A DESCRIPTIVE STUDY ON THE CRITICAL THINKING LEVELS OF THE STUDENTS AT THE UNIT OF ENGLISH PREPARATORY SCHOOL AT HACETTEPE UNIVERSITY

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ABSTRACT

A DESCRIPTIVE STUDY ON THE CRITICAL THINKING LEVELS OF THE STUDENTS AT THE UNIT OF ENGLISH PREPARATORY SCHOOL AT HACETTEPE UNIVERSITY

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The aim of the study is to examine the critical thinking levels of the students who attended Hacettepe University English Preparatory School in the academic year of 2002-2003. In this study, Watson-Glaser Critical Thinking Appraisal Test, the information form and the English proficiency exam were used to collect data. The critical thinking appraisal test was administered to 300 students; however, only 193 students out of 300 returned their tests back.

The data were analyzed through SPSS program. The results showed that the mean of the critical thinking level of the students was moderate (M = 60.6). Regarding the students' major areas, there was a significant difference in their critical thinking levels in favor of the science students. For the types of ÖSS scores, there was a significant difference among the groups in favor of the students having numerical type scores. For their language groups, there was a significant difference in their critical thinking levels in favor of pre-intermediate. Regarding gender, number of siblings and the economic status of the students' families, there was no significant difference in the critical thinking levels of the students. Likewise, in the educational levels of their mothers and fathers either separately or together, there was no significant difference in the critical thinking levels of the students. Although there was no significant relationship between the critical thinking levels and English proficiency levels of the students, there was a significant low relationship between reading and writing skills and the critical thinking skills of the students.

Keywords: Critical thinking, Watson-Glaser Critical Thinking Appraisal, Language learning and critical thinking skills.

ÖZ

HACETTEPE ÜNİVERSİTESİ İNGİLİZCE HAZIRLIK OKULU ÖĞRENCİLERİNİN ELEŞTİREL DÜŞÜNME DÜZEYLERİ ÜZERİNE BETİMLEYİCİ BİR ARAŞTIMA

DAYIOĞLU, SEÇİL

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Bu çalışmanın amacı 2002-2003 akademik yılında Hacettepe Üniversitesi Hazırlık Okulu öğrencilerinin eleştirel düşünme düzeylerini araştırmaktır. Bu çalışmada, Watson-Glaser Eleştirel Akıl Yürütme Gücü Ölçeği, bilgi formu ve İngilizce Yeterlilik Sınavı veri toplama araçları olarak kullanılmıştır. Belirtilen eleştirel akıl yürütme gücü ölçeği 300 öğrenciye ulaştırılmış, fakat ancak 193 öğrenci testi cevaplayıp geri getirmiştir.

Elde edilen veriler, SPSS programıyla analiz edilmiştir. Çıkan sonuçlara göre, öğrencilerin eleştirel düşünme düzeyleri orta düzeydedir (*M* = 60.6). Öğrencilerinbölümlerinin bilim alanlarına göre incelendiğinde, fen bilimleri öğrencileri lehine istatistiksel olarak anlamlı bir farkbulunmuştur.Öğrencilerin ÖSS puan türüne göre elealındığında, sayısal puan türüne göre yerleştirilen öğrenciler lehine istatistiksel olarak anlamlı bir fark bulunmuştur.Öğrencilerin hazırlık okulunda devam ettikleri düzey gruplarına göre orta düzey İngilizce bilenler grubu diğer gruplardan daha yüksek puanlar almıştır ve gruplar arasında istatiksel bir fark bulunmuştur. Cinsiyet, kardeş sayısı ve öğrencilerin ekonomik durumları değişkenlerine göre, istatiksel olarak anlamlı bir farka rastlanmamıştır. Benzer olarak, anne-baba eğitim düzeyleri ayrı ayrı ve birlikte incelendiğinde, herhangi istatiksel olarak anlamlı fark bulunmamıştır. Öğrencilerin İngilizce yeterlilik sınavı sonuçlarıyla eleştirel düşünme testi sonuçları arasındaki ilişki ele alındığında istatistiksel olaral anlamlı bir ilişki bulunmamasına karşın, aynı İngilizce sınavının okuma ve yazma sonuçları ile, öğrencilerin eleştirel düşünme testi sonuçları arasında düşük ama istatistiksel olarak anlamlı ilişki bulunmuştur.

Anahtar Sözcükler: Eleştirel düşünme, Watson-Glaser Eleştirel Akıl Yürütme Gücü Ölçeği, Dil öğrenimi ve eleştirel düşünme becerileri

To my dear grandmother,

to my lovely mother,

and

to my sister

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Date: September 5th, 2003 Signature:

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CHAPTER 1

INTRODUCTION

This chapter starts with the background information about the study. Then, the purpose of the study involving the research questions and hypothesis are dealt with. Finally, the significance of the study and the definitions of the terms used in this study are elaborated.

1.1 Background to the Study

Critical thinking is one of the hottest issues which has recently been discussed in the education although the concept goes back to Dewey, who is one of the leading philosophers in educational arena. Like other subject areas, in foreign language education, critical thinking is scrutinized and its integration with the program is highly concerned. The idea of critical thinking has been taken into consideration since the times

of Ancient Greek. However, in today's world, since our age is the "Age of Information" and the flow of information is fast, critical thinking skills have a great role in analyzing information and evaluating it. Gough (1991) cited in Cotton, 2001) indicated the significance of teaching thinking skills as:

> Perhaps most importantly in today's information age, thinking skills are viewed as crucial for educated persons to cope with a rapidly changing world. Many educators believe that specific knowledge will not be as important to tomorrow's workers and citizens as the ability to learn and make sense of new information.(as cited Cotton, 2001)

That is, people are exposed to various kinds of information from various kinds of sources. If the information is not elaborated with analysis or evaluation, it is highly likely for people to be confused with all this information and even to be exposed to brainwashing (İrfaner, 2002, 4).

Moreover, due to the fact that today's world is complex and the problems faced with are more complicated (Hirose, 2001), the ability to analyze problems and thinking critically at all levels of education is essential (Carr, 1990). Therefore, taking on the role of preparing and training students for this world will require many changes in the educational setting, curriculum and instruction in any disciplines in line with improving thinking skills. Educational settings need to be designed so as to equip the students with the skills of critical thinking in any discipline. Paul (1999) explained this as follows:

> Each student who learns the logic of a discipline has to create that logic in his or her own mind. Each moment of that creation requires the presence of critical thought and judgment, for there is no way to create the logic for the student or simply to "give," transfer, or inject the logic in prefabricated form.

While learning occurs in the minds of the students, they have to activate their thought. In the process of thinking, they analyze knowledge, evaluate it and, at the end, create their own knowledge. By this way, they foster learning rather than memorization and rote-learning.

Despite the points above, most of the educators, teachers and instructors complain about their students' lack of thinking skills. Cromwell (1992) points out that even though the common primary goal of education is the improvement of student thinking, their teachers mostly complain about that "the graduates at all levels do not demonstrate higher thinking skills" (p.32). Suhor (1984) explained, regarding the reports by The National Assessment of Educational Progress in 1981 and The National Commission on Excellence in Education in 1983, that students have poor command of thinking skills such as drawing inferences and logical processing in solving problems.

Moreover, in the Turkish education system, this problem is considered more serious since students are expected to receive knowledge by usually memorization and then re-presenting it at exams (Celep 1993) (as cited İrfaner 2002, 2). Hence, it becomes unlikely for the students to use knowledge when facing real problems. As the students have difficulty in applying knowledge into the real life settings and evaluating knowledge, they become unsuccessful in their work lives and the employees become disappointed about their work. Hirose (2001) deals with the issue as below:

> Many of today's youth lack the basic skills to function effectively when they enter the workforce. A common complaint is that entry-level employees lack the reasoning and *critical thinking* abilities needed to process and refine information. With the modern work environment requiring more *thinking* and problem solving than the jobs of the past, community college teachers and administrators should emphasize *critical thinking* on their campuses, in their curricula, and in their teaching practices in order to prepare students to function effectively in today's workforce.

With an aim towards of academic study and to prepare students for the work environment, higher education has a strong responsibility to promote critical thinking in order to foster academic study and to deal with the problems faced with in the work environment. Erkmen (2003) explained that in today's world, access to knowledge is much easier than other times and people are exposed to various and even diversified knowledge; so are our students. However, they are expected to make sound and valid decisions in terms of their fields either academic or workforce.

Regarding language education, language learning should be viewed as a thinking process, and using language involves the thinking process (Chaffee, 1985, 2). Moreover, language is a natural setting for using critical thought to be analyzed and interpreted (Sacco, 1987, 62). Thus, critical thinking is crucial for language learning to foster analyzing, synthesizing and evaluating ability of the students, called as higher order thinking skills and these are necessary for any academic study.

When the current developments in the education of English as a foreign language, or a second language are considered, skill-based teaching, which refers to teaching the four basic language skills (listening, speaking, reading, and writing) in a communicative and integrated way, is emphasized. Skill-based teaching has been dealt

with in the Communicative Approach, in which language learning is defined as learning in the context of the target language and with authentic materials. According to Nattinger (1984, 394-397) (as cited Özçınar 1996), critical thinking provides students with opportunities to develop the language skills communicatively (p.12). He explained that reading is viewed as actively creating meanings on the basis of the passage, which requires analyzing it and evaluating the ideas in there. Also, for writing, it helps generating ideas for any type of writing and finding relationships among the ideas. Besides, listening critically involves understanding the message given as well as the underlying issues. With regard to speaking, critical thinking can promote understanding both verbal and non-verbal messages and replying accordingly. Besides, Kumaravadivelu (1993, 12) (as cited Özçınar, 1996) listed the common aims of the Communicative Teaching Approach and critical thinking as

1. Seeking to promote interpretation, expression and negotiation of meaning, an attempt which requires the students to be active in order to be involved in such skills,
2. Encouraging students to ask for information, seek clarification, express an opinion, agree/disagree in order to participate in meaningful interaction,
3. Creating learning opportunities in class so that language will develop in its own way,
4. Contextualizing linguistic input to learners in units of discourse so that students can benefit from the interactive effects of linguistic components (pp.12-13).

As stated above, both the Communicative Approach and the critical thinking skills aim to promote the students' thinking skills. The students are provided with a language environment where they use both their language skills and critical thinking skills more effectively and efficiently.

With this notion, the context of this study is English Preparatory School at Hacettepe University, which aims at equipping students with the necessary skills that enable them to express themselves in both written and oral form and to provide them with necessary language communication skills required in their professional, cultural and social lives (www.hacettepe/ydyo/yonetmelik.htm). The students who are expected to attend the English Preparatory School are divided into six different groups based on the result of the English Proficiency Examination. For students whose departments are English Language Teaching, English Language and Literature, American Language and Literature and English Language and Linguistics, their two language levels: intermediate (PC) and upper-intermediate (PB) are available. For these students, lower levels are not available. Regarding the ones who registered in their departments according to their verbal, numerical or equal weight scores on entrance to university, the classroom at the level of beginner (ZB), elementary (ELE), and pre- intermediate (PI) are offered. However, in the academic year 2002-2003, classes at intermediate level was not available because there were no students at this level with respect to the results of the proficiency exam. As for the departments enrolling students according to their ÖSS language scores, the students are supposed to attend to intermediate (PB) and upper-intermediate (PC) classes with regard to their proficiency test results. The total class hours for each groups are as given in Table 1 below:

Table 1. 1 The Class Hours per Week Allocated for the Language Levels

Levels	Class hours
Beginner (ZB)	30
Elementary(ELE)	26
Pre-Intermediate (PI)	20
Intermediate (PC)	20
Upper-Intermediate(PB)	17

Regarding the achievement of the students, quizzes, midterms, story book exams are administered during the academic year. At the end of the year, a final exam which assesses the English proficiency level of the students out of a total score of 100 is administered. During the year about 20-30 quizzes are administered and assessed out of a total score of 15-30. In addition, 6 midterms are administered out of a total score of 100. Lastly 5 or 6 story book exams are given to the students within a total score of 50. Moreover, students are given class performance grades at the end of each month. The students are considered as successful when they get the average of 60 from all those exams on the condition that the final score does not fall below 60 (www. hacettepe/ydyo/yonetmelik.htm)

Hacettepe University English Preparatory School in the School of Foreign Languages is in the process of revising and modifying its programs. In terms of the goals and objectives of the programs, improving students' critical thinking skills is not aimed at directly. However, in the aims of the preparatory school punlished in Hacettepe University Preparatory Year Curriculum Document, in item 5 it is stated that "learners will be assisted in developing skills in learning how to learn". In item 6, "learning independently" and in item 7 "developing an awareness" are expressed. All of these concepts are directly related to critical thinking and its strategies and skills. In order that the students learn how to learn, they should evaluate their learning process critically and be aware of their own obstacles and difficulties in learning. Independent learning requires independent thinkers who can think beyond the beliefs, ideas and norms offered to them and evaluate them from all the perspectives and issues without getting stick to any idea. Moreover, independence is considered as one of the affective strategies by

Paul (1998, 56). In terms of awareness development, learners need critical thinking in order to identify the issues in their environment and understand the relationships in each other. Additionally, language outcomes stated in the curriculum are directly related to critical thinking. For example, in the development of reading skills, distinguishing between facts and opinions and spotting irrelevant information within a text are seen as two outcomes. These are also considered to be the strategies of critical thinking skills by Paul (1998, 56). Also, in the development of writing skills, organizing information and idea generation are viewed as the two main sub-skills. They require critical thinking in finding relationships, ordering the issues, and connecting all the ideas, as they are the key processes in both critical thinking and improving writing skills. As a result, though in the school curriculum, critical thinking is not openly stated as an aim, it lies behind other aims and outcomes.

This study was mainly designed to identify the critical thinking levels of the students at Hacettepe University English Preparatory School. The critical thinking levels of the students were examined according to the variables: their types of ÖSS scores (verbal, numerical, equal weight), the types of major areas (social sciences and sciences), English proficiency level, and socio-demographic features. In the socio-demographic features, gender, number of siblings, parental education level and economic status were examined. In terms of these results, some contradictory results were found in the research and studies conducted recently. Therefore, in this study, it is considered that these variables need to be elaborated.

1.2 Purpose of the Study

This study aims at examining the critical thinking skills of the students who attended Hacettepe University English Preparatory School in the academic year 2002-2003.

1.2.1. Research Questions

This study will attempt to address the following research questions:

1. What are the critical thinking levels of the students?
2. Is there any statistically significant difference in the students' critical thinking levels in accordance with their types of ÖSS scores?
3. Is there any statistically significant difference in the students' critical thinking levels in accordance with their major area?
4. Is there any statistically significant difference in the students' critical thinking levels in accordance with the language groups in which the students were attending at the preparatory school?
5. Is there any statistically significant difference in the students' critical thinking levels in accordance with their socio-demographic features?
    5.1. Is there any statistically significant difference in the students' critical thinking levels in accordance with gender?
    5.2. Is there any statistically significant difference in the students' critical thinking levels in accordance with the number of the siblings?
    5.3. Is there any statistically significant difference in the students' critical thinking levels in accordance with the parental education levels?

5.3.1. Is there any statistically significant difference in the students' critical thinking levels in accordance with the education level of their mothers?

5.3.2. Is there any statistically significant difference in the students' critical thinking levels in accordance with the education levels of their fathers?

5.4. Is there any statistically significant difference in the students' critical thinking levels in accordance with the economic status of the students?

6. Is there any statistically significant relationship between the English proficiency exam scores of the students and their critical thinking levels?

6.1. Is there any statistically significant relationship between the reading scores of the students from the English proficiency exam and their critical thinking levels?

6.2. Is there any statistically significant relationship between the writing scores of the students from the English proficiency exam and their critical thinking levels?

1.3. Significance of the Study

The primary significance of the study lies behind the fact that this study is unique with regard to the fact that it is considered one of the first studies which examines the critical thinking skills in the context of English Language Teaching (ELT). It is thought that it will provide a starting point for the scholars and teachers in order to deal with the

critical thinking concept by incorporating it into the language teaching-learning process in the context of ELT.

Moreover, it is believed that this study can present a framework for the program development process being held in Hacettepe University English Preparatory School. As mentioned before, at English Preparatory School, there has been a reconsideration and reconstruction of the program in order to make it more effective and efficient. With this study, the administrators and the instructors are provided with information about the students' thinking skills and their differences and relationships with the variables such as their ÖSS scores, faculty and department, their English proficiency level, and socio-demographic features (gender, number of siblings, the parental education level and economic status) . These findings will help them design and develop their new programs in line with the students'needs .

1.4 Definitions of Terms

Critical Thinking: It is viewed as a composite of attitudes, knowledge, and skills. This composite includes: 1) attitudes of inquiry that involve an ability to recognize the existence of problems and an acceptance of the general need for evidence in support of what is asserted to be true; 2) knowledge of the nature of valid inferences, abstractions and generalizations in which the weight or accuracy of different kinds of evidence are logically determined; 3) skills in employing and applying the above attitudes and knowledge. (Watson & Glaser, 1964, 10).

Critical Thinking Level: The total scores of the students which they obtained from Watson-Glaser Critical Thinking Appraisal Test.

English Language Proficiency Level: The total scores of the students which they obtained from the final exam conducted on June 13th , 2003 at the English Preparatory School at Hacettepe University. In the exam, there were four parts as listening, use of English, reading, and writing.

CHAPTER 2

REVIEW OF LITERATURE

In this chapter, literature review about the concept of critical thinking, its skills and strategies, and other issues related to the concept are dealt with. Moreover, the studies that can be reached are listed and their results are summarized at the end of the chapter.

2.1. Development of Critical Thinking in Education

Critical thinking is not a new concept but, when its philosophy is concerned, it goes back to the time of Socrates. He proposed a dialogue named as S*ocratic Questioning*, which was used to guide the logic at those times and nowadays it is used as a means to raise the awareness in one's thinking skills. Besides, the purpose behind these questions is explained in its relation to raising critical thinkers (İrfaner, 2002, 12).

In education, critical thinking was first introduced by Dewey, one of the most significant educational scholars and the father of Progressivism in educational philosophy. He defined critical thinking as "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it; and the further conclusion to which it tends" (Dewey, 1928, 6). In this definition he emphasized questioning the belief and knowledge, considering its base and conclusions. In that respect, this definition is similar with the strategy 16 "evaluating the credibility of sources of information", the strategy 18 "analyzing or evaluating arguments, interpretations, beliefs, or theories" and the strategy 19 "generating or assessing solutions" identified by Paul (1989, 56).

Besides, Dewey's definition of reflective thinking involves in some issues of critical thinking. This definition has highly found its reflection in the field of education. The students have been regarded as the center of the teaching and learning environment. The instructional methods and techniques, such as cooperative learning and role-plays have been designed in accordance with this definition. These activities are helpful to promote critical thinking skills of the students in that they trigger the students' mind and provide them with an opportunity to analyze and synthesize the situations and issues.

The taxonomic learning presented by Bloom (1956) is another concept which is strongly related to critical thinking. Bloom's taxonomy has three domains, cognitive, affective and psychomotor. Among these domains, the cognitive domain describing the levels of understanding is mostly in line with the aspects of critical thinking. The cognitive domain includes the following six levels :

- Knowledge (ability to recall data and recite the facts)

- Comprehension (ability to relate and organize the previously learned and new knowledge)
- Application (ability to apply knowledge to a new situation)
- Analysis (ability to separate the concept into meaningful parts)
- Synthesize (ability to build a structure or pattern from diverse elements)
- Evaluation (ability to make judgements about the value of ideas and materials)

Among these levels, the last three phases refer to the components of critical thinking while the first three are important to set the foundation for the others (İrfaner, 2002, 20). While teaching critical thinking skills, the teaching staff should go beyond the phases of knowledge, comprehension and application and stimulate the last three within the curriculum.

Nowadays, critical thinking becomes one of the hottest issues in education as the world becomes more global and complex. For this reason, critical thinking skills are incorporated into the current methods and techniques. Constructivist teaching methodologies emphasize critical thinking (Gömleksiz, 1993; Delen, 1998 cited in Öner, 1999, 21).

2.2. Definitions of Critical Thinking

It is highly possible for any researcher to come across with numerous definitions of critical thinking. The reason underlying this is that critical thinking is not a one-sided way of thinking, it is full understanding of (Chaffee, 1990, 37) and commitment to making sense of the world (Smith, 1990, 5). Cromwell (1992, 1) notes that the definition

of *critical thinking* has gone through a transformation from meaning the ability to distinguish the thought patterns in the work of others to a reflection on one's own beliefs, thoughts, and decisions.

Since critical thinking is a complicated concept, there are numerous definitions concerning its various aspects . The word was originally derived from the words from Greek: According to Barnet and Hugo (cited in Critical Thinking Across the Curriculum). The word *critical* comes from a Greek word, *krinein*, meaning 'to separate,' 'to choose'; it implies conscious, deliberate inquiry, and the word *kritikos*, which means to question, to make sense of, to be able to analyze (Chaffee, 1990, 37). This implies that critical thinking is different from other kinds of thinking in terms of its differentiation among the ideas. Bailin et al. (1999, 288) emphasized that solving any kind of problem and making decisions can be carried out either critically or uncritically in accordance with making a number of judgements and the thinking process leading to these judgments.

Critical thinking is considered to be reasonably reflective thinking on what to believe or do (Ennis, 1991, Hughes, Jason, and Moore cited in Alberquerque, 2000], King & Kitcher1981, 1990, 1994 cited in Leming, 1998, 63 & Bailin et al., 1999, 286). This definition implies that critical thinking is judging the value of believing in something. Also, another significant point underlying critical thinking is that it is selective in term of believing and doing it. Nickerson et al. (1985, 58) defined it as figuring out what to believe, in a variety of contexts, in a rational way that requires the ability to judge the plausibility of specific assertions, to weigh evidence, to assess the

logical soundness of inferences, to construct counter arguments and alternative hypotheses.

Besides reflectivity in critical thinking, Chaffee (1991, 37) expressed that people use critical thinking to comprehend their world by attentively examining the thinking process so that the comprehension is more obvious and well-structured. Thus, the aspect of self-awareness is regarded (Romain cited in Alberquerque, 2001). This refers to not only thinking adequately but also being aware of how thinking is processed, which requires self-observation.

Further, critical thinking is defined as a systematic way of forming and shaping ideas and "disciplined, self-directed *thinking* that exemplifies the perfection of *thinking* appropriate to a particular mode or domain of thought." (Paul cited Alberquerque 2001: online). This means; critical thinking is a logical and rational way of dealing with ideas (Rugerrio and Soccio cited in Alberquerque, 2001). The terms *logical* and *rational* refers to the justifying the ideas, and supporting and validating them.

Regarding all the definitions above, Glock (1987 cited in Hirose, 2001) offers the following broad definition: "*Critical thinking* skills are (a) those diverse cognitive processes and associated attitudes, (b) *critical* to intelligent action, (c) in diverse situations and fields, (d) that can be improved by instruction or conscious effort." In line with the definitions, the components or elements of critical thinking changes. Maclure (1989) identified them as knowing how to define problems or topics, using resources to solve them and revising one's work (p.167). Siegel (1988, 28) (as cited in Bailin et al., 1999) defined two components as the ability to assess reasons properly, and the

willingness, desire, and disposition to base one's actions and beliefs on reasons (p.288). Regarding all the definitions above, in terms of this study, critical thinking is viewed as

- a systematic way of thinking
- an awareness of the thinking process
- a judgmental process of discriminating truth from falsehood, appearance from reality, mere opinion from informed opinion.

2.3. Identifications of Critical Thinking Skills and Strategies

Identification of critical thinking skills and strategies is alterable according to the field it is targeted to be used in reading and writing.

In terms of academic thinking and writing, Kiniry and Rose (1993) considered these six strategies as defining, summarizing, serializing, classifying, comparing and analyzing (p.2). In terms of defining, they explain that it refers to looking at something more clearly and perceiving its boundaries against a background. It is not defined as a mechanical strategy. The second strategy regards setting out notes which we can work easily rather than the text itself. Serializing, the third strategy, is also viewed as making interpretive judgments, decisions about how items, events, or stages relate to one another, about their relative importance and their position in an overall sequence. The other strategy is classifying. It means sorting into the categories. This strategy is significant in thinking critically in academic situation since it brings about evaluating the categories which are human constructions rather than being imposed upon them (pp.162-163). The fifth strategy is comparing. It is explained as restructing and re-evaluating at least two materials (p. 217). The last strategy is analyzing. It is explained as gathering

evidence to evaluate the opinions and ideas (p. 280). All of these strategies are interconnected with each other. They cannot be separated.

