intelligences activities on the English vocabulary achievement and attitudes of learners towards English in the context of a second language acquisition classroom. During a two-month-treatment period, English vocabulary items are taught with multiple intelligences activities in the experimental group; whereas, in the control group traditional teaching was implemented. The following conclusions can be drawn from the study:

- MI activities have a positive and statistically significant effect on the English vocabulary achievement of Turkish learners of English.
- MI activities do not have a positive effect on the retention of learnt English vocabulary items of Turkish learners of English.
- Both traditional teaching and teaching with MI activities have a negative effect on the attitudes of Turkish learners of English towards English. However, MI activities' negative effect on the attitudes of learners towards English is statistically significant.
- The dominant MI type of most of learners in the sample group is verbal-linguistic intelligence. The second dominant MI type of the learners is logical-mathematical intelligence. The third dominant MI type of the learners is bodily-kinaesthetic. The lowest score belongs to the interpersonal intelligence type both in control and experimental groups.

Eventually, this study suggests MI activities to account for the vocabulary achievement of the 10^{th} grade learners in English lessons. The MI activities were

helpful to keep the students alert and active during the treatment. This study also attempted to measure the retention effect of MI activities; however, no significant effect was found in the statistical analysis. As a result of this study, it is observed that MI activities entail negative attitudes towards English. In the light of these findings, MI theory can be used for the teaching of vocabulary items and the relationship of MI with retention level and attitudes of learners might be reinvestigated with other groups and in longer periods.

All in all, Gardner's multiple intelligences theory is believed to open a new era in education. With this theory, students are given a chance not only to reflect their personalities but also to develop their intelligences.

APPENDICES

APPENDIX A

LESSON PLAN

(Control Group)

Background Information

Teacher: Berna Yavuz

School: Söke Cumhuriyet Anatolian High School **Class:** 10 TM-A

Description of Students (Class, age, size): Age- 16, Size – 27

Text and materials: Coursebook (New Bridge to Success), Tape, Poster, Pictures

Previous Class Work: Unit 6 "NEWS"; Present Perfect Continuous

Subject: Unit 7 "FIRST AID"; Infinitive for Purpose, Adverbial Clauses of purpose; so that + can/could, will for probability, Present Perfect Passive, future passive

Date: 03. 04. 2008 **Class Time:** 90 minutes

Procedure

Time Frame	**Procedures**
15''	**immediate pre-test is given**
5''	

First Aid

a. What is happening in the picture?

b. What do you usually do in an emergency?

10''

Listening and Speaking

a. Do you know what to do if you get sunburnt or have a nosebleed?

b. Listen to the dialogue and complete the missing parts.

Rita : I am Rita Brown. Welcome to our programme, "Healthy Body and Healthy Mind". I'm sure this programme will be useful for everybody. The sun is shining outside. It's a perfect time for the beach. How lucky you are if you are lying on the beach and listening to this programme. As you sit comfortably, your eyes will probably fall shut slowly in a midday nap. When you are awake, your skin will look bright red and you may feel a little pain. Do you know what to do? Today we're going to talk about first aid. Our guest is Dr. Scott Holt. Hello, Dr. Holt.
Dr. Holt: Hello.
Rita : Dr. Holt, would you please give us a couple of tips about first aid treatment?
Dr. Holt: Of course, everybody should know something about simple treatments in an (1)…emergency….but we should avoid doing something wrong.
Rita : Yes, you are absolutely right. For example, what should we do if we get (2)…..sunburnt…?
Dr Holt: It's useful to take a cold shower. You can apply sunburn lotion several times a day.
Rita : Can you give us some tips on how to take care of a nosebleed?
Dr. Holt: Sit upright and this will reduce blood (3)……..pressure….. in the veins of your nose. If the bleeding lasts for more than fifteen minutes, get medical care immediately.
Rita : Talking about burns; what about electrical (4)……burns….. ?
Dr. Holt: Call EMS (emergency medical service) in any case of electrical burns. Do not go near the victim if you are not sure the power of source has been turned off.
Rita : What about (5)……bleeding…….? How can we take care of them at home?
Dr. Holt: Try to stop the bleeding. Apply pressure with a clean cloth. If the bleeding still doesn't stop, raise the wound above heart level. If the wound is deep or large, call EMS.
Rita : I hope nobody will face that but what can you tell us about (6)…poisoning……?
Dr. Holt: Hmm. This is a serious situation. If you suspect that someone has been poisoned, call EMS immediately. Try to determine what type of poison was inhaled. Do not give the (7)……victim….. anything to eat or drink unless medical professionals tell you to.
Rita : Thank you so much for being our guest today.
Dr. Holt: Oh, it's my pleasure!
Rita : I'm Rita Brown. I think the audience will be more helpful in emergency if they have listened to you carefully. Join us next week for…

