AN ANALYSIS OF THE CRITICAL THINKING OF UNIVERSITY STUDENTS ENROLLED IN A FACULTY OF EDUCATION

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2016

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Thesis submitted to the

Institute for Graduate Studies in Social Sciences

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in

Educational Sciences

by

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2016

DECLARATION OF ORIGINALITY

I, Ayşe Aylin Buran, certify that

- I am the sole author of this thesis and that I have fully acknowledged and documented in my thesis all sources of ideas and words, including digital resources, which have been produced or published by another person or institution;
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ABSTRACT

An Analysis of the Critical Thinking of University Students

Enrolled in a Faculty of Education

This study seeks to identify the critical thinking of students in a state university in Turkey. All the subjects were enrolled in the Faculty of Education. While doing this research, the students' approaches to critical thinking and their critical thinking experiences are analyzed. The data gathered is interpreted within the framework of Vygotsky's Sociocultural Theory. Using a mixed methods sequential explanatory design, the following research questions were investigated: (a) What are the critical thinking dispositions of the subjects? (b) Based on their personal experiences, how do they conceptualize critical thinking? In the quantitative stage, the California Critical Thinking Dispositions Inventory (CCTDI) was employed. In the qualitative stage, semi-structured interviews with 20 students were conducted. The quantitative data suggests that the subjects have a positive disposition towards critical thinking. It was observed that exercising critical thinking depends not only on actually having the ability to think critically but also upon the subject's environment as well as the characteristics of people surrounding the subject. Hence, it is concluded that critical thinking is a context-based concept rather than a purely individual characteristic or skill. This research contributes to the field in terms of understanding critical thinking in a more comprehensive manner.

ÖZET

Eğitim Fakültesinde Okuyan Üniversite Öğrencilerinin Eleştirel Düşüncelerine Yönelik Bir Analiz

Bu araştırmada Eğitim Fakültesi'nde okuyan öğrencilerin eleştirel düşünce eğilimlerinin tespit edilmesine, eleştirel düşünce kavramına dair yaklaşımlarının ve yaşantılarının belirlenmesine çalışılmıştır. Elde edilen veriler ise, Vygotsky'nin Sosyokültürel Gelişim Kuramı çerçevesinde yorumlanmıştır. Araştırmada iki araştırma sorusu mevcuttur: (a) Eğitim Fakültesi'nde okuyan öğrencilerin eleştirel düşünce eğilimleri hangi yöndedir? (b) Eğitim Fakültesi öğrencileri, deneyimlerine dayanarak eleştirel düşünce kavramını ne şekilde algılamaktadırlar? Araştırmanın ilk kısmı olan nicel etapta, Eğitim Fakültesi'nde okuyan öğrencilere California Critical Thinking Dispositions Inventory'nin (CCTDI) Türkçesi (CCTDI-T) uygulanmıştır. Çalışmanın ikinci etabında ise, 20 öğrenci ile yarı yapılandırılmış yüz yüze görüşmeler yapılmıştır. Nicel verilere göre, Eğitim Fakültesi öğrencilerinin eleştirel düşünceye dair pozitif bir eğilim içinde oldukları görülmektedir. Görüşme sonuçlarına göre ise, üniversite eğitiminin, özellikle de eğitim gördükleri üniversitenin açık görüşlülük alt boyutuna olumlu anlamda katkıda bulunduğu öğrenciler tarafından beyan edilmiştir. Eleştirel düşünceye sahip olmanın ötesinde bu düşünce yapısını açığa vurmanın kişinin içinde bulunduğu ortamla ve bu ortamdaki kişiler ile kurduğu ilişkiler ile bağlantılı olabileceği gözlemlenmiştir. Bu araştırma, eleştirel düşünce kavramının daha kapsamlı şekilde anlaşılmasına katkıda bulunmuştur.

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CONFERENCE PROCEEDINGS

Buran, A. (2011). Who is The Adult Educator? An Inspiration from Bruner. In *Between Global and the Local: Adult Learning and Development, ESREA, Istanbul, Turkey.*

ACKNOWLEDGEMENTS

Firstly, I would like to express my deepest gratitude to my advisor, Prof. Zeynep Kızıltepe, for her guidance, advice, criticism, and encouragement throughout this thesis. I have been amazingly fortunate to have an advisor who has been always inspiring and supportive in every stage of this difficult process.

I would also like to thank my thesis committee members — Prof. Ali Baykal, Prof. Ozana Ural, Assoc. Prof. Fatma Nevra Seggie, and Assoc. Prof. Özlem Ünlühisarcıklı — not only for their insightful comments and encouragement, but also for reading several drafts of this study and providing valuable feedback, which motivated me to widen my research in various perspectives. Furthermore, I wish to express my gratitude to Dr. Ayşe Sim Diri. I am indebted to her for her continuous encouragement and passionate guidance, and for helping me in the quantitative analysis of my thesis. I would also like to express my appreciation to Dr. Cem Kirazoğlu for his sincere suggestions and technical support throughout the work.

My sincere thanks also go to Prof. Yavuz Akpınar, Dr. Melike Acar, Assist. Prof. Sibel Akmehmet, Dr. Meral Apak, and Assist. Prof. Bengü Börkan, Assist. Prof. Ayşe Caner, Dilek Çankaya, Assist. Prof. Zeynep Erdiller, Assist. Prof. Ersoy Erdemir, Dr. Fatma Gümüş, Prof. Zeynep Kızıltepe, Dr. Hayal Köksal, Assoc. Prof. Leyla Martı, Prof. Rifat Okçabol, Assoc. Prof. Serkan Özel, Assoc. Prof. Fatma Nevra Seggie, Işık Sabırlı, and Dr. Bülent Sezgin, all of whom encouraged students to participate in my research. Without their precious support, it would not have been possible to conduct this research. I would also like to thank my academic advisor, Assoc. Prof. Özlem Ünlühisarcıklı. I would like to thank Assist. Prof. Gökhan İskifoğlu for allowing me to use his translation of the California Critical Thinking

Disposition Inventory (CCTDI). I am also grateful to Assist. Prof. Gamze Sart, who is one of the editors of Kritik Düşünce, for sharing her work with me and providing brilliant comments and suggestions. I owe a special thanks to Assist. Prof. Bengü Börkan for sharing her statistical expertise. In addition, I am grateful to Assoc. Prof. Steven Seggie, Hande Arslan Çiftçi, Dilek Özüdoğru, Recep Minga, İlkay Boduroğlu, Önder Bahar and Hüseyin Yüksel for their sincere help. I would like to thank Duygu Cankılıç and Yasemin Dut, who were always willing to help and provide me with assistance in data collection during my writing journey. I would also like to thank Şenay Çınar for always being so helpful, and Eylem Taşdemir for giving me editing support. I would also like to thank Elif Paşalıoğlu for her kind support. I am also grateful to Dear Mustafa Kemal Uyal for his tremendous support and always keeping me motivated during the whole process. I owe a special debt of thanks to Emine Çavak. I would like to thank my dear friend Dr. Salih Cıngıllıoğlu for his valuable contributions. I would also like to thank my dear flatmate Çili for the sleepless nights, the intensive working atmosphere and for all the fun we have had throughout the years. I would like to extend my special thanks to my interviewees, students from the Faculty of Education who kindly agreed to spare time for me and filled out a questionnaire made up of scale-questions.

My family is my greatest fortune. I would like to thank my family — Dr. Bülent Gürkut, my father, and Necmiye Gürkut, my venerable grandmother. Last but not least, I would like to express my deepest gratitude to my beloved mother, who encouraged me to apply for a Ph.D. and supported me throughout the writing process of this thesis and all my life, in general. This dissertation is lovingly dedicated to my mother, İlhan Gürkut. This work would not have been possible without her patience, foresight, encouragement and support.

Dedicated to my dear mother, İlhan Gürkut

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CHAPTER 1

INTRODUCTION

Thinking is one of the basic skills of individuals. Sophisticated thinking is also among the features that individuals are expected to possess. Researchers and philosophers have always been intrigued by the organization and activation of thinking based on certain standards.

Holyoak and Morrison (2005) state that thinking and reasoning are the fundamental components of adults' identity. Brookfield (2005) states that critical thinking is a term mainly associated with adulthood since adult roles lead one to solve discrepancies and to look beyond black and white perceptions. Among the skills expected from a self-directed individual are assessing arguments, thinking on one's own thinking and accordingly deciding. Hence, it can be put forward that these skills can be dealt within the concept of critical thinking. This is suggested by the existing definitions of critical thinking in the literature. For instance, Ennis's (1996) description of critical thinking points to this: "Critical thinking is reasonable reflective thinking focused on deciding what to believe or do. The emphasis is on reasonableness, reflection, and the process of making decisions" (p. 166). As for Kuhn (1999), she states that she deals with critical thinking within the framework of the development of metacognitive skills rather than that of cognitive skills. Ruggiero (2004) defines critical thinking as "the process by which we test claims and arguments and determine which have merit and which do not" (p. 17). Therefore, adulthood appears as a concept that also entails developing critical thinking.

The idea that critical thinking is not an innate ability, but a learned skill exists in the literature. For example, Cottrell stresses that critical thinking is a method

rather than personal characteristics (2005). In relation to this, critical thinking is also one of the acquisitions targeted in education. In addition, the capacity and characteristics of the human mind indicate that humans resort to shortcuts and also may have the potential to make cognitive mistakes as well (Tversky & Kahneman, 1974). Therefore, people can acquire and develop critical thinking skills, but they can also make cognitive errors. Kızıltepe (2012) touches upon this point. Although the topic she studies refers to critical thinking, she does not prefer to use the phrase critical thinking when expressing her observations on the way adults think:

> School children –even adults- do not think as much as required, especially in the activities that necessitate complex thinking. Instead of putting judgment on one side, they jump to the conclusions, and rather than considering all relevant options, they take into account only one or two possibilities. What they only focus on is their own perspectives, namely looking at from only one point of view, and therefore, they neglect various other perspectives. Hastily, they do not think of others' opinions, and that's why, they do not examine the situations properly. Even if they think, they are not well-planned when thinking; yet they cannot sketch the plan of an activity which requires thinking. They do not outline their ultimate goals or the problems they try to solve, and instead, they immediately go through the stage of solution. In fact, they are not conscious of what they are doing. This is why, they never will be aware when they make mistakes. Then, how are we supposed to teach thinking to our children? How are we supposed to turn thinking into a natural process for them? (See Appendix A, 1)

Looking at the available sources on critical thinking, one can deduce that there is a difference between skills and dispositions. Tishman and Andrade state "one can say that good critical thinkers have critical thinking abilities and critical thinking dispositions. In other words, the critical thinker who seeks balanced reasons in an argument has both the ability and the disposition to do so" (1995, p. 3).

The significance of the studies and findings on critical thinking might be approached from several angles. Brookfield argues that the ability to think critically is crucial to understanding our personal relationships, envisioning alternatives and more productive ways of workplace organization, and becoming politically literate

(1987). The significance of the examination of critical thinking, especially in the framework of educational sciences, can be said to lie there: The individual who is equipped with critical thinking would be competent in deciding whether the information faced in today's world is trustworthy, developing a certain way of reasoning, questioning his/ her own ways of reasoning, realizing the steps, and changing the methods when needed. An individual having this understanding would be active. S/he would not just get information or accept that as the only real and stationary information; instead s/he would question, transform, improve or reject it when required. In a broader perspective, s/he would have the opportunity to contribute to the social environment in which s/he exists and the evolution of the society. S/he would not acknowledge anything, which is offered by the society as the only truth, and would be aware of alternatives. Vaughn (2010) summarizes the importance of critical thinking as follows:

> A consequence of not thinking critically is a loss of personal freedom. If you passively accept beliefs have been handed to you by your family and your culture, then those beliefs are not really yours. If they are not really yours, and you let them guide your choices and actions, then they -not you- are in charge of your life. Your beliefs are yours only if you critically examine them for yourself to see if they are supported by good reasons. (p. 15)

According to Brookfield (2005), seeing there are new ways to think and that people who see new ways of thinking as normal is liberating; namely, this makes us feel free, and also threatened, which is scary. It is liberating as it suggests that if something is not fixed as thought before, compatible and eloquent beliefs and behaviors might compensate for the mediocre ones. It also suggests that if we think some economic and social arrangements are out-of-date, unreasonable, or despotic, we could change them with the ones that are more efficacious, sensible, or just other options. On the other hand, this understanding may be threatening as we may rely on some conventions of trust, and they might prove useless, out-of-date, or destructive.

The more this doubt begins to disturb our consciousness, the more we are likely to get away from that doubt as we think it is senseless and misleading (1987).

Freire (2010) underlines that education has decisive roles on critical thinking. He also states that banking education model based on memorization is an obstacle for the individual's access to critical thinking as it regards the individual as a passive entity and puts the teacher and learner in a hierarchical relation. It might be claimed that the research on educational sciences come to the fore here. "Thus, banking education as in adult education, for instance, will never prepare the students for critical evaluation of the reality" (p. 54).

Setting off from the role of education in critical thinking as one of the fundamental tools that shape the individual and society, the objective of this study is to analyze the critical thinking experiences of prospective teachers, who are expected to help their students acquire critical thinking skills and dispositions in the future, by drawing from both quantitative and qualitative data.

The reason for the Faculty of Education to be analyzed in this study can be summarized as the following: It is accepted that critical thinking is one of the concepts that improve through formal and non-formal education as well as informal learning. The students currently enrolled in this faculty, who are likely to become teachers in the near future, will be expected to teach critical thinking skills to their students and inspire them to be critically-disposed individuals. Therefore, it is vital to analyze the current states of prospective teachers and their experiences about critical thinking. The critical thinking of students in the Faculty of Education is addressed by asking the research questions provided below:

1-What are the critical thinking dispositions of Faculty of Education students?

There are four sub-questions of this research question, which are listed below:

(a) What are the critical thinking dispositions of Faculty of Education based on seven dispositions of California Critical Thinking Disposition Inventory (CCTDI), namely: Open-mindedness, truth-seeking, inquisitiveness, analyticity, systematicity, self confidence and maturity of judgment?

(b) Is there a relation between gender and critical thinking dispositions of the faculty students?

(c) Is there a relation between students' grade levels regardless of the departments and their critical thinking dispositions?

(d) Do the critical thinking dispositions of students vary depending on the departments they are enrolled in?

2-How do students of Faculty of Education perceive the concepts of critical thinking and critical thinking dispositions based on their personal experiences?

The first research question has been developed by Facione and Facione, and it has been discussed through CCTDI which was translated into Turkish by İskifoğlu, namely CCTDI-T. The second research question has dealt with the semi-structured interviews conducted with 20 people. The discussion of data is grounded on Vygotsky's Sociocultural Theory. The reason for this theory to be used in the study is that the theory provides a rich platform for discussion to address cognitive, psychological and intellectual acquisitions in relation to the environment.

A Vygotskian perspective

While investigating how critical thinking functions when faced with new information and how the individual uses strategies to better understand the material, it seems adequate to take the environmental factors into consideration since people do not live in a void, but in a social space. Vygotsky (1926/ 1997) suggests that people are

composed of a biological element that includes acquired reactions and inherent reactions. The environment where people are born and raised is believed to determine the acquired reactions. Thus, culture, history and complex nexus are all summed up in the individual. Therefore, these components are to be considered when approaching the individual. Vygotsky also states "it is not nature, but society that above all else might be considered to be the determining factor in human behavior" (1960, p. 116 cited in Wertsch, 1985).

As mentioned earlier, people are born with certain innate characteristics, namely natural memory, involuntary attention, and simple perception. The individual, in time, starts employing auxiliary stimuli to connect to the world. According to Kozulin, three categories of mediators exist. These are psychological tools, material tools, and human mediator (1995). Hereby, all psychological operations are changed via the transition between these mediators (Vygotsky, 1978).

According to Vygotsky, understanding people is possible only if the culture that s/he is a part of is considered. People exist in a social space that is shaped by history. Thus, people create meaning out of their particular social circumstances. From these different perspectives, it seems that a person is neither purely a biological nor purely a cultural being. It is a combination of the two. Hence, understanding people seems to require adopting both perspectives and using them in a harmony. Adopting this stance, this study seeks to look into student experiences about critical thinking and analyzes how environmental factors might have shaped these experiences.

CHAPTER 2

LITERATURE SURVEY

In this chapter, studies in literature on thinking and critical thinking have been mentioned. There have been some efforts to identify critical thinking properly, and these mostly focused on the core of the structure of critical thinking, which is mostly acquired through higher education. The effects of environment on critical thinking have been clarified by means of the Sociocultural Theory of Vygotsky.

2.1 Thinking and critical thinking

Thinking is a main area of investigation for people from time immemorial. Many philosophers, researchers from diverse disciplines search for the nature of thinking, its mechanism, influences on it, its development and the ways to systematize it. In the Cambridge Handbook of Thinking and Reasoning, Holyoak and Morrison (2005) defined thinking as follows: "Thinking is the systematic transformation of mental representations of knowledge to characterize actual or possible states of the world, often is in service of goals" (p. 2). In this framework, 'mental representations of knowledge' are open to manipulation as the basis of new statements. These manipulations ought to be systematic transformations bound by some specific constraints - rather than being unconstrained associations. Thinking does not need to be analytical, realistic or brilliant. Theoretically speaking, nor does it require a person. However, it needs to be geared towards fulfilling a form of desired aim, which involves mental work of any thinker (Holyank & Morrison, 2005).

According to the Dictionary of Psychology (1985), thinking is defined as "a symbolic process, problem solving involving ideational activity, a train of ideas, sub

vocal speech" (Chaplin, p. 467). Ruggiero (2004) states that there are three main activities in thinking: Investigation, interpretation and judgment.

In human history, many contributors shaped the term thinking and showed the importance of analyzing our surroundings in a critical manner. From Socrates to Plato, from Descartes to Dewey, prominent philosophers and researchers searched for more effective ways of thinking, comprehending and examining the world. There are categorizations, grouping and differentiating factors about thinking and what makes it a critical one.

Ruggiero (2002) divides thinking into two and stresses the distinguishing feature of critical thinking. According to him, two processes constitute thinking: Production of ideas and evaluation of ideas. Production of ideas consists of extending the focal point and reviewing the possibilities. It is called creative thinking. The other process is evaluation of ideas, and it is called critical thinking. It refers to narrowing down the subject, displaying the ideas and determining the rational ones. Ruggiero (2004) defines critical thinking as follows: "the process by which we test claims and arguments and determine which have merit and which do not" (p. 17). Inch, Warnick and Endres (2006), stress that critical thinking is about to give an answer within the framework of rationality, during which the individual tries to give answers in the absence of the suitable information. The concept is about judgement.

As Brookfield states (2005), critical thinking is mainly associated with adulthood since adult roles points one to solve discrepancies and look beyond black and white perceptions. According to Brookfield, critical thinking is composed of four constituents. The first one is recognizing and confronting assumptions, which is core to critical thinking. The second is questioning the significance of context, which is

again vital for critical thinking. The third one is the idea that envisioning and looking for alternative options are tried to be achieved in critical thinking. The last one is the opinion that due to envisioning and looking for alternative options, reflective skepticism occurs (2005).

A different perspective belongs to Kuhn. In Kuhn's understanding (1999), the developmental model of 'critical thinking' stems from up-to-date empirical studies of directions and intellectual upbringing of children and adolescents. It is built upon three versions of second order (meta-knowing) cognition: Metacognitive, metastrategic, and epistemological - all of which are essential for the increase of critical thinking skills. Metacognitive involves an awareness of what is already known and the ways in which this knowledge is validated. Therefore, it is indispensable for the development of critical thinking. It provides individuals with self-awareness of their beliefs and the ability to control how these beliefs are transformed in response to external influence. It also gives individuals developed skills in conscious coordination theory, which helps them assess other's beliefs fully. The metastrategic skill is vital for critical thinking as well. Individuals with strong metastrategic skills develop stable and persistent rules for assessment in different time frames as well as contexts. They hardly consider popularity and acceptability of views by mainstream standards, and are more receptive to alternative standards of assessment.

In literature, there are numerous grouping of definitions regarding critical thinking. For instance, Lai (2011) categorizes definitions regarding critical thinking under three headings namely, philosophical approach, cognitive psychological approach, and finally educational approach. In philosophical approach, there are definitions, which mainly focus on ideal critical thinker and his/her qualities. In this

category, a person is accepted as a potential and his/her way of thinking are evaluated under best circumstances. Ennis, McLean, Facione, Paul, Lipman, Bailin belong to this school of thought. Ennis (1996) for instance defines critical thinking as follows: “Critical thinking is reasonable reflective thinking focused on deciding what to believe or do. The emphasis is on reasonableness, reflection, and the process of making decisions” (p. 166). Paul (1992) on the other hand, summarizes seven interdependent traits of mind to be supported in order to let students become critical thinkers. These are: (a) intellectual humility, (b) intellectual courage, (c) intellectual empathy, (d) intellectual good faith or integrity, (e) intellectual perseverance, (f) faith in reason, (g) intellectual sense of justice. According to Paul and Elder (2013), critical thinkers strive to develop their own intellectual properties. The mentioned intellectual property are as follows: Intellectual integrity, intellectual humility, intellectual search for justice, impartiality, intellectual perseverance, intellectual reasoning, intellectual confidence, intellectual courage, intellectual empathy, disciplined intellectual property.

In the categorization made by Lai (2011), the second group is cognitive psychological approach, which is mainly based on the behaviorist tradition and the experimental research. As stated by Lai, this approach focuses on what people can do rather than the ideal skills. Lai cited Sternberg, Halpern, and Willingham in this category (2011). Parallel to this point of view, Vaughn (2010) defines critical thinking as “the systematic evaluation or formulation of beliefs or statements, by rational standards” (p. 4). It includes logic, but it is a broader term since critical thinking is interested in the truth of the argument as well. He states: “Arguments are the main focus of critical thinking” (p. 10). The quality of logic is the main concern of critical thinking. Kurfiss (1988) states: “In cognitive terms, critical thinking is

problem solving in situations where ‘solutions’ cannot be verified empirically” (p. 5). Garrison (1991), on the other hand, emphasizes the role of reason in critical thinking as follows: “For critical thinking to avoid indiscriminate scepticism and negativity, it must be guided and shaped by reason” (p. 289).

According to Lai, the third approach is the educational perspective in which Bloom is the prominent figure. According to Bloom’s Taxonomy, there are three domains namely: Cognitive, affective and psychomotor. The cognitive domain may vary from the very basic skills such as remembering a previously learned material to synthesizing novel ingredients. It is the best part of education. Affective domain on the other hand includes emotion-based issues such as attitudes, appreciations, values, emotions, and sets of biases. Finally, motor skills, bodily coordination take place in the psychomotor domain (Krathwohl, Bloom, Masia, 1964).

2.1.1 Critical thinking skills

In literature, there is a distinction between critical thinking skills and critical thinking dispositions. In the skill part, the Delphi report, which is one of the fundamental reports regarding critical thinking, provides some qualities (Facione, 1990). According to this report, critical thinking skills are as follows: Interpretation, analysis, evaluation, inference, explanation, and self-regulation. According to this report, interpretation means disambiguation of meaning and ability of categorization. Analysis addresses analyzing ideas, realizing arguments and examining them. Evaluation represents evaluation of claims and arguments. Inference identifies questioning of evidence/proof, considering alternatives and drawing conclusions. Explanation includes reaching conclusions and affirming procedures. Self-regulation means self-evaluation and self-correction.

For Salmon (2013), critical thinking requires some important abilities such as the capacity to realize alternative uses of language and the need for evidence to back up an assertion, the ability to develop a sense of whether or not a sentence is true, (and supports another sentence, if it was true), the ability to understand arguments, to single out their parts, to feed unsaid premises, to recognize the premises as well as the result of an argument based on the context it was born into, and lastly the ability to develop the skill of judging an argument by the extent to which the premises do support the conclusion indeed.

Vaughn (2010) stresses the importance of identifying arguments in critical thinking; and he states: “Being able to identify arguments, to pick them out of a block of non-argumentative prose, if need be, is an important skill on which many other critical thinking skills are based” (p. 12).

2.1.2 Critical thinking dispositions

There are many researchers that put emphasis on that distinction; Facione is one of them (2000). Facione and Giancarlo define critical thinking disposition as “consistent internal motivation to engage problems and make decisions by using CT” (1996, p. 65).

According to Tishman and Andrade (1996), to put it simply, thinking dispositions are akin to intellectual behavior patterns. Departing from this understanding, Perkins, Jay and Tishman developed a model of "triadic conception of thinking dispositions," which involves the notion of ability. As a way to approach thinking dispositions from a psychological angle, they determined three components of generating dispositional behavior, which are: (1) sensitivity, the sense of whether or not a specific behavior is appropriate, (2) inclination, the experienced stimulus

towards a particular behavior, (3) ability, the simple capacity to complete the behavior (Perkins, Jay & Tishman, 1993). As an example, an individual who is willing to have justified grounds in a single argument is sensitive to chances to do so, feels affected or is tended to do so, and able to conclude the behavior. This person is expected to be able to see clearly the strengths and weaknesses of reasons for both parties of each argument. Tishman's and Andrade's answers to the question of who would be a good thinker reveal the major distinction between the skill and disposition. Their response includes both cognitive abilities and skills. They state that a good thinker has thinking skills as well as motivations, attitudes, values and habits of mind. These motivations, attitude, values and habits of mind lead one another to act critically (1996).

Ennis states that although abilities and sensitivities are important, they are not necessary conditions for dispositions (1996). He gives the example of a person who is disposed to clarify and seek to understand although s/he is not sensitive to situations calling for clarification. S/he should notice it first (Ennis, 1996). Ritchart (2001) on the other hand offers the following definition:

> Thinking dispositions represent characteristics that animate, motivate, and direct abilities toward good and productive thinking and are recognized in the patterns of one's frequently exhibited, voluntary behavior. Dispositions not only direct one's strategic abilities but they help to activate relevant content knowledge as well, bringing that knowledge to the forefront to better illuminate the situation at hand. Unlike desire, dispositions are accompanied by behavior and thus assume the requisite ability to carry out that behavior. In contrast to habitual routines, dispositions invoke a general class of responses rather than specific actions. Collectively, the presence and force of these dispositions make up our intellectual character. (p. 8)

2.2 Barriers over critical thinking

Vaughn (2010) divides obstructions over critical thinking into two. The first one arises from how we think; the second one is related to what we think. The former is concerned with psychological factors such as motivations and desires; the latter is about philosophical opinions. He called the first group psychological obstacles, and the second group philosophical obstacles. Psychological obstacles include the almighty self, the power of group which is divided into three; namely, peer pressure, appeal to authority and appeal to common practice. Philosophical obstacles include subjective relativism, social relativism, and skepticism.

The almighty self refers to the problem of accepting a claim just because it coincides with one's personal interest or just to save face. Vaughn (2010) points out possible harms caused by this manner of thinking. He states:

> In the realm of critical thinking, this devotion to yourself can prevent careful evaluation of claims, limit critical inquiry, blind you to the facts, provoke self-deception, engender rationalizations, lead you to suppress or ignore evidence, and beget wishful thinking. And these mistakes can decrease your chances of success (however you define success) and hamper your personal growth, maturity, and self -awareness. Such egocentrism can also leave you wide open to propaganda and manipulation by other people who appeal to your personal desires and prejudices. (p. 39)

The power of group refers to the degree to which conformism disturbs critical thinking. There are some subtypes of this category, one of which calls peer pressure, which signifies the force of peers over the person. Appeal to popularity refers to the acceptance of an idea because of being liked or supported by a large number of people. Appeal to common practice means the acceptance of an idea, which is based on regular activities of a group rather than the scope of the activities.

Vaughn (2010) also talks about fallacies, which are faulty arguments. He divides fallacies into two groups: "Those that have irrelevant premises and those that have unacceptable premises'' (p.177). Under this first category, Vaughn counts 11

fallacies which are as follows: Genetic fallacy, composition, division, appeal to the person, equivocation, appeal to popularity, appeal to tradition, appeal to ignorance, appeal to emotion, red herring and straw men.

