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A COMPARATIVE STUDY OF CRITICAL THINKING DISPOSITIONS OF MONOLINGUAL AND BILINGUAL CHILDREN

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To 'MY SON' who gave me inspiration

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TEK DİLLİ VE ÇİFT DİLLİ ÇOCUKLARIN ELEŞTİREL DÜŞÜNME EĞİLİMLERİNİN KARŞILAŞTIRILMASI

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ÖZ

Bu çalışmanın amacı, tek dilli ve çift dilli çocukların eleştirel düşünme eğilimlerini karşılaştırmaktır. Bu çalışmada, tek dilli çocukların ve çift dilli çocukların eleştirel düşünme eğilimleri incelenmiştir. Örneklem grubu 2017-2018 eğitim-öğretim yılında Almanya'nın Aschaffenburg şehrindeki ortaokullara devam eden tek dilli ve çift dilli çocuklardır. Örneklem grubuna 196 (82 tek dilli ve 114 çift dilli) çocuk dahil edilmiştir. Bu çalışmada anket kullanılmıştır. Eleştirel düşünme eğilimlerini gözlemlemek amacıyla deney ve kontrol grubuna bir anket formu uygulanmıştır. Eleştirel Düşünme Eğilimi Ölçeği (Semerci, 2016) kullanılmıştır. Veriler, SPSS programı ile bağımsız örneklem t-testi karşılaştırmaları kullanılarak analiz edilmiştir. Tek dilli ve iki dilli çocukların eleştirel düşünme eğilimleri, cinsiyet ve yaş gibi bağımsız değişkenler açısından analiz edilmiştir. Veri analizleri sonucunda çift dillilik ve eleştirel düşünme eğilimleri arasında olumlu bir ilişki olduğu ortaya çıkmıştır.

Anahtar Kelimeler : Dil edinimi, Çift dillilik, Eleştirel düşünme, Eleştirel düşünme eğilimi

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ABSTRACT

The purpose of this study is to compare critical thinking dispositions of monolingual and bilingual children. In this study, critical thinking dispositions of monolingual children and bilingual ones were analysed. Bilingual children and monolingual, of German language, children in secondary schools in Aschaffenburg, Germany in academic year of 2017-2018 have been used. The sample group is made up of 196 (82 monolingual and 114 bilingual) children. Survey method is used in this study. The experiment and the control groups were given a questionnaire so as to observe the critical thinking dispositions. Critical Thinking Disposition Scale (Semerci, 2016) was used. The data were analysed by the SPSS software by using the comparisons of Independent Two Samples t-test. Critical thinking dispositions of monolingual and bilingual children were also analysed in terms of gender and age. The findings have showed that there is a positive correlation between bilingualism and critical thinking dispositions.

Key Words : Language Acquisition, Bilingualism, Critical Thinking, Critical Thinking Dispositions

Number of Pages : 114

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LIST OF ABBREVIATIONS

CT	Critical Thinking
BFLA	Bilingual First Language Acquisition
SLA	Second Language Acquisition
ELT	English Language Teaching
MA	Masters of Arts
SPSS	Statistical Package for Social Sciences

CHAPTER ONE

I. INTRODUCTION

Bilingualism is a growing phenomenon worldwide in our modern era. There are many reasons of growing population of bilingual people, such as emigration, social media, international mobility, professional or personal reasons and so on. Bilingual people are present in a variety of age range and with different background all around the world. As Brown (1994) stated, bilingualism is the way how people live. Bilingual people not only speak two different languages but also think in two different ways. What is more, they are closely familiar with two different cultures and traditions. They endeavour to exceed the limits of their mother tongue and this situation leads them to be completely influenced in many ways.

Studies show that various cognitive factors are in a positive relationship with bilingualism. Hakuta (1990) asserts that bilinguals seem to be better at different intellectual skills. Critical thinking ability and disposition are among these intellectual skills. Additionally, this study is theoretically based on the theories of Whorf (1956), Vygotsky (1934, 1962) and Cummins (1979a). Whorf (1956) hypothesizes that people who can speak different languages think in a different pattern.

Hakuta (1986) defines a bilingual as ‘a happy thinker’. Because bilingual people can handle problems through two linguistic systems. They can alternate the languages to find the one which would more effectively ‘guide thinking’ (p. 77).

Critical thinking is crucial in that one can apply it to different areas of life and learning (American Philosophical Association 1990). In this study, the literature of critical thinking and bilingualism has been reviewed in terms of their use in academic studies. The relationship between bilingualism and critical thinking has been explained from different perspectives of variety of researchers and theoreticians.