10''

Teacher wants the students to guess the meanings of the words in the dialogue. After that she writes the meanings of the unknown words on the board one by one.

Immediately: without delay, as soon as

first aid: simple medical treatment given as soon as possible to a person who is injured or who suddenly becomes ill.

Bleeding: losing blood

pressure: the act of pressing, compression

reduce: to lessen, to decrease, to make something smaller in size or amount

fainting: losing consciousness

healthy: well, not ill

vein: Blood vessel that carries blood to the heart

poison: kill or injure with toxin

awake: not sleeping

nap: a short sleep

treatment: medical care given to a sick or injured person

vomit: to eject the contents of the stomach by the mouth

5''

c. Listen again and choose the correct option.

1. If you get sunburnt, take …

a) a cold shower b) a hot shower

2. If you have a nosebleed …

a) lie down **b) sit upright**

3. In any case of electrical burns…

a) call the electrician **b) call EMS**

4. After applying pressure with a clean cloth if the bleeding doesn't stop …

a) raise the wound above heart level. b) let the victim get some fresh air.

5. If someone has been poisoned, don't ….

a) go near him **b) give him anything to drink**

6. I think the audience will be more …….. in emergency if they have listened to you carefully.

a) helpless **b) helpful**

5''

d. Match causes and effects.

	Causes	**Effect**
c	1. exposure to the sun	a) vomiting
a	2. poisoning	b) bleeding
d	3. electric shock	c) sunburn
b	4. wound	d) fainting

5''

e. Do you know these? Try to match the questions with the answers.

..b..1. What will happen if you sit in the sun too long?

..a..2. Do you know what will happen if you have electric shock?

..c..3. What will happen if you are poisoned?

a) I will probably faint.

b) I think I will get sunburnt.

c) I am not sure but I think I will vomit.

5''

f. Do you have a first aid kit at home, at school or in your mother's/father's car?

g. Look at the picture and tick the items you can see.

…oval eye pads …scissors …first aid guide …aspirin …alcohol

…wooden arm splint …tweezers …sterile pads …adhesive bandages

…burn cream

15''

READING AND SPEAKING

a. **Are there any first aid classes in your town or city?**

b. **Would you like to take part in them?**

c. **Read the text and find how many first aid situations there are. Then give names to them.**

First Aid and Safety

Have you ever been taken to a hospital after an accident, or have you ever been treated for an animal bite?

Your answers may be negative, but knowledge of first aid will probably save someone's life one day. Anyone can be the victim of an accident; therefore, it is essential to have the correct information. It can take more than eight minutes for an ambulance to arrive at the scene of the accident. Here are some possible situations we may come across.

Animal bites and scratches can cause infection. Rarely, they cause rabies, a dangerous life threatening disease. People are easily infected through the bite of a dog or a cat. Some snakes are poisonous and they can be dangerous if they bite.

What should we do?

-try to stay still and calm not to cause the poison or germs to spread.
-wash the area with soap and water.
-apply pressure with sterile gauze.
-Call emergency medical care immediately.

Burns are often categorized as first, second or third degree, based on the severity of damage to the skin.

What should we do?

-cool the burn with a cold compress so that it can reduce swelling.
-Apply burn cream or a moisturizer to prevent drying.
-do not apply butter, vinegar or toothpaste or similar items.
-call immediately for emergency medical service.

A broken bone requires medical attention. While waiting for medical help what should we do?

-do not move the fractured area.

You can apply a splint, which should be longer than the bone. Use rigid materials such as wood, plastic or metal.

Strain or sprain?