Mayfield (1987) defined the traits of a critical thinker in terms of inductive reasoning and deductive reasoning (p.7-8). With regard to inductive reasoning, a critical thinker:

1. observes self in the process of thinking;
2. monitors and corrects self in the process;
3. develops the confidence that he or she can produce accurate and reliable information;
4. knows the difference between thinking, sensing, and imaging, and can use each selectively;
5. can suspend thinking, judgments, and evaluations for a sufficient length of time while observing to gain insights;
6. can recognize an insight when it occurs;
7. can concentrate on a problem that requires observing for as long as it takes;
8. knows how to identify and verify facts. Knows when more facts are needed and has the patience to seek them out;
9. is flexible in capacity to imagine a wider range of inferences to account for a situation rather than settling for the first inference that comes to mind;
10. does not confuse facts with inferences, or opinions and evaluations with facts;
11. recognizes assumptions and looks for hidden assumptions;
12. develops the ability to distinguish the relevant from the irrelevant and to see relationships and patterns;

13. can identify and articulate problems (incongruities, contradictions) and feels challenged to understand and solve them;
14. persists until true understanding or communication of a problem, word, or situation is reached;
15. checks for errors and has standards for the communication of ideas;
16. can grow in capacity to observe phenomena with awareness and objectivity, and recognizes own tendency to passively absorb and react;
17. has the ability to choose the most likely conclusion from a given set of facts and the one most consistent with these facts;
18. understands that the process of induction produces a hypothesis.

He added that, according to creating arguments through both deductive and inductive reasoning, a critical thinker:

1. wants to be logical – to offer convincing evidence or valid reasons to define or advance a viewpoint;
2. has some knowledge of standards for the construction of a valid and sound argument;
3. understands the basics of semantics, or the relationship between language and communication;
4. clearly defines words used in argumentation and uses the dictionary persistence to arrive at word understanding;
5. recognizes how feeling can affect viewpoint in self and others. Knows the difference between conscious and unconscious viewpoint.

Additionally, regarding analyzing arguments through both deductive and inductive reasoning, a critical thinker:

1. can identify words that are underlined, ambiguous, or disguised in neutral terms;
2. can identify the argument's conclusion, then its reason and evidence. Does not confuse the reasons with the conclusions or start arguing with the reasons rather than the conclusion. Can tell if the reasons are sufficient to back up the conclusion;
3. is aware of the use of unfair techniques of persuasion, such as hypnotism, emotional appeal, commercial and political manipulation;
4. recognizes how viewpoint shapes information and can identify or describe and orientation. Recognizes bias and slant;
5. is aware of important missing information, a such as definitions or evidence;
6. is willing to concede if own argument is untenable and will seek a position that can be supported, even if it is that of the "opponent".

Paul et al. (1989) classified the strategies of good critical thinkers into two categories as affective and cognitive strategies (p. 56). He identified 9 affective and 26 cognitive strategies which are grouped as macro abilities and micro abilities, in total he defined 35 strategies. These are:

Affective Strategies:

1. thinking independently;
2. developing insight into egocentricity or sociocentricity;
3. exercising fair mindedness;

4. exploring thoughts underlying feelings and feelings underlying thoughts;
5. developing intellectual humility and suspending judgement;
6. developing intellectual courage;
7. developing intellectual good faith and integrity;
8. developing intellectual perseverance
9. developing confidence in reason.

Cognitive Strategies – Macro Abilities:

10. refining generalizations and avoiding oversimplifications;
11. comparing analogous situations: transferring insights to new contexts;
12. developing one's perspective: creating or exploring beliefs, arguments or theories;
13. clarifying issues, conclusions or beliefs;
14. clarifying and analyzing the meanings of words or phrases;
15. developing criteria for evaluation: clarifying values and standards;
16. evaluating the credibility of sources of information;
17. questioning deeply: raising and pursuing root or significant questions;
18. analyzing or evaluating arguments, interpretations, beliefs, or theories;
19. generating or assessing solutions;
20. analyzing or evaluating actions or policies;
21. reading critically: clarifying or critiquing texts;
22. listening critically: the art of silent dialogue;
23. making interdisciplinary connections;
24. practicing Socratic discussion: clarifying and questioning beliefs, theories or perspectives;

25. reasoning dialogically: comparing perspectives, interpretations or theories;

26. reasoning dialectically: evaluating perspectives, interpretations or theories;

Cognitive Strategies – Micro Skills:

27. comparing and contrasting ideals with actual practice;

28. thinking precisely about thinking: using critical vocabulary;

29. noting significant similarities and differences;

30. examining or evaluating assumptions;

31. distinguishing relevant from irrelevant facts;

32. making plausible inferences, predictions, or interpretations;

33. evaluating evidence and alleged facts;

34. recognizing contradictions;

35. exploring implications and consequences.

Finally, Paul's identification of the dimensions are regarded as the collection of all the other identification done by other researchers.

In the strategies stated by both Mayfield and Paul et. al., it is obvious that a critical thinker is analytical, reflective and reasonable. He is aware of the beliefs, argumentations, interpretations and feelings existing in the context in either implied or direct form.

2.4. Teachers' Role in Critical Thinking Skills

As in all other educational issues, in critical thinking teachers are also the key people. Since they are the ones who are responsible for the learning environment and atmosphere, their contributions and roles are invaluable to help the students gain critical

thinking skills. To promote critical thinking in a learning environment, teachers should be trained to present the materials in a way that students think critically. Hirose (2001) explained as follows:

> For students to gain *critical thinking* skills, teachers will have to change the way they present materials and change who does the presenting in their classrooms. They must learn to ask more open-ended questions - why, how, and what if- and coach students through the process of learning how to answer them. Rather than having students absorb knowledge, teachers must encourage students to think problems through, analyze, conceptualize, ask questions, be questioned, and reflect on how their beliefs might affect and compare to others. In addition to memorizing facts and figures for a final examination, students must be challenged to apply what they have learned to the real world

Suhor (1984) claimed that English teachers have a special role in the teaching of thinking skills because language has the central role in the curriculum as language is placed "in perspective with both the subject-specific and the generic thinking skills involved in other disciplines"

2.4.1. Teaching Critical Thinking

Although teaching critical thinking is agreed upon by most of the scholars, they cannot agree whether to teach it in content or as a separate subject.

According to the people supporting the idea of teaching it in content, "thinking cannot be divorced from content; in fact, thinking is a way of learning content" (Raths et. al., 1967) (as cited Carr, 1990). In every course, and especially in content subjects, students should be taught to think logically, analyze and compare, question and evaluate.

Skills taught in isolation do little more than prepare students for tests of isolated skills (Spache and Spache, 1986)(as cited Carr, 1990). In line with these ideas, Potts (1999) considered that teaching critical thinking is crucial in any subject level and class because

- Critical thinking promotes interaction among students as they learn.
- Students are exposed to open-ended questions rather than the "one right answer" questions which encourages them to respond questions actively and creatively and even with no fear of giving wrong answer.
- Students are to be allowed sufficient time for students to reflect on the questions asked or problems posed. They are expected to deliberate and ponder and required to make judgements about the issues in problems and questions.
- Students should be taught for transfer-"travel well". They are supposed to apply the critical thinking skills into different areas.

Moreover, Potts (1999) proposes three strategies to adapt in to any subject matter and field. These are 1) building categories, 2) finding problems, and 3) enhancing the environment. These strategies are applicable to most of the subject areas and fields. Teaching critical thinking should be the goal of any learning environment without excluding any kind of educational content. In other words, whether you are teaching mathematics or history, the main question to be answered is "How are we to teach content so that students identify, analyze, and deeply apprehend the logic of that content?". If the students study any content regardless of identification, analysis and apprehension of the logic of the content, they could not develop an integrated understanding of the relationship within the issues, aspects of the content itself and with other contents (Paul & Elder, 1999)

According to Ennis (1989)(as cited İrfaner, 2002, 23), it was indicated that a course claiming to be teaching critical thinking skills can be designed as a separate subject including all the strategies and skills. However, he proposed that if these skills are embedded with the critical thinking skills, it should be content-based.

In line with these suggestions there are a number of programs described on the internet aiming at applying critical thinking skills and its constituents. In the programs of Department of Mechanical and Industrial Engineering at California University (http://www-catalog.admin.csufresno.edu/old/enginddgr.html) and Department of Civil Engineering at John Hopkins University (http://www.ce.jhu.edu/undergrad.html), it is stated that they have integrated critical thinking skill teaching into their curriculum. In California State University, there is a course called the Engineering Writing course which fosters critical thinking in their curriculum. Additionally, in Turkey, in the Freshman Year English Program at Bilkent University, it is aimed at developing critical thinking skills through content-based instruction (C.B.I), which is described as the integration of particular content with language teaching aims. All of these signify that teaching critical thinking has recently been valued in higher education.

However, there are other programs involving critical thinking as a separate course from other disciplines. Oxman and Barell (1983) asserted that project THISTLE (Thinking Skills in Teaching and Learning) is designed to promote critical thinking skills of pre-college urban school students. Lipman's Philosophy for Children is a program for younger students aiming at improving informal logic skills through the discussion of issues raised in narrative tests involving problems of meaning, truth, ethics, reality and imagination (Resnick, 1987).

Teaching critical thinking has currently been conducted in two ways as a course integrating it with an educational content, and a separate subject matter. Its integration with other contents is emphasized since it is explained that it cannot be separated from content. However, as it has its own content and constituents it needs to be taught as a separate subject matter.

2.4.2 Foreign Language Education and Critical Thinking

Although the concept of critical thinking has not been defined clearly and accurately, there has been a consensus about critical thinking as one of the key issues of any subject areas in education. Foreign language education is one of these areas which highly requires promoting critical thinking skills in learning owing to the fact that language learning is a thinking process because it provides a natural setting for using critical thought to be analyzed and interpreted. (Özçınar, 1996, 11; Chaffee, 1985, Sacco, 1987; 58; and Flower, 1981, 3). Suhor (1984) strikingly emphasized that

> Language as a way of thinking and learning, then, is not merely a pedagogical catchphrase. It is an essential element in every classroom and the most persuasive way of insuring that thinking skills are, in fact, being taught effectively in every subject area.

According to Kumaravadivelu (1993, 12) (as cited Özçınar, 1996, 12), the Communicative Approach, one of the current approaches implemented in foreign language education, has similar aims with the critical thinking theory. These are

1. seeking to promote interpretation, expression and negotiation of meaning, an attempt which requires the students to be active in order to be involved in such skills,

2. encouraging students to ask for information, seek clarification, express an opinion, agree/ disagree in order to participate in meaningful interaction,
3. creating learning opportunities in class so that language will develop in its own way,
4. contextualizing linguistic input presented to learners in units of discourse so that students can benefit from the interactive effects of linguistic components.

To sum up, it is conclusive that critical thinking can be developed in integration with foreign language education. Foreign language education fosters critical thinking and critical thinking fosters foreign language education.

2.4.3 Reading Skills and Critical Thinking

Reading skills are one of the skills whose interconnections with critical thinking skills have been emphasized and dealt with by different distinguished experts. They commonly consider that to improve reading skills, it is inevitable to improve critical thinking skills as reading requires thinking in order to analyze, scrutinize and grasp the gist of the text all of which brings about critical thinking as a result of reading process (Özdemir, 1997, 16). Critical reading has been defined as learning to evaluate, draw inferences and arrive at conclusions based on evidence (Zintz and Maggart, 1984) (as cited Carr, 1990).

In order to train the readers of foreign language as critical readers, it is necessary to foster the skills listed below:

1. Distinguishing Fact and Opinion
2. Thinking about bias
3. Detecting errors in reasoning

4. Recognizing propaganda

(Flemming, 1999, 471)

5. Reading between the lines: drawing right inferences
6. Identifying purpose and tone
7. Understanding figurative language (such as metaphors and allusions)
8. Recognizing and responding to bias
9. Understanding and evaluating arguments
10. Reading and responding to essay questions

(Flemming, 2000, 211)

These skills help the readers to analyze, synthesize and evaluate the reading text so that they become more aware of the ideas, opinions, and beliefs and evaluate them critically (Reading Skills for University: Critical Thinking, 2002). Moreover, distinguishing facts and opinion and identifying the author's purpose and attitude are also involved in reading skills. This means, by improving these thinking skills, the learners' reading skills are improved, as well.

Furthermore, the skill stated as reading and responding to essay questions signals that critical reader should be equipped with the skills of the writing skills. Thus, reading and writing are interrelated skills to improve critical thinking.

2.4.4 Writing skills and Critical Thinking

Writing is one of the most significant skills which has a strong relationship with the critical thinking skills. Suhor (1984) indicated that "the writing assignments call for exercise of students' generic thinking processes and those pertinent to the subject area"

and added "prewriting" activities serve as mental organizers, leading towards a coherent writing product that demonstrates deep understanding of the subject".

Most of the writing instructions and curricula lack in critical thinking skills although writing facilitates critical thinking, in a way that it is not only a result of critical thinking but also a stimulus to a new thinking and new discoveries (Sheridan, 1992) (as cited Hirose 2001).However, when teaching writing , writing is predominantly dealt with in a "mechanical" way such as "fill in the blanks" or "short answer" despite the fact that an effective writing should include the concept "sequence", which means "moving from personal to analytical writing, from thesis to logical arguments" (Holbrook, 1984, online).

To avoid the mechanistic view towards writing, students should be encouraged to take the risk of coming up with innovative thought, to deal with the real life topics generated by students themselves in a series of brainstorming sessions, to motivate the students to implement the thinking- writing strategies in their assignments and to generate the criteria which is used to evaluate their writing (Sheridan, 1992) (as cited Hirose, 2001). These techniques can be listed as (a) Focused Freewrite, (b) Categorize Completely, (c)Prioritize Please, (d) Alternate Ways of Looking, (e) Advantages-Disadvantages, (f) Creative Alternative, (g) Compare-Contrast, (h) State Problem Specifically, (i) Mine for Metaphors, (j) Take the Next Step, (k) Essential to Consider Opposition, (l) Alternate Solution, (m) Consider Position, (n) Sequence Your Points, (o) Stand It on Its Head, (p) Write It in Pieces, (q) Close Strongly, (r) Disobey Directions Creatively

2.5. Assessment of Critical Thinking

Assessment of critical thinking is one of the most controversial issues in critical thinking since it is mostly related to cognition and affection. In terms of, especially, standard tests, it is argued that critical thinking is multidimensional so it is almost impossible to cover all of these dimensions in any kind of test. Therefore, most of the standard tests designed were divided into some subcategories which are the dimensions of the critical thinking (See 2.5.1 Assessment Tools of Critical Thinking).

As the standard tests are considered problematic, new alternatives such as portfolio assessment and observation tools to identify the improvement of critical thinking have been searched. By portfolio assessment, a progress of the individual can be figured out by examining his or her works. For observation tools, individuals are observed throughout the period and their progresses are noted down.

As a result, assessment of critical thinking is as discussible as its concept. The following section deals with the various assessment tools currently used.

2.5.1. Assessment Tools of Critical Thinking

To measure the various aspects of critical thinking, there are some tests and inventories. Although they have some common aspects of critical thinking, they elaborate on critical thinking skills. Moreover, the statistical analysis of these tests still continues.

1. The California Critical Thinking Cognitive Skills Test (CCTCST) : The CCTCST is a 34-item tool designed to measure the cognitive skills of critical thinking. That is, it measures the extent to which one is able to analyze, evaluate, infer, and

inductively and deductively reason when faced with a problem. It is composed of five cognitive skill dimensions: analysis, evaluation, inference, inductive reasoning and deductive reasoning. The Cronbach's alpha reliability reported is .70. The test developers set up test norms to range from 2 to 29 with a standard deviation of 4.46. The established mean was 15.89 (May, 1999, 103).

2. The California Critical Thinking Dispositions Inventory (CCTDI): The CCTDI was designed to measure the extent to which an individual possesses the dispositions or characteristics of the ideal critical thinker. These dispositions are categorized into seven subscales as truth-seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness, and maturity. The reported Cronbach's alpha reliability is .90. The subscale alpha reliability for the seven dispositions ranges from .72 to .80. It is composed of 75 items measuring seven dispositions. (May, 1999, 103; Facione, 1994, 346-347).
3. The Watson-Glaser Critical Thinking Appraisal (WGCTA): The WGCTA is one of the most widely-used standardized test to measure the critical thinking skills. It has been undergone to measure gains in critical thinking abilities resulting from instructional programs in schools, colleges, and business and industrial settings; to predict success in certain types of occupations or instructional programs in which critical thinking has an important role, and to determine, for research purposes, the relationship between critical thinking abilities and other abilities and traits. There are five sub-tests in the appraisal: These are inference, recognition of assumption, deduction, interpretation, and evaluation of arguments. According to reliability

studies, split-half coefficients ranged from 0.69 to 0.85 with scores stable across time and between alternate forms (Magnussen, 2000).

4. Cornell Critical Thinking Test Level X Critical Thinking defined as the process of reasonably deciding what to believe and do (Cornell Critical Thinking Tests Level X and Level Z Manual, Midwest Publications, CA, 1985). Aspects of CT measured by the test are: induction, deduction, observation, credibility, and assumptions (STANDARDIZED SCALES-critical thinking.htm).
5. Cornell Critical Thinking Tests: This test is aimed at grade 7 through college and consists of the aspects of induction, deduction, observation, credibility, and assumptions. These aspects make up of the sections induction, credibility, prediction and experimental planning, fallacies, deduction, definition, and assumption.

2.6 Studies Conducted on Critical Thinking Skills in Education

On critical thinking and its issues, various studies have been conducted abroad and in Turkey, which are dealt with below.

2.6.1. Studies Conducted Abroad

Magnussen and his colleagues set out an experimental study to measure the effect of inquiry-based learning (IBL), a newly adapted teaching methodology, on the critical thinking abilities of the students using the Watson-Glaser Critical Thinking Appraisal (WGCTA). The participants were 228 nursing students in the first semester and 257 students in the final semester of their program. When the scores were stratified into groups, it was found that there was a significant increase in the scores of the

students in the low group comparing the scores of the pre-test with those of the post-test. In terms of the students in the medium group, there was no change between the scores of the students. Finally, there was a significant drop in the scores of the students in the high group.

Angel and her colleagues (2000) conducted a longitudinal, quasi-experimental research study with 142 junior nursing students to evaluate any changes in their level of knowledge and critical thinking performance related to the use of either structured or unstructured format of health pattern assessment each week. According to the findings, there is a significant difference between the groups using the structured versus those using the unstructured format for health-pattern assessment. Also, there was no indication that the change in critical-thinking behaviors was influenced by age or previous degree. Additionally, there was no indication that WGCTA score obtained just before the semester started influenced this observed change in critical-thinking behaviors.

Walsh and Hardy (1999) conducted an exploratory study to examine differences in the disposition toward critical thinking in college students in different major areas and across genders using the California Critical Thinking Disposition Inventory (CCDTI). The results of the study revealed differences in the overall disposition toward critical thinking among six majors: English, history, psychology, education, business, and nursing. English major showed consistently higher scores than other majors on the CCDTI sub-scales of Truth-seeking, Open-mindedness, Confidence, Inquisitiveness, and Maturity. Besides, when major areas were grouped into two categories as practice and non-practice disciplines, the disposition scores of the non-practice disciplines were

generally higher than those of the practice disciplines. In terms of gender, there were no significant differences on the scores of the specific scales of the CCDTI among majors; though females showed higher scores overall.

May and his colleagues (1999) set out an exploratory non-experimental design research study to examine critical thinking abilities, clinical competence skills, and the relationship between these two groups involving 143 senior nursing students attending a small, northwestern, liberal arts college. The California Critical Thinking Skill Test (CCTST), the California Critical Thinking Disposition Inventory (CCDTI) and clinical competency evaluation were administered to the sample groups. With respect to the findings of the study, the group of the participants was able to think critically and practice competently according to set standards. Nevertheless, there were no statistically significant correlations between critical thinking and clinical competence total scores. It was found out that there were a few weak positive relationships between CCDTI sub-scales and the nine criteria of the clinical competence evaluation. Specifically, the critical thinking criteria of the clinical competence correlated with the open-mindedness and truth-seeking dispositions of the CCDTI.

Adams (1999) conducted an integrated review summarizing 20 research studies reported from 1977 to 1995 on the critical thinking abilities of professional nursing students. He expressed that in Miller's study diploma students had higher scores than ADN students whereas in Notarianni's study in 1991, no significant positive change obtained at any year level of BSN and ADN students. He signified that there was no clear answer regarding the relationship between critical thinking abilities and the span of years of the nursing program. Therefore; the findings of the review show the mixed and

contradictory results; therefore, the researcher proposed further research on examining the reasons for this contradiction of the results.

Adams and his colleagues (1999) designed a longitudinal study so as to find out if a difference exists in the scores of sophomore-level students and scores of the same students at the senior level. For the study, they used the Watson-Glaser Critical Thinking Appraisal Test (WGCTA). In the study, the scores of the WGCTA correlated with American College Test (ACT), grade point average (GPA) and age. Gender, transfer status, and first-degree or second-degree were analyzed for differences. A sample of 203 students at the baccalaureate level of educational preparation at a state supported university from U.S. participated in the study. The researchers found out that there was no statistically significant difference in the total WGCTA raw scores and each of the sub-tests of inference, recognition of the assumptions, deduction, interpretation, and evaluation of arguments between the students first at the sophomore level and again at the senior level. During the sophomore year, a statistically significant difference was found with gender and the evaluation of arguments in favor of females but this can be due to the domination of the female students in the sample. Also, there was a statistically significant difference existed with transfer status and the sub-tests, inference at the sophomore level, deduction at both sophomore and senior years. There was a moderate positive correlation between sophomore WGCTA raw scores and ACT composite scores whereas there was a low positive correlation between senior-level WGCTA raw scores and ACT composite scores. A positive correlation was found between sophomore WGCTA raw scores and grade point scores. However, there was a low correlation

between senior-level WGCTA raw scores and GPA. There was no significant relationship with WGCTA scores and age.

McCarthy and his colleagues (1999) carried out a cross-sectional study to compare and contrast critical thinking abilities in beginning and graduating nursing students using the California Critical Thinking Skill Test (CCTST) and the California Critical Thinking Disposition Inventory (CCDTI). As a result of the study, they found out that the CCTST revealed a significant difference in critical thinking from sophomore year to senior. Likewise, regarding CCDTI, there were significant differences between sophomore and senior students considering the overall score of the test, with sub-test differences in truth-seeking, analycity, self-confidence, and inquisitiveness. That is; when the grade increased, the critical thinking levels of the students increased.

Facione and his colleagues (1994) conducted a study on the critical thinking disposition as a measure of component clinical judgement in nursing education. Their measure was the 75-item instrument, The California Critical thinking Disposition Inventory (CCDTI). This instrument was administered to an additional sample of college students at about the number of 1019. In this study, the alpha levels ranged from .60 to .70 on the sub-scales and .90 overall. Moreover, the instrument was used to assess critical thinking disposition in high school through the graduate level but was targeted primarily for the college undergraduates. According to the findings of the research, there was a correlation between The Critical Thinking Disposition Inventory and the California Critical Thinking Test in two pilot sample groups. Moreover, it is proposed that in the clinical judgement in nursing students and practicing nurses the measurement

should be multi-modal. In addition to the traditional assessment of clinical judgement, critical thinking skill and critical thinking disposition as measured by the CCDTI.

2.6.2. Studies Conducted in Turkey

İrfaner (2002) carried out a qualitative study "to investigate one teacher's implementation of the components of critical thinking through written assignments and the analysis of the students' implementation of those components in their essays in one Eng 101 class offered in the First Year English Program (F.Y.E. P.) at Bilkent University". As a data collection instrument , interviews were made with the course instructor, two students- who were interviewed eight times- and the director –who were interviewed only once- during the spring semester of the 2001-2002 academic year. Since the design of the study was qualitative, the data analysis was conducted by categorizing the findings obtained as the result of the interviews. The results signified that the instructor could not express a complete definition for critical thinking but rather form an internal understanding of it through expressing his expectations for the students' performance on critical thinking. Additionally, the final list of the instructor to highlight the components of critical thinking which was more extensive than the initial one consisted of those listed by the director and in curriculum guidelines. Regarding the students themselves, it was found out that they were able to employ some of the critical thinking components in the process of their writing.