Genetic fallacy stands for the acceptance of the truth of a claim based on its origin. Composition is to believe what is true for the parts is true for the whole. Division is to believe what is true for the whole is true for the parts. Appeal to the person is to accept or reject a claim based on the person himself/ herself, not based on the claim. Appeal to popularity is to believe that a claim is true because many people believe so. Appeal to tradition is to believe a claim is true because it is a part of the tradition. Appeal to ignorance is to give meaning to lack of evidence to prove something. Appeal to emotion is the usage of emotions as premises. Red hearing means to intentionally bring on the agenda an irrelevant topic. Straw man is to harm the reputation of a person to make people believe that his/ her claims are false (2010).

The second group consists of unacceptable premises, and these are as follows: Begging the question, false dilemma, slippery slope, hasty generalization and faulty analogy. Begging the question stands for using the conclusion as a premise. The false dilemma, on the other hand, stands for considering only two alternatives even though there are more than two. Arguing without good reasons refers to slippery slope. To come up with a conclusion regarding a group based on an inadequate sample of the group implies hasty generalization. Finally, faulty analogy represents fallacies with unacceptable premises (Vaughn, 2010).

2. 3 The Delphi research and report

One of the fundamental investigations regarding critical thinking is the Delphi

research, which aims to come up with a common definition of critical thinking. American Philosophical Association started the Delphi research, which conducts investigations within the framework of critical thinking. This research consists of six sessions, which took place between February 1988 and November 1989.

The summary statement of the Delphi report (1990) mentions 15 pieces of advice within the frame of critical thinking education and its evaluation as a result of this study. During this study, a qualitative research method called the Delphi Method was used; and the study consisted of panels of experts in an interactive environment. 46 experts participated in the Delphi research in total. Almost half of the Subjects (52%) are from the field of philosophy, 22% from education, 20 % from social sciences, and 6% from physical sciences. The study aimed to define critical thinking in the Delphi report as well as outlining some evaluations and suggestions related to critical thinking.

Within the scope of this study, authorities focused on the structure of critical thinking, which can be expected from freshmen and sophomores. There are two reasons; firstly, area of specialization of the experts is mostly around that age. Secondly, the findings related to college level critical thinking could shed light on K-12 level critical thinking studies.

Experts agree that critical thinking can be operationally defined, and some aspects of it can be evaluated effectually and trustworthily. As a result of the panels, experts dwell on the two aspects of conceptualization of critical thinking: Cognitive skills and affective dispositions.

According to the Delphi report (1990), experts defined some skills as central, which imply critical thinking. In accordance with the report, there are six skills; and each of them has its own sub-skills. These skills are as follows: Interpretation,

analysis, evaluation, inference, explanation, and self-regulation. Analysis, evaluation and inference are defined as central by the 95% percent of the authorities. Interpretation, explanation and self-regulation are interpreted again as central with 87% percent consensus of the authorities.

The scopes of these skills are as follows: Interpretation means disambiguation of meaning and ability of categorization. Analysis addresses realizing arguments and examining them. Evaluation represents evaluation of claims and arguments. Inference identifies questioning of evidence/proof, considering alternatives and drawing conclusions. Explanation includes reaching conclusions and affirming procedures. Self-regulation means self-evaluation and self-correction.

Individuals can experience skills and sub-skills, which were taken within the scope of the Delphi research, to a certain extent, or they can give weight to certain skills in a certain time period of their lives. However, this is not a legitimate reason for not including critical thinking in the education system (2010).

After the Delphi research, qualifications of a good critical thinker are determined as follows: (a) habitually inquisitive, (b) well informed, (c) trustful of reason, (d) open-minded, (e) flexible, (f) fair minded in evaluation, (g) honest in facing personal biases, (h) prudent in making judgments, (i) willing to reconsider, (j) clear about issues, (k) orderly in complex matters, (l) diligent in seeking relevant information, (m) reasonable in the selection of criteria, (n) focused on inquiry, (o) persistent in seeking results (Facione, 2000).

During Delphi research, the dispositional side of critical thinking was at the forefront. According to the authorities, each cognitive skill is associated with the associated critical thinking disposition. The panelists agreed that there is a critical stance, a quest for the credible information that a critical thinker possesses. Being

open-minded, inquisitive, honest in facing biases, ready to use critical thinking are listed among dispositional sides of critical thinking (Facione, 1990). At the end of this research, the consensus statement regarding critical thinking and the ideal critical thinker is the following:

> We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based. CT is essential as a tool of inquiry. As such, CT is a liberating force in education and a powerful resource in one's civic life. While not synonymous with good thinking, CT is a pervasive and self-rectifying human phenomenon. The ideal critical thinker, is habitually inquisitive, well informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Thus, educating good critical thinkers means working towards this ideal. It combines developing CT skills with nurturing those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society. (p. 2)

2. 4 Critical thinking in university and college

Kurfiss (1988) argues that one's unique thinking style is a product of a long process, shaped by three factors: An innate tendency towards a specific style - like the right brain or left brain – learned through the processes of cut and try, positive reinforcement and the experience of formal education. In this part, the latter - more specifically, the functions of colleges and universities - will be delved into.

One of the studies which investigated intellectual and ethical development in college belongs to Perry and associates (1970), while another one belongs to Belenky and associates (1986). Perry and associates conducted two separate studies, which lasted four years each at Harvard and Radcliffe. They investigated intellectual development of students via interviews. The first interview series aimed to build the

conceptual framework. The other series aimed to validate this framework. On the one side, Perry came up with three major steps and their nine sequential sub positions regarding how people perceive the world. These are the following: Dualism or multiplicity that includes position one to three, relativism that includes position four to six, finally relativism that includes position seven to nine. Kurfiss (1988) mixed the two research findings up and summarized the intellectual growth in four groups. These are listed below: Dualism/ received knowledge, multiplicity/subjective knowledge, relativism/ procedural knowledge, and commitment in relativism /constructed knowledge. In the first level, students hold the belief that knowledge is accumulated through various facts. Thus, learning involves obtaining knowledge taught by the professor. What he teaches would be correct. Besides, the professor here is considered to be a source of authority, and students are expected to keep quiet. Instead of showing signs of strong personality traits such as passivity or vocationalism, their defiance against critical thinking shows a sign of developmental difficulty while they face a more complicated world than they would expect. The second level is called multiplicity/subjective knowledge. Before students can accept the challenges and responsibilities of independent thinking, they must recognize that conflicting doctrines are an inevitable and legitimate feature of opinions. Many conflicting opinions occur during courses such as humanities and social sciences. In that stage, students are aware that there are many opinions. In terms of critical thinking, multiplicity/subjective knowledge is vital. The third level is called relativism/ procedural knowledge. In this stage, individuals realize that opinions differ according to some criteria. Finally, the fourth stage is called commitment in relativism/constructed knowledge. In that stage, people integrate knowledge gained

outside with their inner knowledge and combine them according to their individual characteristics.

Another study conducted between 1992 and 1996. Facione and Giancarlo researched the effects of the four-year-education process of students on their critical thinking dispositions, in a private university. The findings based on surveys gathered from 147 subjects, pointed out that for students who have had a four-year-long university education, there was a statistically significant rise in truth-seeking, self-confidence, and overall California Critical Thinking Disposition Inventory (CCTDI) scores. Another study conducted with students at higher education is the research by Esmer and Altın (2013) on whether or not the intellectual style preferences of teacher candidates change in a semester. In this study, Thinking Styles Inventory was applied to 794 teacher candidates studying in the following departments: Primary School Education, Science and Technology Education, Social Sciences Education in the Department of Primary Education; English Language Education in the Department of Foreign Language Education; Religion and Ethics Education; and Music Education in the Department of Fine Arts Education. The researchers revealed that the averages of the legislative, executive, judicial, monarchic, hierarchic, external, internal, and liberal subscales were lower in the 2nd implementation than in the 1st implementation. On the other hand, those with higher averages in the 2nd implementation than in the 1st implementation belonged to the oligarchic, anarchic, global, and conservative subscales. The findings of the study suggest that the intellectual styles of teachers may change in a semester. The researchers put forward that this finding supports the opinion that intellectual styles can be learned and may be subject to change. The researchers stated that one of the variables that affects the differing intellectual styles might be the education that teacher candidates receive. Furthermore, the researchers

highlighted the significance of organizing environments and the academic subjects to be learned in a way to ensure the development of the dominant intellectual style.

Paul, Elder and Bartell (1997) conducted a study that sought to examine teaching practices and knowledge of critical thinking among faculty members in teacher preparation programs in California, and exemplary teaching practices that enhance critical thinking. The study included 38 public colleges and universities and 28 private ones. Drawing from the findings of the study, they also attempted to create and offer policy recommendations. The study employs a "minimalist" concept of critical thinking and problem solving. This is because the study represented and reflected the vital aspects of the concept; namely, important descriptions and clarification in the literature, essential values it takes for granted, its word history, dictionary description, its significant examinations, and a background to the development of the concept. The study also resorted to detailed interviews in order to collect information on how critical thinking is considered by faculty members, and how their thinking affects course content and design. The questions asked in the interviews aimed to illuminate how faculty members educate their students to help them acquire critical thinking skills and the competence to teach critical thinking to other people. The analysis of the views stated in the interviews aimed to reveal the number of faculty members with an advanced view on critical thinking and the extent to which there was internal coherence in the views expressed by faculty members. The number of interviewees reached 140 in the study. This corresponds to 78% of the faculty members who were contacted to participate in the interviews. The findings of the study demonstrate that even though the vast majority (89%) asserted that critical thinking was the main objective in their classes, only 19% managed to provide a clear explanation of critical thinking. The answers provided by the faculty

members indicate that those who teach courses by targeting first and foremost critical thinking accounted for only 9% of the interviewees. 50% of the interviewees stated that they can overtly differentiate between critical thinking skills and traits whereas only 8% could clearly explain critical thinking skills that are considered vital for students to acquire. In addition, the vast majority (75%) could make either very little or imprecise remarks (33%) or none (42%) about intellectual traits of the mind. The overwhelming majority (78%) put forward that proper intellectual standards were not something their students possessed; while 73% believed that the most important thing was for their students to learn how to evaluate their own work. In spite of these rates, a mere 8% of the respondents managed to list some intellectual criteria and standards that they themselves expected of their students or managed to clearly explain those criteria and standards. 77% of the interviewees had either little or no understanding of how to integrate content coverage with the development of critical thinking although the great majority (89%) said that critical thinking was an essential component of their teaching. Merely 9% of the faculty members could clearly state how to assess how a faculty member encouraged critical thinking. 81% of the faculty members thought that the graduates of their department developed a good level of critical thinking ability during their undergraduate years while 20% stated that their departments offered a common approach to critical thinking.

Baykal and Esmer's (2010) study on the selected personal tendencies of teachers can also be considered in this context. There are eight tendencies: Activeness, Sociability, Scientific Objectivity, Optimism, Compliance, Creativity, Intuitiveness, and Critical Inquiry. These eight tendencies were analyzed via the Internet by using a Personality Tendencies Scale, an 80-item Likert-type scale developed by Baykal. 2,018 teachers participated in the study. The results revealed

that the highest average belonged to intuitiveness. Computer teachers meaningfully ($p < 0.005$) constituted the least intuitive cluster. Intuitiveness also overweighed scientific objectivity in science and math. Classroom teachers, plastic arts teachers, and Turkish language and literature teachers were the ones who made up the highest intuitive cluster. It was found that the sociability sub dimension did not differ across fields while the most significant difference was in inquiry.

One last study of critical thinking among faculty members was done by Mac Keen Palmer (2007). This study worked on part time members at college level and was concerned with the role of external factors. It used the California Critical Thinking Dispositions Inventory (CCTDI) extensively in measuring the relationship between tutors' characteristics and inclinations towards critical thinking. The major variables here were the degree, academic discipline, teaching experience and familiarity with critical thinking. The sample was collected in different academic disciplines at a four-year private liberal arts university in the Midwestern United States, and consisted of one hundred and twenty part time faculty members. In this study, major differences in terms of experiencing critical thinking were observed and a significant positive correlation between the CCTDI score and variables was found. Ultimately, it suggested that teachers with formal training show firmer inclination towards critical thinking. Also, it proposes that teachers with positive critical thinking dispositions tended to use critical thinking as a learning tool as well as a catalyst of fruitful discussions in the classroom.

2. 5 Vygotsky and Sociocultural Theory

As Bruner states (2009) after the cognitive revolution, two divergent conceptions about how the mind works appeared. Both have different interpretations regarding

the human mind and have different implications for education: (a) Computational Approach, and (b) Culturalism. According to the computational approach, the mind is conceived as a computational device. It deals with information processing; that is to say, how finite, coded, and unambiguous information about the world is sorted, stored, collected, and retrieved. The objective of this view is to discover a redefinition of any and all functioning systems that manage the flow of well-formed information. In other words, the main argument is that any and all systems that process information must be governed by specifiable rules. There is a widespread belief that we should be able to discover something about how to teach people to program computers effectively. Clarity and well-formedness delineate this approach. Its tendency is to be inside out. The focus is on the individual rather than on the individual in a collective space; and it is mechanical.

Culturalism approaches people and education in a different way. According to culturalism, human culture is the main constituent of the human mind. It deals with how people in cultural communities create and transfer meaning. The evolution of people is related to the development of a way of life. The reality is represented by symbolism. Only after comprehending this symbolism and the way people use tools in a given culture can one come up with an understanding of how the mind works. Thus, learning and thinking are always situated in and dependent upon the utilization of cultural resources. Meaning making is possible through the use of tools that a culture provides.

Culturalism seeks to bring together insights from psychology, anthropology, and linguistics; that is to say, human sciences in general. Its approach is to be outside-in. In other words, it is the science of subjectivity. From an educational perspective, culturalists investigate why education is situated in the culture the way it

is, and how this reflects the distribution of power, status and other benefits. It works in two dimensions: the macro level and the micro level.

Culturalism adopts a different approach to education. That education is not an island but a part of the continent culture constitutes the basis for culturalism. The main concerns of culturalism are the mission of "education" in a culture and to what extent it is important for those who make use of it. Furthermore, there are other issues that culturalism is concerned about such as how the existing resources are open to public, and how much of these resources are open to public via "education", education here being an institutional term.

One of the thinkers who uses a combination of human nature and culture to explain human development is Lev Semanovich Vygotsky. According to Vygotsky, understanding people is only possible through understanding the culture of which they are a part. He believes that people exist in a social area formed by history, not in space. This cultural context provides people with specific tools such as language, pieces of art, various symbols, books, etc. The connection of people to the world was made possible thanks to these tools. Hence, people create meaning of life regarding the social conditions typical of them. Vygotsky includes culture in the learning process with all these ideas that he puts forward. He argues that the actual direction of thought development is from social to individual rather than from individual to social. When looked at human development within the framework of this notion, it is possible to anticipate what awaits the individual depending on the tools the environment is equipped with. This means that the more prosperous life is, the better human development can be achieved in parallel with this life.

Vygotsky is a prominent figure in that he thinks that the sociocultural-historical paradigm is of prime importance as it directs the understanding of the

individual under social, cultural and historical circumstances that the individual is involved in. What lies behind Vygotsky's theory is that he deals with the individual's development and learning process as a social and cultural process rather than an individual one (Kozulin and his friends, 2003). The principal idea that he puts forward in his short lifetime is based on various fields including child development and the psychology of education. He probes into the connection between thought and language, the formation of concepts such as development and education as well as every day and academic terms, and the relation among all these (Kozulin et al. 2003). His focus is on the relation between development and learning as well as the socio-cultural nature of this relation (Kozulin and his friends, 2003).

The notions he works on are psychological tools, symbols, mediation, academic vs. scientific concepts along with every day concepts, learning activity and the zone of proximal development (ZPD). Young states that Vygotsky is also a prominent figure in the quest for the definition of knowledge and its role in curricula. His distinction between every day and academic concepts and his distinction of higher forms of thinking, particularly his notion of zone of proximal development, are especially important in this quest (2008). In addition, analytical and psychological tools and the human mediator, which are also the cornerstones of the cultural historical theory, are mentioned by Vygotsky since psychological tools and the human mediator might be accepted as agents in connecting to the world and knowledge.

For Vygotsky (1926/ 1997), a person is made up of a biological factor that embodies innate and acquired reactions. The acquired reactions are determined by the milieu in which a person is born and develops. Hence, a person is the sum of his/her history, culture and complex nexus; and s/he cannot be addressed without

taking these elements into consideration. Vygotsky states: “It is not nature, but society that above all else might be considered to be the determining factor in human behavior” (1960, p. 116 cited in Wertsch, 1985). According to Young, the social character of thought and the mind are the lessons that Vygotsky drew from Levy-Bruhl. In other words, Vygotsky agrees with Levy-Bruhl who advocates different types of psychology in line with different types of societies (2008).

As stated, people have certain natural/ inborn universal traits; namely, involuntary attention, simple perception and natural memory. In time, s/he begins to use auxiliary stimuli to make contact with the world. Kozulin states that there are three classes of mediators; namely, material tools, psychological tools and human mediators (1995). Thus, all psychological operations are changed through the transition of these mediators (Vygotsky, 1978). By using these auxiliary components, one may function at higher mental processes. Gredler and Shileds (2008) give an example of a memory experiment in which a school age child chooses the picture of a chair to represent the word “house,” since the house is the place that one sits in (Luria, 1959 in Gredler& Shileds). Vygotsky (1987/ 1997) draws an analogy between using auxiliary stimuli and the use of tools by people:

> The invention and use of signs as auxiliary devices for solving any psychological problem confronting man (to remember, to compare something, communicate, select etc.) are from the psychological aspect, at one point analogous to the invention and use of tools. Such essential traits of the two concepts being compared we consider the role of these devices in behavior to be analogous to the role of sign**.** We have in mind the function of stimulus-device fulfilled by the sign with respect to any psychological operation that is a tool of human activity. (p. 60)

Gredler and Shields (2008) mention that the mere acquisition of some new psycho-physiological processes does not define what the higher cognitive processes are. The development of new ways of thinking based on a system of signs leads to a higher cognitive process. In other words, new cognitive abilities are developed through

incorporating into the process the auxiliary stimulus that causes people to function at a higher level, and to go beyond the biological heritage, which is not universal, but historical. These cognitive abilities are called voluntary attention, categorical perception, conceptual thinking, and logical memory.

According to Vygotsky, higher mental processes are not built up on elementary processes, but are renewed regulations. Instead, they act according to a new order (1987/ 1999). He states "Each higher mental function is thus a unit of a higher order determined basically by a unique combination of a series of more elementary functions in a new whole" (p. 43).

The historical facets of these processes are also explicitly stated by Vygotsky through his qualification of these components via culture. More specifically, Vygotsky defines culture as something based on the differentiation of natural development, elementary cognitive processes and higher forms of thinking through signs and symbols (Gredler & Shields, 2008).

What comes to the forefront in his theory seems to be the fact that he connects higher mental processes to social interaction. In other words, one actualizes himself/ herself through his/ her interactions in a social world. This idea seems to be clear with regard to his notion of human mediator and his notion of zone of proximal development, in which the interaction of the child with a more competent person is pre-eminent.

2.5.1 Basic concepts

2.5.1.1 Zone of Proximal Development (ZPD)

According to Kozulin and his friends, the zone of proximal development is the most well-known and popular concept, yet it could not have been completely understood

(2003). The reason for this obscurity might be linked to Vygotsky's use of the concept in three different contexts. Vygotsky uses the ZPD developmentally to express the psychological functions of the child. In practice, he utilizes it to represent the distinction between the child's individual performance and the performance that s/he exhibits with support from another person. Finally, he uses the ZPD to metaphorically mean "field", and in this sense, the term represents the area in which the child's every day notions come together with the ones s/he is provided with by his/her teachers or other mediators (Kozulin and his friends, 2003). He describes the ZPD as follows:

> The zone of proximal development defines those functions that have not yet matured, but are in the process of maturation, and functions that will mature tomorrow, but are currently in an embryonic state. These functions could be termed the "buds" or "flowers" of development rather than the "fruits" of development. (Vygotsky, 1978, p. 86)

In Vygotsky's work, the ZPD is explained in terms of identifying the ability to solve problems beyond one's actual developmental level if one were to be given support by a competent person (Wink & Putney, 2002). Through interacting with more competent people in the ZPD, one may learn the manner of thinking and problem solving provided by the culture.

In the ZPD, one may learn to solve problems and use tools for thinking provided by the culture via interacting with more competent collaborators. One is stimulated to use cultural tools and to show such performance independently thanks to these transmissions. These activities in the ZPD make it possible for the child to perform activities that are impossible to do alone (Rogoff, 2003). Ash and Wells (2006) state that the ZPD assists people in realizing countless ways to see one's development supported by others through interaction and the tools used in the process.

2.5.1.2 Spontaneous concepts and academic concepts

In the Vygotskian perspective, the distinction between spontaneous and academic concepts is pivotal (Panofsky, Steiner & Blackwell, 1990). Spontaneous concepts refer to one's own observations and experiences in a given environment and are necessary for the emergence of scientific concepts. One begins to learn them through interactions with others in the socio-cultural milieu (Wink & Putney, 2002). That is to say, one obtains a conception spontaneously through interacting with others as part of experiences in the socio-cultural context, after which comes scientific concepts that are mainly school-based acquisitions. It seems that every day concepts signify one's actual level of thought whereas scientific concepts or the process of learning scientific concepts signify acquisitions in one's ZPD.

As Panofsky, Steiner and Blackwell put forward, according to Vygotsky, spontaneous learning is completely different from instruction, which is the way to teach scientific concepts. The instruction has a prominent effect on the Subjects in terms of forming voluntary attention and logical memory, which are among the higher mental processes (1990). Besides, volition and awareness are the components of the act of knowing. Here, the development of scientific concepts differs from that of everyday ones. The analytical procedures are the starting point in the development of scientific concepts whereas everyday concepts derive from the exposure of the individual to the actual experience. Panofsky, Steiner and Blackwell give an illustrative example. For instance, a child may have a generic understanding of the concept of brotherhood, yet s/he may not be able to define it in words. On the contrary, the same child may define what Archimedes' Principle is without an actual realization. Therefore, scientific concepts are acquired verbally and through rationalization whereas spontaneous concepts are not (1990). In terms of the

distinction between scientific and every day concepts, the illustration seen in Table 1 by Young (2008) is explanatory:

Table 1 Vygotsky's Types of Learning Elaborated on by Young (2008)

Site of learning	Out of school		In school	
Types of concepts	Everyday	Scientific	Everyday	Scientific
Use of concepts				
Routine	1	2	5	6
Reflexive	3	4	7	8

According to the elaboration mentioned in Table 1, Young states that Vygotsky focuses more on helping learners to move from 1 to 8 within school. Young links this aim to the conditions of the Soviet Union in Vygotsky's time, and accordingly, to his focus areas. Thus, Vygotsky pays less attention to the intermediate stages. For example, he attaches less importance to the move from 1 to 3, which is the reflexive use of every day concepts. Besides, he puts little emphasis on the move from 1 to 4 (2008).

Young mentions that Vygotsky, rather than emphasizing the difference between these two concepts -scientific and every day- stresses their interrelatedness, yet at the same time, he shows the limitations of every day concepts in terms of their insufficiency, which might be a further guide for today's educationalists (2008).

2.5.1.3 Psychological tools

Psychological tools appear as another prominent component in Vygotsky's approach since it might be argued that they are the carriers that make it possible for one to make connections with the world and also with knowledge. Psychological tools stand for "language, different forms of numeration and counting, mnemotechniques,

algebraic symbolisms, works of art, writing, schemes, diagrams, maps, blueprints, all sorts of conventional signs" (1982- 1984/ 1997, p. 85). As it is stated, they are historical. The influence of the mind and behavior is required in order to accept a stimulus as a psychological tool (Gredler & Shileds, 2008). Vygotsky (1982- 1984/ 1997) states the following:

> The most essential feature distinguishing the psychological tool from the technical one is that it is meant to act upon mind and behavior, whereas the technical tool, which is also inserted as a middle term between the activity of man and the external object, is meant to cause changes in the object itself. The psychological tool changes nothing in the object. It is a means of influencing one's own mind or behavior or another's. (p. 87)

Based on the above-mentioned points, it might be argued that when the environment and offered psychological tools change, the structure of the cognitive activity may change as well. The research that was conducted in 1931 and 1932 in Uzbekistan by Vygotsky and Luria shows that investigating the socio-cultural dimension of mental processes may serve as an example of this fact. The research was carried out in the Kinghizia area where people experienced collectivization and related social changes. The research addressed the following areas: Generalizations, abstraction, inferences from syllogisms, problem solving, imagination, self-analysis and self-awareness. Luria (1976) concludes that a new stage of social and historical practice is reached, and the mental activities have changed as a consequence of people's changing activities. Luria also states "These are not simply limited to an expanding of man's horizons, but also involve the creation of new motives for action and radically affect the structure of cognitive process." (p. 161)

2.5.1.4 Human mediator

As mentioned above, besides psychological tools, another mediator is the human mediator. Kozulin mentions that there are two approaches of Vygotsky regarding the

human mediator. The first one refers to Vygotsky's insistence on child learning from interpersonal relations followed by intrapersonal processes. Vygotsky (1978) mentions that the cultural development of a child appears twice. The first one appears on the social level while the second takes place on the individual level. Thus, higher mental processes have their roots in human interrelations.

The second one refers to the function of other people as meaning carriers. Vygotsky states, "Only through others we become ourselves; this rule applies to each psychological function as well as the personality as a whole" (Vygotsky, 1983, p. 144 in Kozulin, 1995).

CHAPTER 3

METHODOLOGY

This study aims to set the framework for critical thinking dispositions of the university students in their early adulthood along with their reflections on critical thinking dispositions and on critical thinking in general. In this research, mixed methods sequential explanatory design was employed. Below, the sample is described; the instrument used in the research is explained; the interview questions are touched upon; and, finally, the procedure is specified.

3.1 Sample

3.1.1 Quantitative part

The present study has been carried out among undergraduate students from the Faculty of Education of a state university in Istanbul, Turkey, which had an enrolment of 14,967 students in undergraduate, graduate, and English preparatory school programs in the academic year 2013-2014. The university's vision can be briefly stated as enhancing its capability in both undergraduate and graduate education, joining the top research universities by fostering its competitiveness in academic research, and cultivating a sustainable and green campus. The university's mission is to educate and develop individuals as environmentally conscious persons who respect ethical standards and endorse institutional values, who are creative, versatile and employable in academic institutions as well as in public and private sectors, who can think critically, generate universal knowledge and serve humanity by contributing to science and technology, who can expand the

scientific horizons in Turkey and enhance the institutionalization of science, art and culture in society.

The Faculty of Education programs that have been established with the goal of training students as competent teachers, counselors, and educators, also to accommodate facilities to meet physical, social and cultural needs of students. Students in the Faculty of Education are provided with access to sports and arts facilities and activities as well as literary events that are organized by various student clubs. Additionally, one of the core principles of the Faculty is to encourage students to take part in international exchange programs.

The Faculty of Education includes five undergraduate departments and nine programs; namely, the Department of Educational Sciences, the Department of Computer Education, the Department of Science Education, the Department of Primary School Education, and the Department of Foreign Language Education. The Department of Educational Sciences offers a program in Guidance and Psychological Counseling while the Department of Science Education offers three programs; namely, Physics, Chemistry and Mathematics. In the Department of Primary School Education, there are three programs offered in Primary School Mathematics Education, Preschool Education, and Science Education. The number of students in the following departments and programs are illustrated in Table 2: Primary School Education, Computer Education, Educational Sciences and Foreign Language Education (D. Özüdoğru, personal communication, September 20, 2015).

Undergraduate courses in the Faculty of Education consist of vocation-related courses. Within the Faculty's program, there is no requirement of taking a course related to critical thinking. "Undergraduate and graduate programs in the Faculty of Education are among the first choice of university candidates in Turkey."

Table 2 Departments and Number of Students in the Faculty of Education 2014-2015

	1st Semester			2nd Semester		
	Female	Male	Total	Female	Male	Total
Primary School						
Preschool Education	197	7	204	204	7	211
Primary School Math. Education	184	34	218	183	32	215
Science Education	163	30	193	161	27	188
Computer Education	92	141	233	90	138	228
Educational Sciences	280	62	342	286	59	345
Foreign Language Education	376	75	451	370	73	443

The Subjects of the quantitative part of the study were students in their first four years in the Faculty of Education. Students registered in English preparatory classes and students in their 5th year in the Science Education Department are not included. This is firstly because English preparatory classes are not included within the undergraduate program, and secondly not all programs have a fifth year.