-stop activity right away
-rest the injured part
-wrap an ice pack or cold compress in a towel over the injury
-call emergency medical care

To sum up, life can't be risk free. An accident or injury can occur in any part of our lives. It's better to be ready for the scenarios with first aid. Be aware! Be prepared! And be informed!

d. **Read the text again. Write true (T) or false (F).**

e. **Complete the sentences using the words in the box.**

f. **What would you do in these situations?**

15’’

Assessment: Immediate post-test is given

Homework: Write 10 example sentences with the words you learnt today.

APPENDIX B

LESSON PLAN

(Experimental Group)

Background Information

Teacher: Berna Yavuz

School: Söke Cumhuriyet Anatolian High School **Class:** 10 TM-A

Description of Students (Class, age, size): Age- 16, Size – 27

Text and materials: Coursebook (New Bridge to Success), Tape, Poster, Pictures

Previous Class Work: Unit 6 "NEWS"; Present Perfect Continuous

Work to be collected or returned:

Subject: Unit 7 "FIRST AID"; Infinitive for Purpose, Adverbial Clauses of purpose; so that + can/could, will for probability, Present Perfect Passive, future passive

Date: 04. 04. 2008 **Class Time:** 90 minutes

Procedure

Time Frame **Procedures**

15'' The immediate pre-test is given

10'' The teacher plays background music on the tape and asks the students the following questions:

What do you usually do in an emergency? Do you know first aid?

The teacher wants the students to look at the pictures and try to guess what is happening in them. There are some first aid situations in those pictures such as; fracture, nosebleed, poisoning, burning, strain etc. After that she puts the

related flashcards under the pictures. She wants the students to repeat these words. (Musical and visual-spatial)

Now classify them and put under the correct category. (Naturalist)

ILLNESS-INJURY	TREATMENT	
BLEEDING	APPLY	PRESSURE
FRACTURE	APPLY	SPLINT
HEADACHE	TAKE	PAINKILLERS
SUNBURN	APPLY	BURN CREAMS
STRAIN	APPLY	COLD COMPRESS
POISONING	WASH THE AREA	WITH SOAP

10'' Listening and Speaking: Listen and complete the missing parts.

Rita : I am Rita Brown. Welcome to our programme, "Healthy Body and Healthy Mind". I'm sure this programme will be useful for everybody. The sun is shining outside. It's a perfect time for the beach. How lucky you are if you are lying on the beach and listening to this programme. As you sit comfortably, your eyes will probably fall shut slowly in a midday nap. When you are awake, your skin will look bright red and you may feel a little pain. Do you know what to do? Today we're going to talk about first aid. Our guest is Dr. Scott Holt. Hello, Dr. Holt.
Dr. Holt: Hello.
Rita : Dr. Holt, would you please give us a couple of tips about first aid treatment?
Dr. Holt: Of course, everybody should know something about simple treatments in an (1)…emergency….but we should avoid doing something wrong.
Rita : Yes, you are absolutely right. For example, what should we do if we get (2)…..sunburnt…?
Dr Holt: It's useful to take a cold shower. You can apply sunburn lotion several times a day.
Rita : Can you give us some tips on how to take care of a nosebleed?
Dr. Holt: Sit upright and this will reduce blood (3)……..pressure….. in the veins of your nose. If the bleeding lasts for more than fifteen minutes, get medical care immediately.
Rita : Talking about burns; what about electrical (4)……burns….. ?
Dr. Holt: Call EMS (emergency medical service) in any case of electrical burns. Do not go near the victim if you are not sure the power of source has been turned off.
Rita : What about (5)……bleeding…….? How can we take care of them at home?
Dr. Holt: Try to stop the bleeding. Apply pressure with a clean cloth. If the

bleeding still doesn't stop, raise the wound above heart level. If the wound is deep or large, call EMS.
Rita : I hope nobody will face that but what can you tell us about (6)…poisoning……?
Dr. Holt: Hmm. This is a serious situation. If you suspect that someone has been poisoned, call EMS immediately. Try to determine what type of poison was inhaled. Do not give the (7)……victim….. anything to eat or drink unless medical professionals tell you to.
Rita : Thank you so much for being our guest today.
Dr. Holt: Oh, it's my pleasure!
Rita : I'm Rita Brown. I think the audience will be more helpful in emergency if they have listened to you carefully. Join us next week for…

Match causes and effects (naturalist)

	Causes	**Effect**
C	1. exposure to the sun	a) vomiting
A	2. poisoning	b) bleeding
D	3. electric shock	c) sunburn
B	4. wound	d) fainting

Do you know these? Try to match the questions with the answers.