Akınoglu (2001) conducted a study on the effect of science teaching focusing on critical thinking skills on learning outcomes. He used a pre-test post-test control group design. A critical thinking skills evaluation form consisting of five dimensions

(consistency, combination, application, implementation, competence and communication) was designed for this study. Besides, a test evaluating the students' competence for the unit "Introducing the material" and an attitude scale test were implemented as instruments. All of these instruments were implemented twice in accordance with the pre-test and post-test design. He found out that there was a significant difference between the control group and the experimental group in favor of the latter one, in which science education was based on critical thinking skills. Regarding each dimension considered in this study and the total of these dimensions, teaching science based on critical thinking skills was significantly effective compared to teaching science traditionally.

Coskun (2001) carried out an experimental study to determine the critical thinking levels of Nursing students at Hacettepe University. According to the results of the study, critical thinking levels of the students in experimental and control groups were at medium level. Ist was found that there was a significant difference between the critical thinking levels of the students in the experimental group and the ones in the control group, especially in terms of the sub-dimension deduction and the total test. It was obvious for the experimental group that the higher levels of the classes the students attended, the higher total scores of critical thinking level increases. Moreover, there was no significant difference in the critical thinking levels between the students in the experimental group and the ones in the control group with regard to age, marital status, parental education level, and parents' professions. For the control group, the critical thinking levels of the students increased when the socio-economic level of the students increased. However, for the experimental group, this variable made no difference in the

critical thinking levels of the students. According to the status of the places and their improvement level, the students attended their primary and secondary schools; there was no significant difference in their critical thinking levels. Nevertheless, for the experimental group, with respect to the region the students attended high schools, there was a significant difference in their critical thinking levels in favor of Central Anatolia. Concerning the type of the high school they graduated, there was a significant difference in the critical thinking levels of the students in the fifth dimension of assessment of evaluation. Finally, the relationship between the attitudes of the students' parents and their critical thinking levels was not statistically significant.

Sahinel (2001) carried out an experimental study implementing both qualitative research techniques such as Turkish Competence Test and the Attitude Scale towards Turkish course and quantitative research techniques e.g. observation and recording through video on improving language skills in integration through critical thinking skills. In this study, he found out that although there was no significant difference in the pre-test results of the Turkish Competence Test between the control group and the experimental one, according to the post-test results of the same test, the results of the experimental group were significantly different from the results of the control group. Additionally, the results of the students in the experimental group were significantly higher than the ones of the students in the control group regarding the averages of retention of knowledge. Nevertheless, there was no significant difference between the control group and the experimental group with respect to their pre-test results of the Attitude Scale. However, based on the post-test results of the same test, improving language skills integration through critical thinking skills was more effective than the

traditional teaching method on the attitude of the students towards Turkish Course. The qualitative data being analyzed, the students in the experimental group indicated that the learning activities in line with improving critical thinking skills implemented in different parts of the lesson were interesting, attractive, and fruitful. Additionally, the teacher of this group stressed that these learning activities lead to a positive effect on the students behavior and encouraged them to use Turkish effectively in the classroom environment considering improving language skills in integration through critical thinking skills.

Tokyürek (2001) carried out a quantitative study to find out the effect of the teacher's attitudes on the critical thinking levels of the students. According to the results of the study, there was a significant relationship between the teacher's attitudes and the program. 44 % of the teachers indicated that they had difficulty in setting up an environment fostering critical thinking owing to the program they had to follow. Also, teachers asserted that the school administration and the supervisors sometimes could be the source of the difficulties they encounter in applying critical thinking in their classes. It was found that there was a significant relation between the program and the students' critical thinking levels. Moreover, the attitudes of the teachers affected the critical thinking skills of the students.

Munzur (1999) conducted a descriptive study dealing with the evaluation of the course books of Turkish language and literature students regarding critical thinking education. She mainly examined eight reading texts selected from the course books at the level of high school 1 and 2 in Turkey. As a result of her study she asserted that the education of Turkish language and literature had difficulties in terms of program, timing, number of students, purpose, instructional equipment, method, evaluation and

assessment system. Moreover, concerning the course books, they lacked in aim, function, format, and content since there were no certain criteria. Furthermore, it was found that the concept 'course book' was not understood by the experts; therefore, modern and broad research studies were required.

Öner (1999) presented a pre-test post-test control group design study focusing on the effects of the constructivist teaching method on the critical thinking skills and academic success in a social science course at the level of primary school 5. As instruments, he used a critical thinking attitude scale and an achievement test including the units whose contents were chosen for the study. For the data collection procedure, both of these instruments were implemented as pre-test and post-test. Data was analyzed through statistical analysis. According to the results of the study, it was stated that in terms of their achievement scores, there was a significant difference between the experimental group in which the constructivist teaching method was applied and the control group in which the traditional teaching method was applied. Moreover, in terms of the critical thinking attitude scores, when the scores of the sub-dimensions of critical thinking were regarded, there was no significant difference between the experimental group and the control group.

Kaya (1997) carried out a "descriptive and relationship seeking field" study so as to determine the critical thinking skills of the students of Istanbul University, the factors affecting them. For the study, 244 students attending the fourth grade of the departments at Faculty of Science, Health, Social and Engineering at Istanbul University were selected using the stratified sampling technique. As an instrument, Watson-Glaser Critical Thinking Appraisal was implemented. Also, with the appraisal, an information

form about the information of the subject was submitted to the subjects. Data obtained from the appraisal was analyzed by the percentage test, variance analysis, Tukey's HSD test and t-test on the SPSS program. As a result of the analysis, it was found that the level of critical thinking skills of the students was dominantly at the medium level (59.29±7.28). She found out that regarding the students' departments there was a statistically significant difference in critical thinking skills in favor of the students at Faculty of Engineering and Health. In terms of the number of siblings, the socio-economic levels of the students and the characteristics of inquisitiveness and risk taking, there was a statistically significant difference in the critical thinking levels of the students. However, regarding gender, the facilities of students' studying, their willingness to participate into social and cultural activities, the people they live together with, the educational levels of their parents, how they describe themselves, the approaches they use while solving the problems, there was no statistically significant difference in their critical thinking levels.

2.5. Summary

In this literature review, an overview of critical thinking and its skills is dealt with, which sets the foundation for the present study. As can be inferred, there are numerous definitions of critical thinking and identifications of its skills. For this study, critical thinking is viewed as "a composite of attitudes, knowledge, and skills" (Watson & Glaser, 1964, 10) and according to Watson-Glaser the sub-categories of critical thinking are identified as inference, recognition of assumption, deduction, interpretation and evaluation of arguments.

Besides, in terms of teaching critical thinking, there are two main approaches: teaching it in integration with the other subject matters and teaching it separately. In this study, critical thinking is elaborated in the context of English language learning environment and especially for the learning reading and writing skills this elaboration is considered as these skills are mostly considered to be taught incorporation with critical thinking.

Considering the assessment of critical thinking, there are many diversified ideas; however, it is certain that there is no assessment tool to assess this construct completely and accurately. Regarding this fact, in this study, the Watson-Glaser Critical Thinking Appraisal is considered to be an assessment tool wih its limitations and the students critical thinking levels are assessed through it.

Furthermore, when the studies abroad and in Turkey are taken into account, this study is unique in terms of its context. This study refers to the students of English language learners and one of the variable is the relationship between their critical thinking levels and their English language proficiency level. It is thought that the results of the study can provide us with a general view of critical thinking and the process of English language teaching and learning.

As a result, this review of literature provides a theoretical background for the study and its variables. In this way, the rationale of the study and the research questions are based on this ground

CHAPTER 3

METHOD

In this chapter, the overall design of the study, data collection instrument, population and sampling procedures, the pilot study of the data, the data collection procedures, the data analysis procedures and limitations of the study are discussed.

3.1 Overall Research Design

This study is designed as a survey study in which any forms of systematic data collection is undertaken with a view to providing a detailed description and analysis of a particular topic" (Kent, 2001, 6). A survey research requires the consideration of lots of aspects before conducting it; that is, pre-planning. This pre-planning constitutes sampling, the instrument, the method of gathering data, and preliminary plans for analysis (Krathwohl, 1998, 353).

Regarding the aspects of the survey above, in this study, the random stratified sampling was used to choose the appropriate sample since the variables involves different sub categories and it is necessary to represent them in the sample with about the same proportion of the population. After examining the literature in terms of instruments used to evaluate the critical thinking skills, Watson-Glaser Critical Thinking Appraisal was determined as the instrument for this study. Moreover, since the relationship between the language proficiency levels of the students and their critical thinking levels was one of the research questions, the final exam of the students was used as the second instrument. Also, to gather data in order to identify the socio-demographic and educational features of the students, an information form was designed. In line with the questionnaire, the method of gathering data was the administration of the appraisal and the information form to the students in a certain period of time. Therefore, descriptive statistics, t-test, ANOVA and correlation analysis were conducted by using SPSS.

A survey research differentiates according to the method of data gathering such as interview survey, questionnaire survey, e-mail questionnaire survey, and telephone survey (Kent, 2001& Krathwohl, 1998). This study was designed as a questionnaire type of survey research since the instrument was a critical thinking appraisal.

As Kent (2001) indicated, a survey research has some advantages in terms of time, amount of information and number of the respondents. Also, results can easily be analyzed using PC programs such as SPSS. Nonetheless, it has some disadvantages: One of them is the time. For example, for this study, because of the density of the program, the appraisal had to be answered by the subjects at the end of the day. The number of the

subjects is another drawback. Sometimes it can be difficult to provide enough number of the subjects. In this study, this difficulty was faced with the philology B group. Because the number of the subjects answering the questionnaire appropriately was not enough to carry out a research study, this group had to be excluded from the study.

In line with the purposes above, the research questions designed are

1. What are the critical thinking levels of the students?
2. Is there any statistically significant difference in the students' critical thinking levels in accordance with their types of ÖSS scores?
3. Is there any statistically significant difference in the students' critical thinking levels in accordance with their major area?
4. Is there any statistically significant difference in the students' critical thinking levels in accordance with the group they were attending at the preparatory school?
5. Is there any statistically significant difference in the students' critical thinking levels in accordance with their socio-demographic features?
    - 5.1. Is there any statistically significant difference in the students' critical thinking levels in accordance with gender?
    - 5.2. Is there any statistically significant difference in the students' critical thinking levels in accordance with the number of the siblings?
    - 5.3. Is there any statistically significant difference in the students' critical thinking levels in accordance with the parental education levels?
        - 5.3.1 Is there any statistically significant difference in the students' critical thinking levels in accordance with the education level of their mothers?

5.3.2. Is there any statistically significant difference in the students' critical thinking levels in accordance with the education levels of their fathers?

5.4. Is there any statistically significant difference in the students' critical thinking levels in accordance with their economic status of the students?

6. Is there any statistically significant relationship between the English proficiency exam scores of the students and their critical thinking levels?

6.3. Is there any statistically significant relationship between the reading scores of the students from the English proficiency exam and their critical thinking levels?

6.4. Is there any statistically significant relationship between the writing scores of the students from the English proficiency exam and their critical thinking levels?

3.2 Description of Variables

In this study, the data obtained were evaluated according to the variables as the types of ÖSS scores (verbal, numerical, equal weight), the types of their major area as social sciences and sciences, their general English proficiency level their reading and writing levels, and socio-demographic features as gender, number of siblings, the parental education level and economic status.

Types of ÖSS Scores: Students are registered to the universities regarding their scores and kinds of scores they have obtained from the university entrance examination. The kinds of ÖSS scores are verbal, numerical and equal weight. For example, if a student

gets enough scores from the numerical type, he or she can apply for engineering departments. Or, supposing that a student gets enough scores from the equal weight type, this one can apply for the faculty of administration. Additionally, for the language departments, the language scores are calculated. These scores are calculated according to ÖSS score and the scores of the language test administered separately. For instance, the students having the language scores can apply for the Department of English, German, French, etc. Thus, the kinds of the scores are the determiner of the students' entrance to the faculties of the universities. Kaya (1997) has made a comment with respect to the scores of 1996-ÖSYS, university entrance exam implemented that year, and she stressed that it was obvious that the students of engineering and health departments obtained the highest scores and this was due to their critical thinking level is high and it could be improved easily (p.59). This study examined if the students' critical thinking levels revealed any significant differences according to the types of ÖSS scores.

The Types of the Students' Major Area: For this study, the types of the students' departments refer to departments in social sciences and sciences. For instance, Nursing is the department of sciences while Home Economics is the department of social sciences. In the study conducted by Kaya (1997), she signified that there was a statistical difference in the critical thinking level of the students regarding the departments (p.59). Walsh and et. al (1999) indicated that there were real differences in disposition toward critical thinking among different majors, but these differences were mixed; that is differences were not divided cleanly by practice majors such as nursing and education and non-practice majors such as psychology and history (p.154). Nevertheless, Çıkrıkçı (1996) pointed out that there is no statistically significant difference in the students'

critical thinking levels regarding their types of the departments (p.16). When our study is considered, the students were from different departments of Hacettepe University. Therefore, the study examined if there was any significant difference in the students' critical thinking levels according to the types of their major areas.

Students' language groups the preparatory school: At the preparatory school, there were four main groups formed according to the English proficiency exam scores students got from the Exemption Exam in September, 2002. These groups were zero-beginner, elementary, pre-intermediate and philology groups. For the last group there were two sub-groups as C level and B level. The students attending B level were considered to be more proficient in English than the ones attending C level. This study aimed to be found out whether there is any statistically significant difference in the students' critical thinking level among their groups.

The Students' General English Proficiency Level: This variable refers to the overall scores of students' English language proficiency level they determined by form the final exam administered to them. On 12th June, 2003, philology groups B and C were administered the tests while zero beginners, elementary and pre-intermediate groups were administered the same test on the 13th of June, 2003. They obtained an overall point as a result of this test. This score was used as a score of their proficiency level. In this study, it was examined whether there was any relationship between the students' English proficiency levels and their critical thinking levels.

The Reading and Writing Scores: The reading and writing scores refer to the scores that the students obtained from the reading and writing parts of the final exam. While the general scores are calculated, these scores are calculated separately and added to the

general one. Since reading and writing are two skills in which critical thinking skills are mostly incorporated into the tasks of them in foreign language education (Özdemir, 1997; Zintz & Maggart, 1984 cited in Carr, 1990; Suhor, 1984; Holbrook, 1984; Sheridan, 1992 cited in Hirose, 2001), this study examined whether there was any relationship between these scores and the students' critical thinking levels.

Socio-demographic Features: In this study, gender, number of siblings, the parental education levels, and their economic status are constituted in this category.

Gender is considered to find out whether there is any difference between female students and male students in terms of their critical thinking levels. According to the results of the previous studies, Kaya (1997) found out that there was no difference between females and males in terms of their critical thinking levels (p. 60). Walsh and Hardy (1999) pointed out that although females had higher critical thinking disposition scores, there was no statistically significant difference between females and males (p. 154). However, Adams and his colleagues (1999) found out a statistically significant difference in favor of females in the evaluation of arguments in terms of their critical thinking levels (p. 139). Moreover, Çıkrıkçı (1992) indicated that there is no statistically significant difference in the students' critical thinking levels regarding gender (p. 16). As can be seen, gender is the controversial issue in evaluating critical thinking levels of the students.

Number of Siblings is included in the demographic features in five categories as no sibling, one sibling, two siblings, three siblings, and four and more siblings. Kaya (1997) indicated that there was a statistically significant difference regarding the number of siblings in the students' critical thinking levels (p.60). Moreover, the results revealed

that the people having two siblings had higher scores in the Watson-Glaser Critical Thinking Appraisal than the people having three or more siblings. In this study, it was examined whether there was any difference among the categories with respect to the students' critical thinking levels.

The Parental Education Level is divided into two as mother's education level and father's education level. In each of them, there are 6 categories as illiterate, primary-school graduate, secondary-school graduate, high-school graduate, university graduate, and others to be filled by the students. Kaya (1997, 62) and Coskun (2001, 80) indicated that there was no statistical difference in the students' critical thinking levels regarding the parental education level. In this study, it was examined whether there was any statistical difference the students' critical thinking levels when their parents' education is taken into consideration.

Economic status is evaluated regarding the parents' income per month. In this variable, five categories are evaluated: 0-250 million, 250-500 million, 500-750 million, 750 million-1 billion, and 1 billion and more. In the study conducted by Kaya (1997) pointed out that there was a statistically significant difference in the students' critical thinking levels in terms of their economic status (p. 61). It is emphasized that as the students' economic status increases, their critical thinking level increases. In addition to this study, Brookfields (1995 cited in Kaya, 1997, 61) and Case (1994 cited in Kaya, 1997, 61) indicated that economic status is one of the variable that should be taken into consideration in the studies that investigates critical thinking. Furthermore, Coskun (2001) found that the students in the experimental group had no statistically significant differences whereas the students in the control group had statistically significant

differences in terms of their economic status (p. 81). The results of the study revealed that the students who stated high economic status had higher scores had higher scores from the sub-test 4 “Interpretation” and the sub-test 5 “Evaluation of Arguments”. In our study, it was examined whether there was any difference in the students’ critical thinking levels according to their economic status.

3.3 Data Sources

Data sources were the students attending the English preparatory school at Hacettepe University in the academic year of 2002-2003.

3.3.1. Population and Sample

The students attending the language groups as zero-beginner, elementary, pre-intermediate, and philology (B and C levels) at the Preparatory School at Hacettepe University were the population of this study. The total number was 2140. Since this number was very large to conduct this study, the students were selected regarding the stratified cluster sampling, which was based on the representation of different classes in the population. In the sampling procedure, at first, the number of the classrooms in each language groups and the distribution of the students in these groups were identified and calculated as a percentage. According to this percentage, the classes of the students were randomly selected according to the number of the students expected to involve in the study from each language group (Table 3.1).

According to this sampling, the number of the students expected to participate in the study was 300 in total. 103 of them were attending the zero beginner classes, which

made 34 %. 78 were attending the elementary classes, which made 26 %. 81 were attending the pre-intermediate classes, which made 27 %. The rest (*N* = 39) were attending the philology classes. 15 were the students of Philology B (5 %) and 24 were the students of Philology C (8 %). The distribution and number of the students from the group of classes at different language levels are given the Table 3.1 below:

Table 3.1 The Distribution and Number of the Students Sampled

Group of Classes	Percentage in all group	Number of the total students	Number of the students sampled	Percentage of all the groups in all returned tests	Number of the students returned the test and form
Zero Beginner	.34	727	103	.24	73
Elementary	.26	557	78	.13	40
Pre-Intermediate	.27	578	81	.22	66
Philology B	.05	107	15	-	-
Philology C	.08	171	24	.7	22
Total	100	2140	300	.69	193

However, when the test had been administered to them, 193 students out of 300 were returned their tests back. Among them, 73 of them were the students at zero-beginner classes, which made 24. 40 % of them were the students at elementary classes, which made 13. 66 % of them were the students at pre-intermediate classes, which made 22 %. 22 of them were the students at philology C class, which made 7 %. The students at philology B class returned their tests but their tests were not analyzed since all of

them had not been filled out appropriately (See Limitations). Moreover, the distribution of the sample according to the variables in this study was given in Table 3.2.

3.4 Data Collection Instruments

In this study, three instruments were used: Watson-Glaser Critical Thinking Appraisal Test, the information form and the English proficiency exam. Watson-Glaser Critical Thinking Appraisal Test provided the information about the students critical thinking levels. The information form was useful to obtain necessary information related to the students' background and their demographic information. The English Proficiency exam was used to get some information about the students' English language proficiency level.

3.4.1. Watson-Glaser Critical Thinking Appraisal Test

The Critical Thinking Appraisal Test is composed of a series of test exercises in which the application of the important abilities in the critical thinking is involved in. The rationale of the test is to "provide an estimate of an individual's standing in this composite of abilities by means of five sub-tests designed to tap somewhat differing aspects of the composite" (Watson & Glaser, 1964, 10). The five sub-tests are listed as:

Table 3. 2 Distribution of the sample according to the variables

Variables		Frequency	Percentage
Gender	Females	113	58.5
	Males	80	41.5
Major Area	Social sciences	92	47.7
	Sciences	101	52.3
		10	5.2
Type of ÖSS Scores	Verbal		
	Numerical	100	51.8
	Equal Weight	60	31.1
Type of Group	Zero beginner	73	37.8
	Elementary	40	20.7
	Pre-intermediate	57	29.5
	Philology C	23	11.9
The number of siblings	No	4	2.1
	1	96	49.7
	2	57	29.5
	3	23	11.9
	4	13	6.7
Mother Education Level	Illiterate	9	4.7
	Primary School	68	35.2
	Secondary School	23	11.9
	High School	56	29
	University	33	17.1
	Others	3	17.1
Mother Education Level	Illiterate	1	0.5
	Primary School	41	21.2
	Secondary School	24	12.4
	High School	49	25.4
	University	73	37.8
	Others	4	17.1
Economic Status	0-250 million	21	10.9
	250-500 million	42	21.8
	500-750 million	43	22.3
	750 million- 1 billion	49	25.4
	1 billion and more	37	19.2

TEST 1 Inference: It includes 20 items designed to discriminate among degrees of truth or falsity of inferences drawn from given data. The suggested time to answer the test is 13 minutes.

TEST 2 Recognition of Assumption: It includes 16 items designed to recognize unstated assumptions or presuppositions which are taken for granted in given statements or assertions. The suggested time to answer the test is 6 minutes.

TEST 3 Deduction: It includes 25 items designed to reason deductively from given statements or premises; to recognize the relation of implication between propositions; to determine whether what may seem to be an implication or a necessary inference from given premises is. The suggested time to answer the test is 11 minutes.

TEST 4 Interpretation: It consists of 24 items designed to weigh evidence and distinguish between generalizations from given data that are not warranted beyond a reasonable doubt and generalizations which, although not absolutely certain or necessary, seem to be warranted beyond a reasonable doubt. The suggested time to answer the test is 12 minutes.

TEST 5 Evaluation of Arguments: It consists of 15 items designed to distinguish between arguments which are strong and relevant and those which are weak or irrelevant to a particular question at issue. The suggested time to answer the test is 8 minutes.

As total, the test contains 100 items. The suggested time for all is about 50 minutes. The appraisal test is available in two parallel forms as Ym and Zm, each of which involves in the five sub-tests at the same number of the items.

Regarding the reliability, the split-half reliability coefficient of the Ym form of Critical Thinking Appraisal ranges from .85 to .87 in accordance with the different population to which it was administered (Watson & Glaser, 1964, 13). Since in this study the population is the group of students attending the preparatory school at the university, the reliability coefficient of Ym form reported for the population of the Freshmen in 15 liberal arts college is .85 (Table 3.3) (Watson & Glaser, 1964, 14).

Table 3.3 Watson-Glaser Critical Thinking Appraisal Sub-tests Split-Half Reliability Coefficients for Grade 10

Sub-tests	Number of Items	Form Ym
Test 1 Inference	20	.61
Test 2 Recognition of Assumptions	16	.74
Test 3 Deduction	25	.53
Test 4 Interpretation	24	.67
Test 5 Evaluation of Arguments	15	.62

The validity of the Critical Thinking Appraisal is examined in relation to three categories as content validity, construct validity and predictive validity. It is explained that "the extent to which this appraisal measures a sample of the specified objectives of such instructional programs is an indication of its content validity" (Watson & Glaser, 1964, 14). However, since in the area of the critical thinking there has been no consensus about its skills, abilities and definitions, this appraisal is limited to the

rationale of its own. In terms of construct validity, factor-analytic studies conducted and these pointed out that the existence of discrete subdivisions of critical thinking as measured by the Appraisal (Watson & Glaser, 1964, 14). For predictive validity of the test, it is stated that this appraisal is potentially useful instrument for predicting performance in various cases regarding critical thinking and added that it is necessary to specify the predictive validity where it is to be used.

The Watson-Glaser Critical Thinking Appraisal was decided as the instrument to measure the critical thinking levels of the subjects in this study especially because this form has the Turkish version. The Ym form of Watson-Glaser Critical Thinking Appraisal was translated into Turkish by Assoc. Prof. Dr. Nükhet Çıkrıkçı - Demirtaş (Çıkrıkçı, 1993, 566). The appraisal was implemented in grade 9, grade 10 and grade 11 in a high school in Ankara. The KR-20 reliability coefficient ranged from .11 to .57. She explained that this coefficient was low since the homogeneity of the subjects caused the decrease in the consistency level as a result of diminishing the variances (Table 3.4).