The sample is selected through using both stratified and convenience sampling. In order to collect data from all departments, the researcher aimed to reach the instructors of all departmental courses. Mass courses were targeted intentionally in order to reach the maximum number of students. After the schedules were set with the instructors, the researcher collected data from the students who were present in classes. A total of 663 students participated in the quantitative part.

3.1.2 Qualitative part

20 people from the sample who filled out the questionnaire and volunteered to be an interviewee participated in the qualitative part of this research. The researcher made an announcement during each session the questionnaire was applied in classes, and

the students who volunteered gave their contact number to the researcher. The students were chosen for the interview from among the students who filled out the questionnaire. This was the first intersection point of the quantitative and qualitative parts.

3.2 Instrument and interview questions

3.2.1 Quantitative part

In this study, the Turkish version of CCTDI, namely the CCTDI-T was used with the purpose of delving into the first research question. Additionally, in order to learn demographical information about the Subjects, the Subjects were asked to reply to seven questions. This part was to be completed before the CCTDI-T. Among the questions, gender, age, department, grade level, type of high school the student graduated from, the levels of education of the students' mother and father were included.

3.2.1.1 The California Critical Thinking Disposition Inventory- CCTDI, its reliability and validity

The CCTDI was designed by Facione for the Delphi project carried out in the 1990s by the American Philosophical Association. The original language of the inventory is English; it consists of 75 items, and has seven subscales. The subscales are as follows: Truth-seeking, open-mindedness, analyticity, systematicity, confidence in reasoning, inquisitiveness and maturity of judgment. Responses are recorded using a 6-point Likert scale ranging from 'strongly agree' (1) to 'strongly disagree' (6).

Facione (2000) states that "The process of developing a good educational assessment tool of any kind begins with the construct, or idea, that one seeks to

measure" (p. 67). The construct validity of the instrument depends on how well that idea has been articulated, and on how well the tool captures the idea. According to Facione (2000), since the Delphi report expressed a consensus construct of critical thinking, this report provides a useful opportunity for tool development. Writing candidate items was the next step in the development of the CCTDI. The research team first developed 250 statements followed by the validation of these items via qualitative methods. Methods that include talk-aloud and conversational strategies with people in the target group were employed. Later, item modification followed. Facione states that this is the second form of validation (2000). Researchers then eliminated items that failed to discriminate among test takers. Thus, the CCTDI that consisted of 75 items was put into its final form. Factor analysis of the CCTDI reveals seven distinct elements (Giancarlo & Facione, 2001).

With regard to construct validity, the instrument development team also examined the relationship between the CCTDI and other cognitive and psychological constructs. Significant relationships were observed between the dispositions toward critical thinking and the constructs' openness to experience and ego-resiliency. Four of the seven CCTDI scales were found to be significantly in correlation with openness to experience. In the same study, the CCTDI scales were also significantly correlated with ego-resiliency, which refers to a person's ability to alter his/her modal perceptual and behavioral functioning to adapt to situational constraints; that is, being a flexible and adaptable person. All seven of the CCTDI scales were positively correlated with a measure of ego resiliency (CCTDI Test Manual, 2010).

In terms of reliability, the CCTDI has a Cronbach's alpha of .91 for the overall disposition score. In the test manual, internal consistency reliability coefficients from English language samples of those who took the CCTDI were

reported as follows: .70-.78 for truth-seeking, .67-.74 for open-mindedness, .70-.73 for analyticity, .72-.74 for systematicity, .75-.78 for self-confidence, .78-.82 for inquisitiveness, and .73-.76 for maturity of judgment (2010).

In addition to the United States, the CCTDI is used in more than 25 countries all around the world (CCTDI Test Manual, 2010). In the test manual, it is stated:

> The CCTDI measures the attitudes and values that influence the test taker's capacity to learn and to effectively apply critical thinking skills: Disposition toward truth-seeking or bias, toward open-mindedness or intolerance, toward anticipating possible consequences or being heedless of them, toward proceeding in a systematic or unsystematic way, toward being confident in the powers of reasoning or mistrustful of thinking, toward being inquisitive or resistant to learning, and toward mature and nuanced judgment or toward rigid simplistic thinking. (p. 4)

In terms of the subscales, truth-seeking refers to the tendency of evaluating ideas and alternatives whereas open-mindedness stands for being sensitive to one's own mistakes and also allowing others to voice their views with which one may disagree. Analyticity means using objective evidence and reasoning when faced with challenging situations. Systematicity means striving to approach problems in a disciplined, orderly, and systematic way rather than in a disorderly manner. Confidence in reasoning reflects an individual's self-confidence depending on the reasoning processes. Inquisitiveness signifies the expression of an individual's curiosity. Finally, maturity of judgment refers to cognitive development.

The Subjects who scored 50 and above in these subscales are accepted as having a high critical thinking disposition whereas the ones who scored less than 40 points are regarded as being devoid of critical thinking disposition. A score of 40 or higher means a positive disposition towards critical thinking. Scores can range between 10 and 60. Overall, the range of the CCTDI scores was between 70 and 420 points. While scores equal to or higher than 280 points imply a positive disposition

towards critical thinking, scores equal to or lower than 210 points indicate a negative disposition toward critical thinking.

3.2.1.2 The Turkish version of the CCTDI: The CCTDI-T

The Turkish version of the CCTDI, namely the CCTDI-T is prepared by İskifoğlu in 2013. İskifoğlu is the official translator and the official copyright holder of the translated version of the CCTDI. In the Turkish version of the instrument, the number of items is 75, and there are seven subscales of the inventory, namely, truth-seeking, open-mindedness, analyticity, systematicity, confidence in reasoning, inquisitiveness, and maturity of judgment. Different from the original version, responses are recorded using a 6-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (6).

İskifoğlu (2014) tests the cross-cultural applicability of the CCTDI through testing measurement equivalence of the inventory across American and Turkish populations. He assesses the psychometric equivalence of the CCTDI by utilizing data from 583 Turkish and 448 American students from different teacher training programs. The phases of the adaptation process include the following steps. After the translation and back-translation process, both linguistic versions, English and Turkish of the CCTDI, were checked in terms of psychometric properties. First, content validity of the CCTDI was investigated. The researcher selected five Turkish and five American experts as content validators. Content validity index from Waltz, Strickland and Lenz (1991) was provided for the experts. Each item of the inventory was rated from 1 to 4 in terms of content domains, clarity, simplicity, and ambiguity. 1 stands for 'not relevant', 'not clear', 'not simple', and 'doubtful' while 4 stands for 'very relevant', 'very clear', 'very simple', and the meaning is clear. In terms of

content validity, the CCTDI in Turkish ranged from .83 to .99. For the English version, it ranged from .97 to 1 (İskifoğlu, 2013). The researcher also examined the internal consistency reliability, test-retest reliability followed by a confirmatory factor analysis (CFA). İskifoğlu (2013) reported that alphas for the subscales ranged from .81 to .90 for the CCTDI-T, and ranged from .85 to .91 for the English CCTDI. In terms of test-retest reliability, İskifoğlu (2013) concluded that there is evidence of the existence of test-retest reliability at 0.01 significance levels for both the Turkish and the American samples.

3.2.2 Qualitative part

Within the scope of this work, interviews were conducted with 20 Subjects. Two pilot interviews were made; and the researcher made sure that the questions were clearly understood by the Subjects. In the current study, the interview process was conducted as follows. Prior to the interviews, the students were asked to sign a consent form indicating that they agreed to take part in the study. In the first part of the interview, the backgrounds of the students were investigated. To that end, students were asked to respond to questions inquiring what kind of families they were raised in, what kind of students they were at school (e.g. whether they were hardworking or not), and about their relationships with their friends. The main part of the interview aimed to explore how the students defined critical thinking. Furthermore, on the basis of these definitions, their current life experiences of critical thinking were explored through questions inquiring whether or not they employ critical thinking while they interact with their families and friends; while they use the social media; and while they attend lectures. They were also asked to share their life experiences. A total of 15 questions were asked to the students (Appendix B). In the

questions number two to number nine, the seven dispositions of the CCTDI and the CCTDI-T constituted the basis. With these questions, the objective was to investigate how the Subjects evaluated their personal experiences regarding truth-seeking, open-mindedness, analyticity, systematicity, inquisitiveness, self-confidence, and maturity of judgment. Since these questions were based on the seven dispositions of the CCTDI, it can be argued that this part accounts for the second intersection point of the qualitative and quantitative dimensions in the research design. The interviews lasted 40-50 minutes on average.

3.3 Research design

This study is a descriptive one where a mixed-methods sequential explanatory design was used. In such designs, the qualitative part, the text and data are collected; and it provides help to explain or analyze the quantitative results that are obtained in the first phase of the design. In this research, the researcher first collects a large amount of data as background information followed by the specific reflections of a small group of 20 people on the topic.

Mixed methods research refers to combining both quantitative and qualitative findings in a single study. Mixed methods research is defined by Creswell (2003) as a study in which knowledge claims are based on pragmatic grounds such as consequence-oriented research, problem-centered research, and pluralistic research. Accordingly, mixed methods research relies on simultaneous or sequential data collection strategies in order to better comprehend research problems. The data collected in mixed methods research includes both numerical and textual information, and the resulting database is composed of both qualitative and quantitative data (2003).

Creswell (2003) argues that the origins of mixed methods research probably date back to Campbell and Fiske's study in 1959, which utilized multiple methods for assessing the validity of psychological traits. Their study encouraged the use of a multi-method matrix to investigate multiple data collection methods in a study. Bryman (2007) asserts that studies integrating quantitative and qualitative methods will be more informative as the findings obtained by each of these methods will enhance the interpretation of the findings obtained by the other. He suggests that the data obtained by different methods talk to each other as if in a conversation or debate; and that the goal of the researcher adopting a mixed methods approach is to construct a negotiated account of what these findings mean together. Bryman also emphasizes that mixed methods are not necessarily a tool for testing the findings of various methods against each other. Rather, the objective is to create an overall or negotiated account of the findings that combine information obtained through different methods (2007).

As Ivankova, Creswell and Stick (2006) state, researchers adopting a mixed methods research strategy make a number of important choices when planning their research. Accordingly, researchers need to decide on the method that will have priority in their research design; how they will manage implementation issues; how and when they will connect the quantitative and qualitative stages of the research; and how they will integrate the results of different methods to answer their research question. In the first phase of the current study, a quantitative method was utilized to identify the critical thinking dispositions of the students and for selecting students for the second phase. The second phase, on the other hand, adopted a qualitative approach and aimed at delving in students' critical thinking dispositions as well as their personal stories based on critical thinking in general. In other words, while the

quantitative data obtained in the first phase provided an overall understanding of the research problem, the qualitative data collected in the second phase of the study provided more in-depth data on the views of the Subjects on their experiences; and it was utilized for examining and explaining the statistical findings in depth.

3.4 Procedure

3.4.1 Quantitative part

Prior to the study, the research design was presented to the Human Research Corporate Assessment Commission of the University (Appendix C). After obtaining the required permissions, the researcher contacted the official translator of the CCTDI-T and received his consent to use it in this research (Appendix D). Compulsory courses for all the students in the Faculty were selected, and the professors of those courses were asked for permission to collect data for the research. 22 professors were contacted. 15 out of 22 professors replied positively, and the rest did not reply. Two of the professors who replied positively agreed to conduct the study in two different sections of the same course. Therefore, all data was gathered in a total of 17 sessions, and the process lasted approximately for five months. The researcher agreed with the professors who replied positively that the scales would be presented at the scheduled time of the sessions. The researcher distributed the scales to the students to be filled out. Prior to that, students were presented with consent forms, and their consents were received (Appendix E). A research assistant helped both during the hand-out and the collection of the scales. Filling out the scale took almost 20 minutes. After collecting the scales, data was transmitted to Excel and then to SPSS. To use the data obtained in the quantitative section, this study reached 663 Subjects in total.

3.4.2 Qualitative part

Students who were selected from among the group that filled out the questionnaire and who agreed to participate in the study were presented with consent forms; and their consents were received (Appendix F). Semi-structured interviews were conducted in Turkish with a total of 20 students, and all the interviews were recorded. With respect to the saturation point, having interviews with 20 students convinced the researcher that the number of students reached the saturation point. The Subjects were interviewed by the researcher only. All recorded data was transcribed by assistants and the researcher. The ideas and views of the Subjects stated in this research were translated into English by a professional translator. Original Turkish quotations are provided in Appendix A.

3.5 Data analysis

3.5.1 Quantitative part

As a part of the CCTDI-T, the scores for seven subscales and attitudes and the overall score was determined by the Insight Assessment, which is the owner of the scale. Then, CFA was conducted via AMOS 22.0. Within the framework of CFA, items 29 and 49 were deleted, significant <0.05. Then, factor loadings standardized loadings preferred to be higher than .30.

The level of CFA in the current dissertation is the one who searches for a correlation between factors, which is the second level factor analysis. Based on the CFA findings, reliability analysis was conducted. For reliability, Cronbach alphas coefficients were analyzed. According to the structure obtained, each subscale and the total scores were analyzed in terms of gender, class and department in order to figure out whether there is any difference. Therefore, t-test, one-way ANOVA was

used. An independent sample t-test was employed to examine the differences in critical thinking dispositions between female and male respondents. One-way ANOVA was used to examine if there was a significant difference between grade levels and departments.

3.5.2 Qualitative part

In this research, semi-structured interviews were conducted. The interviews were analyzed by drawing on the constant comparative method. Özdemir (2010) reported that constant comparative method is of the most frequently used techniques in qualitative research. Boeije (2002) states that to develop a theory, researcher categorizes, code, delineate and connect via comparing. She also states that comparison is one of the ascendant tenets of qualitative investigation. In the current research, the data obtained from the interviews were thoroughly analyzed, and the patterns observed in the responses were listed. In the second stage of the review process, the statements listed from the first review were analyzed by another independent researcher, who has an M.A. degree from the same university as the researcher. As a result, the reviewers reached a consensus on the template.

CHAPTER 4

FINDINGS

In this section, the findings based on the analysis of the CCTDI-T and interview data are presented. This section firstly consists of the analysis of the CCTDI-T data gathered with the participation of 663 students who are enrolled in five departments in the Faculty of Education, and who are in the first four years of their studies. Secondly, the analysis of the in-depth interviews conducted with 20 students among the CCTDI-T Subjects follows.

4.1 Findings from the CCTDI-T

In this study, the CCTDI-T was conducted with the participation of students who are enrolled in five departments of the Faculty of Education in a Turkish public university based in Istanbul, and who are in the first four years of their studies. 800 students were contacted and they were requested to fill out the questionnaire. 663 out of the 800 completed questionnaires were usable. Student scores both for the overall scale and also for each of the seven sub-scales were calculated by the Insight Assessment. Demographic information, descriptive statistics and the results of the comparative analyses are presented below.

4.1.1 Demographic characteristics

The Subjects were students who are in their first four years of education in the Faculty of Education. Students who are registered in English preparatory classes and students who are in their 5th year in the Science Education Department were not included in the study. This research was completed with the participation of 552

female students (83.5%) and 109 male students (16.5%), and the final sample consisted of 663 students in total.

Before the CCTDI-T, Subjects were asked to state their age, gender, department, grade level, type of high school, and educational levels of their mothers and fathers. Firstly, respondents were asked to report how old they were. As it is illustrated in Table 3, while majority of the students (27.8%) reported that they are 20 years old, 23.6 percent of the respondents reported that they are 21 years old, and even a smaller percent of the students (15.9%) reported their age as 22.

Respondents were asked to state which high school they graduated from. In the current sample, it was found that teacher-training high school was the type of high school most graduated from. As Table 3 providing the educational status of parents illustrates, the mothers of the students are predominantly primary school graduates, whereas their fathers are predominantly university graduates.

When it comes to the distribution of students by department, as shown in Table 3, the Department of Primary School Education was the most crowded department; and the students of this department made up 31,8% percent of the sample. This department was followed by the departments of Foreign Languages Education, Educational Sciences, Secondary School Science and Mathematics Education, and Computer Education, respectively.

Analysis of the student distribution by grade level revealed that second graders constituted the most crowded group with 250 Subjects accounting for 38% percent of the sample. As Table 3 demonstrates, second graders were followed by first graders, third graders and fourth graders, respectively.

Table 3 Subject Characteristics

		Count	Column N %
Age	=<19	131	19.8%
	20	184	27.8%
	21	156	23.6%
	22	105	15.9%
	>=23	85	12.9%
Gender	female	552	83.5%
	Male	109	16.5%
Department	GUID	146	22.0%
	CET	66	10.0%
	SCED	73	11.0%
	FLED	167	25.2%
	PRED	211	31.8%
Class	1.00	182	27.7%
	2.00	250	38.0%
	3.00	117	17.8%
	4.00	109	16.6%
High school	regular high school	19	2.9%
	Anatolian high school	152	23.0%
	teacher training high school	411	62.1%
	Other	80	12.1%
Mother education	illiterate	17	2.6%
	literate and primary	294	44.9%
	middle school	47	7.2%
	high school	174	26.6%
	university	123	18.8%
Father education	illiterate	4	0.6%
	literate and primary	181	27.5%
	middle school	51	7.7%
	high school	177	26.9%
	university	246	37.3%

4.1.2 Confirmatory Factor Analysis results

Using the Confirmatory Factor Analysis (CFA) implementation of the AMOS 22.0 software package, measurement models were checked if they were significant under each scale. The results show that the measurement models are acceptable. In the next stage, the significance of the whole model was checked using the criteria of high adequacy. As the sample size was increased, especially with samples that had more than 200 elements, the Chi-squared (x^2) value comes out to be large and the Chi-squared (x^2) test shows a statistically insignificant result.

When it comes to CFA-assessing the scales used in the research and deciding whether the models tested are acceptable, the researcher utilized the Chi-squared value normalized by the degree of freedom, that is, (x^2/d.o.f.). Also, other adequacy indices and standardized residual covariance matrix values were utilized.

In the factor analysis that was done using 46 items from CCTDI-T, it was realized that the seven sub dimensional structure was kept intact, and the errors related to the Factor Analysis were within acceptable bounds. As can be seen in Figure 1, in all dimensions, the item factor loadings exceed 0.30. In the TSR (truth seeking) sub dimension, five of the 12 items have been eliminated, leaving behind seven items. In this sub dimension, since all the factor loadings vary between 0.30 and 0.53, and all items have p-values below 0.05, the sub dimension has been kept intact. In the OPE (open-mindedness) sub dimension, seven out of 12 items have stayed intact. In this sub dimension, since all the factor loadings vary between 0.31 and 0.57, and all items have p-values below 0.05, the sub dimension has been kept intact. In the AN (analyticity) sub dimension, five out of 11 items have stayed intact. In this sub dimension, since all the factor loadings vary between 0.36 and 0.58, and all items have p-values below 0.05, the sub dimension has been kept intact. In the

SYS (sytematicity) sub dimension, four out of 11 items have stayed intact. In this sub dimension, since all the factor loadings vary between 0.30 and 0.49, and all items have p-values below 0.05, the sub dimension has been kept intact. In the CTR (critical thinking self-confidence) sub dimension, eight out of nine items have stayed intact. In this sub dimension, since all the factor loadings vary between 0.43 and 0.76, and all items have p-values below 0.05, the sub dimension has been kept intact. In the IN (inquisitiveness) sub dimension, eight out of 10 items have stayed intact. In this sub dimension, since all the factor loadings vary between 0.36 and 0.54, and all items have p-values below 0.05, the sub dimension has been kept intact. Finally, in the MAR (maturity of judgment) sub dimension, seven out of 10 items have stayed intact. In this sub dimension, since all the factor loadings vary between 0.33 and 0.55, and all items have p-values below 0.05, the sub dimension has been kept intact. After the necessary modifications have been made, the actual model fit values calculated for the model have been listed in Table 4. The test for covariance values between sub dimensions is provided in Table 5.

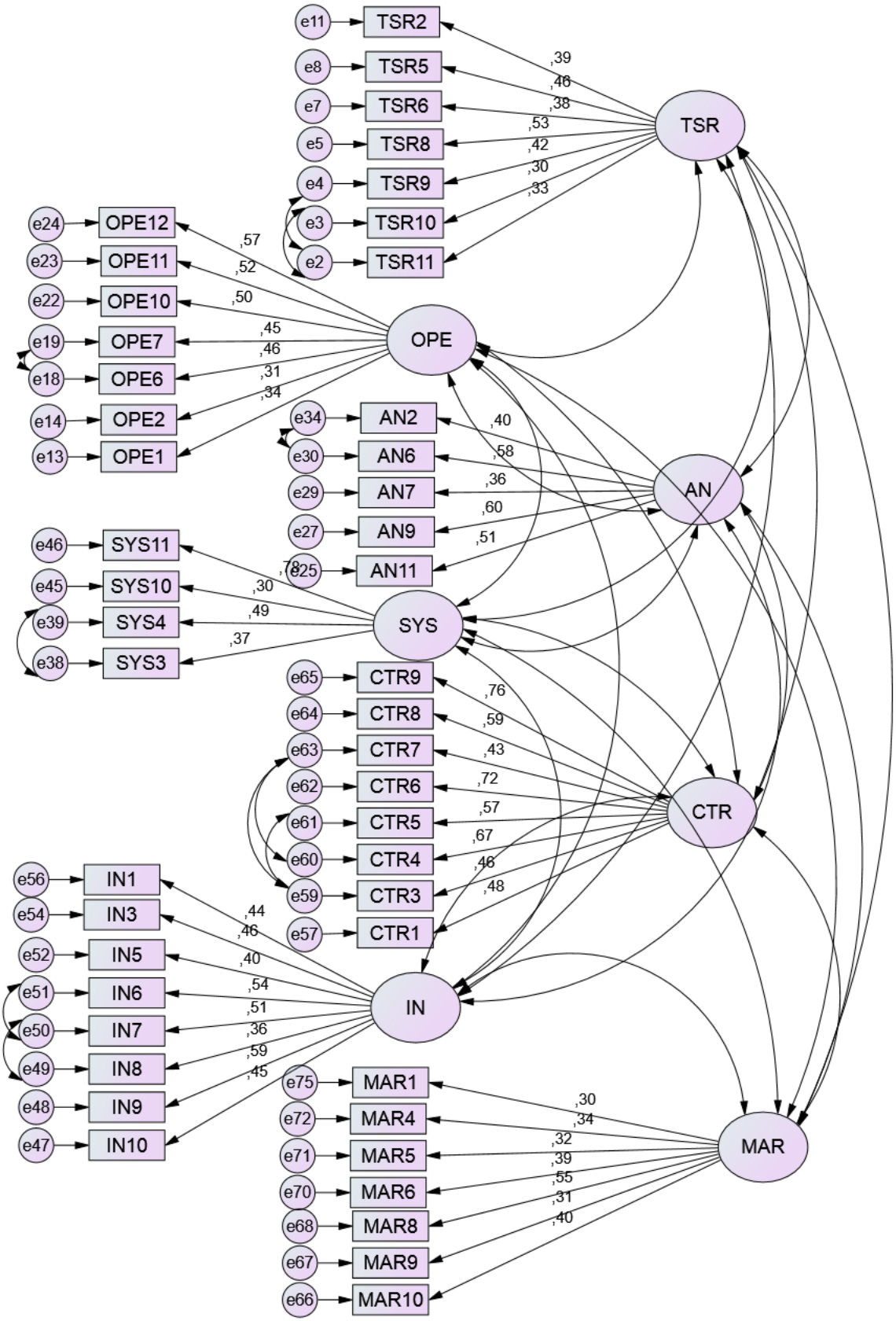


Figure 1 Confirmatory factor analysis of CCTDI-T

Table 4 Standard Good Fit Criteria and the Actual Model Fit Values

nb	Fit Criterion	Good Fit	Acceptable Fit	Actual Model Fit Value
1	x^2	-	-	2518.747 (df=958)
2	x^2/df	$0<x^2/df<2$	$2<x^2/sd<3$	2.629
3	RMSEA	0< RMSEA <0.05	0.05< RMSEA < 0.08	0.050
4	GFI	0.95 < GFI < 1.00	0.90 < GFI < 0.95	0.854
5	CFI	0.97 < CFI < 1.00	0.95 < CFI < 0.97	0.776
6	SRMR	0< SRMR <0.05	0.05< SRMR < 0.10	0.0635

Since the model fit values found with the CFA were $x^2 = 2518.747$ and $x^2/df = 2.629$, CFA is significant. Moreover, since the adequacy index values RMSEA = 0.05 and SRMR = 0.0635, which are within acceptable bounds, the CFA result is deemed to be acceptable. However, the values of CFI and GFI were not within acceptable boundaries, though pretty close to them. When an expert was consulted, it was learned that the reason for this anomaly could be due to the large sample size. (R. Minga, personal communication, April 11, 2016). All the covariance values within the sub dimensions had p-values less than 0.05, showing our approach was adequate. The highest covariance value that was observed was between the AN and SYS sub dimensions with the value of 0.267.

Table 5 The Test for Covariance Values Between Sub dimensions

Var1		Var2	Estimate	S.E.	C.R.	P
TSR	<-->	OPE	0.132	0.025	5.352	***
TSR	<-->	AN	0.142	0.024	5.954	***
TSR	<-->	SYS	0.129	0.025	5.214	***
TSR	<-->	IN	0.116	0.022	5.301	***
TSR	<-->	CTR	0.108	0.020	5.360	***
TSR	<-->	MAR	0.198	0.034	5.757	***
OPE	<-->	AN	0.074	0.016	4.523	***
OPE	<-->	SYS	0.052	0.015	3.542	***
OPE	<-->	IN	0.149	0.025	5.862	***
OPE	<-->	CTR	0.072	0.015	4.696	***
OPE	<-->	MAR	0.163	0.030	5.493	***
AN	<-->	SYS	0.267	0.037	7.202	***
AN	<-->	IN	0.195	0.026	7.402	***
AN	<-->	CTR	0.266	0.031	8.615	***
AN	<-->	MAR	0.073	0.021	3.552	***
SYS	<-->	IN	0.164	0.027	6.042	***
SYS	<-->	CTR	0.211	0.032	6.689	***
SYS	<-->	MAR	0.063	0.020	3.167	***
IN	<-->	CTR	0.157	0.023	6.790	***
IN	<-->	MAR	0.124	0.024	5.147	***
CTR	<-->	MAR	0.034	0.017	2.016	0.044*

Legend: *P<0.05 ***p<0.001

4.1.3 Reliability of the CCTDI-T

A reliability analysis was conducted for the sample. The reliability of the overall scale was found to be 0.874. Therefore, it is understood that the overall scale has reached a high reliability level. Each subscale of the CCTDI-T appeared to have high internal consistency. Reliability coefficients for the subscales were recorded as follows: truth seeking (including 7 items) 0.596; open mindedness (7 items) 0.610; analyticity (5 items) 0.633; systematicity (4 items) 0.618; inquisitiveness (8 items) 0.708; self-confidence (8 items) 0.812 and maturity of judgment (7 items) 0.514. Although the conventional ideal alpha level is considered to be 0.65 and more, even

0.45 is acknowledged as adequate in large samples (A. S. Diri, personal communication, October 15, 2015).

4.1.4 CCTDI-T results

The first research question was the following: What are the critical thinking dispositions of the students in the Faculty of Education? This question had four sub-questions: (a) What are the critical thinking dispositions in the Faculty of Education based on the seven dispositions of the CCTDI-T, namely open-mindedness, truth-seeking, inquisitiveness, analyticity, systematicity, self-confidence, and maturity of judgment (b) Is there a relationship between gender and the critical thinking dispositions of the students in the faculty? (c) Is there a relationship between the grade levels of students regardless of their department and critical thinking dispositions? (d) Is there a relationship between the departments of students and critical thinking dispositions? Descriptive statistics and comparisons of these statistics for each sub-question are presented below.

4.1.4.1 Descriptive statistics

As far as their overall scores are concerned, students from Faculty of Education were positively disposed towards critical thinking (M= 296.02, SD= 31.33) as shown in Table 6. Scores were normally distributed (Appendix G). Before CFA, overall scores and the subscale scores were the following: Overall: 289.98; truth-seeking: 36.42; open-mindedness: 44.86; analyticity: 43.21; systematicity: 36.91; inquisitiveness: 41, 68; maturity of judgment: 42.29 and self-confidence: 41.68.