1.1 Problem Statement

There are many studies on critical thinking of teachers and university students, yet studies done about critical thinking dispositions of secondary school students are limited. There are not any studies comparing critical thinking dispositions of monolingual and bilingual students at secondary school level. Therefore, this study is to be done to compare the critical thinking dispositions of monolingual and bilingual secondary school students and fulfil this vacancy in the literature.

1.2 Purpose of the Study

The main purpose of this study is to compare critical thinking dispositions of monolingual and bilingual children so as to see if there is a significant difference between critical thinking dispositions of monolingual and bilingual children. The other goals of the study are to define the critical thinking dispositions of monolingual and bilingual secondary school students and to compare their critical thinking dispositions in terms of gender and age in order to see if there is a statistically significant difference.

1.3 Research Questions

This study has been based on the following research questions:

1. What are critical thinking dispositions of monolingual children?

2. What are critical thinking dispositions of bilingual children?

3. Is there a statistically significant difference between critical thinking dispositions of monolingual and bilingual children?

4. Is there any statistically significant difference between critical thinking dispositions of monolingual and bilingual children in terms of gender?

5. Is there any statistically significant difference between critical thinking dispositions of monolingual and bilingual children in terms of age?

1.4 Scope of the Study

The research consisted of 196 students attending to three different public secondary schools in Aschaffenburg, Germany in the academic year 2017- 2018. Secondary schools have been chosen because of the intellectual development of children who are said to be in the process of formal operational period. The participants are divided into two groups, one of which includes 82 monolingual students while the other group includes 114 bilingual students. Monolingual group consists of 34 female and 48 male students, whereas the bilingual group consists of 50 female and 64 male students. In this research, Critical Thinking Dispositions Scale (Semerci, 2016) was applied to students in order to compare critical thinking dispositions of monolingual and bilingual children.

1.5 Limitations of the Study

This study is limited by only three secondary school students in Germany. Besides, critical thinking disposition levels of students are limited to measurable qualifications of Critical Thinking Disposition Scale by Semerci (2016).

1.6 Definitions of the Terms

Second Language Acquisition (SLA): Acquiring a new language along with the mother tongue is called second language acquisition. Second language acquisition occurs also when someone learns a second language after being competent in a first language (Fromkin, Rodman, and Hyams, 2003).

Monolingual: The Oxford English Dictionary (2010) defines a monolingual as ‘a person speaking only one language’.

Bilingual: The Oxford English Dictionary (2010) defines a bilingual as a person ‘speaking two languages fluently’.

Critical Thinking: Paul and Elder (2008) defines critical thinking as ‘the art of analysing and evaluating thinking with a view to improving it’.

Critical Thinking Disposition: Critical thinking disposition is a person's inclination to think critically when s/he solves problems, evaluate ideas, or make decisions (Facione, Facione and Giancarlo, 1998).

CHAPTER TWO

II. REVIEW OF LITERATURE

This chapter constitutes two main topics. The former one reviews language acquisition and bilingualism. The latter one is the literature of critical thinking in the fields of philosophy, psychology and educational sciences. Firstly, language acquisition and bilingualism has been defined and explained. Secondly, critical thinking has been explained and some important definitions and views on critical thinking have been given. So as to see the dispositions of children, for critical thinking, a survey developed by Semerci (2016) has been used.

2.1 Language Acquisition

2.1.1 First Language Acquisition

Acquisition refers to acquiring a language naturally in its cultural environment. Language acquisition is a process of learning a first language, in other words, mother tongue. The language acquisition capability is species specific and it is unique to human being. Haynes (2005) asserts that 'children acquire language through a subconscious process during which they are unaware of grammatical rules' and that 'they get a feel for what is and what is not correct'. Therefore, one can say that children learn their mother tongue effortlessly.

First language or mother tongue acquisition is also called 'child language acquisition' (Crystal, 1985) or simply 'Child Language' (Ingram, 1975) or Child's language (Clark and Clark, 1977).

There are various theories of first language acquisition, some of which to be explained in this study are behaviourist, innatist, and interactionist theory.

The first theory to be briefly mentioned is Behaviourist Theory which asserts that environment plays a crucial role in child's learning a language. Skinner (1957) suggested in Verbal Behaviour Analysis that children interact with the environment on the basis of conditioning, such as stimulus, association response and

reinforcement. As a result of these interactions, child learns the language. That's to say, a child learns a language by means of imitation, repetition and the reinforcement of the successful linguistics attempts.