In conclusion, Watson-Glaser Critical Thinking Appraisal was implemented in this study since it is one of the tests whose statistical analyses have mostly been conducted and it is the only instrument which has the Turkish version.

Table 3.4 Watson-Glaser Critical Thinking Appraisal Sub- tests KR-20 Reliability Coefficient

Sub-tests	Grade 9	Grade 10	Grade 11
Test 1 Inference	.09	.42	.45
Test 2 Recognition of Assumptions	.56	.10	.24
Test 3 Deduction	.13	.34	.24
Test 4 Interpretation	.57	.50	.26
Test 5 Evaluation of Arguments	.19	.34	.11

3.4.2 Information Form

Information form was designed to obtain necessary information about the students' background and their demographic information in order to make some statistical analysis accordingly. It involved 8 items: The first item requires information about their faculties and departments. The second item is related to the language score. The third item is in line with the group they are attending at the preparatory school. The next one is about their gender. The fifth one refers to the number of their siblings. The following one is about the educational level of their mothers and the next one is about the educational level of their fathers. Finally, the last item refers to the economic status of the students' family.

3.4.3 The English Proficiency Exam

The English proficiency exam was the final exam prepared by the testing unit of the Unit of English Preparatory School at Hacettepe University at the end of the academic year 2002-2003 It included all the items and skills studied throughout the term. Thus, in this study, the students' scores of the final exam was considered as their English language proficiency level. It was conducted on June 12th, 2003 for Philology groups and June 13th, 2003 for Zero-beginners, Elementary, and Pre-Intermediate groups. Both of them were held in three sessions: In the first session the students were to answer the questions in listening and structure parts. In the second one, they were to answer the questions in reading part and in the last session they were to write a paragraph about the given topic. For the each part, different scores were calculated and

the students' total scores of their final exams were calculated by adding the scores of the each parts.

The statistical analysis of the tests was conducted by an research assistant working in the school. According to this results, the reliability coefficient (*r*) of all the final exam for the philology groups was .980 and the one for Zero-beginners, elementary and pre-intermediate was (*r*) .968.

For our study, the reliability of the test was conducted again considering the scores of the students participated into this study. According to that, the reliability coefficient (*r*) is .641.

As a result, the final exam is one of the instrument of this study and its scores were considered as the students' language proficiency level.

3.4.4. Pilot Study

Piloting was carried out for the Ym form of Turkish version of Watson-Glaser Critical Thinking Appraisal Test and the information form requiring some information about the students' themselves. They were piloted in order to eliminate misunderstandings and find out the places where it needs revision or more explanation.

3.4.4.1. Piloting Procedure

The Ym form of Turkish version of the Watson-Glaser Critical Thinking Appraisal Test and an information form involving the variables used for analyzing the data accordingly were piloted. Since this instrument was used for the first time for a group of students at English preparatory school, it is necessary to pilot it and find out

whether there is any handicap to use it in such a group. The pilot group needs to have more or less the same characteristics with the target group which was the students attending English Preparatory School at Hacettepe University . For this reason, students attending the preparatory classes at METU (Middle East Technical University) were chosen.

For piloting, two different classrooms –one is at the pre-intermediate level and the other is at the intermediate level- and 38 students at METU were involved in. For pre-intermediate classrooms, the pilot work was conducted with 21 students on March 12, 2003. For the other one, it was conducted with 17 students on March 17, 2003.

Before distributing the test and the information form, to relax the students, a kind of small party was conducted. Then, they were explained about the Watson-Glaser Critical Thinking Appraisal Test and how it is answered. After that, the information form was distributed and it was filled out together. When the tests were distributed, they were told that they were free to hand in their information form and the test when they finished so it was not timed. In both group the test took about an hour to be completed.

3.4.4.2. Pilot Data Analysis Procedure

The data obtained were analyzed in the SPSS (Statistical Program for Social Sciences) program. The reliability, means of the test itself and its sub-tests, distributions of the scores in histograms were calculated. For the information form, the percentages and the frequencies of the groups on the basis of class were calculated.

Regarding the distribution of the class, either pre-intermediate or intermediate, 21 students were attending the pre-intermediate, which was 55. 3 % of all group and 17

students were attending intermediate classes, which was 44.7 % of all group (Table 3.5).

Table 3.5 Pilot Data Distribution of Class

Class	*f*	%
Pre-intermediate	21	55.3
Intermediate	17	44.7

In terms of the distribution of the faculty, 26 % of the students were of the social sciences whereas 73 % of them were of the sciences. In other words, 10 students were of social sciences and 28 students were of sciences (Table 3.6).

Table 3.6 Pilot Data Distribution of the Students' Major Area

Their Major Area	*f*	%
Social sciences	10	26.3
Sciences	28	73.7

Considering the ÖSS (University Entrance Exam) scores which were taken into consideration in their entrance of their departments, 73 % of the students had a numerical score from the exam, which is the highest percentage in the group. 21 % of them had a verbal score and 8 % of them were had equal weight score. (Table 3.7)

Table 3.7 Pilot Data Distribution of ÖSS

Type of OSS Score	*f*	%
Verbal	2	5.3
Numerical	28	73.7
Equal weight	8	21.1

When the distribution of the students in the preparatory school group according to their English level was regarded, the frequency and the percentages are the same with the table 1 about the distribution of class. 21 students were attending the pre-intermediate, which was 55. 3 % of all group and 17 students were attending intermediate classes, which was 44.7 % of all group (Table 3.8).

Table 3.8 Pilot Data Distribution of the Students in the Preparatory Group

Type of Group	*f*	%
Pre-intermediate	21	55.3
Intermediate	17	44.7

With respect to gender, 76.3 % of them were males, corresponding to 29 students, and 23.7 % of them were females corresponding to 9 students (Table 3.9).

Table 3.9 Pilot Data Distribution of Students according to Gender

Gender	*f*	%
Females	9	23.7
Males	29	76.3

Concerning the number of the siblings of the students, 39.5 % of them (*N* = 15) have one sibling, 31.6 % of them (n 12)have 2 siblings and 13.2 % of them (*N* = 5) have 3 siblings except them. The ones who have 4 or more than 4 siblings are 15.8 % (*N* = 6). The highest percentage was obtained from the students who have 1 sibling (Table 3.10).

Table 3.10 Pilot Data Distribution of Siblings that the Students have

The number of siblings	*f*	%
1	15	39.5
2	12	31.6
3	5	13.2
4 and more	6	15.8

According to mother education, 21.1 % of the students' mother (*N* = 8) were illiterate. 47.4 % of them (*N* = 18) were been into primary education – they either have graduated or they have attended the school. 15.8 % of them (*N* = 6) were been into secondary education - they either have graduated or they have attended the school. 15. 8 % of them (*N* = 6) were been into high education. As can be seen, the highest percentage is at the primary school level (Table 3.11).

Table 3.11 Pilot Data Distribution of the Students' Mother Education Level

Mother Education Level	*f*	%
Illiterate	8	21.1
Primary school	18	47.4
Secondary School	6	15.8
Higher Education	6	15.8

Like mother education, considering father education, 5.3 % of the students' mother (N = 2) were illiterate. 39.5 % of them (N = 15) were been into primary education – they either have graduated or they have attended the school. 23.7 % of them (N = 9) were been into secondary education - they either have graduated or they have attended the school. 31.6 % of them (N = 12) were been into high education (Table 3.12).

Table 3.12 Pilot Data The Distribution of the Students' Father Education Level

Father Education Level	*f*	%
Illiterate	2	5.3
Primary school	15	39.5
Secondary School	9	23.7
Higher Education	12	31.6

When the economic status of the students' family were regarded, 10.5 % of the students' families (N = 4) had income of about 250 million at most. 21.1 % of them (N = 8) had income between 250 million and 500 million. 34.2 % of them (N = 13) had income between 750 million and 1 billion, which is the highest percentage in the group itself. 13.2 % of them had income of 1 billion or above it (Table 3.13).

Table 3.13 Pilot Data The Economic Status of the Students' Families

Economic Status	*f*	%
0-250 million	4	10.5
250-500 million	8	21.1
500-750 million	13	34.7
750 million-1 billion	8	21.1
1 billion and more	5	13.2

With regard to the reliability of the instrument for piloting, the Croanbach alpha level calculated was about 0.70. In the Manual of the Watson-Glaser Critical thinking Appraisal Test (Watson & Glaser, 1964), the split half reliability coefficient by Spearman-Brown is 0.85 for the senior women in ten liberal art colleges (p.13).

3.4.4.3. Results of Pilot Study

In this study, piloting was conducted in order that the instrument implemented was firstly going to be administered to a group of the students. Regarding this, the results of the instrument was evaluated with the guidance of an expert. The following changes were made accordingly:

1. Since it was observed that in piloting the students were frustrated to write their names and surnames in the information form, this item was made optional. However, they had to write down their student numbers so as to obtain their scores of the final exam whose results were used as their proficiency level.
2. The item about the students' ÖSS score in the information form was removed since it was observed in piloting that the students had difficulty to write down their exact scores. This could cause a problem in data analysis and validity of the instrument.
3. For the item about the parental education level in the information form, the categories were modified by adding an item indicating the graduate of the primary school. This is due to the change in the educational system of the Turkey. (K-8 has been implemented in Turkey since 2000. Before that, only primary school education was obligatory.)

4. In terms of the Watson-Glaser Critical Thinking Appraisal, during piloting, the students asked more questions about the concept of "assumption" in Test 2 Recognition of Assumption. Thus, for the exact implementation, an explanation enclosed to an example was prepared and distributed to each classroom.

3.5 Data Collection Procedure

Watson-Glaser Critical Thinking Appraisal and the Information Form were administered to the instructors of the classrooms randomly selected for this study. While selecting the classrooms, the number of the students was regarded so as to provide the expected number of the students. Moreover, the teachers who volunteered to implement the test were prioritized. The appraisal and the form were distributed to the instructors on May 6th, 2003 and they were requested to bring them back till the beginning of June. A-month duration was provided considering the condition of their following the programs. The number of the appraisal administered to the instructors and the number of the returned questionnaires and their rate are given in Table 3.1.

3.6 Data Analysis Procedures

Data analysis was carried out based on the research questions stated previously. Therefore, descriptive statistics, t-test, ANOVA, two-way ANOVA and correlation analysis were used.

Descriptive Statistics: The data analysis of the descriptive statistics was used to describe the variables in the study. Frequency, mean, range, percentages, standard deviation and variance were conducted to define the subjects of the study in terms of their gender, their types of major area, their type of ÖSS scores, the language group they were attending at

the school, the number of their siblings, their parental education level, and their family income.

Inferential Statistics: It refers to the analysis procedures in order to infer the results of the analysis considering the whole population.

Independent Samples T-test: This data analysis procedure involves in comparing means of two groups or levels. In our study, the research question 3, the sub-question 1of the question 4 were going to be analyzed by independent samples t-test. For the question 3, the types of the students' major area as science and social science were compared. For the sub-question 1 of the question 4, the critical thinking levels of the males and females were compared.

Analysis of Variance (ANOVA): This analysis procedure involves the analysis of one independent variable with more than two levels or groups. In this study for the research question 2, and 4 and the sub-questions 2 and 4 of the question 5, this analysis was conducted. In the question 2, ÖSS scores were grouped in three as verbal, numerical and equal weight. For the sub-question 2 of the question 5 involved in five categories referring to having no sibling, one sibling, two siblings, three siblings and four or more siblings. For the sub-question 1 and 2 of the research question 5.3 on parental education level, there were six categories as illiterate, a graduate of the primary school, a graduate of the secondary school, a graduate of the high school and a graduate of the university and others requiring the explanation for the students own. For the sub-question 4 of the research question 5 on economic status of the students' families, there were five categories in terms of their income level in a month. These categories were stated as 0-

250 million, 250-500 million, 500-750 million, 750 million-1 billion, and 1 billion and more.

Two-way ANOVA: This analysis procedure is conducted when there are two independent and one dependent variables. In this study, for the sub-question 3 of the research question 5, which examined whether the parental education level made any differences, this analysis was carried out. The parental education level involved the educational levels of the students' mothers and their fathers. For the parental education level, there were six categories as illiterate, a graduate of the primary school, a graduate of the secondary school, a graduate of the high school and a graduate of the university and others requiring the explanation for the students own.

Correlation analysis: The correlation studies were implemented for the research question 6 and the sub-questions 6.1 and 6.2. According to the question 5, the relationship between the students' critical thinking levels and their language proficiency levels was examined through this analysis. For the sub-question 5.1, the relationship between the students' critical thinking levels and their reading scores and for the sub-question 5.2, the relationship between the students' critical thinking levels and their writing scores in the final exam. For these questions, Pearson correlation coefficient was calculated.

3.7 Limitations

The scope of the study is limited to the data gathered from 193 out of 2140 students attending the English preparatory school at Hacettepe University in the spring term of the academic year 2002-2003. Although the number of the subjects expected to participate into the study was 300, the number of the tests and forms returned was only

193. Moreover, the answers of the philology B groups were not included in the study since most of the items in the form and tests were not fulfilled. Also, the test had to be applied to the group after the final exam of the students. Thus, it was most likely that the students did not answer diligently.

Besides, the correlation analysis can only be conducted for the zero beginners, elementary and pre-intermediate groups owing to the fact that the final exams applied to the groups above and the philology groups were not the same one. Also, as mentioned above, philology B group were not included in the study and only philology C group was included. Therefore, the number of this group is only 22, which is considered as a small number to conduct a correlation study.

Additionally, this study aimed at finding out whether there is a difference in the students' critical thinking levels according to their gender, major areas, ÖSS scores, their group at the school, the number of their siblings, the parental education level and their family income, and whether there is a relationship between the students' total scores of the exemption test and their critical thinking levels, between their reading scores of the exemption test and their critical thinking levels and between their writing scores of the exemption test and their critical thinking levels. Thus, this survey research does not cover other differences and relationships with the critical thinking levels.

Furthermore, this study was conducted at about the end of the academic year 2002-2003. In this time of the year, the students were preparing for the English final exam so the program was very loaded with the preparation for this exam. Therefore, the instructors of the classrooms were handed in the instruments and in a month they were free to administer them when they thought it was appropriate for them to implement the

instruments. In other words, all the subjects did not fill out the instruments at the same class hour.

In this study, there are three instruments as Watson-Glaser Critical Thinking Appraisal Test, the Information Form and the English Final Exam. The subjects were filled out the critical thinking appraisal test from the beginning of May to the end of June. Then, in the second week of June, the English final exam was administered. That is; the subjects answered these two tests in different time. This can be considered to be a limitation.

Moreover, the critical thinking appraisal test was administered in Turkish so that the subjects were not faced with the problem of understanding the contexts and the questions whereas the proficiency exam was in English as the subjects' language levels could be identified by this way.

In terms of the critical thinking appraisal test, this test only focuses on the cognitive aspects of the critical thinking and the five dimensions (inference, recognition of assumption, deduction, interpretation and evaluation of arguments). Thus, the findings of this study are only limited to this test.

The last limitation is that all the results, inferences and interpretations are limited to quantitative data collected through Watson-Glaser Critical Thinking Appraisal Test, the information form and the results of the English proficiency exam

CHAPTER 4

RESULTS

This chapter is devoted to the results of the study. It will mainly focus on the critical thinking levels of the students, its difference regarding the variables as type of their ÖSS scores, the language group they were attending, and the socio-demographic features and their relationship concerning the variables as their English proficiency scores and the reading and writing scores they obtained from the final exam. Findings will be presented in the same sequence with the research questions after the demographic information is given.

4.1 Characteristics of the Subjects

To identify the demographic information, a information form was administered to the students and they were asked to indicate their major areas, the types of their ÖSS

scores, the groups they were attending at preparatory school, their gender, their number of siblings, their parental education levels, their families' economic status, which consisted of the variables of the study.

According to the types of their major area, 47.7 % (N = 92) of the students were going to attend social sciences departments, while 52 % (N = 101) of them were going to attend science departments after their completion of preparatory school (Table 4.1).

Table 4.1 The Percentages of Subjects According to Their Major Areas

Their Major Area	*F*	%
Social sciences	92	47.7
Sciences	101	52.3

Regarding their type of ÖSS scores, 5.2 % (N = 10) of the students were placed in their departments by their verbal scores. 51.8 % (N = 100) of them were placed by their numeric scores. 31.1 % (N = 60) of them were placed by their "equal weight" scores and 11.9 % (N = 23) of them were placed by their "language scores" (Table 4.2).

Table 4.2 The Percentages of Subjects According to Their ÖSS Scores

Type of OSS Score	*F*	%
Verbal	10	5.2
Numerical	100	51.8
Equal weight	60	31.1

Of the 193 subjects participated in the study, 37.8 % (N = 73) of them were attending the preparatory school at the language level of zero-beginner. 20.7 % (N = 40)

of them were attending the classes at the language level of elementary. 29.5 % (*N* = 57) of them were attending the classes at the language level of pre-intermediate. 11.8 % of them were attending the classes at the language level of philology C (Table 4.3).

Table 4.3 Percentages of Subjects According to Their Language Groups at the Preparatory School

Type of Group	*F*	%
Zero beginner	73	37.8
Elementary	40	20.7
Pre-intermediate	57	29.5
Philology C	23	11.9

In terms of gender, 58.5 % (*N* = 113) of the subjects were female whereas 41,5 % (*N* = 80) of them were male (Table 4.4).

Table 4.4 Percentages of Subjects According to Their Gender at the Preparatory School

Gender	*F*	%
Females	113	58.5
Males	80	41.5

In relation to the number of siblings, the lowest percentage (2.1 %, *N* = 4) was obtained from the ones who had no siblings whereas the highest percentage (49.7 %, *N* = 96) was obtained from the ones who had one sibling. Moreover, 29.5 % (*N* = 57)of them had two siblings, 11.9 % (*n* = 23) of them had three siblings and 6.7 % (*N* = 13) of them had four and more siblings (Table 4.5).

Table 4.5 Percentages of Subjects According to Their Number of Siblings

The number of Siblings	*F*	%
No	4	2.1
1	96	49.7
2	57	29.5
3	23	11.9
4 and more	13	6.7

Of the 193 subjects, 192 responded to the item on their mothers' educational level. The lowest percentage (4.7 %, *N* = 9) was obtained from the ones who mentioned that their mothers were illiterate while the highest score (35.2 %, *N* = 68) was obtained from the ones who mentioned that their mothers were primary school graduates. Besides, 11.9 % (*N* = 23) of them were secondary school graduates, 29 % (*N* = 56) of them were high school graduates and 17.1 % (*N* = 33) of them were university graduates. Furthermore, 1.6 % (*N* = 3) of them indicated that their mothers were not primary school graduates but they attended the classes at some levels (Table 4.6).

Table 4.6 Percentages of the Subjects According to the Educational Level of Their Mothers

Mother Education Level	*f*	%
Illiterate	9	4.7
Primary school	68	35.2
Secondary School	23	11.9
High School	56	29
University	33	17.1
Others	3	17.1

According to the educational level of their fathers, 192 subjects out of 193 responded to the item on their fathers' educational level. Of those 37.8 % (*N* = 73) were university graduates, which is the highest percentage. 21.2 % (*N* = 41) of them were primary school graduates. 12.4 % (*N* = 24) of them were secondary school graduates. 25.4 % (*N* = 49) of them were high school graduates. 2.1 % (*N* = 4) of them mentioned that their fathers were not the primary school graduates but they attended the classes at some levels (Table 4.7).

Table 4.7. Percentages of the Subjects According to the Educational Level of Their Fathers at the Preparatory School

Father Education Level	*f*	%
Illiterate	1	0.5
Primary school	41	21.2
Secondary School	24	12.4
High School	49	25.4
University	73	37.8
Others	4	2.1

Of the 193 subjects involved in the study, 192 of them responded to the item about the economic status of their families. 10.9 % (*N* = 21) of them indicated that their income per month was about 250 million TL, which is the lowest percentage whereas 25.4 % (*N* = 49) of them indicated that their income per month was between 750 million-1 billion TL, which is the highest percentage. 21.8 % (*N* = 42) of them indicated their income per month was between 250 and 500 million TL. 19.2 % (*N* = 37) of them indicated that their income per month was more than 1 billion TL (Table 4.8).

Table 4.8 Percentages of the Subjects According to Their Family Income per Month at the Preparatory School

Family Income Level	*f*	%
0-250 million	21	10.9
250-500 million	42	21.8
500-750 million	43	22.3
750 million-1 billion	49	25.4
1 billion and more	37	19.2

4.2 Results of the Study

In this study, the data collected were analyzed according to six research questions asked regarding the differences in critical thinking levels of the students according to the variables of the study and the relationship between the critical thinking levels of the students and their English Language proficiency level. The results will be presented in the same order with the research questions posed for the study.

The first research question aims at identifying the critical thinking levels of the subjects. The data gathered via Watson-Glaser Critical Thinking Appraisal, which was analyzed through descriptive analysis, which portrays the means, range, standard deviation and standard variance.

Of 193 subjects, their total scores ranged from 39 to 79 with a mean of 60. 6 (*SD* = 7.8). When their scores for each test was examined, the highest mean (*M* = 16.6, *SD* = 3.02, *N* = 178) was obtained in Test 4 whereas the lowest mean was obtained in Test 5 (*M* = 8.5, *SD* = 2.04, *N* = 180). For Test 1, the mean was 9.19 (*N* = 186) with a standard deviation of 2.5. For Test 2, the mean was 10.4 (*N* = 185) with a standard deviation of

2.5 and for Test 3, the mean was 15.4 (N = 181) with a standard deviation of 2.8 (Table 4.9).

Table 4. 9. The Descriptive Statistics of Watson-Glaser Critical Thinking Appraisal and Its Sub-tests

Tests	*N*	*R*	*M*	*SD*
Sub-test 1	186	14	9.19	2.50
Sub-test 2	185	14	10.43	2.52
Sub-test 3	181	15	15.40	2.82
Sub-test 4	178	17	16.60	3.02
Sub-test 5	180	11	8.57	2.04
Overall Test	167	40	60.6	7.8

The second question was stated as 'Is there any statistically significant difference in students' critical thinking levels in accordance with their types of ÖSS scores?'.

A one-way analysis of variance (ANOVA) was carried out to find out whether there was any difference in students' critical thinking levels in accordance with their types of ÖSS scores. The independent variable was their type of ÖSS scores while the dependent variable was their critical thinking scores obtained from The Watson-Glaser Critical Thinking Appraisal Test.

Regarding the total test scores of each student, the ANOVA reveled a significant difference, F (3,163) = 3,937, p = .01 at the .01 level. For the sub-test 1, the ANOVA did not reveal a significant difference, F (3,182) = .630, p = .596 at the .05 level. For the sub-test 2, the ANOVA did not reveal a significant difference, F (3,181)= 1.112, p = .342 at the .05 level. Considering the sub-test 3, the ANOVA revealed a significant difference, F (3,177) = 3.600, p = .015 at the .01 level. Regarding the sub-test 4, the ANOVA revealed a significant difference, F (3,174) = 5.637, p = .001 at the 01. level

For the last test sub-test, the ANOVA revealed a significant, F (3, 176)= 7.821, p = .000 at the .01 level (Table 4.10).

Table 4.10 ANOVA According to the Types of ÖSS Scores

Source	*df*	*M*	*F*	*Mean Square*	*p*
	Between subjects				
Sub-test 1	3	9.19	0.63	3.99	.596
Sub-test 2	3	10.43	1.12	7.11	.342
Sub-test 3	3	15.40	3.60	27.52	.015*
Sub-test 4	3	16.60	5.63	47.90	.001*
Sub-test 5	3	8.57	7.82	29.25	.000*
Overall test	3	60.68	3.93	229.25	.010*
	Within subjects				
Sub-test 1	182	9.19	0.63	6.33	.596
Sub-test 2	181	10.43	1.12	6.34	.342
Sub-test 3	177	15.40	3.60	7.64	.015
Sub-test 4	174	16.60	5.63	8.5	.001
Sub-test 5	176	8.57	7.82	3.74	.000
Overall test	163	60.68	3.93	58.22	.100

Note: * indicates a significant difference.