Table 6 CCTDI-T Sub-scores and Total Score

Measure	M	SD
Truth-seeking	37.75	6.85
Open-mindedness	48.72	5.70
Analyticity	42.63	6.46
Systematicity	34.89	8.54
Inquisitiveness	46.22	6.45
Self-confidence	40.69	6.97
Maturity of Judgment	45.08	6.20
Overall	296.02	3133

Descriptive statistics regarding the sub dimensions are provided in Table 7.

Table 7 Descriptive Statistics of Scale Sub Dimensions

	Mean	Standard Deviation	Median	Mode	Minimum	Maximum
Truth-seeking	37.76	6.85	37.14	35.71	20.00	55.71
Open.	48.73	5.70	48.57	47.14	24.29	60.00
Analiticity	42.64	6.46	42.00	44.00	18.00	60.00
System.	34.89	8.55	35.00	32.50	12.50	60.00
Self conf.	40.70	6.98	41.25	41.25	13.75	60.00
Inquis.	46.22	6.45	46.25	47.50	20.00	60.00
Maturity	45.09	6.20	45.71	44.29	21.43	60.00
Overall	296.03	31.34	295.57	257.75	198.39	378.00

4.1.4.2 Comparative analysis

The second sub-question of the first research question was whether or not there is a relationship between gender and critical thinking dispositions. In order to examine the relationship, an independent sample t-test was conducted. Statistical analysis of the empirical data reveals a meaningful relationship between gender and critical thinking dispositions. There was a significant effect for gender with men receiving higher scores than women in truth-seeking, systematicity, inquisitiveness. There

was a significant effect for gender with women receiving higher scores than men in maturity of judgment. The t-test results are provided in Appendix H.

In order to answer the second sub-question inquiring whether there is a relationship between the grade levels of students and their critical thinking dispositions, one-way analysis of variance was conducted. Findings illustrated that in terms of their critical thinking dispositions, there was no statistically significant difference between first graders, on the one hand, and second, third and fourth graders, on the other hand.

In order to investigate whether there is a relationship between the departments that students are enrolled in and students' critical thinking dispositions within the scope of the third sub-question, one-way analysis of variance is conducted. Significant differences between departments are observed for the open-mindedness and maturity of judgment subscales. For both scales, the mean scores for the Department of Foreign Languages found to be higher than those for the Department of Primary Education. With regards to open-mindedness, there is a difference between the departments of Foreign Language Education and Science Education. The average of Foreign Language Education, 50.17, is meaningfully higher than that of Science Education, which is 47.35. The groups containing differences are looked into with Tukey, a post-hoc test. Appendix I presents the ANOVA and the post-hoc results.

4. 2 Findings from interviews

This chapter presents the analysis of the interviews made with voluntary students from five different departments in the Faculty of Education. Two of the interviews were pilots, while the other 20 make up the actual qualitative part. When we look at

the profiles of the students, it can be seen that female students account for the majority. Only one student is male. The Faculty of Education mainly consists of females. This situation also reflected on the female to male ratio of the voluntary students from whom data was collected.

As it is illustrated in Table 8, three of the students interviewed are from the Guidance and Psychological Counseling Program whereas four are from the Department of Secondary School Science and Mathematics Education.

Table 8 Profile of Subjects

ID	Gender	Age	Dept	Grade	High sc.	Mot. edu	Fat. edu
1	Male	22	CET	2	AVHS	PS	PS
2	Female	23	CET	4	TVHS	PS	PS
3	Female	21	GUID	3	AHS	PS	PS
4	Female	23	SCED	3	TTHS	PS	AC
5	Female	22	SCED	4	TTHS	UN	UN
6	Female	20	SCED	2	AHS	PS	PS
7	Female	20	PRED	1	AHS	HS	AC
8	Female	22	FLED	3	ATTHS	HS	OP
9	Female	20	FLED	1	ATTHS	PS	PS
10	Female	23	GUID	4	ATTHS	MS	PS
11	Female	20	PRED	2	SHS	HS	UN
12	Female	20	GUID	4	ATTHS	PS	HS
13	Female	20	PRED	2	ATTHS	PS	PS
14	Female	22	PRED	3	ATTHS	UN	UN
15	Female	24	FLED	4	ATTHS	PS	PS
16	Female	21	FLED	3	ATTHS	PS	PS
17	Female	21	FLED	3	ATTHS	HS	UN
18	Female	21	SCED	3	ATTHS	PS	SEC
19	Female	21	PRED	3	ATTHS	HS	HS
20	Female	21	FLED	3	ATTHS	MS	MS

Two of the students interviewed are from the Department of Computer Technology while six continue their education in the Department of Foreign Language Education. Five students are from the Department of Primary Education. The age range of the

students is between 20 and 23. Half of the students graduated from teacher training high schools. Three of the students continue their education in the second year, three in the third year, four in the fourth year, and two in the first year in university.

4. 2. 1 Emerging themes

The understanding of critical thinking of the students in the Faculty of Education and its manifestation in their lives are provided via five main themes as follows: (1) students' perceptions about critical thinking; (2) students' self-reflections about their critical thinking dispositions; (3) students' usage of critical thinking; (4) students' evolvement of critical thinking and (5) the nexus between courses and critical thinking.

4.2.1.1 Theme 1: Students' perceptions about critical thinking

This theme deals with the way students define critical thinking; and it is observed that students consider critical thinking in three main frameworks as follows: Acts and attitudes associated with the concept of critical thinking; traits attributed to people with critical thinking skills and disposition; and the perception of critical thinking extending from positive to negative.

Acts and attitudes associated with the concept of critical thinking

During the interviews, a series of acts were associated with critical thinking. These acts can be listed as looking at events from different perspectives, analysis, querying, mental efforts, evaluating situations based on circumstances, objectivity, interpretation, turning abstract into concrete, and search for reality.

When defining critical thinking, the idea of difference came to the forefront and looking at events from different perspectives was emphasized by more than half

of the Subjects. For example, student number 4 expressed her opinions as follows: “I think critical thinking is to be able to see an event from its different sides. I mean, it is to be able to criticize what one sees according to both oneself and in terms of what the thoughts of others might be.” On the other hand, Subject #1 expressed views regarding the possible existence of various sides of events as follows:

> Well, it is to think that something put in front of us might not always be that actually. You know, they put a painting in front of you. To think that the painting is only drawn by the painter in that way, another painter can draw that differently when he/she looks at that object, he/she can deal with a detail differently. (See Appendix A, 2)

In parallel with the opinions above, Subject #3 used the expression of analyzing. Querying is another act that was associated with critical thinking by the students. Subject #9 stated the following: “It directs the person to ask questions and questioning instead of accepting a phenomenon straight away.” Subject #2 said: “It is to question situations in depth.”

Critical thinking can be considered together with reason, logic and mental effort by the students. Subject #8 stated the following about mental effort: “It necessitates real thinking, thinking over.” In parallel with this opinion, critical thinking was named as mind movement by Subject #10. Subject #11 defined critical thinking as not having plain logic. Evaluating situations based on circumstances was another act that was emphasized. Subject #7 stated the following: “One needs to deal with the subject that is criticized together with its past.”

Objectivity is another point that was emphasized. Subject #5 and #7 put an emphasis on the necessity of being objective. Subject #4 described critical thinking as interpretation and stated the following: “Critical thinking, well, is to criticize what you see both according to yourself and also in terms of what the thoughts of others might be. You know, I used the same word, but let me say it is to be able to

interpret." Subject #3 described it as the transformation of abstract into concrete. Subject #4 defined critical thinking with search for reality: "I think it might have a purpose such as revealing the reality." Subject #11 adopted a different perspective and talked about being creative.

Traits attributed to people with critical thinking

The Subjects described the person who is expected to apply critical thinking as somebody who is self-aware, has a strong personality, knowledgeable, broad-minded, has been in different places, and as somebody who thinks. For example, Subject #10 said the following: "Maybe it seems like a skill that people with a strong personality or people who know themselves better can do." Subject #10 presents strong personality as a trait of the critical thinker. On the other hand, Subject #8 associated critical thinking with being knowledgeable: "Being knowledgeable is necessary, too. We cannot approach anything critically without knowing about it, it would be just to have blind faith."

Having a wide perspective was also emphasized by the subjects. For example, Subject #5 said the following: "By whom can critical thinking be done? I think it can be done by somebody who has a wide perspective."

The perception of critical thinking that extends from positive to negative

During the interviews, half of the Subjects stated that they perceived critical thinking as negative in the first stage; however, as they thought about the concept, their opinions moved towards positive. Subject #3 expressed her opinions as follows: "Criticism is usually negative, but it becomes positive when thinking and research are involved." Some of the students expressed that they perceived critical thinking as

positive. An example to positive perception can be the opinion of Subject #8: "Well, let me say it is close to positive. Really, in recent years, I have started to realize its significance. I have always thought a lot about why we did not go through an education of this kind at school." Subject #2 stated a negative opinion by saying: "Even though I know it is not right, a negative thought appears."

The starting point for the Subjects who perceived critical thinking as negative in the first stage and then changed their views towards positive or for the Subjects who perceived critical thinking only as negative may be related to their interpretation of the concept of criticism as adopting a negative attitude towards other people's opinions with whom they disagree. Critical thinking was interpreted as the act of criticizing used in daily Turkish by some students by accepting it as ascribing a negative meaning, not as a thought systematics. For instance, Subject #4 stated the following as an example to the negative effect stemming from Turkish: "When we say critical thinking, generally, something negative comes to mind, because criticism is generally, in our concept, well, it entered our Turkish as such, generally it creates a negative concept in the mind." Similarly, Subject #9 described the perception of critical thinking that extends from negative to positive and its reflection on Turkish as such:

> At first, a negative image appears. The reason for that might be that the concept of criticism has generally been interpreted negatively in our society. Yet, when I think about this concept in depth, I see that it is not a completely negative concept. (See Appendix A, 3)

To sum up, students associated critical thinking with looking at events from different perspectives, objectivity, querying, reasoning, analysis, turning abstract into concrete, interpretation, evaluating situations based on circumstances, search for reality and mental efforts. They stated the necessity for a critical thinker to have certain traits. The critical thinker was described as an objective, knowledgeable and

creative person with a strong personality, who knows oneself and who has been in different places.

4.2.1.2 Theme 2: Subjects' self-reflections about their critical thinking dispositions

This theme highlights the self-perceptions of Subjects regarding their overall critical thinking disposition and the seven dispositions, which are the following: Open-mindedness, inquisitiveness, analyticity, systematicity, truth-seeking, self-confidence, maturity of judgment.

Overall critical thinking disposition

First, Subjects were asked how they considered themselves in terms of their critical thinking disposition. Subjects number 2, 3, 7, 8, 9, 10, 14, 16, 18 and 19 stated that they considered their critical thinking disposition ambivalent. On the other hand, Subjects number 5, 6, 11, 12, 13, and 15 positively commented on their critical thinking disposition. Subjects number 1, 4, 17 and 20 described their levels in terms of critical thinking disposition as very high. No Subject described his/her critical thinking disposition as low. Describing his critical thinking disposition as high, Subject #1 stated the following: “My critical thinking disposition is pretty high. Sometimes, I also think about why I criticize things that much. Sometimes, it is hard to accept things the way they are.” Describing his/her critical thinking disposition as ambivalent, Subject #7 commented:

> I think my critical thinking disposition is high. I think I approach topics critically when I come across topics that I’ve thought a lot about or topics that I’ve never thought about - that I encounter for the first time. However, I prefer to choose the “ambivalent” category since I realize that I use particularly some expressions in daily life without giving them a thought. To give an example, I learned that the proverb “If you lie down with dogs, you will rise up with fleas” contains discrimination last week in one of my courses and I realized that I didn’t think about it until then. (See Appendix A, 4)

Open-mindedness

Subjects were asked about their approaches to differences. This question aimed to reveal Subjects' views on open-mindedness, a critical thinking disposition. All of the Subjects stated that they had a positive approach to differences. Trying to be objective and struggling to empathize with others was identified as ways to approach differences. Some Subjects mentioned a line of development in their approach to differences. For example, Subject #7 described her line of development over student club activities in university:

> I don't think I am; let's not say tolerant or indulgent, not a moderate or accepting person but I have some other characteristics. Yet, I am a person who tries to accept differences as much as possible. Sure, I have some prejudices, but maybe it would be better to give an example. I can mostly think of my student club activities. In my freshman year in university, I attended the Smiling Eyes Project when I joined the Social Service Club. There were children under state protection. What was in my mind when I was going there was 'they are different from me', 'they are in a pitiable condition' or 'everyone there doesn't have parents.' As I became more involved, now for instance, Nursery Schools and Orphanages are a completely different concept than they used to be. I don't say orphans. I say children under protection. It can be hard for me to immediately tolerate or understand differences but when I start something new, if I devote my mind and myself and get used to it, then I can easily accept it. I can soothe my prejudices or different opinions within myself. (See Appendix A, 5)

Some of the Subjects emphasized that their university had a positive effect on their open-mindedness. For instance, Subject #4 stated the following:

> I think I respect differences. My respect to differences increased even more after I began university. I had my own frameworks until I came here, but they increased even more after I came here, because as I got to meet different people, I came across different views. There were many cases when I said "this also makes sense," "this can also be considered like that", and "you are right in that point". (See Appendix A, 6)

Subject #5 mentioned a course he attended named Lifespan Development, and stated that this course developed his/her approach to differences. Subject #6 talked about her approach to differences based on the criteria of not hurting him/her: "I can

tolerate differences as long as they don't hurt me. At least, I don't feel the need to intervene with them." Subject #11 touched upon the developing aspect of differences:

> I believe that always spending time with people who think alike blunts me. So, I try to participate in different events with different people as much as possible. I believe what people want to consider black and white can sometimes also be grey. So, I believe that opposite things or things that seem to differ from each other can meet at one point. Wouldn't blending differences bring a great diversity to us? (See Appendix A, 7)

Two of the students perceived the concept of difference as something out of the routine and put forward that they were not pleased with changes in the routine. However, they also stated that they approached people's differences positively. For example, Subject #13 said:

> Frankly, I'm not a person who loves differences a lot. In fact, I adapt to things very quickly but still I don't like differences. I want my routine to continue just the way it is. But, when it comes to differences, if we are talking about individual differences; that is another story. Even if I don't approve of people's opinions or attitudes, I try to respect them as much as I can (see Appendix A, 8).

Subject #15 stated that she categorized her approach to differences and mentioned in which topics she could not accept differences: "Logically, I consider differences a value and respect them. I am quite far away from homophobia and nationalism. I can be a little bit more prejudiced about religion but I don't project it onto people."

To sum up the student approaches to differences, all students interviewed stated that they adopted a positive approach to differences. It was observed that university life and various elements in university played a significant role in shaping approaches to differences. When some students were describing their approaches to differences, it was observed that they had a clear view about to what extent and in which topics they could be open-minded. Furthermore, students mentioned a line of change and development in their approaches to differences.

Inquisitiveness

Another question "How do you consider yourself in terms of acquiring new information and comprehending complicated issues?" aimed to reveal students' views on inquisitiveness, a critical thinking disposition. 12 of the students approached acquisition of new information and approach to complicated issues positively. One student stated that he/she used to be more eager with regard to the items mentioned above. It was observed that students employed certain methods to acquire information: The methods listed were checking information with different sources, getting expert opinion, and checking source reliability. For instance, Subject #9 said the following:

> I make use of various sources to acquire new information and to comprehend complicated issues. I pay attention to the reliability of these sources. For example, I used to think that Wikipedia would undisputedly provide me with correct information; however, I now know that I need to question the source and reliability of information on the Internet. (See Appendix A, 9)

Subject #7 stated that many of her ideas developed as she did research on different topics in university:

> I have a huge interest in too many fields. Naturally, I consider myself open to learning new information. And actually, I developed many ideas through new information that I acquired after I started university. To give an example, my mentality was dominated by masculine views caused by social pressure before I started university, but now it changed into the opposite, an authentic mentality, knowledgeable about gender equality. (See Appendix A, 10)

Subject #13 described the effect of the social atmosphere in university on acquiring new information and approaching complicated issues:

> For me, everything used to seem too complicated before I started university. Taking the English preparatory class, passing the English proficiency exam, then listening to courses in English and the exams being in English... All seemed too hard or even impossible for me. But then I said to myself "many people start university the way I do right now and I will be successful like them" and I am in my junior year. (See Appendix A, 11)

Systematicity

The interviews tried to reveal students' views on systematicity, a critical thinking disposition, by asking them the question "How do you approach complicated subjects?" Subject #9 drew an analogy to describe how she approaches complicated subjects: "This question evoked an image of a knotty rope. I can find an end to hold the rope, and slowly try to make sense of it. In complicated subjects, I start from a point that I understand and proceed from that." Similarly, Subject #13 detailed the method she uses with an analogy:

> There is an untidy house and it is all dirty and messy. Where would you start? I would first begin by collecting the garbage, meaning the unnecessary information. Then, I would tidy up the rooms one by one. That is to say, I would divide the subject into categories. In this way, I would tidy up around the house and sit in a room. That means I would take the useful information after I divide the subject into categories. (See Appendix A, 12)

Some of the students linked their approach to complicated subjects with certain factors. Among the elements put forward by the students were the level of complicatedness of the subject, whether or not the subject is interesting, and whether or not there is any support. Subject #7 dealt with her approach to complicated subjects in terms of whether or not it attracts her attention:

> If I'm not interested in complicated subjects, unfortunately, I don't ever approach them. Yet, if it is a complicated subject that attracts my attention, I try to understand it starting from its basis at a simple level. I don't know whether it is related, but the only complicated subject that comes to my mind is the programming language in computers. As a basic computer user, I am interested in programming for no reason, but it is complicated for me both because I didn't take any course on the subject and also I don't have any background information. I try to learn java, the basic language in programming, by starting from subjects such as what a programming language is and what it does. (See Appendix A, 13)

As it is mentioned above, some of the students associated their approach to complicated subjects with its content and the support from outside. For instance, Subject #4 stated the following:

> Actually, I am a very curious person but I think I easily give up. I love trying new things; these are the things that bring excitement into life. However, I study mathematics in university and I need support when there are too many complicated things around. If I can't get any support, I sometimes give up easily. I need a more competent person to support me. This support can be in the form of motivation or a technical support. (See Appendix A, 14)

To sum up, while some of the students considered their approach to complicated subjects successful, some associated this with the content of the subject, its degree of complicatedness and whether or not there is any support. Some of the students stated that they first cross out unnecessary information, and then deal with the subject when they approach complicated subjects; while some put forward that they detect a starting point to deal with the subject, and then they proceed from that point.

Analyticity

What the students have found out about analyticity, which is one of the critical thinking tendencies, has been tried to be understood with the question of "What kind of opinions do you look for in order to understand an argument?" The students have listed some methods to understand an argument and various criteria regarding that argument. Those methods have been listed as such: To examine the argument by taking it apart, to identify what field it belongs to and to evaluate the topic accordingly, to look for some comments and evidence on the topic, to try to predict the probable results, and to check if the argument is consistent or not. As for the criteria taken into consideration, they are as follows: To what extent the student will benefit from the topic who came up with it, and how reliable the sources are.

Subject #6 has underlined the consistency of an argument and said: "Consistency matters for me. If there is a text, first, I care about consistency, as it is very important. I think about the consistencies and controversies of it with regard to

my inner world. I pay attention if consistencies or controversies dominate the text." The Subject #9 has identified her way of thinking as such: "I check for the supporting and denying ideas about an argument. I analyze them and decide which is more appropriate/closer to my opinions or purpose." And Subject #10 has talked like this:

> First of all, I think of what it is that makes me get interested in that topic. Additionally, I try to find out what I will get if I search and learn that topic. For instance, I question if I am learning something, as it is required for a lesson or an activity? It is a better way for me to consult people about something rather than just googling it on the Internet. Let's assume I would like to get my master's degree on clinical psychology. What I would do first would be to consult my instructors and friends about it instead of just searching it. To follow this way makes me feel more valuable. (See Appendix A, 15)

It has been observed that students have depicted some criteria in the frame of analyticity and evaluated the arguments according to those criteria. Instead of an ordinary point of view, they have adopted such methods.

Self-confidence

The interviews aimed at finding out students' views on the self-confidence subscale, a critical thinking disposition, by asking them the question of how much they are satisfied with their own reasoning. It was observed that all students except Subject 19 were satisfied with their reasoning and that they also stated the points they lack in that respect. For instance, stating that she is generally satisfied with her reasoning, Subject 2 added: "I am overall satisfied with it but I think I lack in certain points. For example, while I take reasonable decisions in the family, I sometimes realize that I take wrong decisions because of my ambitiousness and because I am defeated by my anger."

Some of the students described their level of reasoning as medium. Subject 4 stated the following:

> I guess I am not that good. I think I am of medium level. For example, if they ask me about a subject and if I have some background information about it, I can come up with certain ideas. Sometimes, I can even come up with original ideas, but I generate ordinary and normal ideas in general. When we are discussing something as a group, and the teacher starts a topic and says let's talk about it and others come up with a really original idea, I say to myself what a nice idea it is. I am not really good, I am normal. (See Appendix A, 16)

An example to those who are satisfied with their reasoning is Subject #6:

> I am happy with it. It satisfies me. I am from the Department of Mathematics Education. This field might be considered a field that requires memorization and that has formulas. Yet, for instance, it is better for me when I discover something on my own or when I use my reasoning. That is because I have a weak memory and I have other strengths. I like something if I can rationalize it. In that sense, I love the way I think. It helps me more rather than memorizing. I think it becomes lasting when I do that. I have my own ways of doing things. When I share them with my friends, I have my unique methods that they haven't thought about before. They might have their own as well. (See Appendix A, 17)

Subject #12 mentioned the effect of communicating with different people on self-confidence in using her reasoning: "Perhaps, I wasn't that good until now. But, you know, as I met people and learned their thinking styles, I think I have established my own system, something of my own. Considering events from different aspects, reaching a conclusion from similarities and differences, empathizing, reaching a correct conclusion through reasoning, objectivity and the effect of university were the points made prominent by the students when they were talking about the things they were satisfied with themselves in terms of reasoning. Among the characteristics they listed when they were describing their reasoning as of medium level were having difficulty in exciting and stressful occasions; being defeated by ambitiousness; being obsessed; not being open-minded to topics they are not interested in; having difficulty in generating original ideas; and being prejudiced. To

sum up, the answers provided by the students to the question on self-confidence in reasoning fall into three categories: those satisfied; those generally satisfied but lacking certain things; and those describing their level of reasoning as medium. One student is not satisfied. The students revealed the reasons why they were satisfied or unsatisfied with their reasoning of medium level.

Truth-seeking

The interviews sought to reveal students' views on truth-seeking, a critical thinking disposition, through asking the interviewees the question "Would you explore views even if they disagree with your views?" The answers in this category fall into three groups: those who certainly explore all subjects; those who explore some but not all subjects; and those who do not explore opposing views. One of the students stated that she explores opposing views much more.

One of the students who certainly explore opposing views was Subject #3 who said: "It is not important for me that something supports my views. I'd like to learn about the opposing view to find out whether or not it can strengthen my view." Another student who belonged to the same category was Subject #11:

> I definitely explore. I believe that there is no absolute truth and that learning about different ideas somehow develop people. I think learning about opposing views also helps an individual's own views to be strengthened. In fact, sometimes, the things you accept as right might turn out to be wrong. I think the way to understand this is to constantly explore and learn. (See Appendix A, 18)

Stating that she sometimes explores opposing views, Subject #4 expressed the following:

> I like exploring, especially if the subject attracts my interest. To be honest, it doesn't always happen. If you defend a view, you need to learn about its "anti" so that you can better defend your view. At least, to convince myself, I love exploring when I think about the reasons why I think in a certain way.

> That is because I think I can't see my deficiencies or weaknesses without knowing about opposing views. (See Appendix G, 19)

Adopting a different perspective, Subject #7 stated that she explores opposing views more: "Actually, I explore the opposing views more. I think that it will be more illuminating and healthy for me to explore the opposing views if I already have some views on the subject." A student who does not explore opposing views, Subject #13, stated the following: "To be honest, I don't explore views that do not support my views. It might shake my faith in me. Of course, it is better to learn the right one but still I don't explore opposing views." Subject #6 drew attention to the different atmosphere created by discussing opposing views in person, and described how she reacted to opposing views when discussing a subject face to face with others:

> I can explore and research but when it comes to discussing it face to face with others, I can be protective. I believe in my opinions a lot. It feels like I already filtered them on my own. I don't see the other aspects of the opposing view. If I wonder about something, I can check it. Yet, I do this in my field of interest. I can sometimes be more protective when I am out in the open. Even when we are discussing why a character in a movie did something with my friends, I insist on my ideas if I think differently than my friends. When I am alone, I can refute their ways of thinking. However, it is a little difficult for me to think on the subject when I am discussing it with others. (See Appendix A, 20)

To sum up, it was observed that the overwhelming majority of the students explored opposing views either always or sometimes. A student stated that she does not explore opposing views while another student put forward that she explores opposing views more. The atmosphere created by sharing opposing views face to face with others was also highlighted.

Maturity of judgment

Are you one of those who act according to the complexity of the problems? This question has enabled us to understand maturity of judgment, one of the critical

thinking tendencies of the students. It has been observed that the students have experienced an improvement and a change with respect to maturity of judgment. While some students have stated that what aroused their attention was related to the topic, and touched upon their ideas about the structure of the topic, some students have approached it more emotionally. That is, they have focused on what the topic meant for them, and how it influenced their emotions and their mood. Subject #5 has expressed a change with regard to the realization of the complexity of topics:

> I was not like that before. I had only one perspective and I had more fixed ideas in my mind. I used to say, "This could happen, that could happen, and I will be behaving like that" etc. But thanks to the things I have gone through in the past years I have realized things having bad consequences could actually have some good consequences, as well. So everything could be more complex and everything could have something different behind it. This way of thinking has struck me. I have started to think things could have some other advantages. So I have changed. (See Appendix A, 21)

As stated by Subject #5, Subject #20, too, talked about an improvement in the realization of the complexity of problems: "As the time goes by I think I realize more and better. The better I realize the more conscious I will make decisions."

Subject #4 has been of the opinion that her approach towards the topic is connected to the meaning that topic carries: "I think it depends on what it means for me. I become rather more introverted when it comes to emotional topics. But when it comes to lessons or something about life I could be more rational. It is easier to put those in frames." As for Subject #2, she has specified the influence of her emotions as follows: "I usually make problems out of nothing. And this slows down my problem solving. Though I am well aware of it I cannot help but continue it."

Subject #7 has stated it matters for her if the topic arouses her attention or not. Her opinions are as follows:

> As I said before, I will not be interested at all or I will not express my opinions unless complex topics or problems externally get my attention or

> they are indirectly inclusive of me. I will accept the complexity and act accordingly only if I am made to get interested in the topics or they simply draw my attention (see Appendix A, 22).

Subject #8 mentioned the dissuasive effect of the complexity of topics: “Yes, most of the time I overestimate things and I have difficulty in coming up with solutions.”

To sum up, the issue of acting according to the realization of the complexity of topics could depend on many factors for the students. How interesting the topic is, what mood people are in, and what meaning is attached to it are those factors. It has been stated by the students that the realization regarding complex structure has a line of change and improvement.

4.2.1.3 Theme 3: Students' usage of critical thinking

The theme about the areas of use for critical thinking covers context-dependent factors, factors dependent on the traits of the person communicated with, and categories about the person’s use of critical thinking against himself/herself and about the partiality of the media.