Another theory about first language acquisition is Innateness Hypothesis, according to which children's knowledge of language is inborn. Noam Chomsky (1959) claims that a child has an innate capacity to acquire a language. Chomsky proposes that human beings have an innate ability to communicate, from the first moment they interact with others. He called that interaction Language Acquisition Device (LAD). The Psychology Glossary (1998) defined LAD as language learning capacity of people do not change from culture to culture or from environment to environment. It is the same worldwide. All the children learn language in developmental phases. Children reach these phases at the same age regardless of where they grow up.

The last theory to be mentioned here is the Interactionist Theory, the followers of which are Lev Vygotsky, Jerome Bruner and Jean Piaget. Social interactionists argue that a baby acquires a language not only biologically and but also socially. According to this theory, plenty of factors affect language acquisition. Among these factors are physical, linguistic, cognitive, and social factors (Cooter and Reutzel, 2004).

According to Larsen-Freeman and Long (1991), interactionist theorists describe language acquisition with not only environmental but also innate components. In other words, language is viewed as a matter of syntactic structures along with a matter of discourse. Therefore, interactionist views are thought to be more powerful than other theories.

2.1.2 Bilingual Child Language Acquisition

Bilingual child language acquisition or bilingual first language acquisition (BFLA) generally refers to acquiring two languages in early childhood. When children are exposed to two languages, they acquire each of them in much the same way as monolinguals. Bilingual acquisition during childhood can be regarded as an instance of simultaneous of two 'first' languages. In fact, BFLA children's language development within one language is much as the same as first language acquisition,

apart from the fact that bilingual children acquire two different languages at the same time.

According to Thompson (2000), the two language acquisition patterns which a bilingual child generally follows are simultaneous bilingualism, which is sometimes called infant bilingualism, and sequential bilingualism. Simultaneous bilingualism occurs when a child acquires two languages at the same time as a result of exposition to two different languages from birth. An example of simultaneous bilingualism is that a child acquires two languages simultaneously when parents speaking two different languages to the child. On the other hand, when a child acquires a primary language and then acquires a second one at a certain point, sequential bilingualism occurs. When it comes to give an example for sequential bilingualism, a child acquires a language at home, then learns a second one at a nursery or school.

2.1.3 Second Language Acquisition

Different researchers have conducted many studies which have tried to shed light on the process of second language acquisition. As a result, many descriptions have been made to explain the way SLA occurs. According to Gass and Selinger (2008), second language is not only one language learnt along with first language but third, fourth, or more languages learnt are also called second language of a person.

Krashen (1988), states that 'acquisition requires meaningful interactions in the target language - natural communication - in which speakers are concerned not with the form of their utterances but with the messages they are conveying and understanding' (p. 1). That is to say, it is necessary to present second language as natural and real as possible so as to create a meaningful L2 process of acquisition.

The factors influencing second language acquisition consist of external factors and internal factors. While external factors are environment, community, social prestige of second language, and differences between the two languages.

One of the external factors influencing second language acquisition is the environment where language acquisition takes place. The two environments in which children generally acquires second language are home and school. Then comes the community factor. The more supportive the community is, better is second language

learned. According to the findings of Place and Hoff (2011), bilingual children have better bilingual outcomes when they get maximum input from native speakers around the children. What is next is the factor of prestige. According to DeCapua and Wintergerst (2009), children develop the languages which is more prestigious socially as a second language more successfully. Final factor is resemblance of the two languages. While learning a second language, differences and similarities in the first and second languages also affects language acquisition. For example, a research by Antoniou, Liang, Ettlinger, and Wong (2015) show that the similarity of sounds in the first and the second languages facilitates easy acquisition of second language.

Internal factors include age of exposure to the second language, motivation, and aptitude of language learning. The age of exposure to second language influences how their second language develops. According to the research of Place and Hoff (2011) when children are exposed to a language more frequently, they happen to be more competent learners. Another factor is child's being motivated to acquire a second language. Children with motivation acquire a language more quickly than children without motivation. Pae (2008) argues that intrinsic motivation brings more success in acquisition. The last factor which impacts learner's development of the language to be stated in this study is language learning aptitude. Yilmaz and Granena (2016) state that there is a relationship between aptitude levels and competence in acquiring a second language. Results of their research show that language aptitude is in relation with better performance at second language.