Follow-up tests were conducted to evaluate pairwise difference among the means. Because the variances among the three groups of ÖSS scores were equal at the significance level (α) .01, we chose to assume that the variances were homogeneous and conducted post hoc comparisons using Bonferroni test, a test that assumes equal variances among three groups. At the .01 and .02 level, the results of the sub-test 4 indicated that there were significant differences between the numerical type of ÖSS scores and the language scores and between the equal weight type of ÖSS scores (M = 17,15) and the language scores (M = 13,86). Additionally, the results of the sub-test 5 showed that there was a significant difference between the numerical type of ÖSS scores

(*M* = 9,09) and the language type of ÖSS scores (*M* = 6,7). At the .05 level, there were significant differences between the numerical type of ÖSS scores and the language scores and between the equal weight type of ÖSS scores and the language scores in the results of sub-tests 4 and 5. Moreover, there was a significant difference between the numerical type of ÖSS scores and the language scores (Table 4.11).

Table 4. 11 Type of ÖSS Scores and Students' Critical Thinking Scores

Test Type	Type of ÖSS scores	M	SD	Language *Scores*
	Verbal	15.60	3.59	Not significant
Sub-test 4	Numerical	16.80	3.08	*
	Equal weight	17.15	2.43	*
	Language	13.86	3.02	
	Verbal	8.30	2.49	Not significant
Sub-test 5	*Numerical*	9.09	1.86	*
	Equal weight	8.26	2.07	*
	Language	6.76	1.39	
	Verbal	56.00	7.88	Not significant
Total Test	Numerical	61.55	8.21	*
	Equal weight	61.32	6.36	Not significant
	Language	55.15	7.77	

Note: * indicates a significant difference between pairs of means using Bonferroni

The third research question was stated as 'Is there any statistically significant difference in the students' critical thinking levels in accordance with the type of their major area as science and social science?'

An independent-samples *t* test was carried out to evaluate the difference in the students' critical thinking levels in accordance with the type of their major areas as science and social science based on equal variances assumed. In the total test there was a

significant difference obtained, t (165) = -2.048, p = .042) at the level of .05. The students whose major area was sciences (M = 61.7 SD = 8.12) had significantly different scores than the ones whose major area was social sciences (M = 59.3 SD = 7.2). For the sub-test 1, there was no significant difference obtained, t (184) = -.378, p = .706. In the sub-test 1, the students whose major area was sciences (M = 9.2 SD = 2.7) did not have the significantly different scores than the ones whose major area was social sciences (M = 9.1 SD = 2.5). Concerning the sub-tests, in the sub-test 2, there was not a significant difference obtained, t (183) = -.628, p = .530). From the sub-test 2, the students whose major area was sciences (M = 10.5 SD = 2.4) did not have significantly different scores than the ones whose major area was social sciences (M = 10.3 SD = 2.5). In the sub-test 3, there was a significant difference obtained, t (179) = -2.274, p = .024). Form the sub-test 3, the students whose major area was sciences (M = 15.8 SD = 2.7) had significantly different scores than the ones whose major area was social sciences (M = 14.89 SD = 2.88). For the sub-test 4, there was no significant difference obtained, t (176) = -1.029, p = .305. The students whose major area was sciences (M = 16.8 SD = 3) did not have a significantly different scores than the students whose major area was social sciences (M = 16.3 SD = 2.9). Also, in the sub-test 5, there was a significant difference obtained, t (178) = -3.351, p = .001. The students whose major area was sciences (M = 9.03 SD = 1.93) had significantly different scores than the ones whose major area was social sciences (M = 8.0 SD = 2.0) (Table 4.12).

Table 4.12. Independent Samples t-test for the Students' Major Area

Tests	Social sciences		Sciences		*N*		*df*	*t*	*p*
	M	*SD*	*M*	*SD*	Social sciences	Sciences			
Sub-test 1	9.11	2.1	9.25	2.7	85	101	184	-.378	.706
Sub-test 2	10.30	2.5	10.54	2.4	85	100	183	-.628	.530
Sub-test 3	14.8	2.8	15.8	2.7	82	99	179	-2.274	.024*
Sub-test 4	16.3	2.9	16.8	3.0	81	97	176	-1.029	.305
Sub-test 5	8.0	2.0	9.0	1.9	83	97	178	-3.351	.001*
Overall test	59.3	7.2	61.78	8.1	74	93	165	-2.048	.042*

Note: * indicates a significant difference.

The fourth question was stated as 'Is there any statistically significant difference in the students' critical thinking levels in accordance with the group they were attending at the preparatory school?'

A one-way analysis of variance (ANOVA) was carried out to find out whether there was any difference in students' critical thinking levels in accordance with their group at the preparatory school. The independent variable was their group they were attending at the preparatory school while the dependent variable was their critical thinking scores obtained Watson-Glaser Critical Thinking Appraisal Test.

Regarding the total test scores of each student, the ANOVA revealed a significant difference, F (3,163) = 10.33, p = .000. For the sub-test 1, the ANOVA revealed a significant difference, F (3,182) = 4.65, p = .004. For the sub-test 2, the ANOVA did not reveal a significant difference, F (3,181) = 0.44, p = .721. Considering the sub-test 3, the ANOVA revealed a significant difference, F (3,177) = 8.17, p = .000 at the .01 level. Regarding the sub-test 4, the ANOVA revealed a significant difference,

F (3,174) = 11.47, p = .000. According to the last test sub-test, ANOVA revealed a significant difference, F (3,176) = 5.32, p = .002. (Table 4.13)

Table 4.13. ANOVA According to the Groups the Students were Attending at the Preparatory School

Source	*df*	*M*	*F*	*p*
	Between subjects			
Sub-test 1	3	9.19	4.65	.004*
Sub-test 2	3	10.43	.445	.721
Sub-test 3	3	15.40	8.17	.000*
Sub-test 4	3	16.60	11.47	.000*
Sub-test 5	3	8.57	5.32	.002*
Overall test	3	60.68	10.33	.000*
	Within subjects			
Sub-test 1	182	4.65	5.94	.004
Sub-test 2	181	.445	6.41	.721
Sub-test 3	177	8.17	7.12	.000
Sub-test 4	174	11.47	7.78	.000
Sub-test 5	176	5.32	3.88	.002
Overall test	163	10.33	52.47	.000

Note: * indicates a significant difference.

Follow-up tests were conducted to evaluate pairwise difference among the means. Because the variances among four groups were equal at the level (α) .05, we chose to assume that the variances were homogeneous and conducted post hoc comparisons using Bonferroni test, a test that assumes equal variances among four groups. At the .05 level, the results of the sub-test 1 indicated that there were significant differences in the critical thinking scores between the zero-beginners (M = 8.38) and the pre-intermediate students (M = 9.92). The results of the sub-test 3 showed that there were significant differences in the critical thinking scores between the zero-beginners (M = 14.56) and the elementary students (M = 16.13), between the zero-beginners (M =

14.15) and the pre-intermediate students (*M* = 16.50), between the elementary students (*M* = 16.13) and the philology C (*M* = 13s.94) students and between the pre-intermediate students (*M* = 16.50) and the philology C students (*M* = 13.94). Likewise, the results of the sub-test 4 showed that there were significant differences in the critical thinking scores between the zero-beginners (*M* = 15.79) and the elementary students (*M* = 17.63), between the zero-beginners (*M* = 15.63) and the pre-intermediate students (*M* = 17.73), between the elementary students (*M* = 17. 63) and the philology C students (*M* = 13.86) and between the pre-intermediate students (*M* = 17.73) and the philology C students (*M* = 13.86). For the sub-test 5, there were significant differences in the critical thinking scores between the philology C students (*M* = 6.76) and the zero-beginners (*M* = 8.68), between the philology C students (*M* = 6.76) and the elementary students (*M* = 8.84) and between the philology C (*M* = 6.76) students and the pre-intermediate students (*M* = 8.80). Considering the total test, there were significant differences in the critical thinking scores between the zero-beginners (*M* = 58.21) and the elementary students (*M* = 62.74), between the zero-beginners (*M* = 58.21) and the pre-intermediate students (*M* = 64.35), between elementary students (*M* =62.74) and the philology C students (*M* = 55.15), and between the pre-intermediate students (*M* = 64.35) and the philology C students (*M* = 55.15) (Table 4.14)

Table 4.14. The Groups the Students were Attending at the Preparatory School and Their Critical Thinking Scores

Test Type	Type of Their Groups	*M*	*SD*	Zero beginners	*Elementary*	Pre-intermediate	Philology C
	Zero beginners	8.38	2.41		Not significant	*	Not significant
Sub-test 1	Elementary	9.36	2.67	*Not significant*		Not significanr	Not significant
	Pre-intermediate	9.92	2.51	*	Not significant		Not significant
	Philology C	9.71	1.76	Not significant	Not significant	Not significant	
	Zero beginners	14.56	2.73		*	*	Not significant
Sub-test 3							*
	Elementary	16.13	2.12	*		Not significant	*
	Pre-intermediate	16.50	2.87	*	Not significant		
	Philology C				*		Not significant
		13.94	2.70	Not significant		*	
							Not significant
	Zero beginners				*		
Sub-test 4		15.79	2.96			*	*
	Elementary						*
		17.63	2.87	*		Not significant	
	Pre-intermediate				Not significant		
	Philology	17.73	2.37	*	*		
		13.86	3.02	Not significant		*	
	Zero beginners	8.68	2.19		Not significant	Not significant	*
Sub-test 5							
	Elementary	8.42	1.89	Not significant	Not significant	Not significant	*
	Pre-intermediate	8.80	1.83	Not significant	*		*
	Philology C						
		6.76	1.39	*		*	
					*		
	Zero beginners						
		58.21	8.06		Not significant	*	Not significant
	Elementary				Not significant		*
Total Test		62.74	6.49	*	*	Not significant	
	Pre-intermediate						*
	Philology	64.35	6.25	*		Not significant	
		55.15	7.77	Not significant		*	

Note: * indicates a significant difference between pairs of means using Bonferroni

The fifth question dealt with whether there is any statistically significant difference in the students' critical thinking levels in accordance with their socio-demographic features as gender, the number of siblings the students have, their parental education level, and the economic status of the students. The first sub-question was stated that 'Is there any statistically significant difference in the students' critical thinking levels in accordance with gender?'

An independent-samples *t* test was conducted to see whether there was any statistically significant difference in the students' critical thinking levels in accordance with gender based on equal variances assumed. In the total test there was not a significant difference obtained, t (165) = -.701, p = .484) at the level of .05. The male students (M = 61.1 SD = 7.8) did not have significantly different scores than the female ones (M = 60.3 SD = 7.8). Regarding the sub-tests, in the sub-test 1 there was a significant difference obtained, t (184) = -2.670, p = .008. The male students (M = 9.7 SD = 2.7) did not have significantly different scores than the female students (M = 8.7 SD = 2.2). In the sub-test 2, there was a significant difference obtained, t (183) = 2.398, p = .017. The female students (M = 10.8 SD = 2.2) had significantly different scores than the male students (M = 9.9 SD = 2.7). In the sub-test 3, there was a significant difference obtained, t (179) = -2.403, p = .017. The male students (M =15.9 SD = 2.8) had significantly different scores than the female ones (M = 14.9 SD = 2.7). In the sub-test 4, there was not a significant difference obtained, t (176) = .214, p = .831. The female students (M = 16.6 SD = 2.9) did not have significantly different scores than the male students (M = 16.5 SD = 3.1). In the sub-test 5, there was not a significant difference obtained, t (178) = .414, p = .679. The female students (M = 8.6 SD = 1.9) did

not have significantly different scores than the male students (M = 8.5 SD = 2.1) (Table 4.15).

Table 4.15. Independent Samples t-test for Gender

Tests	Female		Male		*N*		*df*	*t*	*p*
	M	SD	M	SD	Female	Male			
Sub-test 1	8.77	2.2	9.7	2.7	106	80	184	-2.670	.008*
Sub-test 2	10.8	2.2	9.9	2.7	106	79	183	2.398	.017*
Sub-test 3	14.9	2.7	15.9	2.8	102	79	179	-2.403	.017*
Sub-test 4	16.6	2.9	16.5	3.1	101	77	176	.214	.831
Sub-test 5	8.6	1.9	8.5	2.1	102	78	178	.414	.679
Overall test	60.3	7.8	61.16	7.8	92	75	165	-.701	.484

Note: * indicates a significant difference.

In terms of the sub-question 2 in the research question 5, it was stated whether there is any statistically significant difference in the students' critical thinking levels in accordance with the number of siblings.

A one-way analysis of variances (ANOVA) was carried out to evaluate the difference in the students' critical thinking levels with regard to the number of siblings. The independent variable was the number of siblings whereas the dependent variable was their critical thinking scores obtained by Watson-Glaser Critical Thinking Appraisal Test.

In terms of the total test scores of each student, the ANOVA did not reveal a significant difference, F (4,162) = 1.709, p = .150. For the sub-test 1, the ANOVA did not reveal a significant difference, F (4,181) = 1.046, p = .385. For the sub-test 2, ANOVA did not reveal a significant difference, F (4,180) = 0.821, p = .513. Considering the sub-test 3, the ANOVA did not reveal a significant difference, F (4,176) = 1.242, p =

.295. Regarding the sub-test 4, the ANOVA did not reveal a significant difference, F (4,173) = .837, p = .503 at the .05 level. According to the last test sub-test, ANOVA did not reveal a significant difference, F (4,175) = .283, p = .889 at the .05 level. There were no differences in the students' critical thinking scores in accordance with the number of siblings they have (Table 4.16).

Table 4.16. ANOVA According to the Number of Siblings They Have

Source	*df*	*M*	*F*	*p*
	Between subjects			
Sub-test 1	4	9.19	1.04	385
Sub-test 2	4	10.43	.821	.513
Sub-test 3	4	15.40	1.24	.295
Sub-test 4	4	16.60	.837	.503
Sub-test 5	4	8.57	.283	.889
Overall test	4	60.68	1.70	.150
	Within subjects			
Sub-test 1	181	9.19	6.29	.385
Sub-test 2	180	10.43	6.38	.513
Sub-test 3	176	15.40	7.93	.295
Sub-test 4	175	16.60	9.20	.503
Sub-test 5	176	8.57	4.23	.889
Overall test	162	60.68	60.29	.150

Note: * indicates a significant difference.

Since no significant result was obtained as a result of the ANOVA analysis, follow-up tests were not conducted to evaluate pairwise differences among the means of the categories in the independent variable.

In the third sub-question of the question 5, it was stated whether there is any statistically significant difference in the students' critical thinking levels in accordance with the parental education level?'

To find out the difference as a result of both the educational level of the students' mothers and fathers together, two-way ANOVA was carried out. Regarding the total test scores of the students, the two-way ANOVA did not reveal a significant difference, F (14,166) = .679, p = .792. For the sub-test 1, the two-way ANOVA did not reveal a significant difference, F (14,166) = .362, p = .982.Considering the sub-test 2, the two-way ANOVA did not reveal a significant difference, F (14,166) = .759, p = .711. In consideration to the sub-test 3, the two-way ANOVA did not reveal a significant difference, F (14,166) = 1.104, p = .360. Regarding the sub-test 4, the two-way ANOVA did not reveal a significant difference, F (14,166) = .733, p = .739. According to the last test sub-test, the ANOVA revealed significant, F (14,166) = 1.860, p = .036 at the .05 level. Except the sub-test 5, two-way ANOVA did not reveal a significant difference (Table 4.17).

Table 4.17. Two-way ANOVA for the Education Levels of the Students' Mothers and Fathers together

Source	*df*	*M*	*F*	*p*
Sub-test 1	14	9.15	.367	.982
Sub-test 2	14	10.40	.759	.711
Sub-test 3	14	15.40	1.104	.360
Sub-test 4	14	16.54	.733	.739
Sub-test 5	14	8.63	1.860	.036*
Overall test	14	60.71	.679	.792

Note: * indicates a significant difference.

A one-way analysis of variances (ANOVA) was conducted to evaluate the difference in the students' critical thinking levels with regard to their parental education level as their fathers' and their mothers' separately. The independent variable was the

parental education level whereas the dependent variable was their critical thinking scores obtained by Watson-Glaser Critical Thinking Appraisal Test. The independent variable included two components as their father's education level and their mother's education level.

The sub-question 1 of the research question 5.3 was stated as 'Is there any statistically significant difference in the students' critical thinking levels in accordance with the education levels of their mothers?'

With regard to the total test scores of each student, the ANOVA revealed a significant difference, F (5,160) = .515, p = .765 at the .05 level. For the sub-test 1, the ANOVA did not reveal a significant difference, F (5,179) = .544, p = .743 at the .05 level. In terms of the sub-test 2, the ANOVA did not reveal a significant difference, F (5,178) = .971, p = .437 at the .05 level. Considering the sub-test 3, the ANOVA did not reveal a significant difference, F (5,174) = .129, p = .986 at the .05 level. Regarding the sub-test 4, the ANOVA did not reveal a significant difference, F (5,171) = .387, p = .858 at the .05 level. According to the last test sub-test, the ANOVA did not reveal a significant difference, F (5,173) = .184, p = .968 at the .05 level. There were no differences in the students' critical thinking scores in accordance with their mother's education level (Table 4.18).

Table 4.18. ANOVA According to the Educational Levels of the Students' Mothers

Source	*df*	*M*	*F*	*p*
	Between subjects			
Sub-test 1	5	9.20	.544	.743
Sub-test 2	5	10.41	.971	.437
Sub-test 3	5	15.41	.129	.986
Sub-test 4	5	16.62	.387	.858
Sub-test 5	5	8.57	.184	.968
Overall test	5	60.71	.515	.765
	Within subjects			
Sub-test 1	181	9.20	6.29	.743
Sub-test 2	180	10.41	6.38	.437
Sub-test 3	176	15.41	7.93	.986
Sub-test 4	175	16.62	9.20	.858
Sub-test 5	176	8.57	4.23	.968
Overall test	162	60.71	60.29	.765

Note: * indicates the significant differences.

Since no significant result was obtained as a result of the ANOVA analysis, follow-up tests were not conducted to evaluate pairwise differences among the means of the categories in the independent variable.

The sub-question 1 of the research question 5.3 was stated as 'Is there any statistically significant difference in the students' critical thinking levels in accordance with the education level of their fathers?'

In relation to the total test scores of each student, the ANOVA did not reveal a significant difference, F (5,160) = 1.833, p = .109. For the sub-test 1, the ANOVA revealed a significant difference, F (5,179) = 1.191, p = .004. In terms of the sub-test 2, ANOVA did not reveal a significant difference, F (5,178) = .851, p = . 316 at the .05 level. In consideration to the sub-test 3, the ANOVA did not reveal a significant

difference, F (5,174) = .851, p = .515. Regarding the sub-test 4, the ANOVA did not reveal a significant difference, F (5,171) = .988, p = .427. According to the last test sub-test, ANOVA did not reveal a significant difference, F (5,173) = 1.045, p = .393. Except the sub-test 1, there were no differences in the students' critical thinking scores in accordance with their father's education level (Table 4.19).

Follow-up tests were conducted to evaluate pairwise difference among the means. Because there is only one subject identifying his or her fathers' educational level as 'illiterate', post hoc tests were not performed. Therefore, this subject was excluded from the post hoc analysis. Since the variances among six groups were equal at the significance level (α) .05, we chose to assume that the variances were homogeneous and conducted post hoc comparisons using Bonferroni test, a test that assumes equal variances among five groups. The results of the sub-test 1 indicated that there were

Table 4.19. ANOVA for the Education Levels of the Students' Fathers

Source	*df*	*M*	*F*	*p*
	Between subjects			
Sub-test 1	5	9.20	3.65	.004*
Sub-test 2	5	10.41	1.91	.316
Sub-test 3	5	15.41	.851	.515
Sub-test 4	5	16.62	.988	.427
Sub-test 5	5	8.57	1.04	.393
Overall test	5	60.71	1.83	.109
	Within subjects			
Sub-test 1	179	9.20	3.65	.743
Sub-test 2	178	10.41	1.91	.437
Sub-test 3	174	15.41	.851	.986
Sub-test 4	171	16.62	.988	.858
Sub-test 5	173	8.57	1.04	.968
Overall test	160	60.71	1.83	.765

Note: * indicates a significant difference.

differences between the secondary school graduates (M = 10.21) and high school graduates (M = 8.02) and between the high school graduates (M = 8.02) and university graduates (M = 9.40). For the sub-test 2, 3, 4, 5 and the total test there were no differences among the graduates of the school at different levels (Table 4.20).

Table 4.20. The Educational Levels of the Students' Fathers and Their Critical Thinking Scores

Type of test	Educational level	*M*	*SD*	Primary school	Secondary School	High school	University	Others
	Primary school	9.46	2.22		Not significant	Not significant	Not significant	Not significant
	Secondary school	10.21	2.21	Not significant		*	Not significant	Not significant
Sub-test 1	High school	8.02	2.04	Not significant	*		*	Not significant
	University	9.40	2.82	Not significant	Not significant	*		Not significant
	Others	11	1.82	Not significant	Not significant	Not significant	Not significant	

Note: * indicates a significant difference between pairs of means using Bonferroni

The last sub-question of the question 5 was stated as 'Is there any statistically significant difference in the students' critical thinking levels in accordance with their economic status of the students?'

A one-way analysis of variance (ANOVA) was conducted to find out whether there was any difference in students' critical thinking levels in accordance with their economic status of the students. The independent variable was the economic status of the students while the dependent variable was their critical thinking scores obtained by Watson-Glaser Critical Thinking Appraisal Test.

With respect to the total test scores of each student, the ANOVA did not reveal a significant difference, F (4,161) = 1.151, p = .335. For the sub-test 1, the ANOVA did not reveal a significant difference, F (4,180) = .162, p = .957. In terms of the sub-test 2, the ANOVA did not reveal a significant difference, F (4,179) = .828, p = .509. In consideration to the sub-test 3, the ANOVA revealed significant, F (4,175) = 2.346, p = .056. Regarding the sub-test 4, ANOVA did not reveal a significant difference, F (2,172) = .914, p = .457 at the .05 level. According to the last test sub-test, ANOVA did not reveal a significant difference, F (4,174) = .774, p = .544 at the .05 level. Except the sub-test 3, there were differences in the students' critical thinking scores in accordance with their economic status (Table 4.21).

Table 4.21. ANOVA for the Economic Status of the Students

Source	*df*	*M*	*F*	*p*
	Between subjects			
Sub-test 1	4	9.19	.163	.957
Sub-test 2	4	10.43	.828	.509
Sub-test 3	4	15.38	2.34	.056
Sub-test 4	4	16.58	.914	.457
Sub-test 5	4	8.56	.774	.544
Overall test	4	60.64	1.15	.335
	Within subjects			
Sub-test 1	180	.163	6.44	.957
Sub-test 2	179	.828	6.41	.509
Sub-test 3	175	2.34	7.67	.056
Sub-test 4	172	.914	9.17	.457
Sub-test 5	174	.774	4.21	.544
Overall test	161	1.15	61.14	.335

Note: * indicates a significant difference.

Since no significant result was obtained as a result of the ANOVA analysis, follow-up tests were not conducted to evaluate pairwise differences among the means of the categories in the independent variable.

In the sixth research question it was stated that "Is there any statistically significant relationship between the English proficiency exam scores of the students and their critical thinking levels?"

To find out the relationship between the students' scores of the final exam and the critical thinking scores of the students, the Pearson correlation coefficient was calculated by SPSS program. According to the results of the analysis, the overall scores of the students from the critical thinking test had no significant correlation with the final exam scores of the students, R =.144 p = .088 N = 142. With regard to the sub-tests, their scores from the sub-test 3 had a significant low correlation with their final scores, R = .162 p = .047 N = 151 while their scores of the others did not have a significant correlation. The value of the correlation coefficient signified a low positive correlation between the students' exam results and their critical thinking scores. However, the other sub-tests were not significant (Table 4.22).

Table 4.22. Correlation between the Critical Thinking Test Scores of the Students and their Final Exam Scores

Tests	*r*	*p*	*N*
Sub-test 1	.055	.498	152
Sub-test 2	.099	.220	154
Sub-test 3	.162*	.047	151
Sub-test 4	.010	.901	150
Sub-test 5	.131	.108	151
Overall Test	.144	.088	142

Note: * indicates that the correlation was significant.

The first sub-question of the sixth research question examines whether there is any statistically significant relationship between the reading scores of the students from the English proficiency exam and their critical thinking scores. Therefore, the correlation study was conducted by calculating the Pearson correlation coefficient.