..b..1. What will happen if you sit in the sun too long?

..a..2. Do you know what will happen if you have electric shock?

..c..3. What will happen if you are poisoned?

d) I will probably faint.

e) I think I will get sunburnt.

f) I am not sure but I think I will vomit.

The teacher wants the students to look at their worksheets for the next 3 activities.

5'' Activity 1: Look at the words in the box. The meanings are given below the box. Go back to the dialogue and read it again. Try to work out the meaning of the word from the sentence they are in. If that sentence doesn't help you try reading the sentences before and after it. (verbal-linguistic)

healthy- first aid- awake- nap-treatment-vein-poison- immediately- vomit-fainting-bleeding-pressure-reduce

1. without delay, as soon as

……

2. simple medical treatment given as soon as possible

…….

to a person who is injured or who suddenly becomes ill.

3. losing blood

……

4. the act of pressing, compression

……

5. to lessen, to decrease, to make something smaller in size or amount

……

6. losing consciousness

……

7.well, not ill

……

8. blood vessel that carries blood to the heart

……

9. kill or injure with toxin

……

10. not sleeping

……

11. a short sleep

……

12. medical care given to a sick or injured person ……

13. to eject the contents of the stomach by the mouth ……...

10'' <u>Activity 2:</u> The teacher hangs on the board the empty grid and wants the students to complete the grid on their worksheets and then the volunteers complete the grid on the board.

Snake Shapes (Verbal-Linguistic)

Across:

1. I will take a …. ..as soon as I go home. I couldn't sleep well last night.
3. If someone has a ……. his bones must be splinted with rigid materials.
4. After the first …… the victim was taken to a hospital.
5. You should wash your hands with a …….. to prevent some diseases.
7. If you are poisoned by a food you generally ……

Down:

2. If there is a bleeding apply …….. to the wounded area to stop blood.
3. You should eat something otherwise you will …….

6. A ….. is a useful piece of advice.

7. Her broken arm has been put in a …….

8. She will …… her meals to lose weight.

N A P

R

E

S

S

U

R

F R A C T U R E

A

I

N

T R E A T M E N T

I

S O A P

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I

N

V O M I T

10'' <u>Activity 3:</u> Read through the following extracts, then rearrange them in the correct order to make a story. (Logical-mathematical)

a. It was an ordinary day. I woke up in the morning and after having my breakfast I went out.

b. While waiting for the school bus, a car came very fast and it couldn't stop in the red light.

c. It crashed to the barriers.

d. Nobody was injured except the driver.

e. He couldn't move his leg and his head was bleeding.

f. We got him out of the car with great difficulty.

g. We laid him to the bus stop and wanted him not to move.

h. Then someone called EMS.

i. While waiting for the ambulance I applied pressure to his head to stop bleeding and

j. I put a wooden splint to his bone.

k. The ambulance came in half an hour.

l. The paramedic and nurse congratulated me for the correct first aid.

m. The first aid lessons at school helped me so much.

10''

<u>Activity 4:</u> The teacher divides the class into two groups and distributes the first parts of some sentences to the first group and the second part of these sentences to the second group.

Find your missing half (Kinaesthetic and interpersonal)

Read your card to the class and find your missing half.

I was feeling sleepy after lunch so I had-	- a nap
Their dog is very aggressive; it-	-sometimes bites strangers.
She gained her health	-after the treatment.
Blood vessels that carry blood from the body back to the heart are called	-veins.
The meat wasn't fresh. It made me sick and I had to-	-vomit.
The little girl was very tired and hungry so she suddenly-	-fainted.

Her wound is quite serious and they can't stop-	-bleeding
When I broke my arm during the basketball match my coach applied a-	-splint.
For cutting the fabric I need a pair of -	- scissors.
While waiting for an ambulance do not move-	-the fractured area.
Alice was rescued from the fire but her hand was burnt and it-	-swelled.
This small spider's one bite-	-poisons a person seriously.
I didn't see the stone there. So I fell down and my leg was-	-bruised.
The doctor used medication to-	-cure her.
She took some pills to-	-soothe her headache
Life is risky so we should take some-	-precautions.

5''

Activity 5: Write about an accident or an injury you had or you saw. What happened? What did the people do?