2.2 Bilingualism

There is not a consensus on the definition of bilingualism among researchers. Therefore, different definitions from various scholars will be given. In this way, bilingualism can be dealt with from different points of views. According to Bloomfield (1933), bilingualism is having native-like control of two or more languages. This definition is rather limited as Baker (2006) finds it ambiguous. Because it seems unclear what 'control' is and who the 'native' people are. He evaluates this definition of bilingualism as maximalist and states that simple categorization is random and a value judgment is required about what the basic competence is for someone to be called bilingual. However, the danger of being too exclusive is not overcome by being too inclusive. According to Einar Haugen (1953),

the beginning of bilingualism is a person's uttering full and meaningful sentences in a second language. In the same vein, Grabe and Kaplan (1991) define bilingualism as the ability to make a meaningful phrase in two languages and 'native-like ability in two languages including reading, writing, speaking, and understanding at a highly educated level'. The definition made by Baker (1993) is that being able to speak two languages is not enough to be a bilingual as one need also to be able to write in that language. Contemporary studies about bilingualism engage in both oral and literal skills which are listening, speaking, reading, and writing. On the other hand, Döpke (1992) claims that understanding or even reading a language even if one is not able to produce it can be regarded as bilingualism.

Grosjean (2010) states that bilingualism is using more than one language or dialect in daily life. Grosjean (1985, 1994) also argues that two contradictory views of bilingualism exist. These are fractional and holistic view of bilinguals. According to the first view, a bilingual is defined as a person consisted of two monolinguals. However, the second view opposes this view in that a bilingual has a unique linguistic profile and cannot be evaluated as the sum of two complete or incomplete monolinguals.

Defining bilingualism is difficult in that language ability develops continuously and assessing one's proficiency in a language is not easy, especially as much of language knowledge is context based. Generally, most of the bilinguals speak the two languages with different aims. For example, while one language is spoken with family members at home, another language is used in academic life or at school. In this case, selection of vocabulary also changes according to the environment where a language is used. That is to say, the language used at home is more informal than the language used at school. Because the latter language is used for academic purposes and accordingly, word selection is not the same as in the first language. However, this situation does not mean that the bilingual is insufficient in one language or in the other, as the bilingual applies only different knowledge into different situations. Shortly, Darko (2016) defines a bilingual as a person using two different languages in everyday life in different circumstances or environments which he or she is in. Actually, the languages used by a bilingual are spoken in his or her different areas of life.

According to Alptekin (2010), a bilingual person can be regarded as somebody who with different levels of knowledge in two languages, with different degrees of expanding knowledge in the social and pragmatic aspects of those languages and different levels of culture specific conceptualizing and with varying levels of communicative competence in that a bilingual is also a bicultural person'.

To sum up, bilingual is a complete linguistic entity, an integrated whole. The two languages of a bilingual are used with different people, in different contexts and for different aims. Therefore, a bilingual may be proficient in these languages in different extents. Levels of proficiency in these languages may be different in that it depends on which contexts (e.g. street and home) and how often the bilingual uses these languages. It is to be expected and natural that a bilingual may have a stronger communicative competence in one of his or her two languages in some domains than in others. When it comes to the assessment of a bilingual' competence in two languages, it is essential that such assessments be sensitive to such differences of when, where and with whom bilinguals use either of their languages and reveal the multi-competences of bilinguals (Cook, 1992).

2.2.1 Theories of Bilingual Language Acquisition

Developing a better insight into what bilingualism is, some theories of bilingualism should be explained. There are various theories, such as the balance theory, common underlying proficiency, and threshold theory. These theories enable us to comprehend how children acquire a second language.

The first theory to be mentioned is the balance theory. Another name for this theory is the separate underlying proficiency (SUP) model. According to this theory, bilingual has two separate areas in his or her mind for each language and the more competent a bilingual become in a language, the less competent he or she is in the second language. Besides, it is assumed that one cannot transfer the knowledge and abilities in a language into the second language (Bilash, 2009). It is asserted by this theory that it is difficult for a child to acquire a second language in addition to his or her first language.

The common underlying proficiency (CUP) model is the second theory to be explained. This model opposes the balance theory or SUP model, as it asserts that

there is a central operating system in bilinguals which handles the two languages. The languages may be to some extent separate. However, the production of the languages is done through an underlying cognitive process. Bilinguals foster their competences in a language by means of some cognitive processes, such as ability to read, abstract thinking and problem solving (Baker, 1996). As is seen in Figure 1 below, this model is visualized as two icebergs representing the two languages of a bilingual which unite under water with the name of common underlying proficiency.