Some of the students expressed that they use or do not use critical thinking depending on the dynamics of the circumstances that they are in. For instance, while some students said they preferred not to use critical thinking in the family environment, some stated that they do not use it when religious beliefs are involved. On the other hand, some students mentioned that they do not use it in their friendships whereas others said they do. Some said that although they used critical thinking, they preferred not to express it in certain situations. To sum up, the idea that critical thinking is used or not used consciously in some environments according to the dynamics of the environment becomes more prominent. What is meant by the dynamics of the environment are the characteristics of the subject addressed in that environment (such as whether it is a religious subject or an academic subject) and the

characteristics of the environment (such as whether it is a classroom environment or a circle of friends). What the interviews point to is that an individual having critical thinking does not necessarily mean that person will use critical thinking. The researcher of the current dissertation referred to the decision of a person to use or not to use critical thinking according to the dynamics of the environment and according to that person's behavior shaped through this decision as conscious adaptation. Subject #10 stated that she does not use critical thinking in family relationships and the reason for that is emotions are at the forefront in this kind of relationships:

> I can't say I use it a lot in my family relationships, because it is easier for me to accept, rather than criticize some things since there is more acceptance there and a love-based relationship. But in academic life or in social life, maybe in my more distant relationships or more rational relationships, yes, I use it. (See Appendix A, 23)

Subject #5 explained her attitude, which changes depending on the context, with religious beliefs:

> I don't use it much in the religious sense, because of the Qur'an... You know, religion does not accept too much criticism. I think about it in that sense but not critically like continuing in the same way. There is a system; I have a thought like it is written. I don't think there is a lot to criticize. (See Appendix A, 24)

Factors dependent on the traits of the person communicated with make up another category. For example, Subject number 7 stated the following: "Simply, I think my mom is a despot personality. She is a person who loves being the leader, but she is my mom. So I can be frank with her. Well, it is like that..." At this point, the frankness of the student with her mother seems as an effort to adapt to her mother as a result of her personality traits rather than open-mindedness.

Adopting a different perspective, Subject #4 pointed that the actual place to use critical thinking is the self: "Well, I think that every person should evaluate

herself, I mean she should evaluate herself at least as much as others evaluate themselves.

Students mentioned the partiality of the media when they were talking about where they used critical thinking. For example, Subject #4 stated the following:

> Unfortunately, there is no concept like impartial media in Turkey, everybody suffers from the pressure on themselves or trying to spread their own view. Therefore, maybe I don't know, I think it might be much more effective to look at different channels when looking at the news. Well, simply, an event like this happened, I don't know whether I should tell it now but, on the 23rd of April, there was a little child who sat in Davutoğlu's seat, when they asked the child like what do you think about CHP, he said some things about Kılıçdaroğlu. I listened to this from TRT, I was like why this child said that, then the event passed, you know, we said people laughed or whatever. Later, I listened to this news from a different channel but Davutoğlu there but also not just for that, even if it is for somebody else our respect is infinite. He whispers this to the child, he says, you know, say this and that, the child says the same, you know, this is all clearly on cameras. But in the information I got from TRT, I mean, there was never that footage when I listened to it, it was as if that child said it from his own mind. That made me sad, impartial media should not be like this, I mean, you know, at least a media that says it is impartial should not be like this. Then, actually they received a lot of reaction from the opposition, you are using children like this, like that etc. well these are not nice things really. Criticism becomes important in this context, because how true is the truth of news, I wonder, I am listening, you are saying but how much should I believe you? Well, therefore, I think it is necessary in the media, especially in the newspaper. (See Appendix A, 25)

The students' emphasis on the partiality of the media might be an indicator that they use critical thinking when following the media, and at least, they raise their awareness. To sum up, it was observed that there is a distinction in the minds of the students as to where to use or where not to use critical thinking. These distinctions may vary based on the dynamics of the environment or based on the traits of the people that are communicated with. The partiality of the media was among the issues that became prominent when students were talking about where they used critical thinking.

4.2.1.4 Theme 4: Students' evolvement of critical thinking

The theme about the evolvement of critical thinking in the lives of students covers three main categories: Effects related to formal education, effects related to social life, and effects related to individuals.

When talking about the evolvement of critical thinking, more than half of the students mentioned the influences linked to formal education. Some of these students touched upon the effect of university life while others talked about the teacher effect. More than half mentioned the effect of university. Subject #9 stated the following: "In the shaping of my frame of thinking, realizing it or not, the effect of the people around me and the influence of the circumstances cannot be ignored. For example, until I came to university, I was not aware of the concept of critical thinking to this extent." It was observed that in the eyes of some students, university life was also intertwined with the idea of entering into a social circle. Subject #12 said the following:

> I think that I developed myself more after I came to university, because, you know, I had a more ordinary life back then. It was also; well, very isolated in primary school and middle school as well. I was always in Beylikdüzü, the situation was like I was always with my family and a couple of friends. So, you know, it wasn't like let me meet new people, or they think like this or that. I had similar kinds of people around me. For me, it was like when you think the same and do not hear different things, you do not find the situation odd. But when I came here, I came across with a very different framework though I didn't even go far from home; I was going to university from my home. When I saw the conflict point between the values there and the values that I was used to at home etc., I said that this also exists but it is also not wrong, then, you know, there is an opinion here. Then, I questioned my family first. Then, I questioned myself a bit and changed myself. The turning point in my life can be my entrance into university or my first year or second year; it can be my entrance into the department and meeting many people. (See Appendix A, 26)

Within the framework of formal education, Subject #5 emphasized the teacher effect: "Who doesn't want us to think critically are the teachers in the Faculty of Education.

They somehow instill it; especially science instructors are stricter. They teach the course in a certain way and they want it to continue like that."

In addition to themes about formal education, which were emphasized, effects related to social life were another topic that was mentioned by the students. Subject #5 put an emphasis on the effect of Istanbul's diversity, where she lives, on critical thinking:

> For example, if I had stayed in Tekirdağ, if I hadn't gone to Edirne ... One of the reasons why I didn't choose medicine in university was Istanbul... The diversity of Istanbul... I was pleased with it. I didn't know about any culture before. Now, this increased my critical thinking. You begin to approach awareness more differently; you begin to question it. (See Appendix A, 27)

Subject #1 talked about the intellectual activities he participates in: "I joined the Debate Club here, I read books before it. The Club developed me a lot." Effects related to individuals were also mentioned in the evolvement of critical thinking. Some of the students established connections between their personal lives and the evolvement of critical thinking in time. For instance, Subject #3 gave a traumatic example in her life and talked about in which way that experience influenced her critical thinking.

> We lost my elder brother in a traffic accident when I was four and a half years old. This again, I think this part, generally prevented me when I was considering an event, actually, I am not emotional. For example, my mom… I will explain it again over my mom, she restricts me too much. But I do, well, I immediately say "Yes, you know, she lost a son, why are you doing this, she is afraid that it will happen to you as well" and I draw a conclusion from there. So, everything is linked to my brother, and then to his death. I can't make any evaluations, because I have a concrete thing at hand, well, my mom doesn't want to go through that pain one more time, she doesn't want anything bad to happen to me. Then, I leave what I want aside and for example, I act the way my mom wants me to. (See Appendix A, 28)

Subject #4 talked about the impact of the effects related to individuals on the evolvement of critical thinking, and she said that she checks herself:

> I think it might be the pressure I put on myself, now, this came up as a reply that I didn't put much thought into. Well, rather than being criticized, really, I get really sad when somebody criticizes me by saying it without thinking and if it is heart breaking. Sometimes, I can give up on myself in order not to make others go through this. My friend told me about this recently. She said: "Fatma, why are you doing this to yourself, why are you torturing yourself this much?" Well, you know, it was like you can't live like this but for me, I think maybe it seems better to experience that sadness rather than causing others to experience it. I always bear with this on my own, this is an inhibitive element, I know this. Sometimes, there is something that I want to say and that should be said, but I just can't say it. (See Appendix A, 29)

To sum up, students considered the evolvement of critical thinking in their lives within the framework of formal education, the effects related to social life and individual effects. Formal education is divided into two as the effect of university and the teacher effect. University life was also suggested by students in the sense of entering into a different environment. At the same time, students touched upon the diversity of the social environment and the functions of intellectual activities. Apart from this, the role of individual experiences in the realization of critical thinking was also underlined.

4.2.1.5 Theme 5: The nexus between courses and critical thinking

This theme is composed of student views on the relation between critical thinking and the courses they take in university. The students touched upon the teacher effect when sharing their experiences within the framework of this theme. When answering the question of whether the courses students take in the department have an impact on their critical thinking, Subject #5 described the effect of whether or not the teacher herself applies critical thinking:

> This was both about the course materials and about the teacher's attitude. There was not much impact in SCED courses, departmental courses, because departmental courses mostly aim to teach methods or how to make assessment and evaluation. We didn't learn a lot of critical things. On the

contrary, I was taking the courses constantly from one teacher but although our teacher claims to be open to criticism, he/she is not quite open to criticism. S/he doesn't accept any anonymous criticism. You need to provide your name if you are to criticize him/her because s/he is afraid of receiving strong criticism. He/she doesn't even look at the online course evaluations. S/he says those evaluations are anonymous. Then, he/she knows that Ayşe will not be able to provide strong criticism. Since I know she/he isn't inclined to think critically, I don't say anything to her/him even though s/he says s/he wants to get feedback from us. Although the course is really boring, I don't say that to him/her. S/he has certain patterns in his/her mind. So, if you do your assignment and write your answers in the exam by following these patterns, then it is OK. I took three courses from her/him. Since my courses on education, my departmental courses, became more intense along with my internship, I didn't witness much critical thinking in none of them. However, now, finally I am taking the course Teaching Method. It is very effective since as prospective teachers we are discussing how students think. Yet, that is still up to our teacher. X is teaching this course. S/he is also my advisor. So, s/he is someone I know. Therefore, it is a comfortable class environment. We feel really relaxed since we can say whatever we want the way we want to say it. S/he contributed to our critical thinking both as a teacher and a student. Yet, our teachers change every year. We mainly have two teachers. One teaches the course one year and the other the next year. If the other one taught this course, it wouldn't be like this. For example, the other teacher wants to teach the internship course. You can't express your views since he/she acts like he/she knows everything and he/she knows the best (this is a completely different teacher). We have to hand in internship reports every week. He/she says he/she wants us to think critically but when it comes to the course, that critical thinking dies because Y wants things to be done a specific way. S/he doesn't accept other ways because he/she constantly acts as if s/he knows everything. While we should have an environment for discussion, her attitude kills that in class.

Unfortunately, I am talking as if I am making innuendos. Unfortunately, I wouldn't want to say this but... I also didn't like it when s/he told a friend of mine something. For instance, s/he said that the people whose parents are divorced have a lower IQ. The parents of my best friend in the department are divorced but her/his IQ is very high. From this point onwards, I don't need to get into a discussion with her/him by saying that Z is very good since it is obvious what she believes in. That is her/his way. I can't convince her a lot because she is academically above my level. I could try to discuss with her/him and guide him/her if s/he were my friend. Yet, she/he is an academician. S/he already will not accept... You try to tell something to him/her once or twice. Then, you don't because you see that s/he is inclined to think that way. S/he is not ready to be criticized and doesn't want to accept it. S/he acts as if she/he always knows everything. That is her/his attitude.

> I keep quiet. I only answer the questions s/he asks in the course and I only comment on the content of the course. For instance, I answer the question of what the teaching method should be but I lose the connection with her/him. That is because I find such teachers in the Faculty of Education strange in this field. (See Appendix A, 30)

With regard to the teacher effect, Subject #6 put forward her views that teachers should support students in class:

> There needs to be more encouragement in courses. It may be related to the number of students in class but I think encouragement is much more effective. In the end, all subjects need to be covered in the course. It has a specific content. No one wants to shine out and say things. Sometimes, the teacher might not even like it. Like why did you interrupt the course or something? Yet, there needs to be more encouragement in class. Then, it becomes easier to learn and remember. When I just read the content and move on... I do this on my own as well. When I think about why something is like that, it becomes easier to remember it otherwise it just slips away. (See Appendix A, 31)

Within the framework of the relationship between critical thinking and the courses taken, the majority of the students expressed positive views about a course on critical thinking to be offered. For instance, Subject #3 stated the following:

> I think it would be very nice and it would be useful because it is something that can be used in every field. Especially, I say this since this is a study carried out in the Faculty of Education. Our job will be with people. Most of us will be teachers or counselors and even if we don't work at schools, we will work hand in glove with children and people. I think it should definitely be offered in a university like my university for the development of critical thinking and helping others develop it. (See Appendix A, 32)

Subject #4 stated that just as a course on critical thinking can be offered as a separate course, a critical thinking perspective can also be integrated into different courses:

> Such a theme can be integrated into any course. From a mathematical perspective, what does criticism mean? In other words, what does criticism mean in social sciences? When you look at natural sciences, you talk about events and form a hypothesis and you look at its consequences and events. Considering that, what does criticism mean? It might be included in all courses or it might be offered as a separate course and be dealt with in each course. Why not? (See Appendix A, 33)

Subject #13 stated that the course should not be merely about critical thinking and that students might develop critical thinking when it is integrated into various courses: "I think the name of the course shouldn't be critical thinking. For instance, disguised in a Turkish course, a text can be read and children can be asked to talk about the good and bad aspects of the text, what they do not like about it and what they like the most about it and so on." On the other hand, Subject #6 put forward that such a course would not be functional:

> I don't see it as something that can develop through courses. Rather through reading... It might happen through guiding students in the readings. It might happen through shaping the readings. We can move away from more romantic work to more critical work but I think this wouldn't work much if it was to be taught as a part of courses. (See Appendix A, 34)

Subject #11 expressed her views that a course with a critical thinking content is not possible in Turkey. She put an emphasis on the teacher attitude in class and the methods he/she employs to teach subjects and stated the following:

> I don't believe that this can be achieved in Turkey. I think it is something necessary but to be honest, I don't think there are teachers who can teach this in this country. In our country, this would also turn into grading. The teacher comes to class, announces the midterm dates, hands out the syllabus, tells that this is the way to think critically, puts on a slideshow, talks about it and leaves. If it will be a course like this, then let it not be at all. (See Appendix A, 35)

The views expressed by the students about a course on critical thinking to be offered fall into three categories: those who consider a separate course to be offered positively, those who believe it would be effective both if a separate course is offered and also if critical thinking is integrated into other courses and those in favor of helping students develop critical thinking by integrating it into other courses. A student stated that she believes that a course on critical isn't functional. In addition, some of the students also emphasized that university life is a late period to start teaching students critical thinking. Adopting a different perspective, Subject #16

emphasized that there might be lessons that contradict critical thinking: “That might even go back to middle school. However, I don’t have any idea about the lessons (religion lesson) that it will contradict.”

The students touched upon what they can do to help their students develop critical thinking when they work in educational institutions in the future. Among the methods put forward by the students are the following: Students deciding where or not there will be a midterm exam, getting feedback from students on the methods employed by the teacher in class, encouraging students to research, produce and discuss, recommending empathy to students, attempting to eliminate prejudices against different religions, allowing students to criticize courses, debating, making case studies, bringing students together with differences and active use of laboratories. It can be suggested that some of these methods overlap with andragogy, which represents the educational approach to the learning of adults. The students talk about an environment that allows for active participation on part of the students as individuals, that provides a discussion environment, and that enables students to criticize the teacher and give feedback. Furthermore, it was observed that the students adopted an egalitarian approach to teacher-student relations, not a hierarchical one.

Adopting a different perspective, Subject #10, who studies in Psychological Counseling, stated that she cannot use critical thinking:

> For me, it is more about listening and understanding rather than thinking critically. I don’t think I can use that skill a lot. I will already be in a personal process. I don’t really think I can use that skill. It seems like I would care more about other skills such as listening to others with an empathy or understanding emotions rather than thinking critically. Of course, here is another thing. I give this answer based on the current definition of critical thinking in my mind. Perhaps, if I read more about it, I might say that it is very important. (See Appendix A, 36)

In the interviews, students provided examples to courses that contribute to their critical thinking. Subject #11 stated the following:

> I don't think all my departmental courses lead me to critical thinking. I think that our ideas are valued and a discussion environment is supported but I don't think this is done based on critical thinking. I think that we arrived at this point due to extreme mistakes of the educational system. However, I think that the situation I mentioned is present in some of the elective courses I take. In fact, I think that this situation is linked to the attitude and approaches of teachers and students taking the courses rather than the content of the courses. For example, the subjects can differ in different sections of a course or there might be very different attitudes in the same course taught by different instructors. (See Appendix A, 37)

To sum up, the students mentioned the teacher effect when they were talking about the relationship between the courses they take and critical thinking. It was observed that teachers set an example for students. The encouragement of students by teachers was among the points highlighted. The students positively approached a course on critical thinking to be offered. Some of the students stated that instead of being offered as a separate course, critical thinking can be integrated into various courses. The students expressed that when they work in educational institutions in the future, they will try to help their students develop critical thinking through activities that allow for active student participation and they will do this with an egalitarian perspective rather than a hierarchical relation.

CHAPTER 5

DISCUSSION

This chapter discusses the findings of the study. First, reflections from the data are discussed, followed by the definition of the new scientific term "selected conformity" proposed by the researcher. Second, the quantitative and qualitative data gathered during the study are interpreted within the context of Vygotsky's Sociocultural Theory. Following that, it is described how the mixed methods that the researcher employed affected the study. The pedagogical recommendations and the limitations of the study are presented at the end of the chapter.

5.1 Reflections from the data

Looking at the quantitative data in this study, one can see that the critical thinking tendencies of students studying in the Faculty of Education are positive. These findings differ from the findings of Baykal's and Esmer's (2010) study. This study tried to identify the tendencies of teachers and found that intuitiveness was the most common tendency. This finding seems not to overlap with the data gathered in this study that revealed the critical thinking tendency of students to be positive. This situation may stem from the fact that although teachers are mentally in favor of critical thinking, they may have to employ a different set of mechanisms when they practice their profession and make decisions in practical life. On the other hand, the group in this study consists of teacher candidates who have not yet began to work. Hence, it is a group that did not personally experience the daily dynamics of teaching.

In the current study, according to qualitative data, subjects associated critical thinking with looking at events from different perspectives, objectivity, querying, reasoning, analysis, turning abstract notions into concrete terms, interpreting and evaluating situations based on circumstances, search for reality, and mental effort. They stated the necessity for a critical thinker to have certain traits. The critical thinker was described as an objective, knowledgeable and creative person with a strong personality, who knows oneself and who has been in different places. The aforementioned traits that were listed by the subjects do overlap with the results of the Delphi research at certain points. Recall that some skills were named central to the Delphi research: Interpretation, analysis, evaluation, inference, explanation, and self-regulation. Analysis, evaluation and inference are defined as central by 95% of the authorities. Interpretation, explanation and self-regulation are interpreted again as central, with 87% consensus among the authorities. Analysis, being able to consider situations from different standpoints, interpretation, self-assessment, commenting, querying, evaluating situations based on circumstances, which are the articles mentioned by the subjects, overlap with the skills listed in the results of the Delphi research. Search for reality is also one of the seven critical thinking dispositions mentioned in the Delphi report.

In addition, half of the subjects stated that they perceived critical thinking as negative in the first stage, and their views moved towards positive as they thought about the concept. Actually, the negative perception might be stemming from the Turkish definition of the word criticism. This word is defined in Turkish in three separate categories by the Turkish Language Institution. These three definitions for criticism are translated verbatim into English below:

a. Criticism as a noun is defined as examining a person, a work or a subject to find and show its right and wrong sides, censure.
b. In the category of art, criticism is defined as: A genre that is written with the aim of ensuring that a work of literature or art is understood by assessing all its sides, censure, and critique.
c. In the category of philosophy, criticism is defined as: Examining, testing, and judging especially the foundations of knowledge and the status of truth of the knowledge.

In all the three definitions above, the idea of considering situations both positively and negatively is present; however, in daily use, the word criticism can mean considering mainly the negative sides of a situation, or of an act. In particular, the word *tenkid* in Turkish can be used synonymously with *eleştiri* (criticism). Therefore, criticism may easily have a negative connotation in Turkish. According to dictionary of Ottoman-Turkish (2007), *tenkid* has both negative and positive meaning, but in daily use, its negative meaning can be in forefront. So, in Turkish, the word criticism seems to have a negative connotation (D. Cankılıç, personal communication, March 8, 2016). Actually, that is what has been found in the current research. As mentioned before, half of the subjects of our study stated that they had initially perceived critical thinking as negative when they first entered their university.

The findings of the study suggest that subjects perceive critical thinking as a dynamic process that is open to both change and development. Attending a university is among the experiences that subjects describe with regard to the change in their critical thinking habits. For these subjects, it can be put forward that 'university life' is a significant milestone in the development of their critical

thinking. It can be said that the subjects' mention of the effects of university life on the evolvement of critical thinking is similar to Giancarlo and Facione's (2001) research data in some aspects. It is interesting to note that the statements made by the subjects in the current study about the development of their disposition of critical thinking, in certain ways, during their university life are similar to the statements in that research.

In the same research, Facione and Giancarlo also found that the scores in the sub-dimensions of open-mindedness and inquisitiveness remained stable. This finding, especially the open-mindedness part, seems to contradict with the current research. As can be remembered, interview data points to a positive change in terms of subjects' open-mindedness. In the interviews, Subjects stated that the university where they study positively contributes to open-mindedness. This finding overlaps with 'respect for freedoms', which the university where this study was carried out tries and claims to promote.

It can be put forward that the study carried out by Esmer and Altın (2013) and aimed at finding whether or not the intellectual style preferences of teacher candidates change overlaps with the statements pointed out in this study and that suggest critical thinking is a dynamic concept that is open to change. The researchers put forward that the intellectual style preferences of teacher candidates could change in a semester. Similarly, students share the changes they witness in themselves in this study as well.

5.2 Selected conformity

According to the interview data, it was observed that critical thinking is a context-based concept rather than a pure individual characteristic. For instance, some of the

subjects expressed that they use or do not use critical thinking depending on the dynamics of the circumstances that they are in. For instance, while some subjects said they preferred not to use critical thinking in the family environment, some stated that they do not use it when religious beliefs are involved. On the other hand, some subjects mentioned that they do not use it in their friendships whereas others said they do. Some of the subjects said that although they used critical thinking, they preferred not to express it in certain situations. The idea that critical thinking is used or not used consciously in some environments according to the dynamics of the environment becomes more prominent. What is meant by the dynamics of the environment are the characteristics of the subject addressed in that environment (such as whether it is a religious subject or an academic subject), and the characteristics of the environment (such as whether it is a classroom environment, or a circle of friends).

What the interviews point to is the fact that an individual having critical thinking ability does not necessarily mean that the person will exercise critical thinking. 'Selected conformity' is referred to by the author of the current dissertation as the decision of a person to use or not to use critical thinking according to the dynamics of the environment, and according to that person's behavior that would be shaped through this decision.

The proposed term selected conformity stands for a conscious choice of (environment or opportunity) where (and when) to use critical thinking, and where (or when) not to use it. This choice is stems from the characteristics of the environment and/or from the characteristics of the people in contact with the decision maker.

5.3 A Vygotskian framework

In the interviews conducted in the study, the subjects touched upon certain main elements that affect their critical thinking experiences positively or negatively. These are listed as follows: University, teacher, environment and the opportunities it provides, and the characteristics of the person that is communicated with. Moving on from this emphasis on environmental factors, it is predicted that individual critical thinking experiences can be discussed within the context of Vygotsky's Socio-cultural Theory since one of the most significant approaches of Vygotsky is the emphasis on the function of environmental factors in enabling people to reach higher mental processes.

The Vygotskian perspective puts forward that the context and its features are vital elements when considering individual experiences. The prominent element in this approach is the role of the environment, and he specifically highlights its crucial role. Vygotsky's focus on human potential, how it can develop through interaction, and how the environment and the opportunities it provides can affect the process might be put forward as the elements that give the Vygotskian perspective its pedagogical importance. Taking this perspective as a starting point, certain building blocks in Vygotsky's theory are considered to be an effective tool in interpreting student experiences that were mentioned during this research.

When subjects were talking about their experiences within the context of open-mindedness, one of the critical thinking dispositions, they stated that university, student club activities, and the courses they attend affect their open-mindedness positively. Similarly, they also highlighted the positive effect of the university environment when they were talking about inquisitiveness, which is another critical thinking disposition. The observations on environmental factors overlap with

Vygotsky's emphasis on the environment. Vygotsky suggests that a biological element is the main constituent of humans, and that this element encompasses innate reactions and acquired reactions. The environment where people are born and raised controls the acquired reactions. Besides, students' emphasis on the impact of the university seems that university contributed them to pay more attention to the academic concepts.

In the interviews, it was observed that the university is prominent not only academically, but also socially. For instance, subjects mentioned the contributions of living in a different city with different people in the university, the effects of student clubs such as the Debate Club and Social Service Club, and the social activities in the university. At this point, the effect of experiencing different lives is observed on the subjects. In other words, it can be said that these activities act as psychological tools for students.

Vygotsky's emphasis on the significance of human experience is vital. Individuals establish and construct their experiences in a certain environment. It might be useful to bear in mind that people interact with each other as well as with the environment and thus might affect the environment. Hence, there is a mutual interaction between people. In fact, the environment is vital as well as open to change. Adopting a Vygotskian perspective, it can be claimed that it is possible to organize the environment so as to increase one's experiences. This, in return, leads to an expansion in their repertory. In addition, the context and its features can affect the experience, and hence the variety of outcomes. The physical and psychological characteristics of the environment enable individuals to have a natural behavior in that environment.

Social interactions can be counted among the fundamental elements with regard to social features of the environment, because meaning is generally constructed as a result of interacting with others. In other words, one tends to define himself/herself as a result of interaction. Vygotsky argues that development relies on the interaction and tools that are available in a certain culture.

According to Vygotsky, development takes place as a result of one's conversations with adults or peers who are more skilled. At this point come the statements of subjects about when they do and when they do not use critical thinking. If it is to be remembered, some of the subjects stated that they prefer not to express their critical thinking in certain environments. This attitude is proposed to be named selected conformity. It is related to the characteristics of the person that is communicated with. For instance, some subjects said they prefer not to use their critical thinking consciously when they come into contact with a dominant person. In that case, the attitudes and characteristics of individuals that are communicated with can prevent people from expressing their critical thinking. At this point, the role of the environment in enabling individuals to express themselves becomes prominent. Vygotsky's emphasis on social interaction becomes meaningful in this framework as well. The opposite, when the person that is communicated with is in a supportive attitude, might contribute to the development of the individual. Subjects also gave supporting examples in this context. This approach can be considered as the interactive features of a certain environment, which embellishes experience. This, in return, helps the development of the individual. At that stage, Vygotsky and his concept of ZPD are significant. The interactions with more experienced and talented partners in the zone of proximal development offer tools that are employed in thinking and problem-solving. The individual can learn how to use these tools.

Vygotsky states that, in a given culture, children learn the use of tools in coordination with more competent figures.

Once again, at this point, the communication subjects establish with others, and later, the changes in their critical thinking that they stated in the interviews come to the forefront. If it is to be remembered, subjects mentioned the communication they establish with their teachers, and stated that their teachers can affect them positively or negatively. A student expressed that her teacher supported her open-mindedness, but acted in a contradictory way, and that, as a result, she preferred to keep quiet. The same student put an emphasis on the development she experienced as a result of her teacher's supportive attitude when she was in the English preparatory class. These two examples can be considered within the context of ZPD. As long as the teacher supports the student, the student can further improve her potential. Apart from this, people's adjustment of their point of view according to the environment that they are in and according to the traits of the people they communicate with agrees with Vygotsky's views on how a person's behavior is influenced by the environment. Only a context can provide the ground for discussing human experience. Wertsch (1985) states that "one of the most fundamental assumptions that guided Vygotsky's attempt to reformulate psychology on Marxian foundations was that in order to understand the individual, one must first understand the social relations in which the individual exists" (p. 58). At this point, the actualization of critical thinking can be related to the creation of the conditions in which the person believes that he/she will be able to express himself/herself. In other words, the actualization of critical thinking seems to be a context-related situation.

Having a critical thinking disposition does not necessarily bring about the reflection of critical thinking in the outside world. Student views suggest that even if an

individual approaches an issue from a critical thinking perspective, the dynamics of the social atmosphere may affect whether or not the individual reflects his/her views. According to data obtained in the interviews, the view formed as a result of critical thinking, which is called selected conformity by the researcher, may not always be expressed consciously.

This study revealed a framework that suggests that critical thinking is beyond the acquisition of certain skills, and that rather, it is a dynamic concept linked to social elements. In this context, the Vygotskian framework which highlights the role of the environment in shaping the individual provides an effective platform for discussion.