Use at least three of the words below.

Healthy- first aid- awake- nap-treatment-vein-poison- immediately- vomit-faint-bleed-pressure-reduce-wooden arm splint- scissors- tweezers- first aid guide-adhesive bandages-bite-germ-swelling- moisturizer- fracture-splint-rigid-strain-bruise- precaution-bruise

15''

Assessment: the immediate post-test is given.

APPENDIX C

PRE-POST-DELAYED ACHIEVEMENT TEST

Söke Cumhuriyet Anatolian High School English Exam

Name-Surname: ***Class:***

A. Anlam olarak diğerlerinden farklı olan kelimeyi seçiniz. (2x20)

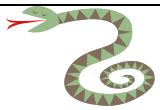
1. a. pottery	b. painting	c. cycling	d. striking
2. a. rook	b. knight	c. dice	d. bishop
3. a. jaw	b. palm	c. wrist	d. thumb
4. a. amazing	b. regular	c. unusual	d. extraordinary
5. a. unfriendly	b. hostile	c. vicious	d. kind
6. a. marvellous	b. fantastic	c. puzzled	d. wonderful
7. a. arrow	b. hammer	c. spanner	d. rake
8. a. eagle	b. bear	c. owl	d. pigeon
9. a. forehead	b. cheek	c. kidney	d. nostril
10. a. intestine	b. chin	c. liver	d. lung
11. a. quarrel	b. fight	c. debate	d. agree
12. a. rumour	b. orbit	c. spacecraft	d. mission
13. a. archery	b. centenary	c. skating	d. fencing
14. a. elbow	b. knee	c. heel	d. ankle
15. a. exposure meter	b. darkroom	c. filter	d. stick
16. a. wound	b. bruise	c. waist	d. swell
17. a. trustworthy	b. predictable	c. open	d. honest
18. a. plump	b. slim	c. thin	d. slender
19. a. brilliant	b. imaginative	c. clever	d. intelligent
20. a. concealed	b. invisible	c. penniless	d. hidden

B. Boşluklar için en uygun seçeneği işaretleyiniz.(1x30)

1. She was so tired that during the lunch-break she took a ……..
   a. nap b. sleep c. repose d. midday
2. The doctor gave me some ..... to lose weight.
   a. tales b. tips c. remarks d. marks
3. There are various …….. available for this illness.
   a. solutions b. medications c. reasons d. treatments
4. ..... carry blood in our whole body.
   a. vests b. veins c. veils d. vents
5. If there is a bleeding, apply …….. to the wounded area.
   a. moisturizer b. splint c. pressure d. medication
6. Our neighbours have been …… with the mushrooms they ate so we took them to the hospital.
   a. poisoned b. inhaled c. fractured d. swollen
7. The main effect of poisoning is ……..
   a. fainting b. bleeding c. swelling d. vomiting
8. …….. is any of the 16 chessmen of lowest rank.
   a. Bishop b. Opponent c. Checkmate d. Pawn
9. The aim of chess is to …… the enemy King.
   a. capture b. kick c. kill d. replace
10. We can never ……. the broken antique vase.
    a. remove b. replace c. rescue d. realize