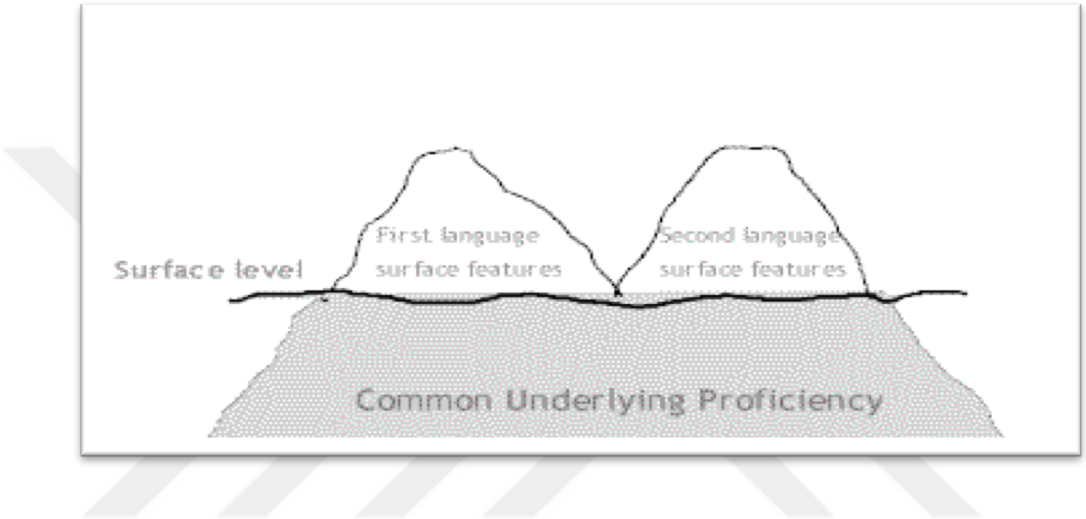

Figure 1: Common Underlying Proficiency Model

According to Baker (1996), these two icebergs symbolizes the first and second language. Even though they appear separately, they are still united underneath the water line. The fusion of icebergs means that both languages operate by means of the same operating system instead of functioning interdependently. In accordance with this analogy, because languages share a common system, people who have proficiency in more than one language can learn further languages more easily.

The last theory to be mentioned is the threshold theory which evolved from the CUP model and was developed by Cummins (1976). This theory explains how cognition and the competence in bilingualism relate. Cummins (1979a, p. 229) states that some features of bilingualism may affect cognitive development of a child in a positive way. These positive effects can be seen provided that the child is competent in a second language at a certain minimum level. This level is called threshold level of bilingual competence that must be attained by a child not only to make advantage of

being a bilingual on his or her cognitive development but also to refrain from cognitive deficits. In other words, this theory declares that level of bilingualism and cognitive advantage have a positive relationship. Limited bilingual speakers whose competences in the two languages are at the lower threshold level result in having cognitive disadvantages, such as difficulty in school curriculum. However, learners with higher bilingual proficiencies have cognitive advantages.

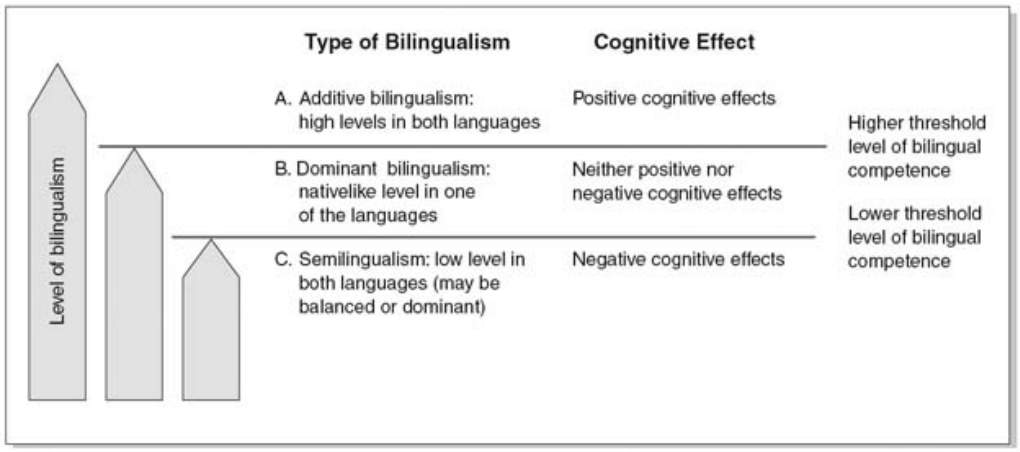

Figure 2: The Threshold Hypothesis

As seen in Figure 2, Cummins (1979, p. 230) demonstrates types of bilingualism and their cognitive effects. Bilingualism has three different types which are semilingualism, dominant bilingualism and additive bilingualism. In addition, two threshold levels can be seen between these types of bilingualism: lower threshold level of bilingual competence and higher threshold level of bilingual competence. If a bilingual passes the first threshold level, negative cognitive effects are avoided. When a bilingual reaches the second threshold, he or she is able to make advantage of positive cognitive effects of bilingualism. Moreover, there is a neutral area where any noticeable advantages or disadvantages may not be seen for the cognitive development between these two thresholds levels.