5.4 Pedagogical recommendations

The outcomes of the current study can be used from several standpoints. First, the findings of the study put forward that students in the Faculty of Education are overall on the positive side of the scale while they stand at the ambivalent level in the subscales of truth-seeking and systematicity. At this point, courses aimed at improving the subscales of truth-seeking and systematicity might be offered, or these subscales can be made prominent in the existing curriculum to develop the dispositions of subjects in the subscales mentioned above.

Second, in this study, the students interviewed partially mentioned the sub-categories forming critical thinking and provided a partial definition that fits the definition of critical thinking that is agreed on as a result of the Delphi research, which is considered to be the basis of this study. Hence, this concept can be made prominent in courses to provide the students in the Faculty of Education with a better understanding of the building blocks of critical thinking.

Third, interview data shows that teachers have an effect on subjects regarding how they perceive critical thinking. It seems that teachers are role models for subjects, so they are expecting from their teachers to behave in accordance with their own expectations. For instance, if a teacher asks for a critical stance from their student, s/he should behave in a critical manner as well. In the interviews, Subject #4 pointed that the actual place to use critical thinking is the self: "Well, I think that every person should evaluate himself/herself, I mean s/he should evaluate himself/herself at least as much as others evaluate themselves. It can be said that this idea overlaps with the necessity of developing self-awareness stated in the definitions of critical thinking (Cottrell, 2005; Paul & Elder, 2015; Facione, 1990). Hence, teacher candidates should be trained as persons who are aware of his/her level of critical thinking.

Fourth, it was found that teacher attitudes also affect the development of critical thinking in students. Taking this as a starting point, teacher candidates who are well-equipped in terms of critical thinking are expected to work in educational institutions in the future where they can express themselves to reveal their critical thinking structures. They are also expected to be a role model for their students in this respect, and to train students as individuals equipped with critical thinking dispositions and skills. Therefore, there is a need for an environment where freedom of expression can become a culture; where individuals can listen to each other; and the culture of listening is internalized. It is necessary to restructure educational policies to enable this, to ensure that teachers practice their profession by being well-equipped and considering the significance of teacher attitudes, and to build and maintain institutional cultures where teachers as well as students can express themselves.

5.5 Mixed methods approach

This study gathered first quantitative and then qualitative data. The findings of the study were interpreted using both types of data. The quantitative data was collected to obtain the general framework of the subject of the study. Later, the qualitative data was gathered, and then the relations between critical thinking and context as well as information were studied in the interviews. Students suggested that expressing critical thinking may be related to the characteristics of the person that is communicated with. This was done by studying the personal stories of the individuals. More specifically, the quantitative data points that the Faculty of Education has a positive disposition of critical thinking; however, the interviews revealed that having a critical thinking disposition or skill does not guarantee the reflection of the disposition or skill in the outside world. Depending on the situation and the people communicated with, the individual can prefer not to express or reflect his/her perspective. In addition, the meaning that students attribute to university life was discovered in the interviews, which were useful in terms of understanding how teacher attitudes affect critical thinking, and which courses are found to be beneficial in the acquisition of critical thinking. These detailed pieces of information were useful in drawing a more comprehensive picture. Therefore, it can be stated that the co-existence of quantitative and qualitative data is a functional approach in terms of catching the details that can go unnoticed, and comprehending the subject that is studied.

In addition, employing mixed methods might entail various difficulties. Collecting quantitative and qualitative data consecutively necessitates that the process of the study spread over a vast period. Among the points to be considered are first, in which stages of the study the quantitative and qualitative data will be

integrated; and second, the necessity to analyze data in a way to ensure that they complete each other. Furthermore, one of the prominent aspects in this approach is the competency of the researcher to examine data both quantitatively and qualitatively.

5.6 Limitations and suggestions for further research

The findings of this study should be assessed by considering the internal dynamics of the faculty, from which data was collected. For the generalizability of the data to be higher, similar studies should be conducted in different universities. In addition, a compare and contrast analysis of findings both from students studying in science departments and faculties and from students studying in social science departments and faculties will be useful in order to reveal the similarities and differences between these students and to draw a clear picture within the context of critical thinking.

The Faculty of Education, from which data was gathered, mainly consists of females. Therefore, data must be considered from this perspective. Continuing to conduct studies with a higher rate of male participants will be effective.

Research findings suggest that there is no significant difference in the grade levels of students. To study the critical thinking of students in their freshman year, and then in their senior year might help answer the following questions: “Does this difference point out that no development occurs in critical thinking in university education?” and “Do students have a higher disposition in their sophomore, junior, and senior years but a lower disposition in their freshman year?” Therefore, if students, from whom data was collected in this longitudinal study, are observed in their senior year, the progress among grade levels can be analyzed more clearly.

The perception of critical thinking in other cultures is another prominent are of research. In the current dissertation, mainly a Western perception of the concept is on the forefront. How people perceive critical thinking in other cultural settings should be investigated. Finally, developing different scales for critical thinking can contribute to the field.

APPENDIX A

QUOTATIONS IN THE ORIGINAL TURKISH

1- Okul çocukları- hatta yetişkinler bile- özellikle karmaşık düşünmeyi gerektiren etkinliklerde gerektiği kadar düşünmüyor. Yargıyı daha sonraya bırakmak yerine hemen sonuca atlayıveriyorlar; tüm ilgili seçenekleri gözden geçirmektense sadece bir veya iki olasılığı göz önüne alıyorlar. Sadece kendi bakış açıları olan tek bir açıdan olaylara bakıp diğer çeşitli açıları unutuyorlar. Alelacele, herhangi başka birinin fikrini kabul edip olayları irdelemiyorlar. Hatta düşünseler bile düşünürken bu işi planlı biçimde yapamıyorlar; düşünmeyi gerektiren bir etkinliğin planını kafadan kabataslak bile çizemiyorlar. Ulaşmak istedikleri amacı veya çözmek istedikleri problemi ana hatlarıyla belirlemeyip hemen çözüm aşamasına geçiyorlar. Aslında kafaca ne yaptıklarının bilincinde de değiller. Dolayısıyla ne zaman hata yaptıklarının da hiçbir zaman farkında olmayacaklar. O zaman çocuklarımıza düşünmeyi nasıl öğreteceğiz? Düşünmeyi onlar için nasıl doğal bir süreç haline getireceğiz?

2- Yani bizim önümüze konan bir şeyin her zaman öyle olmayacağını düşünmektir aslında. Hani önünüze bir resim konuluyor. O resmin sadece o ressam tarafından öyle çizildiğini düşünmek, başka bir ressam o objeye baktığında başka bir şekilde çizebilir, başka bir ayrıntı daha farklı şekilde işleyebilir.

3- İlk olarak negatif bir tablo canlanıyor. Bunun nedeni eleştiri kavramının genellikle toplumumuzda olumsuz olarak yorumlanmış olması olabilir. Ancak bu kavram

üzerinde daha derin düşündüğümde tamamen negatif bir kavram olmadığını görüyorum.

4- Eleştirel düşünce eğilimimin yüksek olduğunu düşünüyorum. Özellikle üzerine çok düşündüğüm veya hiç düşünmemiş olduğum -yeni öğrendiğim- konularla karşılaştığımda direkt eleştirel yaklaştığımı düşünüyorum. Ancak özellikle günlük hayatta kullandığım ibarelerde düşünmeden kullandıklarım olduğunun farkına vardığım için "değişken" kategorisini tercih etmek istiyorum. Örnek vermem gerekirse, "Körle yatan şaşı kalkar" atasözünün ayrımcılık içerdiğini geçtiğimiz hafta bir ders esnasında öğrendim ve bu zamana kadar hiç düşünmeden kullandığımı fark ettim.

5-Farklılıklara karşı, tolerans demeyeyim de ya da hoşgörü de değil, daha ılımlı bir insan ya da kabul edici bir insan olduğumu düşünüyorum ama hala belli başlı ötekilerim var. Ama olabildiğince farklılıkları kabul etmeye çalışan bir insanım. Tabii belli başlı önyargılar var ama örnek versem daha iyi olabilir belki. Daha çok kulüp faaliyetlerim aklıma geliyor. Birinci sınıfta Sosyal Hizmet Kulübü'ne girdiğimde Gülen Gözler Projesi'ne devam ettim. Orada devlet koruması altında olan çocuklardı, oraya giderken aklımdaki fikir onlar benden başkalar, "acınacak durumdalar" ya da oradaki herkes anne-babasız... İşin içine girmeye başladığımda, şu an mesela, Yetiştirme Yurdu ve Çocuk Yuvası benim için çok başka bir kavram. Kimsesiz çocuklar lafını kullanmak demiyorum da koruma altındaki çocuklar diyorum. Farklılıkları hemen tolere edebilmem ya da anlamam zor olabiliyor ama bir şeye yeni başladığımda zihnimi, kafamı verdiğimde, alıştığımda bunu çok rahat

kabullenebiliyorum. Önyargımı ya da farklı düşüncelerimi kendi içimde sakinleştirebiliyorum.

6- Farklılıklara karşı saygılı olduğumu düşünüyorum, bu ünversiteye girememle daha da fazlalaştı. Buraya gelene kadar kendi çerçevelerim vardı ama buraya geldikten sonra çok daha arttı. Çünkü farklı insanlar tanıdıkça farklı görüşler gördüm, bu da mantıklıymış, böyle de düşünülebilirmiş, sen de şu konuda haklısın dediğim pek çok olay olmuştu.

7- Sürekli aynı şekilde düşünen insanlarla birlikte olmanın beni körelttiğine inanıyorum. Bu yüzden mümkün olduğunca farklı insanlarla farklı etkinliklere katılmaya çalışıyorum. Ben insanların siyah ya da beyaz olarak görmek istedikleri davranışların bazen gri de olabileceğine inanıyorum, bu yüzden birbirine karşıt ya da birbirinden farklı gözükebilen şeylerin bir noktada buluşabileceğine inanıyorum. Farklılıkların harmanlaması bize çok büyük çeşitlilik katmaz mı?

8- Dürüst olmak gerekirse farklılıkları çok seven bir insan değilim. Aslında çabuk adapte olurum ama yine de farklılıkları sevmem. Oturttuğum rutinin devam etmesini isterim. Farklılık derken, bireysel farklılıklardan bahsediyorsak o ayrı tabii ki. Kişilerin düşüncelerini, tutumlarını onaylamasam da saygı duymaya çalışırım elimden geldikçe.

9- Çeşitli kaynaklardan yararlanırım yeni bilgiler edinmek ve karmaşık konuları anlamak için. Bu kaynakların güvenilir olup olmadığına dikkat ederim. Örneğin eskiden Vikipedia'nın bana tartışmasız doğru bilgiler vereceğini düşünürdüm ancak

artık internette olan bilgilerin kaynağını ve güvenilirliğini sorgulamam gerektiğini biliyorum.

10- Çok fazla farklı alana yoğun ilgim var, doğal olarak yeni bilgiler edinmek konusunda da kendimi açık görüyorum. Ve aslında üniversiteye geçtikten sonra edindiğim yeni bilgiler sayesinde değişen çok fazla fikrim oldu. Örnek vermem gerekirse üniversite öncesinde toplum baskısı sebebiyle eril düşüncenin hakim olduğu kafa yapım şuan tam tersine cinsiyet eşitliği konusunda bilgili ve özgün bir karar sahibi.

11- Üniversiteye gelmeden önce bana herşey çok karmaşık geliyordu. Hazırlık okumak İngilizce yeterlilik sınavını geçmek sonrasında dersleri İngilizce işlemek ve sınavları bile İngilizce yapmak... Bunlar bana çok zor hatta imkansız görünüyordu. Ama sonra dedim ki, birçok insan bu okula benim gibi başlıyor ben de onlar gibi başarıcam dedim ve şu an 3. sınıftayım.

12- Dağınık bir ev var her yer pis ve karmakarışık. İşe nerden başlardınız? Ben öncelikle ortadaki çöpleri toplaratardım yani gereksiz bilgileri. Sonrasında odada düzenlerdim yani konuyu başlıklara ayırırdım. Bu şekilde bir düzenle ortalığı toplayıp işimi halledeceğim odada otururdum yani konuları başlıklara ayırdıktan sonar işime yarayacak olan bilgiyi içerisinden alırdım.

13- Karmaşık konulara dair ilgim yoksa ne yazık ki genelde hiç yaklaşmam. Ancak ilgim olan bir karmaşık konu söz konusuysa önce temelden ve basit düzeyde ele almaya çalışırım. Çok bağlantılı olur mu bilemiyorum ama bununla ilgili aklıma

gelen tek karmaşık konu bilgisayarlardaki programlama dilleri. Basit düzeyde bir bilgisayar kullanıcısı olarak nedensizce programlama dilleri ilgimi çekiyor, ancak ne ders aldığım için ne de konuya dair bir bilgim olduğu için bana karmaşık geliyor. Ben de öncelikle programlama dili nedir ne işe yarar gibi konulardan başlayarak, en temel dil olan javayı öğrenmeye başlıyorum.

14- Aslında çok meraklıyım ama erken pes ediyorum galiba. Yeni şeyler denemeyi seviyorum, bular hayata heyecan katan şeyler. Ama bölümüm itibari ile matematik okuyorum ve karmaşık şeyler çok fazla olduğu zaman desteğe ihtiyaç duyuyorum. Desteği bulamazsam erken pes edebiliyorum bazen. Daha iyi bilen birinin beni o konuda desteklemesi… Bu motivasyon olarak da destek de olabilir, teknik destek de olabilir.

15- Önce, o konuya beni iten şeyin ne olduğunu zihnimde düşünürüm. Bir de o konuyu araştırmamın ya da öğrenmemim sonucunda ne kazanacağım, onu da bilmeye çalışırım. Mesela bir şeyi bir ders kapsamında mı yoksa bir faaliyet kapsamında mı öğreneceğim, onu irdelerim. Bir argümanı ya da herhangi bir şeyi öğrenirken, hemen internete yazıp öğreneyimden ziyade insanlara danışmak benim için daha güzel bir yoldur. O yüzden, ilk başta, bir konu geldi ya da yüksek lisans mesela, şu an mezuniyet aşamasındayım, Klinik Psikoloji yüksek lisansı yapmak istiyorum. Bunu araştırmaktan ziyade, alanda olan hocalarımdan, arkadaşlarımdan, ilk etapta onlara danışmak yüz yüze iletişimde benim için daha kıymetli oluyor.

16- Aslında çok da iyi değilim galiba, orta seviye diyebiliriz. Bir konu hakkında, örneğin, bir şey sorsalar eğer kafamda onunla ilgili bilgi sahibiysem onunla ilgili bir

şeyler üretebiliyorum, bazen çok orijinal fikirler de çıkabiliyor ama genel olarak tekdüze normal fikirler çıkıyor. Bazen toplu halde konuştuğumuzda hoca bir konu açıyor, üstüne konuşalım dediğimizde çok orijinal fikirler çıktığında, ne güzel düşünmüşler falan diyorum. Bence çok iyi değilim, normal.

17- Memnunum, beni tatmin ediyor. Matematik öğretmenliği benim bölümüm. Bu ezberi, formülü olan bir alan olarak görülebilir ama ben mesela bir şeyi kendim keşfettiğim zaman kendim akıl yürüterek yaptığım zaman bu daha iyi oluyor benim için. Çünkü ezber yönüm zayıf, diğer yönüm daha güçlü. Kendi mantığıma oturtabildiğimde seviyorum. Bu anlamda düşünce tarzımı seviyorum. Ezberlemektense bu bana çok yardımcı oluyor, daha kalıcı olduğunu düşünüyorum. Kendimce yöntemlerim oluyor bir işi yaparken. Arkadaşlarımla paylaştığımda onların aklına gelmemiş, onların da vardır tabi ama, benim bana özgü olan yöntemlerim var.

18- Kesinlikle araştırırım, mutlak doğru diye bir şey olmadığını, başka fikirleri öğrenmenin insanlara mutlaka bir şeyler kazandıracağına inanıyorum. Karşıt fikirleri öğrenmenin bireylerin kendi fikirlerinin temellenmesine de destek olacağını düşünüyorum. Ayrıca bazen doğru bilinenler yanlış olabilir, bunu anlayabilmenin en iyi yolunun sürekli araştırmak ve öğrenmek olduğunu düşünüyorum.

19- Araştırmayı seviyorum, özellikle o konu ilgili çekiyorsa. Her zamanda olmuyor, kendi kendimi de kandırmayayım. Çünkü bir şeyi savunuyorsak onun hakkında biraz anti şeyini de öğrenmeliyiz ki savunabilecek durumda olalım. En azından kendimizi ikna etmek babında, ben bunu niye düşünüyorum o zaman dediğimde araştırmayı

seviyorum. Çünkü karşı tarafı tanımadan kendi eksiklerimi, kendi şeylerimi çok iyi göremem diye düşünüyorum.

20- Araştırıp inceleme oluyor ama yüz yüze konuşurken biraz korumacı oluyorum. Çok inanıyorum kendi düşüncelerime, onları kendimce çok süzgeçlerden geçirmişim gibi geliyor. Diğerinin diğer yüzünü görmem, bunun kendim merak edip bakabilirim ama bunu kendi ilgi alanımda yapıyorum. Açıktayken biraz daha korumacı olabiliyorum bazen. Bir filmdeki bir karakterin bile bir şeyi neden yaptığı hakkında konuşurken arkadaşlarım farklı düşünüyorken ben farklı düşünüyorsam bunu çok ısrarlı söylüyorum. Onların düşünce tarzının yalnızken üzerinden geçebiliyorum, o anda o esnada onun üzerine düşünmem biraz zor oluyor.

21- Öyle değildim aslında, daha düz bakıyordum, daha oturmuş düşüncelerim vardı. Böyle olur, şöyle olur, böyle davranırım gibi ama son yıllarda yaşadığım bazı olayların hem kötü sonuçları doğurduğunu düşünürken iyi sonuçları da doğurduğunu gördüm. İyi sonuçları doğururken kötü sonuçları da doğurduğunu gördüm. Dolayısıyla her şey daha kompleks olabilir her şeyin arkasında daha farklı bir şey olabilir düşüncesi oluştu. Bunun bana daha farklı getirisi olabilir diye düşünmeye başladım. Bu yüzden aynı durumda değilim yani.

22- Daha önce de belirttiğim gibi karmaşık konular veya problemler benim dışarıdan ilgimi çekmiyorsa ve/veya beni dolaylı olarak dahi içine almıyorsa gerçekten hiç ilgilenmem ve görüş belirtmem. Ancak ilgilenmek zorunda olduğum veya ilgimi çeken problemler ve/veya karmaşık konular için karmaşık olduğunu kabul edip davranacağımı düşünüyorum.

23- Aile ilişkilerimde pek fazla kullandığım söyleyemem; çünkü orada daha fazla kabullenme ve sevgi odaklı bir ilişki olduğu için bazı şeyleri eleştirmekten ziyade kabullenmek benim için daha kolay. Ama akademik yaşantı ya da sosyal yaşantımda daha mesafeli ilişkilerimde belki ya da daha rasyonel ilişkilerimde, evet, kullanırım.

24- Dini anlamda çok fazla kullanamıyorum. Kur'andan dolayı… Din çok fazla eleştiri kabul etmiyor biliyorsunuz. O anlamda üzerinde düşünüyorum ama eleştirel değil. Aynı şekilde devam eder gibi. Bir sistem var, yazılmış gibi düşüncem var. Çok fazla eleştirilebilecek bir şey olduğunu düşünmüyorum.

25- Maalesef tarafsız medya diye bir kavram Türkiye'de yok, herkes kendi üzerindeki baskılardan veya kendi sahip olduğu düşünceyi yaymaya çalışıyor. O yüzden de belki bilmiyorum haberlere bakarken farklı kanallara bakmak çok daha etkili olabilir diye düşünüyorum. Yani en basitinden söyle bir olay olmuştu, bilmiyorum şimdi anlatmalı mıyım ama, 23 Nisan'da Davutoğlu'nun yerine koltuğa geçen küçük bir çocuk vardı, çocuğa CHP konusunda ne düşünüyorsunuz falan diye sorunca Kılıçdaroğlu hakkında bir şeyler söylemişti. Ben bunu TRT'den dinledim, bu çocuk bunu niye söylemiş ki falan oldum, sonra olay geçti, millet güldü falan neyse dedik hani. Sonra ben farklı bir kanaldan dinledim bu haberi ki halbuki orada Davutoğlu ama sadece bunun için de değil başkasına da olsa saygımız sonsuzdur. O bunu fısıldıyor çocuğa, diyor ki hani böyle böyle de çocuk da aynısını söylüyor hani bu bariz kameralara yansıyor. Ama TRT'den aldığım bilgide yani orada dinlediğimde o görüntü hiç yoktu, sanki o çocuk onu aklından söylemiş gibiydi. Bu beni üzdü, tarafsız medya böyle olmamalı yani hani en azından tarafsızlığını söyleyen bir medya böyle olmamalı. Sonra hatta muhalefetten bayağı bir tepki

almışlardı, çocukları alet ediyorsunuz şöyle böyle falan yani hani bunlar hoş şeyler değil gerçekten. Eleştiri bu bağlamda önemli oluyor, çünkü bir haberin gerçekten doğruluğu ne kadar doğru acaba, dinliyorum ben, söylüyorsun sen ama bana ne, kadar inanayım ben sana. Yani o yüzden bence gerekli medyada, gazetede özellikle.

26- Üniversiteye gelince daha bir geliştiğini düşünüyorum. Çünkü hani daha böyle sıradan bir yaşantım vardı. İlkokuldayken, ortaokuldayken falan bir de çok izoleydi. Hep Beylikdüzü'ndeydim, hep ailemle ve üç beş arkadaşımlaydım gibi bir durum vardı. O yüzden hani böyle yeni insan tanıyayım, o da böyle düşünüyormuş gibi falan değildi. Benzer insanlar vardı etrafımda. Aynı şeyi düşününce de farklı şeyler duymayınca da insan çok yadırgamıyor gibi bir durumdu benim için. Ama buraya geldiğimde çok farklı bir çerçeveyle karşılaştım ki ben evden falan uzaklaşmadım bir yandan evden gidip geliyordum üniversiteye. Oradaki değerler, evde alışkın olduğum değerlerle buranın çatıştığı noktayı vs. gördüğümde bu da varmış ama bu da yanlış bir şey değil, o zaman bunda da hani bir fikri var deyip bu sefer önce ailemi sorguladım. Sonra kendimi çok oturtmuşum deyip kendimi birazcık sorgulayıp değiştirdim. Üniversiteye başlamam ya da birinci ikinci sınıf bölüme başlamam daha çok insan tanımam olabilir dönüm noktası olarak.

27- Ben mesela Tekirdağ'da kalsaydım, Edirne'ye gitmeseydim… Üniversite olarak tıbba gitmememin nedenlerinden biri İstanbul… İstanbul'un çeşitliliği…Çok memnun kaldım. Ben daha önce hiçbir kültürü tanımıyordum, bu benim eleştirel düşüncemi artırdı. Bilince, daha farklı yaklaşmaya, sorgulamaya başlıyorsunuz.

28- Dört buçuk yaşındayken ağabeyimi trafik kazasında kaybettik. Bu yine bu kısmı galiba, bir olaya bakarken duygusal da değilim aslında, ama engelledi genel olarak. Mesela annem… Yine annem üzerinden gideceğim, çok fazla kısıtlıyor beni. Ama şey yapıyorum,"Evet ya evlat acısı yaşadı, niye şey yapıyorsun ki, senin başına gelmesinden korkuyor," deyip direkt bir sonuç çıkartıyorum oradan. Yani her şey ağabeyime bağlanıyor, oradan onun vefatına bağlanıyor. Değerlendirme yapamıyorum çünkü elimde somut bir şey var, yani annem tekrar acı yaşamak istemiyor, bana kötü bir şey olsun istemiyor. O zaman isteklerimi bir kenara koyup annemin istediği gibi davranabiliyorum mesela.

29- Kendime uyguladığım baskı olabilir diye düşünüyorum, biraz düşünmeden verdiğim bir cevap oldu ama şu anda. Yani eleştirmekten gerçekten çok, biri beni eleştirdiğinde eğer karşıdaki bunu düşünmeden söylüyorsa ve kırıcı oluyorsa buna gerçekten çok üzülüyorum ve bunu başkalarına yaşatmamak uğruna bazen kendimden çok tavizler verebiliyorum. Bunu arkadaşım geçen söyledi, "Fatma, bunu kendine neden yapıyorsun, niye bu kadar zulüm ediyorsun?" dedi. Yani hani böyle yaşanmaz ki oldu ama benim için. O üzüntüyü yaşamak başkalarına yaşatmaktan daha iyi geliyor galiba. Bunu ben hep kendim çekiyorum, bu engelleyici bir unsur, bunu biliyorum, bazen söylemek istediğim söylenmesi gereken bir şey oluyor ama ben söyleyemiyorum.

30- Bu hem ders materyalleri ile hem de hocanın tutumu ile alakalıydı. SCED yani bölüm derslerinden çok fazla olmadı çünkü bölüm dersleri genelde metotları öğretmeye yönelik ya da nasıl ölçme değerlendirme yapılacağına yönelik, çok fazla eleştirel bir şey öğrenmedik. Hatta tam tersine sürekli bir hocadan alıyordum ama

hocamız eleştiriye açık olduğunu söylese bile pek eleştiriye açık değil. İsimsiz eleştiri kabul etmiyor, isim vererek eleştiri yapacaksın çünkü sert eleştiri yapmaktan korkuyor. Online course evaluation'lara bile bakmıyor. Çünkü onların anonymous olduğunu söylüyor. Çünkü o zaman biliyor ki X çok sert şeyler yazamayacak, ondan dolayı onun eleştirel düşünmeye yatkın olmadığını bildiğim için ben de ne kadar feedback istiyorum dese de bir şey söylemiyorum. Dersi çok sıkıcı olsa da söylemiyorum. Onun kafasında olan yollar var, o yollardan ödevini yaparsan, sınavda o yollardan yazarsanız onun için okey. Ben ondan üç ders aldım, yeni yeni eğitim derslerim bölüm derslerim ciddi derecede başladığı için stajla beraber onlarda da çok fazla eleştirel düşünce görmedim. Ama Teaching Method dersi alıyorum son olarak, o baya etkiliydi. Bir öğretmen olarak öğrenci nasıl düşünür üzerine tartıştığımız için ama o da gene hocamızdan kaynaklı. X veriyor bu dersi kendisi danışmanım, bu sayede de bilip tanıdığım biriydi. O yüzden rahat da bir sınıf ortamı var, istediğimizi istediğimiz gibi söyleyebildiğimiz için çok çok rahatız ve eleştirel düşünmemize katkıda bulundu hem öğretmen hem öğrenci olarak. Ama hocalarımız her sene değişiyor, iki hocamız var esas olarak, bir sene bir bir sene biri veriyor dersi. Eğer diğeri vermiş olsaydı kesinlikle bu olmazdı. Mesela staj dersini diğer hoca istiyor, o hocamız ben bilirim, ben en iyisini bilirim havasında olduğu için (bu tamamiyle başka bir hoca) kendi fikrinizi sunamıyorsunuz. Her hafta staj raporları var, staj raporlarında kritik düşünmenizi istiyorum diyor ama derse gelince o kritik düşünce ölüyor çünkü Fatma Hoca belli bir yol istiyor. Öğrencinin yollarını kabul etmiyor çünkü ben biliyorum havasında sürekli. Bu ben biliyorum havası da derste tartışma ortamı yaşamamız gerekirken, tartışma ortamını öldürüyor.

Mesela böyle laf sokar gibi cevap veriyorum, maalesef bunu demek istemezdim ama. Bir arkadaşım da şey yapınca hoşuna gitmedi. Mesela anne babası boşanmış kişilerin IQ'su daha düşük oluyor dedi. Benim bölümde en yakın arkadaşım ve anne babası boşanmış ve IQ'su da çok yüksek falan. Bundan sonra zaten benim ona ama Selin çok iyidir tartışmasına girememe gerek yok çünkü o belli yani ona inanıyor. O onun yolu çok fazla ikna edemiyorum çünkü benden akademik olarak üst bir kademede, arkadaşım olsa daha farklı tartışıp yönlendirmeye çalışırım ama o akademisyen, zaten benim dediğimi... Bir iki kere bir şeyler söylemeye çalışıyorsunuz ondan sonra çalışmıyorsunuz çünkü bakıyorsunuz ki yok, o oraya yönelik. O eleştirilmeye hazır değil ve kabul etmek istemiyor. Hep ben bilirim havasında, onun tavrı tarzı öyle. Susuyorum, derste sadece sorduğu soruları ya da kontente yönelik cevap veriyorum. Mesela teaching method nasıl olmalı, ona bir cevap veriyorum ama hocayla iletişimim kopmuş oluyor. Çünkü öyle bir eğitim hocasını ben alanda çok garipsiyorum.