11. A(n) ……. is a device in your home that you use to do a job such as cleaning or cooking. It's often electrical.
a. gadget b. machine c. tool d. appliance
12. After the ……. archaeologists found a buried city in Pompeii.
a. discovery b. excavation c. innovation d. investigation
13. …….. is the line of hair above the eye.
a. Eyeball b. Eyelash c. Eyelid d. Eyebrow
14. The ……. takes his …….and goes to the forest to cut some wood early in the morning.
a. lumberjack-axe b. carpenter-axe c. lumberjack-anvil d. carpenter-anvil
15. Jane ……. ten thousand dollars to an organization working for poor people.
a. gifted b. donated c. paid d. offered
16. Victoria has ……. herself to her job; she works on weekends too.
a. given b. contributed c. spent d. dedicated
17. A(n) ……. is an area of land on which fruit trees are grown.
a. garden b. orchard c. vineyard d. field
18. This factory …… clothes and exports them.
a. manufactures b. makes up c. effects d. generates
19. …… is a very large amount of money.
a. Richness b. Prosperity c. Fortune d. Cash
20. Firemen tried to extinguish the fire with their ……
a. hose b. whip c. net d. mat
21. …….. means care that is taken against danger.
a. Insure b. Precaution c. Insurance d. Caution
22. My daughter is very interested in ballet so she is …… about taking ballet lessons.
a. competitive b. anxious c. enthusiastic d. conscious
23. The teachers have been …… by Andy's success. They didn't expect this result.
a. ashamed b. abducted c. assigned d. amazed
24. Jack is afraid of height. His trembling in the plane is a(n)…….. of his fear.
a. evidence b. witness c. existence d. incident
25. Kelly is generally late for her appointments. She is not particularly a(n)……. person.
a. careful b. attentive c. punctual d. thoughtful
26. ..... people give money easily whenever it is needed. In other words, they are open-handed.
a. generous b. mean c. rich d. careful
27. The only ..... of the crash said that the car was very fast and it couldn't stop.
a. evidence b. viewer c. spectator d. witness
28. Lisa was very .....so I believed that she told the truth.
a. counselling b. convincing c. attractive d. well-organized
29. The ..... of a place are the people who live there.
a. members b. neighbours c. inhabitants d. associates
30. The ..... of something means it is present in the world.
a. evidence b. existence c. absence d. expression

C. Her resmi en uygun kelimeyle eşleştiriniz. (1x30)

				
1. a. oven b. freezer c. stove d. fridge	2. a. heater b. refrigerator c. fireplace d. oven	3. a. cooker b. mat c. saucepan d. mug	4. a. bath b. shower c. sink d. washbasin	5 a. cupboard b. wardrobe c. bookcase d. bookshelf
				
6. a. needle b. anchor c. compass d. drill	7. a. carpet b. curtain c. cushion d. cupboard	8. a. cupboard b. drawer c. wardrobe c. shelf	9. a. clock b. land c. lamb d. lamp	10. a. cleaner b. broom c. vacuum cleaner d. electrical broom
				
11. a. hammer b. anvil c. axe d. screwdriver	12. a. pool b. stove c. washbasin d. chimney	13. a. careful b. confident c. consistent d. conscious	14. a. patient b. flexible c. terrified d. tired	15. a. bald b. freckle c. glasses d. beard
				
16. a. shy b. anxious c. arrogant d. honest	17. a. generous b. smart c. excited d. strong	18. a. weak b. mean c. miserable d. ill-tempered	19. a. successful b. helpful c. wonderful d. creative	20. a. ambitious b. trustworthy c. adventurous d. cheerful
				
21. a. moody b. elegant c. sociable d. attentive	22. a. exhausted b. eager c. enthusiastic d. excited	23. a. outgoing b. infamous c. artistic d. sensitive	24. a. frog b. spider c. snail d. snake	25. a. over-weight b. up-weight c. above-weight d. beyond-weight
				
26. a. rabbit b. peacock c. squirrel d. cock	27. a. ant b. turtle c. giraffe d. crocodile	28. a. parrot b. lovebird c. dove d. pigeon	29. a. deer b. donkey c. horse d. giant	30. a. tiger b. lion c. bear d. camel