2.2.2 Dimensions of Bilingualism

When analysing bilingualism, some dimensions which are to be used to define and measure it should be considered. Baker (2006) lists these dimensions as ability, use, and balance of two languages, age, development, culture, contexts and elective bilingualism. Furthermore, social interaction is another criterion for analysing

bilingualism regarding a person's use and function. That is to say, an individual who is limitedly proficient in languages may have sufficient interaction skills and consequently be effective in communication while others are linguistically competent, but he or she may not communicate so effectively.

In addition, Valdés and Figueroa (1994) offer that bilinguals are classified with regard to:

1. Age (simultaneous/ sequential/ late).

2. Ability (incipient/ receptive/ productive).

3. Balance of two languages (balanced/ non-balanced).

4. Development (ascendant/ recessive).

5. Context (e.g. home, school).

To start with, the age of the child when he or she starts learning a second language divides bilingual language acquisition into two categories which are simultaneous or infant bilingualism and sequential bilingualism. Simultaneous or infant bilinguals acquire two different languages at the same time from birth, whereas a sequential bilingualism occurs when the child acquires a second language after he or she is three years old (De Houwer, 2009). Late bilingualism is learning a second language in adulthood or adolescence. When bilingualism is determined by the ability, the bilinguals are called incipient, receptive and productive. According to development, there are two types of bilingualism. These are ascendant bilingualism in which second language is developing and recessive bilingualism in which one language is decreasing.

When it comes to balance of two languages, there are two types of bilingual: balanced and non-balanced. Grosjean (1982) defines 'balanced' bilinguals as people with nearly equal fluency in two languages and 'non-balanced' bilinguals as people with more fluency or dominance in one language. 'Native-like proficiency in both languages' as 'true' bilingualism is also called equilingualism or ambilingualism (Cutler, Mehler, Norris, and Segui, as cited in Gottardo and Grant, 2008). However,

the majority of bilinguals are non-balanced, thus balanced bilinguals are very rare. At this point, Fishman (1971) points out that since many bilinguals use different languages in different situations, anyone rarely has the ability to use their languages equally across all situations. To illustrate, a bilingual uses one language at home or in daily life and the other can be used while working or in academic life. At this point, we can say that the contexts where a bilingual acquires and uses the two languages may change.

Owens (2012, p. 220) argues that generally, non-balanced bilingualism, or when an individual is more proficient in one language, is seen more often. Nevertheless, it should be indicated that a bilingual may be more competent in his or her second language than the first language. Because the use of the mother tongue may be used less frequently. In order to distinguish balanced bilinguals from pseudo-bilinguals, Peal and Lambert (1962) clarify that a balanced bilingual is proficient in both languages and able to communicate in these two languages as much effectively. This type of bilingual learns the two language and becomes proficient in both of them in the childhood. On the other hand, a pseudo-bilingual is more competent in one language. He or she does not communicate in the second language. The last point to be clarified about balanced bilingualism is that there may be a balance between the two languages of a bilingual who is nearly equally incapable of them both. Even though it can be literally said that the bilingual is balanced, the word 'balanced' is not used in that meaning within the framework of bilingualism. What is meant with balanced bilingual is that a bilingual is reasonably competent in the two languages (Baker, 2006). That is to say, the other balance of incompetence in the languages is not what alluded is.

Moreover, elective and circumstantial bilingualism are added to this list as a sixth dimension. Elective bilingualism refers to choosing to learn a second language. This learning may occur formally in a class. Elective bilinguals come from major language groups, for example, English-speaking Americans learning a second language. While they learn a second language, they do not lose their first language. When it comes to circumstantial bilingualism, it refers to learning another language to survive. For these bilinguals, another language is a necessity to operate efficiently in the community. They may be immigrants and need to learn this second language.

Turkish people living in Germany can be given as an example for this case. On the contrary to elective bilingualism, first language of circumstantial bilinguals is inclined to be substituted by the second language. Because their demands in different areas of life, such as education, politics or work, and need to communicate in the community where they live cannot be met by their first language. Finally, the main difference between elective and circumstantial bilinguals is that elective bilinguals choose to learn, whereas circumstantial bilinguals often need to learn a second language.