In terms of the results of the study, the overall critical thinking scores of the students had a significant low correlation with the reading scores of the students, R = .229, p = .006, N = 150 According to the sub-tests, the students' scores of the sub-test 1 had a significant low correlation with the reading scores of the students, R = .167, p = .041, N = 150. Also, their scores of the sub-test 3 had a significant low correlation with the reading scores of the students, R = .289, p = .000, N =152. The value of the correlation coefficient signified a low positive correlation between the students exam results and their critical thinking scores. Nevertheless, the other sub-tests and the overall test were not significant (Table 4.23).

Table 4.23. Correlation between the Critical Thinking Appraisal Test Scores of the Students and their Reading Scores of their Final Exam

Tests	*R*	*p*	*N*
Sub-test 1	.167*	.041	150
Sub-test 2	.074	.362	152
Sub-test 3	.289*	.000	149
Sub-test 4	.145	.079	148
Sub-test 5	.058	.182	149
Overall Test	.229*	.006	150

Note: * indicates that the correlation was significant.

The second sub-question of the fifth research question indicated "Is there any statistically significant relationship between the writing scores of the students from the English proficiency exam and their critical thinking levels?"

To analyze this, the correlation study was carried out as well. Regarding the results, The students' scores of the overall critical thinking test had a significant low correlation with their writing scores, $R = 261$ $p = 002$ $N = 141$. Moreover, the students' scores of the sub-test 3 had a low significant correlation with their writing scores, $R = .300$, $p = .000$, $N = 151$. The students' scores of the sub-test 4 had a low significant correlation with their writing scores, $R = .164$, $p = .045$, $N = 149$. The correlation coefficient can be considered as a low positive correlation between the writing scores of the students and their critical thinking scores. Nonetheless, their scores of the other sub-tests and the overall test did have a significant correlation with their writing scores (Table 4.24).

Table 4.24. Correlation between the Critical Thinking Appraisal Test Scores of the Students and their Writing Scores of their Final Exam

Tests	*R*	*p*	*N*
Sub-test 1	.156	.059	151
Sub-test 2	.090	.270	153
Sub-test 3	.300*	.000	150
Sub-test 4	.164*	.045	149
Sub-test 5	.131	.108	151
Overall Test	.261*	.002	141

Note: * indicates that the correlation was significant.

4.2 Summary

The summary of the analyses carried out and the results of the study are presented in Table 4.25. The table continues on pages 101 and 102

Table 4.25 Summary Table of the Results

Research Questions	**Analysis Conducted**	**Results**
1. What are the critical thinking levels of the students?	Descriptive Analysis	• Moderate mean (M = 60,6) obtained from the total test • The highest mean obtained from sub-test 4 • The lowest mean obtained from sub-test 5
2. Is there any statistically significant difference in the students' critical thinking levels in accordance with their kinds of ÖSS scores?	One way ANOVA Post Hoc tests	• the total test ... significant • the sub-test 1 ... not significant • the sub-test 2 ... not significant • the sub-test 3 ... significant • the sub-test 4 ... significant • the sub-test 5 .... significant
3. Is there any statistically significant difference in the students' critical thinking levels in accordance with the type of their major area as science and social science?	Independent samples t-test	• the total test ... significant • the sub-test 1 ... not significant • the sub-test 2 ... not significant • the sub-test 3 ... significant • the sub-test 4 ... not significant • the sub-test 5 .... significant
4. Is there any statistically significant difference in the students' critical thinking levels in accordance with the group they were attending?	One-way ANOVA Post Hoc tests	• the total test ... significant • the sub-test 1 ... significant • the sub-test 2 ... not significant • the sub-test 3 ... significant • the sub-test 4 ... significant • the sub-test 5 ... significant

Table 4.25 Summary Table of the Results (continue)

5. Is there any statistically significant difference in the students' critical thinking levels in accordance with their socio-demographic fetaures?		• the total test ... not significant
5.1 Is there any statistically significant difference in the students' critical thinking levels in accordance with gender?	Independent samples T-test	• the sub-test 1 ... significant • the sub-test 2 ... significant • the sub-test 3 ... significant • the sub-test 4 ... not significant • the sub-test 5 ... not significant
5.2 Is there any statistically significant difference in the students' critical thinking levels in accordance with the number of the siblings?	One-way ANOVA Post hoc tests	• the total test ... not significant • the sub-test 1 ... not significant • the sub-test 2 ... not significant • the sub-test 3 ... not significant • the sub-test 4 ... not significant • the sub-test 5 ... not significant
5.3 Is there any statistically significant difference in the students' critical thinking levels in accordance with the parental education level?	One-way ANOVA Two-way ANOVA Post Hoc Tests	*Mother*: • the total test ... not significant • the sub-test 1 ... not significant • the sub-test 2 ... not significant • the sub-test 3 ... not significant • the sub-test 2 ... not significant • the sub-test 4 ... not significant • the sub-test 5 ... not significant *Father*: • the total test ... not significant • the sub-test 1 ... significant • the sub-test 2 ... not significant • the sub-test 3 ... not significant • the sub-test 2 ... not significant • the sub-test 4 ... not significant • the sub-test 5 ... not significant *Mother and Father* • the total test ... not significant • the sub-test 1 ... not significant • the sub-test 2 ... not significant • the sub-test 3 ... not significant • the sub-test 4 ... not significant • the sub-test 5 ... significant
5.4. Is there any statistically significant difference in the students' critical thinking levels in accordance with the economic status of the students?	One-way ANOVA Post Hoc Tests	• the total test ... not significant • the sub-test 1 ... not significant • the sub-test 2 ... not significant • the sub-test 3 ... not significant • the sub-test 4 ... not significant • the sub-test 5 ... not significant

Table 4.25 Summary Table of the Results (continue)

6. Is there any statistically significant relationship between the reading scores of the students from the English final exam and their critical thinking levels?	Pearson Correlation Coefficient	• the total test ... not significant • the sub-test 1 ... not significant • the sub-test 2 ... not significant • the sub-test 3 . significant(low) • the sub-test 4 ... not significant • the sub-test 5 ... not significant
6.1 Is there any statistically significant relationship between the reading scores of the students from the English final exam and their critical thinking levels?	Pearson Correlation Coefficient	• the total test .. significant(low) • the sub-test 1 ..significant(low) • the sub-test 2 ... not significant • the sub-test 3.. significant(low) • the sub-test 4 ... not significant • the sub-test 5 ... not significant
6.2. Is there any statistically significant relationship between the writing scores of the students from the English final exam and their critical thinking levels?	Pearson Correlation Coefficient	• the total test .. significant(low) • the sub-test 1 ... not significant • the sub-test2 .. significant(low) • the sub-test 3 ..significant(low) • the sub-test 4 ... not significant • the sub-test 5 ... not significant

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

This chapter is devoted to the conclusions of the study, implications for practice and implications for further research.

5.1. Conclusions

This study aimed at finding out the critical thinking levels of the students at the preparatory school at Hacettepe University. It also identified the differences between the total critical thinking scores of the subjects in accordance with the types of their major area, the types of their ÖSS scores, their groups at the school, gender, their number of siblings, their parental educational levels, the economic status of their family. Moreover, it examined the relationship between the total critical thinking scores of the subjects and

their total English final exam scores, the reading scores of the final exam, and the writing scores of the final exam. In the following part, the inferences that can be drawn from the results of the study are presented.

The critical thinking levels of the students at the preparatory school can be regarded as a moderate level in terms of the mean (M = 60,6) score obtained. This score is higher than the scores of the high school students at their first, second, and third years (Çıkrıkçı, 1993, 567). Moreover, Coskun (2001) indicated that the critical thinking levels of the students in both control and experimental groups were moderate; which is in line with our findings (p. 55). With respect to the sub-tests in the critical thinking appraisal, the subjects got the highest score from Test 4, Interpretation. This showed that they were good at "weighing evidence and distinguishing between generalizations from given data and generalizations to be warranted beyond a reasonable doubt". However, the lowest mean was obtained from Test 5, Evaluation of Arguments. This revealed that they were not good at "distinguishing between arguments which are strong and weak" (Watson & Glaser, 1964, 2).

In terms of the type of ÖSS scores of the subjects, the critical thinking scores of the subjects differed. In terms of the pairwise differences, the critical thinking scores of the students having the numerical type of the scores were higher than the ones of the students having the language type of the scores. With regard to the sub-tests Inference and Recognition of Assumptions, the critical thinking scores of the students did not reveal any differences. However, in the sub-tests Deduction, Interpretation and Evaluation of Assumption, the critical thinking scores of the students revealed a significant difference. For these sub-tests when the pairwise differences were

interpreted, the subjects entering university with the language scores had lower critical thinking scores than the ones entering university with numeric and equal weight scores in the sub-tests Interpretation and Evaluation of Assumption. This may be result from the content and structure of the Watson-Glaser Critical Thinking Appraisal Test. In other words, the sub-categories and skills in the test refer more to analytical and mathematical analysis.

Considering the subjects' major areas in terms of their type as sciences and social sciences, it was found out that there was a significant difference in the students' critical thinking scores. The ones whose major areas were sciences had significantly higher scores than the ones whose major areas were social sciences. Also, in terms of sub-tests, Deduction and Evaluation of Arguments revealed a significant difference between these two groups in favor of the students at science departments. This finding was consistent with the findings of the study conducted by Kaya (1997, 59). She stated that the critical thinking scores of the engineering and health departments were higher than the scores of the social science and science departments. According to Walsh and Hardy (1999), it was found out that when the students were grouped as practice and non-practice disciplines, the students in the non-practice discipline had higher scores than those in the practice discipline in relation to their critical thinking disposition. Their finding contrasted with the finding of this study. The reason behind science students scoring higher than the students at the social sciences can be the content and structure of the Watson-Glaser Critical Thinking Appraisal Test, as stated in the previous paragraph. Also, this result was in line with the results of the research question on the type of ÖSS

scores of the students. The students having numerical type of ÖSS scores were the students of the science departments.

In terms of the language groups the students were attending at the preparatory school, there were significant differences in the general critical thinking scores of the students and the sub-tests Inference, Deduction, Interpretation and Evaluation of Arguments. However, there was no difference in the sub-test Recognition of Assumption. Taken the pairwise differences, in the sub-test 1, the critical thinking scores of the pre-intermediate students had higher scores than the zero-beginners. This can be interpreted in a way that zero-beginners had more difficulty in discriminating degrees of truth than pre-intermediates. For the total test and the sub-tests 3 and 4, the elementary students had higher critical thinking scores than the zero-beginners. Thus, elementary students were better at reasoning deductively and weighing evidence than zero-beginners. Additionally, in the same sub-tests, the pre-intermediate students had higher critical thinking scores than the zero-beginners. For this reason, the pre-intermediate students were better at reasoning deductively and weighing evidence than zero-beginners. Also, the elementary students had higher critical thinking scores than the philology C students. Therefore, the elementary students were better at reasoning deductively and weighing evidence than the philology C students. The pre-intermediate students had higher critical thinking scores than the philology C students. Thus, the pre-intermediate students were better at reasoning deductively and weighing evidence than the philology C students. In terms of the sub-test Evaluation of Arguments, the zero-beginners, elementary and pre-intermediate students had higher critical thinking scores than the philology C students. Hence, these students were better at distinguishing the

strong and weak arguments than the philology C students. Moreover, the pre-intermediate students had the highest critical thinking mean score whereas the philology C students had the lowest one. This may be due to the fact that in the elementary and pre-intermediate groups there were students from the science departments whose critical thinking levels were higher than the students from social sciences. The reason why the critical thinking scores of the zero-beginners, elementary and pre-intermediate students can be due to the fact that in the former groups there were science students whose critical thinking scores were significantly higher than the students at social science departments including the students in the language departments.

Regarding gender, this study showed that there was no significant difference in the critical thinking scores of the students between males and females. This finding was in line with the findings of the study conducted by Kaya (1997), Walsh and Hardy (1999), and Çıkrıkçı (1992) in which no statistically significant differences in relation to gender were indicated. Nevertheless, this finding contradicts with the findings of the study conducted by Adams and his colleagues (1999); whereby, they found out a statistically significant difference in favor of females in the evaluation of arguments in terms of their critical thinking levels. Considering the sub-tests Recognition of Assumption and Deduction, there were significant differences in the critical thinking scores of the students. In the sub-test Recognition of Assumption, the female students had significantly higher scores than the male students. Nevertheless, in the sub-test Deduction, male students had significantly higher scores than the female ones. The reason for these results in the sub-test focusing on recognizing the assumptions and the sub-test 3 dealing with deduction can be due to the patriarchal structure of the society.

In accordance with the number of siblings, the total critical thinking scores of the subjects did not reveal any differences. Also, in terms of the sub-tests, there was no significant difference in the critical thinking scores of the students. This finding is consistent with the findings of the study conducted by Kaya (1997, 60).

In terms of the parental education level, the critical thinking scores of the students resulted in no differences the last sub-test Evaluation of Arguments. This finding was in line with the findings of the study conducted by Kaya (1997, 62) and Coskun (2001: 80). It can be inferred that the critical thinking is independent of the parental education levels; therefore; it can be stated that education is a crucial factor to promote the critical thinking. In terms of the sub-test Evaluation of Arguments, the subjects' distinguishing between strong arguments and weak ones differed according to the parental education level. This can because in line with the education level, the families' awareness of the discrimination between strong and weak arguments increases with their education level.

In relation to mothers' education level, the critical thinking scores of the subjects did not differ in the sub-tests and the overall test. Regarding fathers' education level, the critical thinking scores of the subjects did not reveal any significant difference. Also, in the sub-tests except for the first one, no significant difference was obtained. However, in the sub-test Inference, in the critical thinking scores of the subjects, there was a significant difference. The students whose fathers are secondary school graduates had higher critical thinking scores than the students whose fathers are high school graduates in the sub-tests Inference. Moreover, in the same sub-test, the students whose fathers are

university school graduates had higher critical thinking scores than those of the ones whose fathers are high school graduates.

In accordance with their economic status of the students, there were no statistically significant differences in their critical thinking scores except for the sub-test 3. However, Kaya (1997, 1) found out that there were statistical differences in the students' critical thinking levels in relation to their socio-economic level. She explained that the reason for this can be due to the fact that they had more opportunity to improve themselves. Coskun (2001, 80) stated that in the experimental group there were no statistical differences whereas in the control group there were statistical differences. According to the further statistical analysis she conducted, she added that the students who had the higher critical thinking scores had higher scores in the sub-test Interpretation and the sub-test Evaluation of Arguments. In contrast, in our study, in the sub-tests and the overall test, the critical thinking scores of the subjects did not reveal any significant difference. This result is crucial to signify that promoting the students' critical thinking is independent of their economic status.

With respect to the relationship between the critical thinking levels of the students and their English proficiency levels, there was no significant correlation obtained. This can be because of the type of the questions asked in the exam. The exam was a multiple-choice exam in which the students were expected to select the correct answers from the given alternatives so they did not need to make deeper analysis to answer the questions. Besides, the content of the questions can be another reason for that. For the sub-tests, there was a significant low positive correlation between their critical thinking scores and the results of the sub-test Deduction, while there was no

significant correlation obtained from other sub-tests. The reason why there was a significant difference in the sub-test Deduction can be due to the fact that the students were required to deduce the answers of the questions in terms of their content.

In terms of correlation, the relationship between the critical thinking levels of the students and their reading abilities was examined. The analysis revealed that the critical thinking scores of the students had a low relationship with the proficiency levels of them. This can be due to the fact that reading skills are interrelated the critical thinking skills. For example, distinguishing the facts and opinions and evaluating arguments (Flemming, 1999) are also considered in both reading skills and the critical skills. Besides, it was found out that there was a significant relationship between the reading scores of the students obtained from the final exam and their critical thinking scores in the sub-test Inference and the sub-test Deduction. The significant results of these sub-tests can be owing to the fact that while reading, inferring unstated ideas and opinions and deducing the given ideas or opinions are required in order to analyze reading effectively (Zintz and Maggart, 1984 cited in Carr 1990; Flemming, 1999; Flemming, 2000).

Furthermore, the relationship between the critical thinking levels of the students and their writing skills was examined. The study revealed that the critical thinking levels of the students had a significant but low correlation with the writing skills as writing. This can be due to the fact that writing as a skill requires evaluating arguments, beliefs and ideas and producing a new essay (Suhor, 1984). These skills are regarded as critical thinking skills (Paul et. al., 1989). In the sub-test Deduction and Interpretation, significant relationships with the English proficiency levels of the students were

obtained. For these tests, low positive correlations were found out with the writing scores of the students in the final exam. This relationship is due to the fact that while writing anything it is necessary to reason deductively considering the beliefs, ideas and opinions in order to support your ideas and in your writing. Also, interpretation of the topic in writing provides the ground for dealing with the writing topic. In other words, in writing, it is expected that the students interpret the given topic and produce an essay by supporting their interpretation. Besides, the significant relationships were low because of the structure of the English proficiency tests and the critical thinking appraisal test. Further, essay writing may show higher positive relationship with the critical thinking skills as it involves more deeper analysis for a topic. However, in the proficiency test whose results were analyzed in this study, the students were expected to write a paragrah about the topic given. Therefore, this might be other reason of the low relationship between the writing scores and the critical thinking scores.

The significant relationships between the reading and writing skills and the English proficiency level of the students were in line with the study conducted by İrfaner (2002). In this study, he examined one's teacher's implementation and the analysis of this implementation of the components of the critical thinking. He found out that the students were able to employ some components in the process of reading and writing.

As a result of the findings, it can be summarized that the critical thinking levels of the students indicated no differences in terms of their economic status, their parental education level, the number of siblings, gender while in consideration with the type of their ÖSS scores, the type of their major areas and the language groups, these levels revealed significant differences. When these variables are taken into account, the ones

where significant differences were obtained can be grouped as the educational variables whereas the others where no significant difference was obtained were the socio-demographic features. The variables in the second group are more difficult to change and can be changed in time. However, changing the ones in the first group is easier and can be done in shorter time. Additionally, there was no significant relationship between the students' English proficiency levels and their critical thinking levels. However, positive low relationships were obtained between the students' English proficiency levels and their reading and writing skills.

5.2. Implications for Practice

In this study, the critical thinking levels of the students were elaborated by making comparisons between the sub-groups of the subjects according to their socio-demographic features and educational backgrounds. It was obvious that except for the language group; i.e. philology C, the students, other variables revealed significant differences among the students. Although the socio-demographic features are mostly hard to change, educational factors can be improved easily. Therefore, education is one of the most crucial tools to improve critical thinking skills. These skills should be incorporated into the educational system in order to attain the goal 'educating the students to become global individuals having free and scientific thinking and having expanded the horizons' stated in the Law of Turkish National Education and the Law of Higher Education.

Besides, especially for the universities, promoting critical thinking skills should take place in their educational philosophy since they are the institutions which prepare

students for their professions and the real life. For this reason, universities should develop and design new educational models working with educational scientists and experts to promote critical thinking in education. Furthermore, since the academic staff as the implementers of the programs have the key role to improve critical thinking skills, they should be trained and they should be equipped with the necessary skills.

Although in our study there was no relationship between the critical thinking and the English language proficiency levels of the students in our study, there was a positive relationship between the reading and writing scores of the students and their critical thinking levels. Therefore, it is highly essential to incorporate the critical thinking aspects into teaching reading skills. This can be done by fostering students' thinking. That is; their ideas should be valued and they should always be encouraged to discover any language aspect for themselves and produce their own understanding. Moreover, they should be promoted to justify their propositions or criticisms with valid supports.

In addition, on account of the relationship between students' abilities in reasoning deductively and their reading and writing scores, the deduction activities can be incorporated into the curriculum. In reading, these activities can be helpful for them to differentiate between the supporting ideas and the main ideas in the text and find out consistency in them. The analysis of a reading text can provide them with an opportunity to construct their own writing more coherently. In other words, they can provide clearer supports for their arguments in the text. Furthermore, in terms of writing skills, deduction activities can be tailored into the writing activities. For instance, in writing an essay, the students can be encouraged to make deduction during the pre-writing stage by narrowing it down.

Besides, regarding the relationship between the interpretation dimension of the critical thinking skills and the writing skills, students can be encouraged to interpret the given topic. This can be done by the help of analyzing different reading texts on the topic by discussing in groups or as a whole classroom. This not only helps them to improve their critical thinking skills but also establishes the ground to writing essays clear and well-supported argumentation and interpretation.

In summary, this research is a descriptive study targeted at finding out the differences in line with the socio-demographic and educational variables. Also, it not only presents the findings of a study aiming to identify the relationship between the critical thinking levels of the students at the preparatory school and their language skills but also provides a starting point to conduct further research on teaching English as a foreign language in integration with critical thinking skills.

5.3. Implications for Further Research

In this part, recommendation for future researchers are listed below:

- Since in this study, the critical thinking levels of the students at the preparatory school are explored and compared to socio-demographic features and educational variables, a further study focusing on different variables and samples can be conducted. For example, the critical thinking levels of the freshmen students can be examined to compare the results of the preparatory year.
- As the present study is a quantitative and descriptive study, a further qualitative study examining the situation in a more detailed way is required to find out the factors affecting the critical thinking levels of the stduents. Moreover, since critical

thinking is difficult to measure by a quantitative instrument, qualitative studies can provide opportunities to make comparisons between the quantitative and the qualitative studies.

- A longitudinal study can be conducted in order that the development of critical thinking skills of children throughout their maturity can be observed.
- A further study concerning the effectiveness and efficiency of the educational methods and techniques in English language teaching can be helpful in the area o fthe development of critical thinking skills to identify them and design a new curriculum to promote them.
- For the Turkish version of Watson-Glaser Critical Thinking Appraisal, a further study can be conducted to make it a more reliable and valid instrument. Because there may be some cultural elements which are not consistent with the Turkish culture, these cultural elements may reduce the validity and reliability of the test. It is necessary to adapt it to our own culture.

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APPENDIX A

WATSON-GLASER CRITICAL THINKING APPRAISAL TEST

TURKISH VERSION

WATSON-GLASER
ELEŞTİREL AKIL YÜRÜTME GÜCÜ ÖLÇEGİ
(FORM: YM)

AÇIKLAMALAR: Bu kitapçık sizin analitik ve mantıksal olarak ne kadar iyi düşünebildiğinizi (akıl yürütebildiğinizi) ortaya çıkartmayı amaçlayan beş çeşit testi içermektedir.

- Size söylenen e kadar bu sayfayı çevirmeyiniz.
- Bu test kitapçığı üzerinde hiçbir işaretleme yapmayınız.
- Bütün cevaplarınızı, size verilen CEV AP KAGIDI üzerinde işaretleyiniz.
- Eğer bir cevabı değiştirmek isterseniz, yanlış olarak işaretlediğiniz eski cevabınızı iyice silip yeni cevabınızı işaretleyiniz.

TEST 1

ÇIKARSAMA

YÖNERGE

Çıkarsama, bireyin gözlediği veya doğruluğunu kabul ettiği belirgin durumlardan çıkardığı bir yargıdır. Örneğin, bir kişi bir evden gelen piyano sesinden ve pencereden sızan ışıktan evde birisinin olduğu sonucu çıkarabilir. Evdekiler dışarıya çıkarken ışığı açık bırakmış olabilirler. Müzik sesi de açık bırakılmış bir teypten veya radyodan geliyor olabilir.

Bu testteki uygulamalardan her biri, doğru olduğunu kabul etmek durumunda olduğunuz olguları içeren bir metinle başlar. Her metnin altında, bu metine dayalı çeşitli çıkarsamaların verildiğini göreceksiniz. Her çıkarsamayı ayrı ayrı inceleyiniz ve incelediğiniz her bir çıkarsamanın doğruluk-yanlışlık düzeyi hakkında karar veriniz.

Cevap kağıdında her çıkarsama için **D, MD, YV, MY ve Y** sembolleri altında gösterilen boşluklar bulacaksınız. Her çıkarsama için uygun olan sembolün altındaki boşluğu, sembollerin anlamına ilişkin açıklamaları dikkate alarak işaretleyiniz.

D (Doğru): Eğer çıkarsamanın kesinlikle **DOĞRU** olduğunu düşünüyorsanız; yani bunun hiçbir şüpheye yer bırakmadan verilmiş olan olgu ifadesini izlediğini düşünüyorsanız, **D** sembolünü işaretleyiniz.