31- Daha fazla teşvik olması gerekiyor derste. Mevcutla ilgili olabilir ama teşvik bence daha çok etkili. Sonuçta konular bitirilmeye çalışılıyor belli bir kapsamı var, kimse sivrilip araya bir şeyler söylemek istemiyor. Hatta bazen hocanın hoşuna bile gitmeyebilir. Neden şimdi konumu böldün gibisinden ama daha teşvik olması gerekiyor. O zaman daha akılda kalıcı oluyor, okuyup geçtiğimde… Kendi içimde de bunu yapıyorum. Neden böyle diye düşündüğümde daha çok aklımda kalıyor yoksa kalmıyor.

32- Çok çok güzel olur bence faydalı olur çünkü her alanda kullanılabilecek bir şey. Özellikle eğitim fakültesinde yapılan bir araştırma olduğu için söylüyorum işimiz

insanlarla olacak, çoğumuz öğretmen danışman hani okulda çalışmasak bile bir şekilde çocuklarla insanlarla içli dışlı olacağız. Kazanılması ve bu insanların da başka insanlara kazandırması açısından X gibi bir üniversitede kesin olması gerekiyor diye düşünüyorum.

33- Her dersin içine böyle bir konu eklenebilir. Bir matematiksel bakış açısından eleştiri ne demektir yani bir sosyal bilimlere bakarken eleştiri ne demektir veya bir fen bilimlerine bakarken hani olaylar kuruyorsun sonuçta bir hipotez kuruyorsun, sonuçlarına, olaylarına bakıyorsun bunun üzerine eleştiri ne demekti? Her dersin içine konulması da olabilir veya ayrı bir ders olarak alınıp her dersin içinde incelendiği bir ders de olabilir, neden olmasın?

34- Ben dersle gelişebilecek bir şey gibi görmüyorum daha çok. Daha okuyarak… Belki okumaların yönlendirilmesi ile olabilir. Okumaların şekillendirilmesi ile olabilir. Daha romantik eserlerden daha eleştirel eserlere yönlenilebilir ama ders olarak işlendiğinde bu işlemez fazla gibime geliyor.

35- Bunun Türkiye de yapılabileceğine inanmıyorum. Olması gerek bir bir şey olduğunu düşünüyoum ama ülkede ed eğitimi verebilecek hoca olduğunu düşünmüyorum işin açıkçası. Bizde bunud a nota dökeriz. Hoca gelir, midterm tarihlerini söyler, syllabusı dağıttı, eleştirel düşünmek budur, der slaytını yansıtır, anlatır ve çıkar. Bu şekilde bir ders olacaksa hiç olmasın.

36- Eleştirel düşünmeden ziyade, benim için dinlemek, anlamak, çok çok o yetiyi kullanabileceğimi sanmıyorum. Zaten çok bireysel bir süreçte olacağım, çok sanmıyorum o yetiyi kullanabileceğimi. Daha başka yetiler, mesela eleştirel

düşünmeden ziyade, empatik dinleme ya da duyguları anlama gibi şeyleri daha çok önem verirmişim gibi geliyor. Tabii şöyle de bir şey var, eleştirel düşüncenin şu an kafamda olan tanımı ile bu cevapları veriyorum, belki üzerine okusam bir şey bu kesinlikle çok önemli diyebilirim.

37- Bölüm derslerimin eleştirel düşünceye sevk ettiğini düşünmüyorum, fikirlerimize önem verildiğini, tartışma ortamının desteklendiğini düşünüyorum ancak bu durumun eleştirel düşünce baz alınarak yapıldığını düşünmüyorum, eğitim sisteminin aşırıya kaçan hataları sebebiyle durumun bu noktaya geldiğini düşünüyorum. Ancak seçmeli olarak aldığım derslerin bir kısmında bu durumun var olduğunu düşünüyorum. Aslında bu konunun dersin içeriğinden çok hocaların ve dersi alan öğrencilerin tutum ve yaklaşımlarına bağlı olduğunu düşünüyorum, örneğin aynı dersin farklı sectionlarında konular çok farklı yerlere gidebiliyor veya aynı dersi veren farklı hocaların derslerinde çok farklı tutumlar olabiliyor.

APPENDIX B

INTERVIEW QUESTIONS

1. Bölüm: Demografik Sorular

Anne-babanızın eğitim durumları nedir?

Ağabey-ablalarınız varsa eğitim durumları nedir?

Ailenizde okumuş başka kişiler var mı?

Hanede kaş kişi yaşıyorsunuz? Eğitim durumları nedir?

Ailenizde edindiğiniz beceriler var mı?

Anne-babanızın sizin eğitim yaşantınıza dair tutumları nasıldı/ nasıldır?

İlkokuldan başlayarak eğitim geçmişinizi anlatabilir misiniz?

Okulda çalışkan mıydınız?

Okul arkadaşlarınız ile ilişkileriniz nasıldı?

2. Bölüm: Eleştirel düşünce çerçevesindeki sorular

1-Eleştirel düşüncenin sizce tanımı nedir?

-Sizce eleştirel düşüncenin ne gibi özellikleri vardır?

-Eleştirel düşünce denilince zihninizde pozitif mi yoksa negatif bir tablo mu canlanıyor?

-Eleştirel düşünce sizce faydalı mıdır?

2-Eleştirel düşünce eğilimi olarak kendinizi ne yönde değerlendiriyorsunuz? Çok yüksek, pozitif, değişken, negatif olarak bir kategorilendirme yapsanız kendi durumuzu ne yönde nitelersiniz?

3-Farklılıklara karşı yaklaşımınızı değerlendirir misiniz? Örnekler vererek yanıtlar mısınız lütfen?

4-Yeni bilgiler edinmek, karmaşık konuları anlamaya çalışmak konusunda kendinizi değerlendirmenizi istesem neler söylersiniz? Örnekler vererek anlatır mısınız?

5-Akıl yürütme biçiminizden memnun musunuz? Örnekler vererek yanıtlar mısınız lütfen?

6-Bir argümanı tartışmak/anlamak için ne tip görüşleri araştırırsınız?

7-Fikirlerinizi desteklemeyecek olsa da karşıt görüşleri de araştırır mısınız?

8-Karmaşık konulara nasıl yaklaşırsınız?

9-Problemlerin yapısının ne derece farkına varırsınız? Bunun karşısında nasıl davranırsınız?

10- Eleştirel düşünceyi nerelerde kullanıyorsunuz? Mümkünse örnekler vererek anlatır mısınız?

Ailenizde kullanıyor musunuz?

Arkadaş çevrenizde kullanıyor musunuz?

Okul arkadaşlarınızla kullanıyor musunuz?

Mahalle arkadaşlarınızla kullanıyor musunuz?

Ders dinlerken kullanıyor musunuz?

Gazete okurken kullanıyor musunuz?

Televizyon seyrederken kullanıyor musunuz?

Sosyal medyada kullanıyor musunuz?

11- Biyografinizi ele aldığınızda düşünce yapınızı şekillendiren, bu süreci destekleyen ve/veya engelleyen yaşantılar var mı sizce? Anlatabilir misiniz?

12- Geçmiş yıllara kıyasla yetileriniz ve eğilimleriniz sizce herhangi bir değişikliğe uğradı mı? Eğer öyle ise ne yönde açıklar mısınız?

13- Bölümünüzde aldığınız derslerden eleştirel düşünceye etki eden ders/dersler sizce var mı? Varsa detaylı olarak görüşlerinizi paylaşır mısınız lütfen?

14- Eleştirel düşünceyi kazandırmaya yönelik bir dersin örgün ve/veya yaygın eğitimde müfredata dahil olmasına nasıl bakarsınız?

15- Siz ileride bir eğitim kurumunda görev aldığınızda eleştirel düşünceyi ortamınızda öğrencilerinizle ilişkinize nasıl kullanacaksınız?

Mülakatın sonuna geldik, bu noktada başka eklemek istedikleriniz var mı?

INTERVIEW QUESTIONS

Part 1: Demographic Questions

What are the levels of education of your parents?

If you have any elder siblings, what are their levels of education?

Are there any other educated people in your family?

How many people live in your household? What are their levels of education?

Do you have any skills that you acquired in your family environment?

What are/were the attitude of your parents towards your educational life?

Could you please talk about your educational background starting with primary school?

Were you hardworking at school?

How were your relationships with your friends at school?

Part: 2: Questions related to critical thinking

1-What do you think is the definition of critical thinking?

-What do you think are the characteristics of critical thinking?

-Does a positive or negative image appear in your mind when talking about critical thinking?

-Do you think critical thinking is beneficial?

2-How do you consider yourself in terms of critical thinking dispositions? If you were to make a categorization as very high, positive, ambivalent, or negative, how would you describe yourself?

3-What do you think about your approach to differences? Could you please give examples?

4-How do you consider yourself in terms of acquiring new information and comprehending complicated issues? Could you please give examples?

5-Are you satisfied with your reasoning? Could you please give examples?

6-What kind of opinions do you look for in order to discuss/understand an argument?

7-Do you explore opposing views even if they do not support your views?

8-How do you approach complicated subjects?

9-To what extent do you become aware of the nature of problems? How do you act in view of this?

10-Where do you use critical thinking? Could you please give examples if possible?

Do you use it in your family environment?

Do you use it in your circle of friends?

Do you use it with your friends at university?

Do you use it with your friends in your neighborhood?

Do you use it when you listen to lectures?

Do you use it when you read the newspaper?

Do you use it when you watch TV?

Do you use it on social media?

11- When you look at your biography, do you think there are any experiences that shape the way you think and that support and/or prevent this process? Could you please talk about them?

12- Do you think your skills and tendencies have changed compared to the past? If so, in what way did they change? Could you please explain it?

13- Do you think there is/are any course/courses affecting critical thinking among the courses you take in your department? If there is any, could you please talk about your views in detail?

14- What do you think about the inclusion of a course aimed at developing students' critical thinking into the curriculum in formal and/or non-formal education?

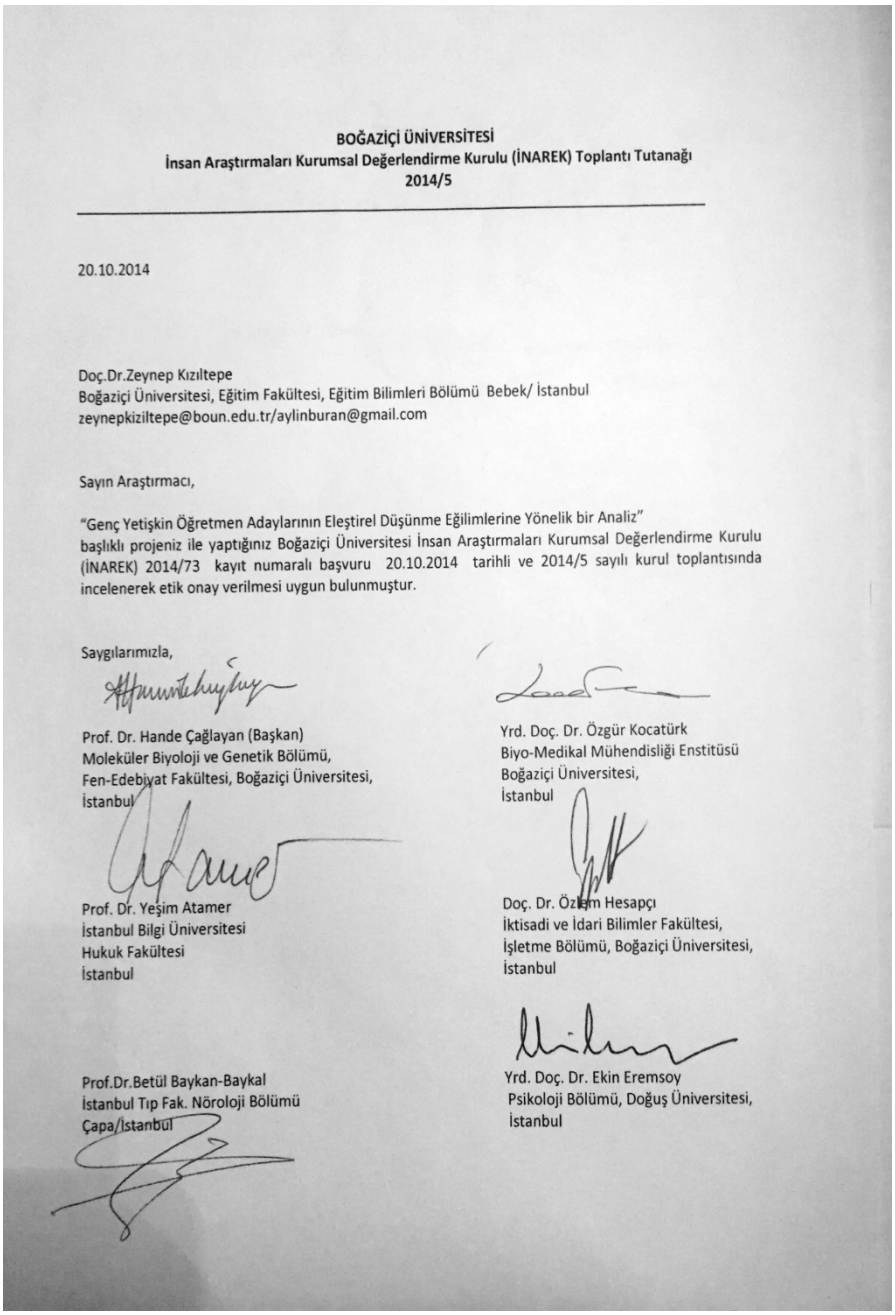
15- When you work in educational institutions in the future, how will you use critical thinking in your relationships with your students?

We reached the end of the interview. Is there anything you would like to add?

APPENDIX C

REPORT OF HUMAN RESEARCH CORPORATE ASSESSMENT

COMMISSION OF THE UNIVERSITY



BOĞAZİÇİ ÜNİVERSİTESİ
İnsan Araştırmaları Kurumsal Değerlendirme Kurulu (İNAREK) Toplantı Tutanağı
2014/5

20.10.2014

Doç.Dr.Zeynep Kızıltepe
Boğaziçi Üniversitesi, Eğitim Fakültesi, Eğitim Bilimleri Bölümü Bebek/ İstanbul
zeynepkiziltepe@boun.edu.tr/aylinburan@gmail.com

Sayın Araştırmacı,

"Genç Yetişkin Öğretmen Adaylarının Eleştirel Düşünme Eğilimlerine Yönelik bir Analiz"
başlıklı projeniz ile yaptığınız Boğaziçi Üniversitesi İnsan Araştırmaları Kurumsal Değerlendirme Kurulu (İNAREK) 2014/73 kayıt numaralı başvuru 20.10.2014 tarihli ve 2014/5 sayılı kurul toplantısında incelenerek etik onay verilmesi uygun bulunmuştur.

Saygılarımızla,

Prof. Dr. Hande Çağlayan (Başkan)
Moleküler Biyoloji ve Genetik Bölümü,
Fen-Edebiyat Fakültesi, Boğaziçi Üniversitesi,
İstanbul

Yrd. Doç. Dr. Özgür Kocatürk
Biyo-Medikal Mühendisliği Enstitüsü
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Prof. Dr. Yeşim Atamer
İstanbul Bilgi Üniversitesi
Hukuk Fakültesi
İstanbul

Doç. Dr. Özlem Hesapçı
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Çapa/İstanbul

Yrd. Doç. Dr. Ekin Eremsoy
Psikoloji Bölümü, Doğuş Üniversitesi,
İstanbul

APPENDIX D

LETTER FROM TURKISH COPYRIGHT OWNER OF CCTDI

Nisan 3, 2015
Aylin Buran
Boğaziçi Üniversitesi
Eğitim Fakültesi

Sayın Aylin Buran

Tez konunuz incelenmiştir ve Kaliforniya Eleştirel Düşünme Eğilimi Ölçeğinin Türkçe versiyonunu tez araştırmanızda kullanabilirsiniz. Her bir katılımcının ölçeğin her bir boyutuna ve tamamına ilişkin puanların hesaplanması Insight Assessment tarafından yapılacaktır.

Gökhan İskifoğlu, Ph.D
Uluslararası Kıbrıs Üniversitesi

Aylin Buran
Boğaziçi Üniversitesi

APPENDIX E

KATILIMCI BİLGİ VE ONAY FORMU (CCTDI-T için)

Araştırmayı Destekleyen Kurum: Boğaziçi Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Bölümü Yetişkin Eğitimi Programı

Araştırmanın adı: Eğitim Fakültesi'nde Okuyan Üniversite Öğrencilerinin Eleştirel Düşüncelerine Yönelik Bir Analiz

Araştırmacının adı: Ayşe Aylin Buran

Adresi: Boğaziçi Üniversitesi, Eğitim Fakültesi, Eğitim Bilimleri Bölümü

E-mail adresi:

Telefonu:

Tez konusu: Bu araştırmada üniversitede okuyan genç yetişkin öğretmen adaylarının eleştirel düşünce eğilimlerinin tespit edilmesi ve eleştirel düşünce kavramına dair yaklaşımlarının ve yaşantılarının belirlenerek gruba dair bir panoramanın çıkartılması hedeflenmektedir. Bu araştırmaya katılmayı kabul ettiğiniz takdirde sizden 75 soruluk bir anket doldurmanızı rica edeceğiz. Bu anket öğretmen adaylarının eleştirel düşünmeye olan eğilimlerini daha iyi anlamamıza yardımcı olacaktır. Bu anketi doldurmak yaklaşık 20 dakikanızı alacaktır.

Onam: Genç yetişkin öğretmen adaylarının eleştirel düşünceye dair eğilimlerini araştırdığımız çalışmaya katılmaya sizi davet ediyoruz. Bu çalışma kapsamında eleştirel düşünce bağlamında öğretmen adaylarına dair bir manzaranın ortaya konmasını amaçlıyoruz. Bu araştırma bilimsel bir amaçla yapılmaktadır ve katılımcı bilgilerinin gizliliği esas tutulmaktadır.

Çalışmaya katılmanız tamamen isteğe bağlıdır. Sizden ücret talep etmiyoruz ve size herhangi bir ödeme yapmayacağız. İstediğiniz zaman çalışmaya katılmaktan vazgeçebilirsiniz. Bu durumda vermiş olduğunuz yanıtlar imha edilecektir. Yapmak istediğimiz araştırmanın size risk getirmesi beklenmemektedir. Araştırmanın ileride diğer araştırmacılara ve bu alanda çalışan bireylere yarar sağlaması muhtemeldir. Öğretmen adaylarının eleştirel düşünceye yönelik eğilimlerini ve yaşantılarını araştırmanın, öğretmen yetiştirme sistemine/ anlayışına yarar sağlamasını beklemekteyiz.

Bu formu imzalamadan önce, çalışmayla ilgili sorularınız varsa lütfen sorun. Daha sonra sorunuz olursa, Ayşe Aylin Buran'a (Telefon:.....) sorabilirsiniz. Araştırmayla ilgili haklarınız konusunda INAREK'e danışabilirsiniz.

Bana anlatılanları ve yukarıda yazılanları anladım. Bu formun bir kopyasını aldım. Çalışmaya katılmayı kabul ediyorum.

Katılımcı Adı-Soyadı:
İmzası:
Tarih (gün/ay/yıl):

Araştırmacının Adı-Soyadı:
İmzası:
Tarih (gün/ay/yıl):

APPENDIX F

KATILIMCI BİLGİ VE ONAYFORMU (Mülakat için)

Araştırmayı destekleyen kurum: Boğaziçi Üniversitesi

Araştırmanın adı: Eğitim Fakültesi'nde Okuyan Üniversite Öğrencilerinin Eleştirel Düşüncelerine Yönelik Bir Analiz

Araştırmacının adı: Ayşe Aylin Buran

Adresi: Boğaziçi Üniversitesi, Eğitim Fakültesi, Eğitim Bilimleri Bölümü

E-mail adresi:

Telefonu:

Tez konusu: Bu araştırmada üniversitede okuyan genç yetişkin öğretmen adaylarının eleştirel düşünce eğilimlerinin tespit edilmesi ve eleştirel düşünce kavramına dair yaklaşımlarının ve yaşantılarının belirlenerek gruba dair bir panorama çıkartılması hedeflenmektedir.

Bu araştırmaya katılmayı kabul ettiğiniz takdirde sizden mülakat esnasında size yöneltilecek soruları yanıtlamanızı rica edeceğiz. Yanıtlarınız, öğretmen adaylarının eleştirel düşünmeye olan eğilimlerini daha iyi anlamamıza yardımcı olacaktır.

Mülakat yaklaşık 40 dakikanızı alacaktır.

Onam: Genç yetişkin öğretmen adaylarının eleştirel düşünceye dair eğilimlerini araştırdığımız çalışmaya katılmaya sizi davet ediyoruz. Bu çalışma kapsamında eleştirel düşünce bağlamında öğretmen adaylarına dair bir manzaranın ortaya konmasını amaçlıyoruz. Bu araştırma bilimsel bir amaçla yapılmaktadır ve katılımcı bilgilerinin gizliliği esas tutulmaktadır.

Çalışmaya katılmanız tamamen isteğe bağlıdır. Sizden ücret talep etmiyoruz ve size herhangi bir ödeme yapmayacağız. İstediğiniz zaman çalışmaya katılmaktan vazgeçebilirsiniz. Bu durumda vermiş olduğunuz yanıtlar kayıt cihazından silinecektir.

Yapmak istediğimiz araştırmanın size risk getirmesi beklenmemektedir. Araştırmanın ileride diğer araştırmacılara ve bu alanda çalışan bireylere yarar sağlaması muhtemeldir. Öğretmen adaylarının eleştirel düşünceye yönelik eğilimlerini ve yaşantılarını araştırmanın, öğretmen yetiştirme sistemine/ anlayışına yarar sağlamasını beklemekteyiz.

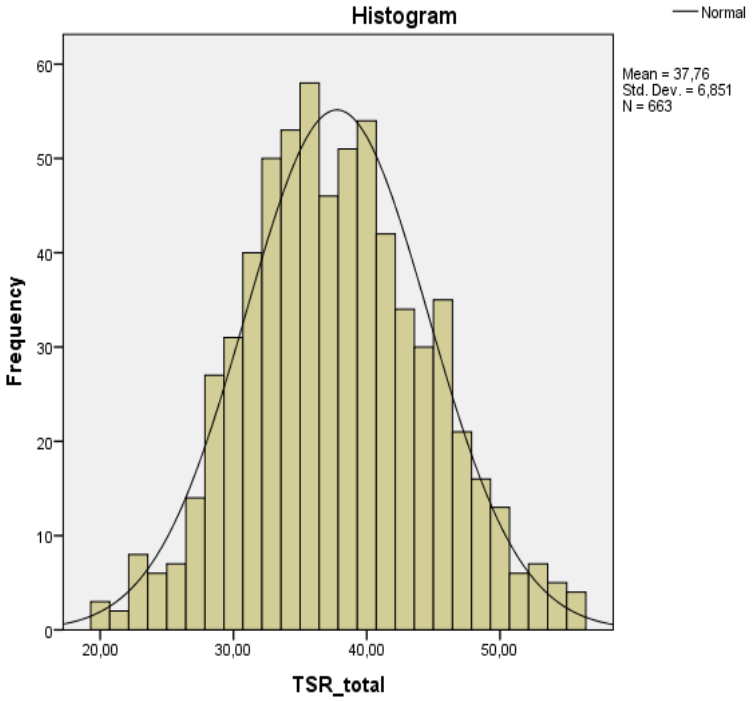
Bu formu imzalamadan önce, çalışmayla ilgili sorularınız varsa lütfen sorun. Daha sonra sorunuz olursa, Ayşe Aylin Buran'a (Telefon:.....) sorabilirsiniz. Araştırmayla ilgili haklarınız konusunda INAREK'e danışabilirsiniz. Bana anlatılanları ve yukarıda yazılanları anladım. Bu formun bir kopyasını aldım. Çalışmaya katılmayı kabul ediyorum.