2.2.3 Studies on Bilingualism

A variety of studies has been carried out about childhood bilingualism. These studies attempt to find out if there is a relation between childhood bilingualism and different cognitive abilities, such as metalinguistic awareness (Ben- Zeev, 1977; Cummins, 1976; Ianco-Worrall, 1972), cognitive flexibility (Peal and Lambert, 1962), and divergent thinking and creativity (Landry, 1974; Torrance, Wu, Gowan, and Allioti, 1970).

In early studies, researchers asserted that intelligence quotient of a bilingual child was lower and his or her cognitive development was not so good as a monolingual child (Bialystok et al, 2014). Thompson (1952) claims that the language development of a child who grows up bilingually is certainly retarded. Therefore, considering the probable problems encountered in the common language as a result of bilingualism, he questions the worthiness of speaking two languages. However, these early studies have been criticized because bilingualism was not described efficiently at the time. In addition, some bilinguals who participated in these studies were not from the same socioeconomic class with monolingual participants, which may lead a wrong comparison.

In later studies of bilingualism, such variables have been controlled more successfully. The first research which changes this general negative view is the research by Peal and Lambert (1962). The study is about how bilingualism and cognition relate and carried out in Montreal, Canada. They define a bilingual as ‘a youngster whose wider experiences in two cultures have given him advantages which a monolingual does not enjoy. Intellectually his experience with two language

systems seems to have left him with a mental flexibility, a superiority in concept formation, a more diversified set of mental abilities. In contrast, the monolingual appears to have a more unitary structure of intelligence which he must use for all types of intellectual tasks' (p.20). With this definition, they were able to change the perspective of people about the bilingualism from negative to positive. While carrying out a study at French schools which are middle-class, their aim is not only to make a balanced bilingual group and a group of monolinguals but also to compare monolinguals and the bilinguals who all come from the same socioeconomic class. With this purpose, 110 children out of 364 children, who are 10 years old, have been chosen to take part in the research. There are 18 variables which measure IQ in this research and the findings indicate that while bilinguals are better than monolinguals at 15 variables, there is not a difference on the other three variables. Therefore, they conclude that bilinguals are:

- mentally more flexible
- superior in concept formation
- better in abstract thinking
- able to think more independently of words.

In addition, they further state that the development of IQ is affected by an environment which is bilingual and bicultural in a positive way and that two languages of a bilingual facilitate the development of verbal IQ. That is to say, there is a positive transfer.

Since 1960s, a great many studies comparing monolingual children with balanced bilingual ones have been conducted which are in parallel with the positive findings of Peal and Lambert's (1962). These studies show that balanced bilinguals perform better in some of the cognitive abilities, such as concept formation (Liedtke and Nelson, 1968) and metalinguistic awareness (Cummins, 1978). Furthermore, Balkan (1970) carried out different tasks on balanced bilinguals and monolinguals and he points out that bilinguals have better cognitive flexibility than monolinguals. Besides, Ben-Zeev (1977) compared monolinguals and bilinguals and suggested

similar results of bilinguals' cognitive flexibility. Bilingual children also performed remarkably better in symbol substitution and verbal transformation tasks than monolinguals. Moreover, bilinguals were observed to approach the cognitive tasks analytically during the study. At this point, it should be pointed out that the definition of 'cognitive flexibility' has never been adequately done. The term has been used by different studies to describe different cognitive abilities. Among these studies, there is a description of how bilinguals perform general reasoning tests (Peal and Lambert, 1962); how bilinguals pay attention to structure and detail (Ben-Zev, 1976, 1977a); how they perform perceptual and 'set changing' tasks (Balkan, 1970); how they perform creativity tests measuring their divergent thinking skills (Landry, 1974). In all of these studies, bilinguals seem to have showed a superiority in cognitive flexibility.

A number of studies (e.g., Bialystok, 1988; Cummins, 1976; Lemmon and Goggin, 1989) show that a relationship between critical thinking and bilingualism exist. For example, Bialystok (1988) have carried out some tasks which include metalinguistic problems. The participants are children who have different level of bilingualism. Some demands have been made on either analysis of knowledge (i.e., the way in which the language is represented in the mind) or control of processing (i.e., the selection of information for use). Finally, he concludes that fully bilingual children outperform partially bilingual children in tasks which require high levels of knowledge analysis.

As Cummins (1976) hypothesizes in threshold theory, the positive influences of bilingualism on bilingual's cognitive functioning can be observed in cases of additive bilingualism in which a bilingual attains a threshold level of linguistic proficiency in the first and second languages.

According to McLaughlin (1984), as a bilingual is aware of the possibility to express the same thing in two different ways, he or she is linguistically more advantageous than a monolingual one.