MD (Muhtemelen) : Metinde verilen olguların ışığı altında, çıkarsamanın **Doğru** **MUHTEMELEN DOGRU** olduğunu; doğru olma şansının daha çok olduğunu düşünüyorsanız. MD sembolünü işaretleyiniz.

YV (Yetersiz Veri) : Metinde verilen olgularda :**YETERSİZ VERİ** olduğunu kararlaştırdıysanız Yani,çıkarsamanın doğru ya da yanlış olduğunu' söyleyemiyorsanız, olgular herhangi bir yönde bir yargıda bulunmak için ipucu, bilgi sağlamıyorsa, **YV** sembolünü işaretleyiniz.

Y(Yanlış) : Çıkarsamanın,verilen olguların yanlış yorumlanmasından ya da çıkarsamanın olgulara veya olgulardan çıkarılması gereken çıkarsamalara ters düşmesinden dolayı, kesinlikle **YANLIŞ** olduğunu düşünüyorsanız **Y** sembolünü işaretleyiniz.

Bazen bir çıkarsamanın muhtemelen doğru ya da muhtemelen yanlış olduğuna karar verirken pratik olarak herkesin sahip olduğu ve yaygın kabul gören belirli bilgileri kullanmanız gerekmektedir.

Aşağıda verilen örneği inceleyiniz: doğru cevaplar aşağıdaki çerçeve içinde işaretlenmiştir.

ÖRNEK

ABD'de 200, 8.sınıf öğrencisi bir kentte düzenlenen bir hafta sonu forumu biçimindeki konferansa gönüllü olarak katılmıştır. Bu öğrenci konferansında ırk ilişkileri ile dünya barışını sağlama ve devam ettirme yollan tartışılmıştır. Çünkü, bu konular öğrenciler tarafından bugünün dünyasında önemli konular olarak seçilmiştir.

TEST 1
ÇIKARSAMA

		D	**MD**	**YV**	**MY**	**Y**
1. Bu toplantıya katılan öğrenciler, insanlığa ilişkin konulara ve yaygın toplumsal problemlere çoğu 8.sınıf öğrencisinden daha fazla ilgi göstermişlerdir.	**1.**	/ /	/**X** /	/ /	/ /	/ /
2. Bu öğrencilerin çoğu 17-18 yaşları arasında idi.	**2.**	/ /	/ /	/ /	/**X** /	/ /
3. Öğrenciler ülkenin değişik yörelerinden gelmekteydiler.	**3.**	/ /	/ /	/**X** /	/ /	/ /
4. Öğrenciler yalnızca işçi ilişkileri sorunlarını tartışmışlardır.	**4.**	/ /	/ /	/ /	/ /	/**X** /
5. Bazı 8. sınıf öğrencileri, ırk ilişkilerini ve dünya barışının sağlama ve devam ettirme yollarının. tartışılmasını önemli bulmuşlardır.	**5.**	/**X** /	/ /	/ /	/ /	/ /

Yukarıdaki örnekte, **1.** çıkarsama muhtemelen doğrudur (MD). Çünkü birçok 8.sınıf öğrencisi yaygın toplumsal problemlerle ciddi olarak, fazla ilgilenme eğiliminde değildirler. Verilen olgulardan, bu çıkarsamanın kesinlikle doğru olduğu sonucuna varılmaz. Çünkü bu olgular diğer 8.sınıf öğrencilerinin dünya sorunlarına gösterebilecekleri ilginin derece ve çeşidi hakkında kesin bilgi sağlamamaktadır. Ayrıca toplantıya katılan öğrencilerden bazılarının gönüllü olarak bir hafta sonunu evden uzakta, başka bir yerde geçirmek istemiş olmaları mümkündür.

2. Çıkarsama, muhtemelen yanlıştır (MY), çünkü (yaygın olarak bilindiği gibi) ABD'de 17 ve 18_yaşlan arasında olup da ,8.sınıfa giden çok az öğrenci vardır.

3. Çıkarsama için, metinde hiçbir kanıt yoktur. Bu bakımdan bu konu hakkında bir yargıya varılabilmesi için yeterli veri yoktur (YV).

4. Çıkarsama kesinlikle yanlıştır (Y). Çünkü olguyu belirleyen ifadede tartışma için seçilen problemlerin dünya barışının sağlanması ve ırk ilişkileri konulan olduğu belirtilmiştir.

5. Çıkarsama metinde verilen olgulann kaçınılmaz bir sonucudur, dolayısıyla

doğrudur (D).

Herhangi bir çıkarsamayı en iyi tanımladığını düşündüğünüz seçeneğin sembolü altındaki boşluğu iyice karalayınız, eğer cevabınızı değiştirmek isterseniz yine iyice silip, yeni cevabınızı cevap kağıdına işaretleyiniz, bunun dışında hiçbir işaret koymayınız.

AŞAĞIDAKİ UYGULAMALARLA DEVAM EDİNİZ.

Bir edebiyat öğretmeni ders verdiği sınıflardan birindeki öğrencilerin "Büyük Umutlar" filmini görmeleri için gerekli düzenlemeyi yapmış, aynı öğretmen diğer sınıflarındaki öğrencilerin ise filmi görmeden, sadece kitabını okumalarını sağlamıştır. Öğretmen, edebiyat derslerinde filmlerin etkili bir araç olarak kullanılıp kullanılamayacağını görmek istemektedir. Her iki uygulamanın hemen ardından öğrencilere, konunun beğenilip beğenilmediğini ve nasıl anlaşıldığını ölçen testler uygulamıştır. Bu testlerde filmi izleyen sınıfın daha başarılı olduğunu göstermiştir. Bu sınıf "Büyük Umutlar"a öyle büyük bir ilgi göstermiştir ki, ders dönemi sona ermeden önce öğrencilerin çoğu tamamen kendi girişimleri ile kitabı okumuşlardır. Öğretmen yaptığı ön denemeden büyük bir memnuniyet duymuştur.

ÇIKARSAMALAR:

1. **Hikayenin** beğenilip beğenilmediğini ve nasıl anlaşıldığını ölçmeyi amaçlayan testler hem filmi gören hem de sadece kitabı okuyan öğrencilere uygulanmıştır.

2. **Filmi** görerek konuyu öğrenen öğrencilerden ders dönemi başında kitabı okumalan istenmiştir.

3. **Buna** benzer bir uygulamaya girişecek diğer edebiyat öğretmenlerinin hiçbiri benzer sonucu elde edemez.

4. **Bu çalışmayı** yapan öğretmen (edebiyat öğretmenliğini sürdürdüğü. takdirde) bundan sonra, bu uygulamayı yapma konusunda serbest bırakıldığında, uygun bulduğu filmleri öğretim aracı olarak kullanmaya devam edecektir.

5. **Bu** iki tip öğretim uygulaması sonunda, filmi gören sınıfin sadece kitabı okuyan sınıflara kıyasla "Büyük Umutlar" filmini daha çok beğendiği ve anladığı yolunda herhangi bir kanıt elde edilememiştir.

6. **Öğrenciler** birçok konuyu kitaplardan daha çok filmlerden öğrenebilirler.

Yapılan araştırmalar, A.B.D.' de göreceli olarak veremin, zenciler arasında, beyazlara kıyasla daha yaygın olduğunu göstermiştir. Bununla beraber, aynı gelir düzeyine sahip zenci ve beyazlar arasındaki verem oranında çok az bir fark (eğer bir fark olarak kabul edilirse) vardır. A.B.D.' de beyazların ortalama gelir düzeyi zencilerin ortalama gelir düzeyinden oldukça yüksektir.

7. **A.B.D.' de** veremi ortadan kaldırmanın en kolay yolu, genel yaşam standardını yükseltmektir.

8. **Yüksek** gelir diliminde bulunan kişiler veremden korunma konusunda düşük gelir diliminde bulunanlardan daha iyi durumdadırlar.

9. **Göreceli** olarak yüksek gelir diliminde bulunan zenciler arasındaki verem oranı, düşük gelir diliminde bulunan zenciler arasındaki verem oranından daha düşüktür.

10. **Zencilerin** gelirlerinin yüksek ya da düşük olması, onların verem olma olasılıklarında bir farklılık yaratmaz.

Bir süre önce, Missisipi Eyaletinin Middletown kentinde kalabalık bir grup, yörenin Ticaret. Odası'nın yeni başkanının konuşmasını dinlemek üzere bir araya geldi. Yeni başkan konuşmasında, "işçi sendikalarının, hem vatandaşlarının durumunu hem de toplumun refahını daha ileriye götürmek için tüm sorumluluğu paylaşmalarını rica etmiyor, kesinlikle istiyorum" dedi. Merkez işçi Sendikalarının toplantıda hazır bulunan üyeleri bu konuşmayı büyük bir coşkU ile alkışladılar. Üç ay sonra Middletown'daki tüm işçi sendikaları Ticaret Odasına kayıt oldu. Bu temsilciler, başka grupların temsilcileriyle birlikte komitelerde çalıştılar, fikirlerini açıkladılar, aktif olarak belediye hizmetlerini iyileştirme projelerine katıldılar ve Ticaret Adasının bu projelerle ilgili olarak belirlediği hedeflere ulaşmasına yardım ettiler.

11. **Hem** işçi Sendikası temsilcileri hem de diğer komisyonların üyeleri Ticaret Odasındaki ilişkileri sayesinde birbirlerinin görüşlerinin daha iyi farkına vardılar.

12. **İşçi** Sendikalarının Middletown Ticaret Odasına katılması bu kentteki işçi-işveren yönetimindeki anlaşmazlıkları önemli ölçüde azalttı.

13. **İşçi** sendikalarının etkin olarak katılımı Ticaret Odası'nın komite toplantılarında çözülmeyen birçok anlaşmazlıklara neden oldu.

14. **Sendika** temsilcilerinin çoğu, Ticaret Odası tarafından yapılan Odaya katılma çağrısını kabul ettiklerine pişman oldular.

15. **Bazı** Ticaret Odası üyeleri, başkanlarının, sendika temsilcilerinin Odaya

katılmalarını istemesinin akıllıca bir davranış olmadığı duygusuna kapıldılar.

16. **Yeni** başkan konuşmasında, işçi sendikalarının, vatandaşların durumunun daha da iyileştirilmesi için henüz sorumluluğu tümüyle paylaşmayı kabul etmediklerini belirtti.

ABD'de ilk gazete, Ben Harris'in yayım sorumluluğunda Boston'da 25 Eylül 1960 tarihinde yayımlandı ve aynı gün vali Simon Bridestreet tarafından yasaklandı. Bunun ardından, yayım sorumlusunun küçük gazetesini yaşatmak ve istediklerini yayımlamak yolunda verdiği savaş, basın özgürlüğünün korunması için verilen mücadelenin önemli bir aşamasını oluşturdu.

17. **İlk** Amerikan gazetesinin yayım sorumlusu, gazetenin yayımlanmasının yasaklandığı 25 Eylül1960'dan birkaç gün sonra öldü.

18. **Ben** Harris'in gazetesinin, ilk sayısının bir kopyası, hemen vali Bridstreet'in dikkatine sunuldu.

19. **Bu** gazetenin sorumlusu valiyi eleştiren yazılar yazdı.

20. **Ben** Harris, bazı görüş ve amaçlarını korumada ısrarcı bir kişi idi.

TEST 2

VARSAYIMLARIN FARKINA VARMA

YÖNERGE

Varsayım, olduğu ya da doğruluğu kabul edilen bir şeydir. Birisi "Haziranda mezun olacağım" derse, bu kişi Haziranda yaşıyor olacağını ya da okulun kendisini mezuniyet için yeterli göreceğini veya benzeri şeyleri kabul etmekte ya da varsaymaktadır.

Aşağıda bazı ifadeler verilmektedir. Her ifadeden sonra önerilen birkaç varsayım yer almaktadır. Her bir varsayım için ifadeyi veren bir kişinin, ö ifadede, o varsayımı gerçekten yapıp yapmadığına karar vermek durumundasınız. Varsayım doğru olduğunu düşünüyorsanız, cevap kağıdında uygun yerdeki "**VARSAYIM YAPILDI**" ifadesinin altındaki boşluğu karalayınız. Varsayımın, verilen ifadeye dayalı olmadığını düşünüyorsanız cevap kağıdın cevap kağıdında "**VARSAYIM YAPILMADI**"nın altındaki boşluğu karalayınız.

Aşağıda bir örnek verilmiştir. Sağdaki çerçevede, cevapların cevap kağıdında nasıl işaretleneceği gösterilmiştir.

Eğer aşağıdaki örnekte cevapların niçin doğru olduğunu göremezseniz açıklaması için, test uygulayıcısına sorunuz. Bazı ifadelerde varsayımlardan birden fazlası çıkabilirken diğer ifadelerde hiçbirisi çıkmayabilir.

Teste başlamadan önce aşağıdaki örneği dikkatle inceleyiniz.

TEST 2

VARSAYIMLARIN FARKINA VARMA

ÖRNEK

ifade: "Oraya gitmek için zamandan tasarruf etmemiz gereklidir, onun için uçakla gitmemiz daha iyi olur".

Önerilen Varsayımlar:

		VARSAYIM YAPILDI	**YAPILMADI**
1. Uçakla gitmek diğer bir ulaşım aracı ile gitmekten daha az zaman alır. (Verilen ifadede uçağın diğer ulaşım araçlarından daha hızlı olması nedeniyle grubun gidilecek yere daha kısa zamanda varacağı varsayılmaktadır).	**1**.	/**X** /	/ /
2. Gidilecek yere olan uzaklığın en azından bir kısmını katedebileceğimiz bize uygun bir uçak servisi var dır. (Bu, yukarıda verilen ifadeden çıkarılması gerekli bir varsayımdır. Çünkü zamandan kazanmak için uçakla gidebilmek mümkün olmalıdır).	**2**.	/**X** /	/ /
3. Uçakla yolculuk etmek, trenle yolculuk etmekten daha uygundur. (Verilen ifadede böyle bir varsayım yoktur.) Çünkü ifade zaman tasarrufu ile ilgilidir ve rahatlık, kolaylık veya seyahatla ilgili özel bir belirlemeden söz etmektedir).	**3**.	/ /	/**X** /

AŞAĞIDAKİ UYGULAMALARLA DEVAM EDİNİZ

ifade: "Akıllı bir insan, kazancından haftada en az 1 00-150 bin lira biriktirebilir".

<u>Önerilen Varsayımlar</u>:

21. **Aptallar** haftada 1 00-150 bin lira biriktirmeyi akıl edemezler.

22. **Her hafta** 1 00-150 bin lira biriktirebilmek için insanın akıllı olması gerekir.

ifade: "Derhal üstün bir silahlı güç oluşturarak banş ve refahı koruyalım".
Önerilen Varsayımlar:

23. **Üstün** bir silahlı güç oluşturmak barış ve refahın sürdürülmesinin garantisidir.

24. **Eğer** silahlarımızı artırmazsak en kısa zamanda savaşa gireriz.

25. **Şimdi** barış ve refah içindeyiz.

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ifade: "Aile bütçesi için ayrılan paradan bir miktar artırabilen bir ev hanımının bu parayı kişisel gereksinimleri için harcamasına izin verilmelidir".
Önerilen Varsayımlar:

26. **Bazı** ev hanımlarının aile bütçelerini, ev gereksinimlerini karşılayacak biçimde yönetme sorumlulukları vardır.

27. **Aile** bütçesi başka hiç bir şekilde ev hanımının kişisel gereksinimleri için para ayırmasına olanak sağlamaz.

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ifade: "Atom enerjisinden yararlanmada başka yolların keşfedilmesinin uzun vadede insanlık için bir nimet olduğu anlaşılacaktır".
Önerilen Varsayımlar:

28. **Atom** enerjisi çok çeşitli biçimlerde kullanılabilir.

29. **Atom** enerjisinden başka amaçlarla yararlanma yolunda yapılan buluşlar uzun vadeli yatırımlar gerektirecektir.

30. **Atom** enerjisinin şu andaki kullanım biçimleri insanlık için bir beladır.

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ifade: "Zenith tam yaşanacak şehirdir. En düşük vergiler buradadır".
Önerilen Varsayımlar:

31. **Yetkin** bir şehir yönetimi düşük vergileri beraberinde getirir.

32. **Nerede** yaşanılacağına karar verilirken, göz önünde tutulacak en önemli şey, yüksek vergilerden kaçınabilme olasılığının olmasıdır.

33. **Zenith** şehrinde yaşayanların çoğunluğu şimdiki şehir yönetiminden memnundur

ifade: "Üniversiteye devam etmek isteyen öğrenci sayısı gittikçe arttığına göre çok sayıda üniversite binası yapılmalıdır".

Önerilen Varsayımlar:

34. **İnşa** edilmesi gereken yeni üniversite binalarının sayısı yüksek öğrenim görmeyi düşünen lise öğrencilerinin gelecekteki eğitimlerine ilişkin planlan ile bağıntılı olmalıdır.

35. **Şu andaki** üniversite binaları öğrenci sayısının çok fazla olması yüzünden kapasitesini aşmış durumdadır.

36. **Öğrencilerin** üniversiteye devam edebilmeleri için yeterli sayıda bina gerekmektedir

TEST 3

TÜMDENGELİM

YÖNERGE

Bu testte her bir uygulama, iki önerme ifadesi ile bunları izleyen bazı olası sonuçları içermektedir. Bu testin amacı bakımından, iki önermenin de istisnasız doğru olduğunu kabul ediniz. Önermelerin altındaki ilk sonucu okuyunuz. Bunun, verilen önermelerin. zorunlu bir sonucu olduğunu düşünüyorsanız, cevap kağıdında "**SONUÇ İZLER**" başlığı altındaki boşluğu iyi_e karalayınız. Eğer sonucun verilen önermeyi izlemediğini düşünüyorsanız, genel bilgileriniz çerçevesinde doğru olduğuna inansanız bile "**SONUÇ İZLEMEZ**" başlığı altındaki boşluğu iyice karalayınız.

Bunun gibi diğer her bir sonuç okuyunuz ve karar veriniz. Ön yargılarınızın kararınızı etkilemesine izin vermemeye çalışınız. Yalnızca verileri önermelere bağlı kalınız ve her bir sonucun önermeleri zorunlu izleyip izlemeyeceğine karar veriniz.

Bu önermelerden herhangi birindeki "bazı" sözcüğü bir grup şeyin belirsiz bir kısmını veya miktarını ifade etmektedir. "Bazı" ifadesi grubun en az bir kısmını belki de tamamını kastetmektedir. Bu nedenle "bazı tatiller yağmurludur" derken, tatillerden en az birinin, muhtemelen birden fazlasının ve hatta belki de hepsinin yağışlı olduğu söylenmek istenilmektedir.

Teste başlamadan önce aşağıdaki örneği dikkatle inceleyiniz.

TEST 3
TÜMDENGELİM

ÖRNEK: Bazı tatiller yağmurludur.
Bütün yağmurlu günler sıkıcıdır. Bundan dolayı,

SONUÇ

		İZLER	**İZLEMEZ**
1.Açık havalı günler sıkıcı değildir. (Bu sonuç verilen önermeleri izlemez. Zira önermelerden yağışsız günlerin sıkıcı olup olmadığını anlaşılmamaktadır. Bazıları olabilir.)	**1**.	/ /	/**X** /
2. Bazı tatiller sıkıcıdır. (Önermelerden bu sonucu çıkarmak gerekir. Zira önermeye göre yağışlı tatiller sıkıcı olmalıdır.)	**2**.	/**X** /	/ /
3. Bazı tatiller sıkıcı değildir. (Bazı tatillerin çok iyi olduğunu biliyor olmamıza rağmen bu sonuç verilen önermeyi izlemez.)	**3**.	/ /	/**X** /

AŞAĞIDAKİ UYGULAMALARLA DEVAM EDİNİZ.

Belli bir şehirde, belli bir yıl içinde, tüm ciddi çocuk felci vakaları 10 yaşından küçük çocuklarda ortaya çıktı. O yıl çocuk felci aşısı yaptıranlardan hiçbirinde ciddi bir çocuk felci durumu görülmedi. Bundan dolayı,

37.**10 yaşından** küçük bazı çocuklar çocuk felci aşısı olmamışlardı.

38. **Çocuk** felci aşısı olanların tamamı 10 yaşından büyüktü.

39. **10 yaşından** küçük çocukların bazıları o yıl çocuk felci aşısı olmuşlardı.

Eğer bir insan batıl inançlı ise, falcılara inanır. Bazı insanlar falcılara inanmazlar. Bundan dolayı,

40. **Eğer** bir insan batıl inançlı değilse, falcılara inanmayacaktır.

41. **Bazı** insanlar batıl inançlı değildir.

42. **Eğer** bir insan falcılara inanıyorsa o batıl inançlıdır.

Okullar için daha büyük bütçe ayrılmasına taraftar olan kişilerden bazıları lise eğitiminin herkes için zorunlu olmasına karşıdır. Yalnızca eğitimin önemine içtenlikle inanan kimseler okullara daha büyük bütçe ayrılmasından yanadırlar. Bundan dolayı,

43. **Eğitimin** önemine içtenlikle inanan kimselerden bazıları lise eğitiminin herkes için zorunlu olmasına taraftar değildirler.

44. **Lise** eğitiminin zorunlu tutulmasına taraftar olanlardan bazıları öğretim konusuna içtenlikle inanmamaktadırlar.

45. **Öğretimin** önemine içtenlikle inanan bir kimse lise eğitiminin zorunlu olmasına karşı çıkamaz.

Bazı fanatikler (tutku haline gelmiş düşüncelere sahip kimseler) içten idealist kimselerdir. Bütün fanatikler sıkıcıdır. Bundan dolayı,

46. **Bazı** içten idealist kişiler sıkıcıdır.

47. **Bazı** sıkıcı kimseler içten idealistlerdir.

48. **Hiçbir** sıkıcı kimse içten idealist değildir.

49. **Eğer** bir kimse içten idealist ise, o kimse muhtemelen sıkıcıdır.

Eğer bir düşünce inanış üzerine temellendirilmez ise en zayıf karşı görüşlerle bile çökebilir. Düşüncelerimizin çoğu bir inanışa dayanmamakta gelişigüzel benimsenmektedir. Bundan dolayı,

50. **İnanışlarımızın** çoğundan bir tartışma sonunda vazgeçmemiz mümkündür.

51. **Birçok** insan körükörüne bağlı olduğu inançlara sahiptir.

52. **Eğer** bir insanın düşünceleri değişirse, ya da karşı görüşlerle çökerse, öncelikle o

inanış inanca dayanmıyor demektir.

Tüm iyi atletlerin fiziksel kondisyonları iyidir. Bazı iyi atletlerin okul başarıları ise zayıftır. Bundan dolayı,

53. **Okul** başarısı zayıf olan bazı öğrencilerin fiziksel kondisyonları iyidir.

54. **Eğer** bir öğrencinin fiziksel kondisyonu iyi ise, okul başarısı zayıf olacaktır.

55. **İyi** fiziksel kondisyona sahip bazı öğrencilerin okul başarıları zayıftır.

56. **Hem** okul başarısı iyi olan, hem de iyi atlet olan her öğrencinin fiziksel kondisyonu da iyidir.

Tüm büyük romanlar birer sanat eseridir. Tüm büyük romanlar hayal dünyamızı sararlar. Bundan. dolayı,

57. **Hayal** dünyamızı saran her şey bir sanat eseridir.

58. **Bazı** sanat eserleri hayal dünyamızı sararlar.

59. **Hayal** dünyamız pek çok değişik şey tarafından doldurulabilir.

Gelir düzeyi yüksek olan hiçbir kimse gelir vergisi ödemekten kaçamaz. Gelir düzeyi yüksek olan bazı kimseler gelir vergisi ödemekten hoşlanmazlar. Bundan dolayı,

60. **Gelir** düzeyi yüksek olan bazı kimseler istemedikleri bazı şeyleri yapmak zorunda kalırlar.

61. **Gelir** vergisini ödeyen herkesin gelir düzeyi yüksektir

TEST 4

YORUMLAMA

YÖNERGE

Aşağıda yazılı olan her madde, kısa bir paragraf ile bunu izleyen birkaç sonuçtan oluşmaktadır.

Bu testi amacı bakımından, kısa paragrafta belirtilen her şeyin doğru olduğunu kabul ediniz. Yapılacak iş, önerilen her bir sonucun mantıken paragrafta verilen bilgilerden, şüphe götürmez bir biçimde çıkartılıp çıkartılmayacağına karar vermektir.