APPENDIX D

İNGİLİZCEYE YÖNELİK TUTUM ÖLÇEĞİ

	Tümüyle Katılıyorum	Katılıyorum	Kararsızım	Katılmıyorum	Hiç Katılmıyorum
1. İngilizce çalışmayı seviyorum.	**A**	**B**	**C**	**D**	**E**
2. Ödevleri severek yapıyorum	**A**	**B**	**C**	**D**	**E**
3. Boş zamanlarımda İngilizce okumaktan hoşlanırım.	**A**	**B**	**C**	**D**	**E**
4. İngilizce öğrenmek sıkıcı bir uğraştır.	**A**	**B**	**C**	**D**	**E**
5. İngilizce derslerinde mutlu oluyorum.	**A**	**B**	**C**	**D**	**E**
6. İngilizce çalışmaya başlayınca kendimi iyi hissetmiyorum.	**A**	**B**	**C**	**D**	**E**
7. İngilizce çalışırken zaman su gibi akıyor.	**A**	**B**	**C**	**D**	**E**
8. İngilizce öğrenmeyi başaramayacağımı düşünüyorum.	. *A*	**B**	**C**	**D**	**E**
9. İngilizce yerine Türkçe okumayı tercih ederim.	**A**	**B**	**C**	**D**	**E**
10. İngilizce okuduklarımı Türkçe'ye çevirmeden anlayamıyorum.	**A**	**B**	**C**	**D**	**E**
11. İngilizce dersinde zaman geçmek bilmiyor.	. *A*	**B**	**C**	**D**	**E**
12. İngilizce öğrenmek bana zor gelmiyor.	**A**	**B**	**C**	**D**	**E**
13. Duyduklarımı Türkçe'ye çevirmeden anlayabiliyorum.	**A**	**B**	**C**	**D**	**E**
14. İngilizce ile ilgili konuşmalar beni sıkıyor.	. *A*	**B**	**C**	**D**	**E**
15. İngilizce çalışmaya başladığımda kendimi gergin hissediyorum.	**A**	**B**	**C**	**D**	**E**
16. İngilizce derslerindeki araları dört gözle bekliyorum.	**A**	**B**	**C**	**D**	**E**
17. İngilizce çalışmaktansa daha eğlenceli bir şey yapmayı tercih ederim.	**A**	**B**	**C**	**D**	**E**

APPENDIX E

MULTIPLE INTELLIGENCES INVENTORY

KİŞİSEL BİLGİ FORMU

1. **Adınız Soyadınız**:……
2. **Sınıfınız**:……..
3. **Doğum tarihiniz**:…….
4. **Annenizin eğitim düzeyi:**
    a. İlkokul
    b. Ortaokul
    c. Lise
    d. Üniversite
5. **Babanızın eğitim düzeyi:**
    a. İlkokul
    b. Ortaokul
    c. Lise
    d. Üniversite
6. **Annenizin mesleği:** ……
7. **Babanızın mesleği:** ……

ÇOKLU ZEKA ENVANTERİ

		EVET	KARARSIZIM	HAYIR
1.	Adam asmaca vs. gibi kelime oyunlarından hoşlanırım.	A	B	C
2.	Başkalarına bir beceri veya aktivite öğrenmekten zevk alırım.	A	B	C
3.	Başkalarının ruh hali ve mizaçlarına göre davranırım.	A	B	C
4.	Bir beceriyi yaparak öğrenirim.	A	B	C
5.	Bir kelimeden başka bir kelime türetme gibi sözcük oyunları oynamayı severim.	A	B	C
6.	Bir müzik aleti çalmak/çalabilmek bana zevk verir.	A	B	C
7.	Bir odanın nasıl düzenlendiği her zaman dikkatimi çeker.	A	B	C
8.	Bir şey öğrenirken etrafta yürümek hoşuma gider.	A	B	C
9.	Çoğunlukla birçok şey ya doğrudur ya da yanlıştır.	A	B	C
10.	Çok gelişmiş bir kelime hazinem vardır.	A	B	C
11.	Daha önce bana söylenmiş şeyleri harfi harfine hatırlarım.	A	B	C
12.	Duvardaki resmin düzgün asılıp asılmadığı dikkatimi çeker.	A	B	C
13.	Ellerimle bir yapıt ortaya çıkartmaktan zevk alırım.	A	B	C