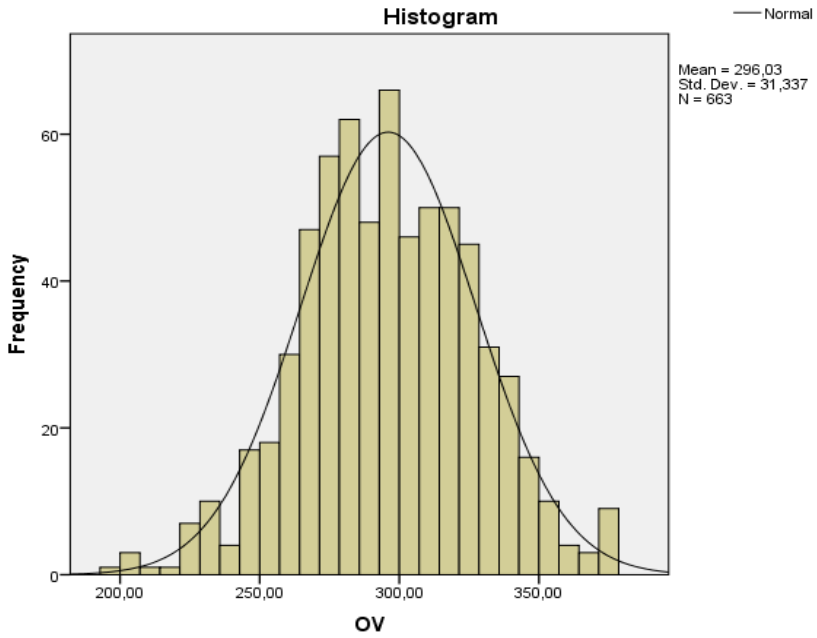
Katılımcı Adı-Soyadı:
İmzası:
Tarih (gün/ay/yıl):

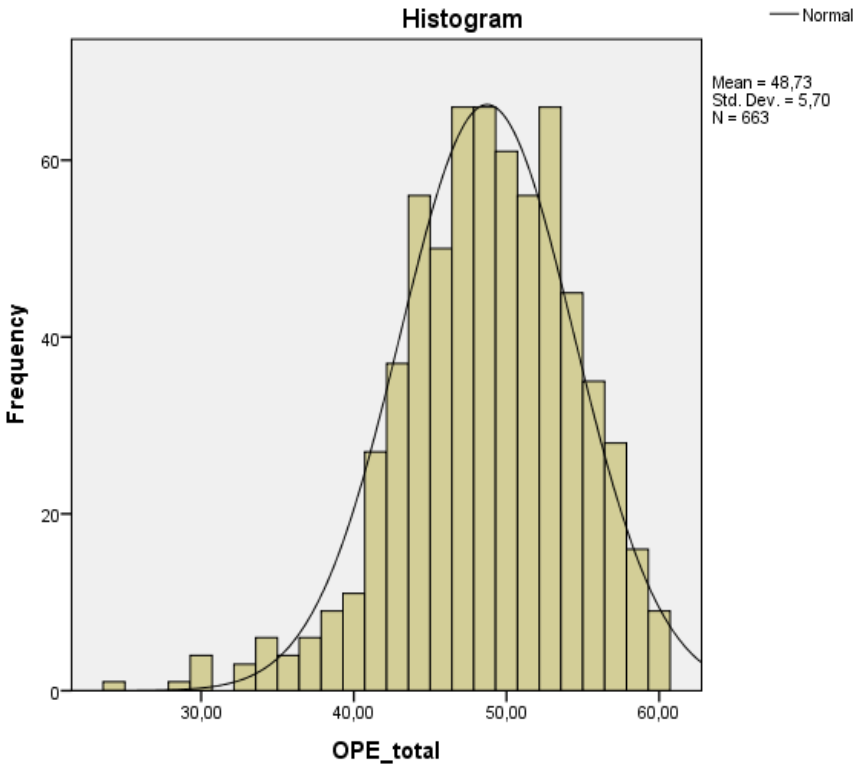
Araştırmacının Adı-Soyadı:
İmzası:
Tarih (gün/ay/yıl):

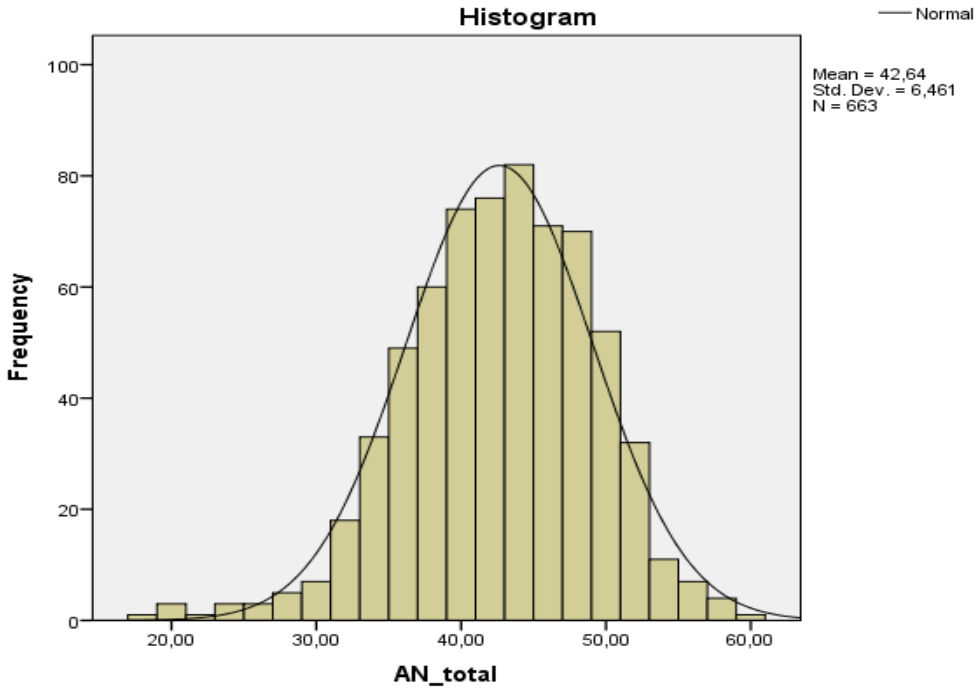
APPENDIX G

HISTOGRAMS OF CCTDI-T'S TOTAL AND SUBSCALE SCORES






Histogram
Normal
Mean = 48,73
Std. Dev. = 5,70
N = 663
Frequency
0
20
40
60
30,00
40,00
50,00
60,00
OPE_total


Histogram
Normal
Mean = 42,64
Std. Dev. = 6,461
N = 663
Frequency
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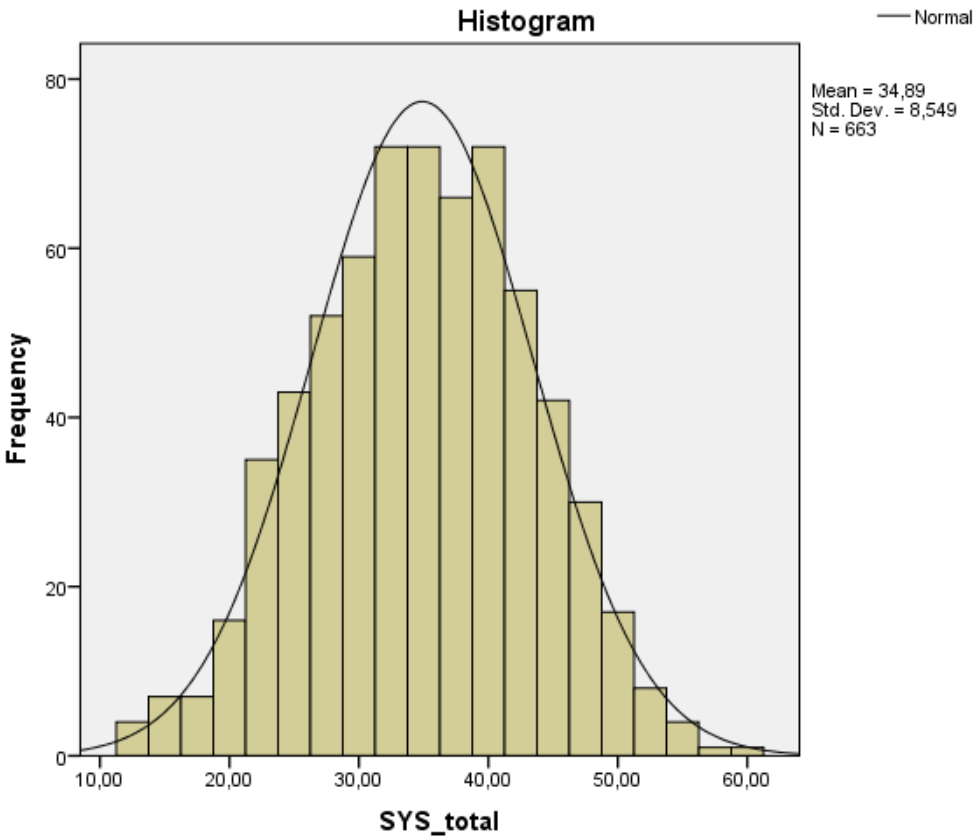
20
40
60
80
100
20,00
30,00
40,00
50,00
60,00
AN_total


Histogram
Normal
Mean = 34,89
Std. Dev. = 8,549
N = 663
Frequency
SYS_total
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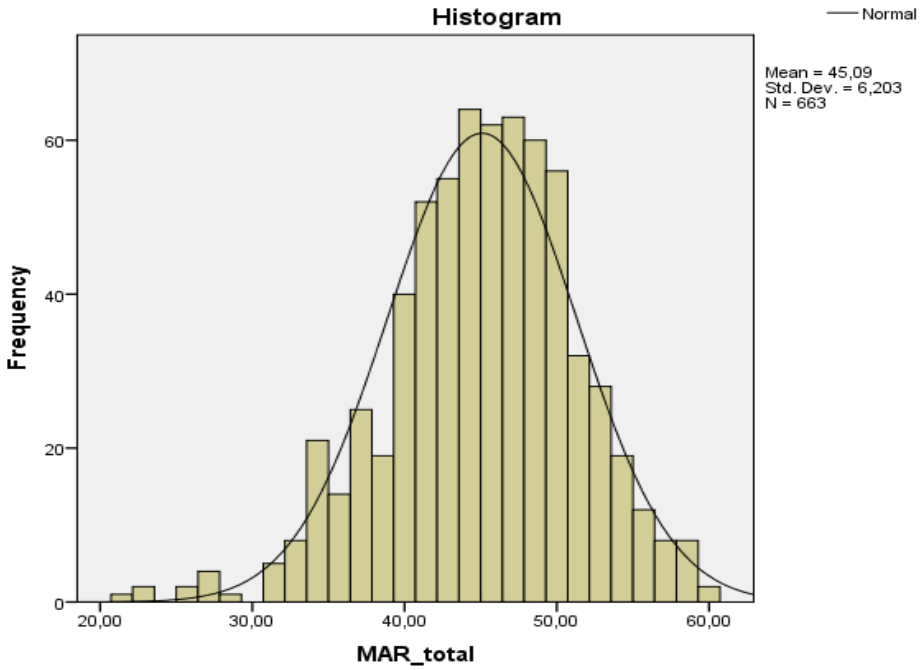
20
40
60
80
10,00
20,00
30,00
40,00
50,00
60,00


Histogram
Normal
Mean = 45,09
Std. Dev. = 6,203
N = 663
Frequency
MAR_total
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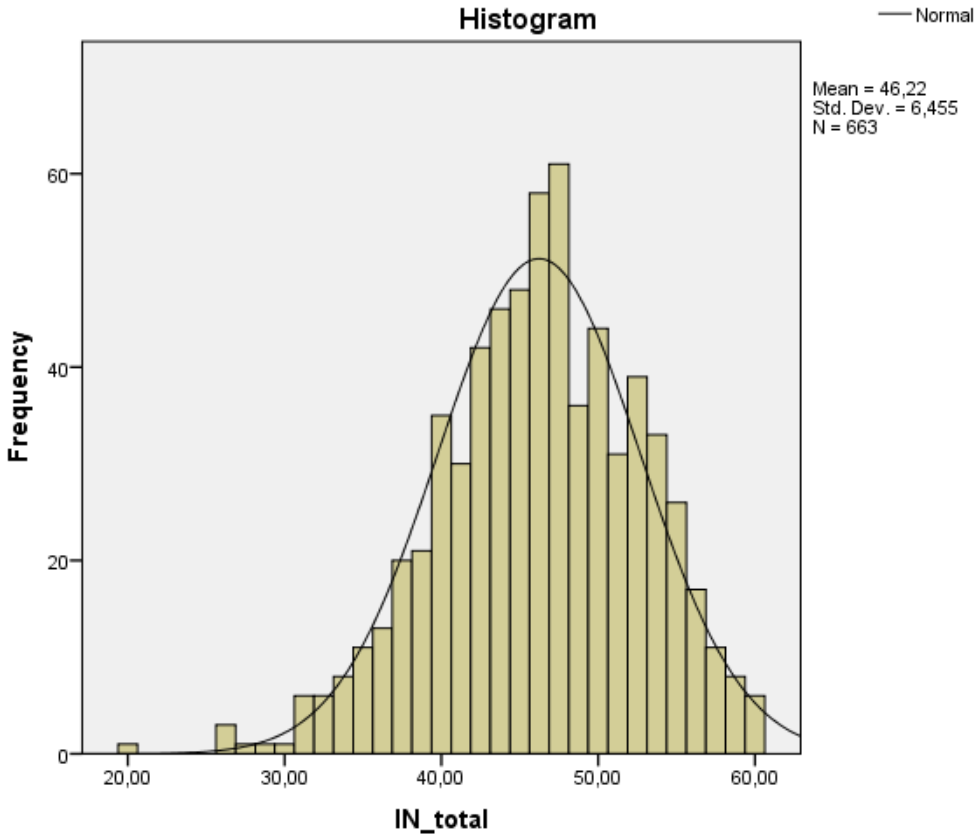
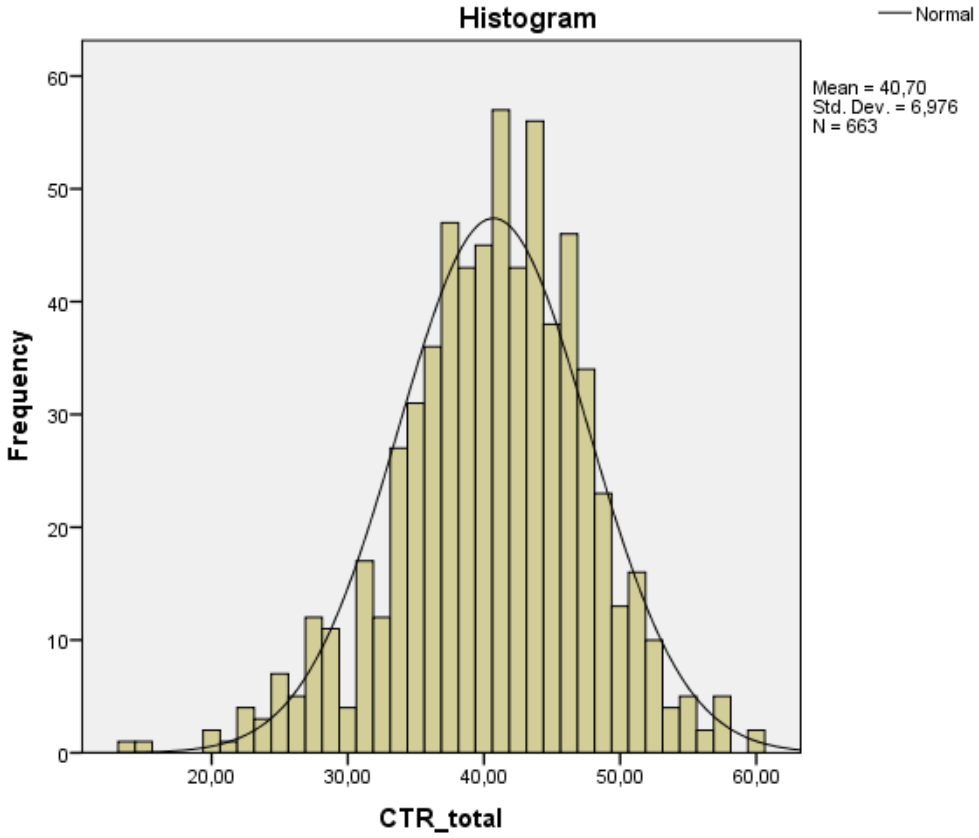
20
40
60
20,00
30,00
40,00
50,00
60,00


Histogram
Normal
Mean = 46,22
Std. Dev. = 6,455
N = 663
Frequency
0
20
40
60
20,00
30,00
40,00
50,00
60,00
IN_total


Histogram
Normal
Mean = 40,70
Std. Dev. = 6,976
N = 663
Frequency
0
10
20
30
40
50
60
20,00
30,00
40,00
50,00
60,00
CTR_total

APPENDIX H

COMPARISON OF THE SUB DIMENSIONS ACCORDING TO GENDER

Variables	gender	N	Mean	Std. Deviation	t	df	p
TSR_total	Female	552	37.4224	6.77286			
	Male	109	39.3971	7.08787	-2.760	659	.006**
OPE_total	Female	552	48.8872	5.65075			
	Male	109	47.9423	5.95216	1.581	659	.114
AN_total	Female	552	42.5471	6.32094			
	Male	109	43.1927	7.16017	-.953	659	.341
SYS_total	Female	552	34.5924	8.70032			
	Male	109	36.5138	7.62260	-2.148	659	.032*
CTR_total	Female	552	40.6567	6.85970			
	Male	109	40.8945	7.62643	-.325	659	.746
IN_total	Female	552	45.9601	6.40845			
	Male	109	47.4541	6.58572	-2.214	659	.027*
MAR_total	Female	552	45.4296	5.90431			
	Male	109	43.3552	7.37295	2.767	659	.006**
OV	Female	552	295.4955	31.16135			
	Male	109	298.7497	32.50312	-.989	659	.323

APPENDIX I

COMPARISON OF THE SUB DIMENSIONS ACCORDING TO DEPARTMENTS BY USING ONE-WAY ANOVA

		N	Mean	Std. Deviation	F	P
Truth.	GUID	146	37.4853	6.58043		
	CET	66	39.1342	6.16812		
	SCED	73	36.4384	6.83513		
	FLED	167	38.2720	7.48547		
	PRED	211	37.5626	6.66991		
	Total	663	37.7569	6.85130	1.685	.152
Open-mind.	GUID	146	49.0607	5.19957		
	CET	66	48.3983	5.43559		
	SCED	73	47.3581	6.10133		
	FLED	167	50.1796	5.64541		
	PRED	211	47.9215	5.79394		
	Total	663	48.7266	5.70029	5.122	.000
Analiticity	GUID	146	42.1370	6.62558		
	CET	66	42.1818	6.91689		
	SCED	73	43.2055	5.80938		
	FLED	167	42.2395	6.65791		
	PRED	211	43.2512	6.24488		
	Total	663	42.6395	6.46076	1.077	.367
Systematicity	GUID	146	35.4452	8.16154		
	CET	66	33.7500	8.83883		
	SCED	73	34.5548	8.06164		
	FLED	167	34.1168	9.60076		
	PRED	211	35.6043	7.96322		
	Total	663	34.8944	8.54879	1.187	.315
Self-confidence	GUID	146	40.6678	8.02497		
	CET	66	40.2273	7.28839		
	SCED	73	41.1301	6.98512		
	FLED	167	39.8578	6.81542		
	PRED	211	41.3803	6.15506		
	Total	663	40.6976	6.97588	1.258	.285
Inquisitiv.	GUID	146	46.3784	6.22102		
	CET	66	46.6477	6.97578		

	SCED	73	46.7466	5.81373		
	FLED	167	46.4596	6.93349		
	PRED	211	45.6161	6.27539		
	Total	663	46.2236	6.45467	.734	.569
Maturity.	GUID	146	45.1468	5.96844		
	CET	66	45.2165	6.82360		
	SCED	73	44.2270	6.43491		
	FLED	167	46.5526	5.99000		
	PRED	211	44.1435	6.07126		
	Total	663	45.0873	6.20301	3.983	.003
Overall	GUID	146	296.3212	32.44942		
	CET	66	295.5557	31.37034		
	SCED	73	293.6605	29.69449		
	FLED	167	297.6779	33.76945		
	PRED	211	295.4795	29.25397		
	Total	663	296.0259	31.33743	.242	.915

Multiple Comparisons of the Department Analysis of Variance Using Tukey

Multiple Comparisons							
Tukey HSD							
Dependent Variable	(I) dep_grup	(J) dep_grup	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence	
						Lower Bound	Upper Bound
TSR_total	GUID	CET	-1.64888	1.01413	.481	-4.4229	1.1251
		SCED	1.04697	.98008	.823	-1.6339	3.7278
		FLED	-.78670	.77466	.848	-2.9057	1.3323
		PRED	-.07730	.73602	1.000	-2.0906	1.9360
	CET	GUID	1.64888	1.01413	.481	-1.1251	4.4229
		SCED	2.69584	1.16131	.139	-.4808	5.8724
		FLED	.86217	.99408	.909	-1.8570	3.5813
		PRED	1.57157	.96428	.479	-1.0661	4.2092
	SCED	GUID	-1.04697	.98008	.823	-3.7278	1.6339
		CET	-2.69584	1.16131	.139	-5.8724	.4808
		FLED	-1.83367	.95932	.312	-4.4577	.7904
		PRED	-1.12427	.92839	.745	-3.6638	1.4152
	FLED	GUID	.78670	.77466	.848	-1.3323	2.9057
		CET	-.86217	.99408	.909	-3.5813	1.8570
		SCED	1.83367	.95932	.312	-.7904	4.4577
		PRED	.70940	.70814	.855	-1.2276	2.6464
	PRED	GUID	.07730	.73602	1.000	-1.9360	2.0906
		CET	-1.57157	.96428	.479	-4.2092	1.0661
		SCED	1.12427	.92839	.745	-1.4152	3.6638
		FLED	-.70940	.70814	.855	-2.6464	1.2276
OPE_total	GUID	CET	.66240	.83517	.933	-1.6221	2.9469
		SCED	1.70254	.80712	.217	-.5052	3.9103
		FLED	-1.11898	.63796	.402	-2.8640	.6261
		PRED	1.13920	.60614	.329	-.5188	2.7972
	CET	GUID	-.66240	.83517	.933	-2.9469	1.6221
		SCED	1.04015	.95638	.813	-1.5759	3.6562
		FLED	-1.78137	.81866	.190	-4.0207	.4580
		PRED	.47681	.79411	.975	-1.6954	2.6490
	SCED	GUID	-1.70254	.80712	.217	-3.9103	.5052
		CET	-1.04015	.95638	.813	-3.6562	1.5759
		FLED	-2.82152*	.79003	.003	-4.9825	-.6605
		PRED	-.56334	.76456	.948	-2.6547	1.5280
	FLED	GUID	1.11898	.63796	.402	-.6261	2.8640
		CET	1.78137	.81866	.190	-.4580	4.0207
		SCED	2.82152*	.79003	.003	.6605	4.9825
		PRED	2.25818*	.58318	.001	.6630	3,8534
	PRED	GUID	-1.13920	.60614	.329	-2.7972	.5188
		CET	-.47681	.79411	.975	-2.6490	1.6954
		SCED	.56334	.76456	.948	-1.5280	2.6547
		FLED	-2.25818*	.58318	.001	-3.8534	-.6630
AN_total	GUID	CET	-,04483	,95808	1,000	-2,6655	2,5759

		SCED	-1.06849	.92591	.777	-3.6012	1.4642
		FLED	-.10253	.73185	1.000	-2.1044	1.8993
		PRED	-1.11420	.69534	.496	-3.0162	.7878
	CET	GUID	..04483	.95808	1.000	-2.5759	2.6655
		SCED	-102366	1.09713	.884	-4.0247	1.9774
		FLED	-.05770	.93914	1.000	-2.6266	2.5112
		PRED	-1.06937	.91098	.766	-3.5612	1.4225
	SCED	GUID	1.06849	.92591	.777	-1.4642	3.6012
		CET	1.02366	1.09713	.884	-1.9774	4.0247
		FLED	.96596	.90629	.824	-1.5131	3.4450
		PRED	-.04571	.87708	1.000	-2.4448	2.3534
	FLED	GUID	.10253	.73185	1.000	-1.8993	2.1044
		CET	.05770	.93914	1.000	-2.5112	2.6266
		SCED	-.96596	.90629	.824	-3.4450	1.5131
		PRED	-1.01166	.66900	.555	-2.8416	.8183
	PRED	GUID	1.11420	.69534	.496	-.7878	3.0162
		CET	1.06937	.91098	.766	-1.4225	3.5612
		SCED	.04571	.87708	1.000	-2.3534	2.4448
		FLED	1.01166	.66900	.555	-.8183	2.8416
SYS_total	GUID	CET	1.69521	1.26730	.668	-1.7713	5.1617
		SCED	.89041	1.22474	.950	-2.4597	4.2405
		FLED	1.32844	.96805	.646	-1.3195	3.9764
		PRED	-.15906	.91976	1.000	-2.6749	2.3568
	CET	GUID	-1.69521	1.26730	.668	-5.1617	1.7713
		SCED	-.80479	1.45122	.981	-4.7744	3.1648
		FLED	-.36677	1.24225	.998	-3.7648	3.0312
		PRED	-1.85427	1.20500	.538	-5.1504	1.4418
	SCED	GUID	-.89041	1.22474	.950	-4.2405	2.4597
		CET	.80479	1.45122	.981	-3.1648	4.7744
		FLED	.43803	1.19880	.996	-2.8411	3.7172
		PRED	-1.04947	1.16016	.895	-4.2229	2.1240
	FLED	GUID	-1.32844	.96805	.646	-3.9764	1.3195
		CET	.36677	1.24225	.998	-3.0312	3.7648
		SCED	-.43803	1.19880	.996	-3.7172	2.8411
		PRED	-1.48750	.88492	.446	-3.9081	.9331
	PRED	GUID	.15906	.91976	1.000	-2.3568	2.6749
		CET	1.85427	1.20500	.538	-1.4418	5.1504
		SCED	1.04947	1.16016	.895	-2.1240	4.2229
		FLED	1.48750	.88492	.446	-.9331	3.9081
CTR_total	GUID	CET	.44054	1.03390	.993	-2.3876	3.2686
		SCED	-.46233	.99918	.991	-3.1954	2.2708
		FLED	.81002	.78977	.844	-1.3503	2.9703
		PRED	-.71252	.75037	.877	-2.7651	1.3400
	CET	GUID	-.44054	1.03390	.993	-3.2686	2.3876
		SCED	-.90286	1.18395	.941	-4.1414	2.3357
		FLED	.36949	1.01346	.996	-2.4027	3.1417
		PRED	-1.15306	.98308	.767	-3.8421	1.5360

	SCED	GUID	.46233	.99918	.991	-2.2708	3.1954
		CET	.90286	1.18395	.941	-2.3357	4.1414
		FLED	1.27235	.97802	.691	-1.4029	3.9476
		PRED	-.25019	.94649	.999	-2.8392	2.3388
	FLED	GUID	-.81002	.78977	.844	-2.9703	1.3503
		CET	-.36949	1.01346	.996	-3.1417	2.4027
		SCED	-1.27235	.97802	.691	-3.9476	1.4029
		PRED	-1.52255	.72195	.217	-3.4973	.4522
	PRED	GUID	.71252	.75037	.877	-1.3400	2.7651
		CET	1.15306	.98308	.767	-1.5360	3.8421
		SCED	.25019	.94649	.999	-2.3388	2.8392
		FLED	1.52255	.72195	.217	-.4522	3.4973
IN_total	GUID	CET	-.26930	.95817	.999	-2.8902	2.3516
		SCED	-.36815	.92599	.995	-2.9011	2.1648
		FLED	-.08116	.73192	1.000	-2.0832	1.9209
		PRED	.76231	.69541	.809	-1.1399	2.6645
	CET	GUID	.26930	.95817	.999	-2.3516	2.8902
		SCED	-.09885	1.09723	1.000	-3.1002	2.9025
		FLED	.18815	.93923	1.000	-2.3810	2.7573
		PRED	1.03161	.91107	.789	-1.4605	3.5237
	SCED	GUID	.36815	.92599	.995	-2.1648	2,9011
		CET	.09885	1.09723	1.000	-2.9025	3.1002
		FLED	.28699	.90638	.998	-2.1923	2.7663
		PRED	1.13046	.87716	.698	-1.2689	3.5298
	FLED	GUID	.08116	.73192	1.000	-1.9209	2.0832
		CET	-.18815	.93923	1.000	-2.7573	2.3810
		SCED	-.28699	.90638	.998	-2.7663	2.1923
		PRED	.84347	.66907	.715	-.9867	2.6736
	PRED	GUID	-.76231	.69541	.809	-2.6645	1.1399
		CET	-1.03161	.91107	.789	-3.5237	1.4605
		SCED	-1.13046	.87716	.698	-3.5298	1.2689
		FLED	-.84347	.66907	.715	-2.6736	.9867
MAR_total	GUID	CET	-.06968	.91189	1.000	-2.5640	2.4247
		SCED	.91977	.88127	.835	-1.4908	3.3303
		FLED	-1.40584	.69656	.258	-3.3112	.4995
		PRED	1.00324	.66182	.552	-.8071	2.8136
	CET	GUID	.06968	.91189	1.000	-2.4247	2.5640
		SCED	.98944	1.04423	.878	-1.8669	3.8458
		FLED	-1.33616	.89386	.566	-3.7812	1.1089
		PRED	1.07292	.86706	.729	-1.2988	3.4446
	SCED	GUID	-.91977	.88127	.835	-3.3303	1.4908
		CET	-.98944	1.04423	.878	-3.8458	1.8669
		FLED	-2.32560	.86260	.056	-4.6851	.0339
		PRED	.08347	.83480	1.000	-2.2000	2.3669
	FLED	GUID	1.40584	.69656	.258	-.4995	3.3112

		CET	1.33616	.89386	.566	-1.1089	3.7812
		SCED	2.32560	.86260	.056	-.0339	4.6851
		PRED	2.40907*	.63675	.002	.6673	4.1508
	PRED	GUID	-1.00324	.66182	.552	-2.8136	.8071
		CET	-1.07292	.86706	.729	-3.4446	1.2988
		SCED	-.08347	.83480	1.000	-2.3669	2.2000
		FLED	-2.40907*	.63675	.002	-4.1508	-.6673
OV	GUID	CET	.76545	4.65886	1.000	-11.9782	13.509
		SCED	2.66071	4.50241	.976	-9.6550	14.976
		FLED	-1.35675	3.55875	.996	-11.0912	8.3777
		PRED	.84166	3.38125	.999	-8.4073	10.090
	CET	GUID	-.76545	4.65886	1.000	-13.5091	11.978
		SCED	1.89527	5.33500	.997	-12.6979	16.488
		FLED	-2.12219	4.56676	.990	-14.6139	10.369
		PRED	.07622	4.42983	1.000	-12.0409	12.193
	SCED	GUID	-2.66071	4.50241	.976	-14.9764	9.6550
		CET	-1.89527	5.33500	.997	-16.4884	12.697
		FLED	-4.01746	4.40703	.892	-16.0723	8.0373
		PRED	-1.81905	4.26498	.993	-13.4853	9.8472
	FLED	GUID	1.35675	3.55875	.996	-8.3777	11.091
		CET	2.12219	4.56676	.990	-10.3695	14.613
		SCED	4.01746	4.40703	.892	-8.0373	16.072
		PRED	2.19841	3.25317	.962	-6.7002	11.097
	PRED	GUID	-.84166	3.38125	.999	-10.0906	8.4073
		CET	-.07622	4.42983	1.000	-12.1934	12.040
		SCED	1.81905	4.26498	.993	-9.8472	13.485
		FLED	-2.19841	3.25317	.962	-11.0970	6.7002

*. The mean difference is significant at the 0.05 level.

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