Eğer önerilen sonucun akla uygun, şüphe götürmez bir biçimde verilen paragraftan çıkartılabileceğini düşünürseniz. (Tamamen ve gerekli bir biçimde izlemese bile) cevap kağıdında "**SONUÇ ÇIKARTILIR**" başlığı altındaki boşluğu karalayınız. Eğer verilen sonucun şüphe götürmez bir biçimde çıkartılamayacağını düşünüyorsanız o zaman "**SONUÇ ÇIKARTILAMAZ**" başlığı altındaki boşluğu karalayınız. .

Bazı durumlarda önerilen sonuçların birden fazlası verilen paragraftan çıkartılabilirken, diğer bazı. durumlarda ise hiç biri çıkartılamayabilir.

Aşağıdaki örnekte, sağ taraftaki çerçeve cevabınızın cevap kağıdında nasıl işaretleneceğini göstermektedir.

Testi cevaplamadan önce örneği dikkatlice inceleyiniz.

TEST 4
YORUMLAMA

ÖRNEK: 8 ay ile 6 yaş arasındaki çocuklarda sözcük bilgisi gelişimini inceleyen bir araştırma, konuşulan kelime sayısının 8.ayda sıfır iken, 6 yaşında 2562'ye yükseldiğini göstermektedir. Bundan dolayı,

	SONUÇ ÇIKARTILIR	**SONUÇ ÇIKARTILMAZ**
1. Bu araştırmadaki çocuklardan hiç-Biri 6 aylık olana kadar konuşmayı öğrenmemiştir. (Paragrafa göre, 8 aylık iken konuşulan kelime sayısı sıfır olduğundan bu sonuç şüphe götürmeksizin çıkartılır.)	**1**. /**X** /	/ /
2. Kelime bilgisindeki artış, çocukların yürümeyi öğrendiği dönemde en yavaştır. (Bu sonuç çıkartılmaz, çünkü önermede yürümeyle sözcük öğrenmenin gelişimi arasındaki ilişki ile ilgili hiçbir bilgi verilmemiştir.)	**2**. / /	/**X** /

AŞAĞIDAKİ UYGULAMALARLA DEV AM EDİNİZ

A.B. D. 'de belli bir yılda liselerin 3. ve 4. sınıflarında okuyan 2.800.000 öğrenciden yalnızca 830.000'i fen, 660.000'i matematik derslerine kayıt olmuştur.

62. Söz konusu yılda bazı liselerde 3. ve 4. sınıf öğrencilerinin tümünün fen ve matematik derslerini almaları zorunlu tutulmamıştır.

63. Belirtilen yılda 3. ve 4. sınıf öğrencilerinin yansına yakınının fen ve matematik derslerini almamalarının başlıca nedeni, bu öğrencilerinin, bu dersleri lisenin 1. ve 2. sınıfında almış olmalarıdır.

64. Belirtilen yıl içinde A.B.D.' nin liselerindeki bazı 3. ve 4. sınıf öğrencileri ne fen ne de matematik dersi alıyorlardı.

Bir Los Angeles gazetesi belirli bir zaman içinde Los Angeles bölgesinde araba kazasına karışan kadın ve erkek sürücüleri kapsayan bir araştırma yapmıştır. Bu araştırmanın sonucunda erkek sürücülerin 1210, kadın sürücülerin ise sadece 920 kazaya karıştıkları ortaya çıkmıştır.

65. Eğer araştırmanın yapıldığı dönem tipik bir dönem olarak kabul edilirse, Los Angeles bölgesindeki kazalara erkek sürücüler kadın sürücülerden daha fazla karışmaktadırlar.

66. **Herhangi** bir günde Los Angeles bölgesinde araba kullanan erkeklerin sayısı kadınlardan daha fazladır.

67. **Los Angeles** bölgesinde ergenlik çağındaki erkek çocuklar, ergenIik çağındaki kız çocuklarından daha fazla araba kazalarına karışmaktadırlar.

Bir sosyolog, belli bir grup otel ve lokanta işletmecisinin otellerine ya da lokantalarına konuk veya müşteri olarak Çinlileri kabul edip etmeyeceklerine ilişkin tutumlarını, posta ile gönderilen anketlerle araştırdı. Sonra, bu otel ve lokantaları bir Çinli çiftin ziyaret etmesini sağlayarak bu çiftten hangi kuruluşlarının kendilerine gerçekten hizmet verdiğini öğrendi. Bu Çinli çifte hizmet veren kuruluşların % 90'dan fazlasının daha önceden, Çinlilere hizmet veremeyeceklerini belirtenler olduğunu buldu.

68. **Bir eyleme** yönelik olarak belirtilen tutumlar, her zaman davranışın güvenilir bir göstergesi değildir.

69. **Belirtilen** tutumların ölçülmesini amaçlayan araştırmalar, insanların günlük yaşamdaki davranışlarında ne yapacaklarını anlamaya hiçbir katkıda bulunmazlar.

70. **Çinli** çifte yolculukları boyunca hizmet veren otel ve lokanta işletmecilerinin çoğunluğu daha önce Çinlileri konuk ya da müşteri olarak kabul etmeyeceklerini belirtmişlerdir.

Son 2000 yıllık tarih göstermiştir ki, savaşlar giderek sıklaşmış ve daha yıkıcı hale gelmiştir. 20.yüzyıl şimdiye kadar her iki konuda da en kötü göstergelere sahiptir.

71. İnsanlık, barışı koruma yeteneğinde fazla bir gelişme gösterememiştir.

72. Bilim daha güçlü silahlar ürettikçe, savaşlar daha yıkıcı olmaktadır.

73. Son 300 yıl içinde insanlar, MS (milattan sonra) l yıldan bu yana herhangi bir 300 yıl boyunca yaptıkları savaşlardan daha sık ve daha yıkıcı savaşlara katılmışlardır.

Genellikle yatar yatmaz uyurum. Fakat yaklaşık ayda iki kez akşamlan kahve içerim ve ne zaman bunu yapsam, yatağa girdikten sonra saatlerce uyanık kalır, sağa sola döner dururum.

74. Çoğunlukla benim sorunum zihinseldir; Akşamlan içtiğim kahvenin beni uyanık tutacağından o kadar emin olurum ki, bundan dolayı kahve beni uyutmaz.

75. Gece kahve içtikten sonra hemen uyuyamam çünkü kahvedeki kafein saatlerce sinirlerimi uyanık tutmaktadır.

76. Uyumamı engelleyen ve yatakta dönüp durmama neden olan şey her ne ise, akşamın erken saatlerinde içtiğim kahve ile ilgilidir. .

Radyasyon kurbanları (örneğin atomik patlama sonucu çoğunlukla kansızlıktan ölmektedirler, çünkü kemik iliklerinin kan yapıcı özellikleri hasar görmektedir. Günlük tıbbi uygulamalarda, röntgen ışınının dozu insanların radyasyona bağlı rahatsızlıkların kurbanı olmalarını önlemek için son derecede dikkatli biçimde ayarlanmalıdır. Tavşanlar üzerinde deneme yapan Dr. Leon Jacobson hayvanların dalak ve apandistlerinin kurşunla korunmaları durumunda, öldürücü dozda röntgen ışını alsalar bile ölmediklerini göstermiştir. Hasar görmemiş olan dalak ve apandisit, zarar gören dokuların yeniden iyileşebilmeleri için yeterli kanlı üretebilmektedir. .

77. Tavşanlarda, radyasyon sonucu, kemik iliği kan yapıcı işlevini yitirdiğinde, zarar görmemiş belli organlar bu eksikliği telafi etmek eğilimindedirler.

78. Dr. Jacobson 'un tavşanlar üzerindeki deneyleri, yeterince geniş insan grupları üzerinde denenip aynı sonucun elde edilip edilemeyeceğine bakılmalıdır.

79. Bazı hayvan türlerinden kan, birden fazla organ tarafından üretilebilir.

A.B.D.' de yayınlanan haftalık bir dergi Katolik "Kilisesinin sağlık ve sansürle ilgili eylemlerini eleştiren bazı makaleler yayımladı ve yayımdan hemen sonra bir Doğu şehrinin yetkili yerel okul kurulu bu derginin lise kütüphanelerine girişini yasakladı.

80. Yetkili yerel okul kurulu üyelerinin çoğunluğu Katolik kilisesinin gücünden çekiniyorlardı.

81. Söz konusu şehirdeki insanların çoğunluğu Katolik olmalı idi.

82. Dergi bu makaleleri yayınlamamalıydı.

Belirli bir yılda, A.B.D.' deki nüfus istatistikleri raporuna göre A.B.D.' de yaklaşık 1.650.000 kişi evlenmiş, 264.000 kişi de boşanmıştır.

83. Eğer yukarıdaki oranlar hala doğru ise A.B.D.' de her yıl boşananların yaklaşık 6 katı evlenmektedir.

84. A.B.D.' de boşanma göreceli olarak kolaydır.

85. A.B.D. 'de boşanma oranı çok yüksektir.

TEST 5

KARŞI GÖRÜŞLERİN DEGERLENDİRİLMESİ

YÖNERGE

Önemli sorunlara ilişkin kararlar alınırken, söz konusu kararlara dayanak oluşturan güçlü görüşler zayıf görüşleri birbirinden ayırabilmek gerekir. Bir görüşün güçlü olabilmesi için hem önemli hem de doğrudan sorunla ilgili olması gerekir.

Bir görüş, genel anlamda büyük bir önem taşısa bile, doğrudan sorunun özü ile ilgili değilse veya fazla bir önem taşımıyorsa ya da sorunun önemsiz yönleri ile ilgili ise zayıf

bir gerekçedir.

Aşağıda bir dizi sorun verilmiştir. Her sorunu birkaç görüş izlemektedir. Bu testin amacı bakımından her görüşü doğru kabul etmelisiniz. Sizden istenen bu görüşün **GÜÇLÜ** veya **ZAYIF** olduğuna karar vermenizdir.

Bir görüşün güçlü olduğu düşüncesinde iseniz cevap kağıdında görüş "**GÜÇLÜ**", değilseniz "**ZAYIF**" sözcüğünün altındaki boşluğu karalayınız. Her bir gerekçeyi ayrı ayrı değerlendiriniz, kendi kişisel tutumlarınızın değerlendirmenizi etkilememesine çalışınız. Testi yanıtlamadan önce aşağıdaki örneği dikkatlice inceleyiniz.

ÖRNEK

TEST 5
KARŞI GÖRÜŞLERİN DEĞERLENDİRİLMESİ

A.B.D.'de bütün genç erkekler üniversiteye gitmeli midir?

		GÜÇLÜ	**ZAYIF**
1. Evet; çünkü okul onlara okul şarkılarını ve eğlencelerini öğrenmek için fırsat sağlar. (Bu, bir üniversitede o kadar yıl geçirmek için saçma bir nedendir).	**1**.	/ /	/**X** /
2. Hayır; genç erkeklerin büyük bir yüzdesi üniversite eğitiminden yararlanabilmek için yeterli yetenek ve ilgiye sahip değildir. (Eğer bu doğru ise, ki yönerge bizden bunu doğru olarak kabul etmenizi istemektedir, bu tüm genç erkeklerin üniversiteye gitmelerine karşı olmak için güçlü bir gerekçedir).	**2**.	/**X** /	/ /
3. Hayır; aşışı çalışma bireyin kişiliğinde kalıcı sapmaya neden olur. (Bu gerekçe doğru olarak kabul edildiği takdirde çok büyük önemi olmasına karşın doğrudan sorunla ilgisi bulunmamaktadır. Çünkü üniversiteye devam etmek mutlaka aşırı çalışmayı gerektirmez).	**3**.	/ /	/**X** /

Aşağıdaki soruların herhangi birindeki ilk kelime zorunluluk bildiren bir ekle (-meli, -malı gibi) kullanıldığında; cümlenin anlamı A.B.D' deki insanların genel olarak refahını artıracak bir eylemin önerilmesi şeklinde olacaktır.

AŞAĞIDAKİ UYGULAMALARLA DEVAM EDİNİZ.

Eğer nitelikleri uygunsa A.B.D' deki evli kadınlar resmi okullarda öğretmen olarak çalıştırılmalı mıdır?

86. Hayır; ülkede ihtiyaç duyulan öğretmenlik işinin sayısının üstünde bekar kadın vardır.

87. Evet; kadınlar evlendikten sonra, daha iyi öğretmen olma eğilimindedirler.

88. Hayır; bir annenin ilk sorumluluğu kendi çocuklarına karşıdır.

AB.D. hükümeti, yeni silahlar, araç ve gereçler üzerinde yapılmakta olan denemelerden beklenen sonuçlardan önce deneme programlarının ayrıntılarını vaktinden önce açıklamak yoluyla, halkın bilimsel araştırma programlarının ayrıntıları hakkında bilgi sahibi olmasını sağlamalı mıdır?

89. Hayır; halka geniş biçimde tanıtılan çalışmalar başarısız olduğunda bazı kişiler hükümeti eleştirirler.

90. Evet; ancak bu şekilde bilinçlendirilen bir toplum ülkenin güvenliği bakımından gerekli görülen araştırma ve geliştirme çalışmalarına gereken desteği sağlar.

91. Evet; projeler halkın ödediği vergilerle desteklenir, toplum da parasının nerelere harcandığını bilmek ister.

Davaların bir jüri tarafından karara bağlandığı mahkemelerde, birbirleri ile hukuki bir anlaşmazlığa düşmüş olan zengin ve fakir kişilere yasaların hemen hemen eşit olarak uygulandığı söylenebilir mi?

92. Evet; her iki tarafın avukatları jüri üyelerini muhtemel yanlılık yönünden sorgulama olanağına sahiptir.

93. Hayır; mahkemede jüri üyelerinin çoğu karşı tarafin zengin olduğunu bildiğinden fakir insanlara karşı daha sempatik olurlar, jüri üyelerinin sempatisi onların bulgularını etkiler.

94. Hayır; zenginlerin fakirlere karşı kazandıkları davaların sayısı, fakirlerin zenginlere karşı kazandıkları dava sayısından biraz daha azdır.

A.B.D. hükümeti belli başlı sanayi kuruluşlarını devletleştirme yolu ile her isteyene iş vermeli ve ürünleri maliyetine satmalı mıdır?

95. Hayır; Hükümetin ekonomik ve bürokratik gücünün bu kadar artması halkın kişisel ve siyasal özgürlüğünü kısıtlar.

96. Evet; devlet zaten postaneleri, karayollarını, silahlı kuvvetleri, parkları, halk sağlığı hizmetlerini ve diğer bazı kamu hizmetlerini yönetmektedir.

97. Hayır; rekabetin ve kar amacının bu derece ortadan kaldırılması sonucunda, yararlı yeni mal ve hizmetlerin üretilmesi için gerekli olan girişimler azalacaktır.

A.B.D.' de hükümetin bazı politikalarına karşı olan gruplara sınırsız bir basın ve konuşma özgürlüğü tanınmalı mıdır?

98.Evet; demokratik bir ülke ancak serbest ve sınırsız tartışma ile eleştirinin bulunduğu bir ortamda hayat bulur.

99.Hayır; ülkemizin yönetim biçimine karşı olan diğer ülkeler, kendi topraklarında görüşlerimizin özgürce ifade edilmesine izin vermezler.

100. Hayır; eğer basın ve konuşma" özgürlüğü tam olarak verilirse karşı gruplar birçok ciddi iç çekişmelere neden olur, hükümetin durumunu temelden sarsar, bunun doğal bir sonucu olarak demokrasimizin kaybedilmesine yol açar.

TEST BİTTİ CEVAPLARINIZI KONTROL EDİNİZ.

APPENDIX B

WATSON-GLASER ELEŞTİREL AKIL YÜRÜTME GÜCÜ ÖLÇEĞİ

CEVAP KAĞIDI

TEST 1 ÇIKARSAMA

Bu bölümdeki her bir çıkarsama için

D = DOĞRU

MD = MUHTEMELEN DOĞRU

YV = YETERSİZ VERİ

MY = MUHTEMELEN YANLIŞ

Y =YANLIŞ sembollerin altındaki boşluğu karalayınız.

	D	MD	YV	MY	Y		D	MD	YV	MY	Y
1.	/ /	/ /	/ /	/ /	/ /	11.	/ /	/ /	/ /	/ /	/ /
2.	/ /	/ /	/ /	/ /	/ /	12.	/ /	/ /	/ /	/ /	/ /
3.	/ /	/ /	/ /	/ /	/ /	13.	/ /	/ /	/ /	/ /	/ /
4.	/ /	/ /	/ /	/ /	/ /	14.	/ /	/ /	/ /	/ /	/ /
5.	/ /	/ /	/ /	/ /	/ /	15.	/ /	/ /	/ /	/ /	/ /
6.	/ /	/ /	/ /	/ /	/ /	16.	/ /	/ /	/ /	/ /	/ /
7.	/ /	/ /	/ /	/ /	/ /	17.	/ /	/ /	/ /	/ /	/ /
8.	/ /	/ /	/ /	/ /	/ /	18.	/ /	/ /	/ /	/ /	/ /
9.	/ /	/ /	/ /	/ /	/ /	19.	/ /	/ /	/ /	/ /	/ /
10.	/ /	/ /	/ /	/ /	/ /	20.	/ /	/ /	/ /	/ /	/ /

TEST 2 VARSAYIMLARIN FARKINA VARMA

Bu bölümdeki her ifadeden sonra önerilen her bir varsayım için,

yapılan varsayımın ifadeye dayalı olduğunu –yani doğru olduğunu-düşünüyorsanız VARSAYIM YAPILDI ifadesinin altındaki boşluğu,yapılan varsayımın verilen ifadeye dayalı olmadığını düşünüyorsanız VARSAYIM YAPILMADI ifadesinin altındaki boşluğu karalayınız.

	VARSAYIM YAPILDI	YAPILMADI		VARSAYIM YAPILDI	YAPILMADI
21.	/ /	/ /	29.	/ /	/ /
22.	/ /	/ /	s 30.	/ /	/ /
23.	/ /	/ /	31	/ /	/ /
24.	/ /	/ /	32.	/ /	/ /
25.	/ /	/ /	33.	/ /	/ /
26.	/ /	/ /	34.	/ /	/ /
27.	/ /	/ /	35.	/ /	/ /
28.	/ /	/ /	36.	/ /	/ /

TEST 3 TÜMDENGELİM

Bu bölümdeki her iki önerme ifadesinden sonra sonuçlar verilmiştir.

Her bir sonucu verilen önerme ifadelerinin zorunlu bir sonucu olduğunu düşünüyorsanız, SONUÇ İZLER başlığı altındaki boşluğu iyice karalayınız.

Eğer sonucun verilen önermeyi izlemediğini düşünüyorsanız,genel bilgilerinize göre doğru olduğuna inansanız bile SONUÇ iZLEMEZ baslığı altındaki boşluğu iyice karalayınız.

	SONUÇ			SONUÇ	
	İZLER	İZLEMEZ		İZLER	İZLEMEZ
37.	/ /	/ /	50.	/ /	/ /
38.	/ /	/ /	51.	/ /	/ /
39.	/ /	/ /	52.	/ /	/ /
40.	/ /	/ /	53.	/ /	/ /
41.	/ /	/ /	54.	/ /	/ /
42.	/ /	/ /	55.	/ /	/ /
43.	/ /	/ /	56.	/ /	/ /
44.	/ /	/ /	57.	/ /	/ /
45.	/ /	/ /	58.	/ /	/ /
46.	/ /	/ /	59.	/ /	/ /
47.	/ /	/ /	60..	/ /	/ /
48.	/ /	/ /	61.	/ /	/ /
49.	/ /	/ /			

TEST 4 YORUMLAMA

Bu bölümdeki kısa paragraflardan sonra önerilen sonucun akla uygun, şüphe götürmez bir biçimde çıkartılabileceğini düşünürseniz, **SONUÇ ÇIKARTILIR** başlığı altındaki boşluğu karalayınız. Eğer verilen sonucun şüphe götürmez bir biçimde çıkartılamayacağını düşünürseniz,**SONUÇ ÇIKARTILAMAZ** başlığı altındaki boşluğu karalayınız.

SONUÇ		SONUÇ	
ÇIKARTILIR	**ÇIKARTILAMAZ**	**ÇIKARTILIR**	**ÇIKARTILAMAZ**
62. / /	/ /	74. / /	/ /
63. / /	/ /	75. / /	/ /
64. / /	/ /	76. / /	/ /
65. / /	/ /	77. / /	/ /
66. / /	/ /	78. / /	/ /
67. / /	/ /	79. / /	/ /
68. / /	/ /	80. / /	/ /
69. / /	/ /	81. / /	/ /
70. / /	/ /	82. / /	/ /
71. / /	/ /	83. / /	/ /
72. / /	/ /	84. / /	/ /
73. / /	/ /	85 / /	/ /

TEST 5 KARŞI GÖRÜŞLERİN DEĞERLENDİRMESİ

Bu bölümde verilen her bir soruna ilişkin olan her bir görüşü –bu testin amacı bakımından her birini doğru kabul ederek – bu görüşün güçlü olduğuna karar verirseniz **GÜÇLÜ** sözcüğünün altındaki boşluğu, görüşün zayıf olduğuna karar verirseniz **ZAYIF** sözcüğünün altındaki boşluğu karalayınız.

GÜÇLÜ	**ZAYIF**	**GÜÇLÜ**	**ZAYIF**
86. / /	/ /	94. / /	/ /
87. / /	/ /	95. / /	/ /
88. / /	/ /	96. / /	/ /
89. / /	/ /	97. / /	/ /
90. / /	/ /	98. / /	/ /
91. / /	/ /	99. / /	/ /
92. / /	/ /	100. / /	/ /
93. / /	/ /		

APPENDIX C

BİLGİ FORMU

Değerli Öğrenciler,

Yüksek lisans tez çalışması için hazırlanmış olan bu form üniversite öğrencilerinin analitik ve mantıksal olarak ne kadar iyi düşünebildiğini belirlemek amacıyla düzenlenmiştir. Çalışma sonuçlarının sağlıklı olabilmesi için lütfen formda yer alan hiçbir maddeyi ve cevap kağıdındaki hiçbir soruyu boş bırakmamaya ve ankete ilişkin görüş ve sorularınızı anketi cevapladıktan sonra yöneltmeye özen gösteriniz.

Çalışmaya gösterdiğiniz ilgiye teşekkür ederim.

SEÇİL DAYIOĞLU

İsim ve Soyadı (isteğe bağlı): ..... Numara:

.....

Aşağıdaki 1., 2., ve 3. soruların yanındaki boşluğa istenilen bilgiyi yazarak doldurunuz.

1- (Hazırlık sonrası devam edeceğiniz) Fakülte ve Bölümünüz: .....

2- (Bu bölüme girişte esas alınan) ÖSS puan türünüz: .....

Aşağıdaki 4., 5. , 6. ,7. ve 9. maddelerde verilen kategorilerden size uygun olan açıklamanın gösterdiği rakamı yuvarlak içine alınız.

3- Hazırlık sınıfında devam etmekte olduğunuz grubunuz:

1) Zero Beginner 2) Elementary 3) Pre-intermediate

4) Filoloji: a) C b) B

4- Cinsiyetiniz:

1) Kadın 2) Erkek

5- Kaç kardeşiniz var? (Sizden başka)

1) yok 2) 1 3) 2 4) 3 5) 4 ve üzeri

6- Annenizin eğitim düzeyi:

1) Okur-yazar değil 2) İlkokul Mezunu

3) İlköğretim (İlkokul+ Ortaokul) Mezunu 4) Ortaöğretim (Lise) Mezunu

5) Yükseköğretim Mezunu

6) Diğerleri (Lutfen belirtiniz): _____

7- Babanızın eğitim düzeyi:

1) Okur-yazar değil 2) İlkokul Mezunu

3) İlköğretim (İlkokul+ Ortaokul) Mezunu 4) Ortaöğretim (Lise) Mezunu

5) Yükseköğretim Mezunu

6) Diğerleri (Lutfen belirtiniz): _____

8- Ailenizin sosyo-ekonomik durumu (aylık gelire göre):

1) 0-250 milyon arsı 2) 250 milyon-500 milyon arası

3) 500 milyon-750 milyon arası 4) 750 milyon-1 milyar arası

5) 1 milyar ve üstü