14.	Etrafımdaki seslere duyarlıyım (Örn. Seslerdeki ritmi hemen algılarım)	A	B	C
15.	Film seyretmek, fotoğraf ve slaytlara bakmaktan hoşlanırım.	A	B	C
16.	Fiziksel aktivite gerektiren şeylerden zevk alırım.	A	B	C
17.	Fotoğraf makinesi kullanmaktan hoşlanırım.	A	B	C
18.	Gelir ve giderlerimi dengeli tutarım.	A	B	C
19.	Genelde birileriyle konuşurken onlara dokunurum.	A	B	C
20.	Genelde kendime güvenirim.	A	B	C
21.	Genellikle kağıt üzerine resimler çizer ya da karalamalar yaparım.	A	B	C
22.	Grupla değil tek başıma en iyi öğrenirim.	A	B	C
23.	Harita ve grafikleri çok kolay okurum.	A	B	C
24.	Her işimde planlı ve programlıyım.	A	B	C
25.	Her konuda kendime has tavır sergilerim.	A	B	C
26.	Her şeyde mantığa dayalı bir düzen olması hoşuma gider.	A	B	C
27.	Her şeyin düzenli, açık ve anlaşılır olmasından hoşlanırım.	A	B	C
28.	Her zaman mantıklı davranırım.	A	B	C
29.	İçimden şarkılar mırıldanırım.	A	B	C
30.	İçinde hareket olan aktivitelerden zevk alırım.	A	B	C
31.	İlişkilerimde bağımsız kişilik sergilerim.	A	B	C
32.	İnsancıl bir kişiyim.	A	B	C
33.	İnsanları organize etmekten hoşlanırım.	A	B	C
34.	İnsanların ya da nesnelerin benzerlerini çizebilirim.	A	B	C
35.	İnsanlarla bir arada olmaktan zevk alırım.	A	B	C
36.	İnsanlarla iletişim kurmayı severim.	A	B	C
37.	İsimler, tarihler ve kimi önemsiz bilgileri hatırlarım.	A	B	C
38.	İyi bir vücut koordinasyonum vardır.	A	B	C
39.	Kendi düşünce ve hislerimi tahlil edebilirim.	A	B	C
40.	Kendi kendimi motive ederim.	A	B	C
41.	Kendimi başkalarının yerine koyarak onların duygularını anlayabilirim.	A	B	C
42.	Kişisel problemlerim için nadiren yardım isterim.	A	B	C
43.	Kitaplardan hoşlanırım.	A	B	C
44.	Konuşurken canlı ve hareketliyim.	A	B	C
45.	Mantık yürütmeyi gerektiren bilmecelerden hoşlanırım.	A	B	C
46.	Mantıklı tahminler yürütebilirim.	A	B	C
47.	Matematik ve/veya fen bilimlerinden hoşlanırım.	A	B	C
48.	Mektup vb. şeyleri yazmaktan zevk alırım.	A	B	C
49.	Müziğin temposunu takip etmek benim için kolaydır.	A	B	C
50.	Müzik dinlemekten hoşlanırım.	A	B	C
51	Müzik duyduğumda ben de söylerim.	A	B	C
52.	Müzikteki yanlış notayı fark edebilirim.	A	B	C
53.	Nesnelere dokunmaktan hoşlanırım.	A	B	C
54.	Nesneleri görerek hatırlarım.	A	B	C
55.	Özel bir insanım ve bu iç dünyam da benim hoşuma gidiyor.	A	B	C
56.	Renklere karşı duyarlıyım.	A	B	C

57.	Satranç gibi taktik oyunlarından hoşlanırım.	A	B	C
58.	Ses titreşimlerine duyarlıyım.	A	B	C
59.	Sık sık radyo veya televizyonda müzik dinlerim.	A	B	C
60.	Sosyal durumları iyi algılarım.	A	B	C
61.	Sosyal olaylardan hoşlanırım.	A	B	C
62.	Şarkı söylemekten hoşlanırım.	A	B	C
63.	Tarih ve/veya edebiyattan zevk alırım.	A	B	C
64.	Tek başıma bir etkinlikte bulunmaktansa grup etkinliklerini tercih ederim.	A	B	C
65.	Tek başıma yaptığım aktivitelerden hoşlanıyorum.	A	B	C
66.	Uzun süre sakince oturamam.	A	B	C
67.	Yalnız başıma zaman geçirmekten hoşlanırım.	A	B	C
68.	Yazarken ya da konuşurken yaratıcı gücüm ortaya çıkar.	A	B	C
69.	Yönümü kolaylıkla bulabilirim.	A	B	C
70.	Zevk için okumaktan hoşlanırım.	A	B	C

APPENDIX F

THE SCORES OF THE STUDENTS IN THE PILOT STUDY OF THE ACHIEVEMENT TEST FOR TEST-RETEST RELIABILITY

Participant	Pre-test	Post-test
1	48	66
2	50	41
3	27	37
4	28	21
5	43	53
6	18	28
7	51	46
8	39	43
9	36	57
10	32	35
11	29	38
12	29	43
13	27	38
14	21	23
15	21	21
16	27	26
17	27	34
18	29	34
19	31	38
20	28	18
21	39	28
22	41	37
23	24	24
24	38	23
25	28	33
26	13	12
27	22	22
28	30	27
29	37	38
30	26	38
31	32	35
32	31	24
33	35	32
34	31	35
35	33	37

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