In more recent studies, some studies point out that bilingualism affects strongly the development of language and linguistic competences as well as cognitive development (Bialystok, 2009; Kroll, Dussias, Bogulski, and Kroff, 2012).

In the light of these studies given, one can conclude that bilingualism has some advantages, such as academical or cognitive development. (Hamers and Blanck, 2003). Therefore, studies of bilingualism show us that bilinguals seem to be better in using their cognitive abilities which may lead them to the success in critical thinking.

2.3 Critical Thinking (CT)

Before explaining what critical thinking is, it would be appropriate to discuss the word 'critical' first. Because the word 'critical' may sometimes mean something negative. However, critical thinking has nothing to do with negativity. At this point, Halpern (1997) makes a clear explanation about this misunderstanding that may sometimes occur. Halpern gives an example in which the word critical conveys a negative meaning: 'She was critical of the movie.'. Unlike this example, the critical word in critical thinking has a denotation of evaluation. This evaluation is in a constructive way and might have positive and negative attributes. Critical thinking involves evaluating our decisions and solutions of a problem, which are the outcomes of our thought processes. Moreover, thinking process itself is also evaluated in critical thinking. That is to say, the reasoning behind a conclusion made or the factors which are involved in deciding are evaluated.

After a first glimpse of critical thinking, the historical background of it may show us how important it is. The term critical thinking is newly proposed in the twentieth century. However, in the ancient Greek this phenomenon can be seen in the works of some philosophers, such as Socrates, Plato and Aristotle. Critical thinking was largely viewed by these philosophers as the ability to question, examine and think about the ideas and values (Wilgis and McConnell, 2008). In 1605, English philosopher Francis Bacon described critical thinking as 'a desire to seek, patience to doubt, fondness to meditate, slowness to assert, readiness to consider, carefulness to dispose and set in order; and hatred for every kind of imposture.'

2.3.1 Defining Critical Thinking

Critical thinking has many different definitions; therefore, defining it shortly is not that easy. Instead of selecting one of these definitions for this study, as many definitions as possible are to be given. Because different important characteristics of

critical thinking can be spotted in each one of them. Some useful definitions of critical thinking from distinguished theoreticians are as follow:

Dewey (1910) names it as ‘reflective thinking' which refers to consider any belief or assumed knowledge actively, persistently and carefully by taking into account what the reasons behind it are and the consequences it may lead.

Goodwin Watson and Edward Glaser have a pioneering development in the increase of the progressive education emphasis on critical thinking. According to Glaser (1941) critical thinking involves inclination of thinking the problems and issues to be experienced carefully, knowing techniques to inquire logically and to reason as well as having necessary skills to apply these techniques. In addition to the common elements that are shared with Dewey’s definition, the definition of Glaser stresses that some intellectual skills are also required. Zintz and Maggart (1984), in the same way, suggest that critical thinking includes learning how to make evaluation, inferences and draw evidence-based conclusions.

Another important definition of critical thinking is made by Ennis (1985) who names it ‘reasonable and reflective thinking’ focusing upon what one should do or believe. Beside the common elements with previous definitions, this one is different from them in that it includes action and decision making. In addition, he asserts that the various cognitive skills of critical thinking can only result in genuine rational reflective thinking, when they are used together with a complex of dispositions. For instance, these component cognitive skills may be used to serve either closed-minded or open-minded thought. According to Ennis (1985), people who have genuine open-mindedness:

- have serious consideration of other people’s perspectives (dialogical thinking);

- reason from premises that they do not agree and do not let the disagreement interfere with their reasons (suppositional thinking);

- withhold judgement when they have not sufficient evidence.

According to Sternberg (1986), critical thinking is cognitive processes, strategies, and representations that people apply while they solve problems, make decisions, and

learn new concepts. Shortly afterwards, Harvey Siegel (1988) formulates the definition of critical thinking as thinking 'appropriately moved by reasons' (p. 32). The link between critical thinking and rationality is indicated in this definition. However, the ideal of rationality has also various explications.

Matthew Lipman (1988) endorses that beside the mental processes used to solve problems or to make decisions, critical thinking also involves 'skilful, responsible thinking, that facilitates good judgement because it relies upon criteria, is self-correcting, and is sensitive to context' (p. 39). As understood from this holistic definition, one should employ criteria while thinking and reflect on his or her thinking to correct it when necessary.

In 1990, a number of philosophers, educators, and scientists who specialized in critical thinking came together in Delphi research project under the sponsorship of the American Philosophical Association. These experts reached a consensus on definition of critical thinking and characteristics of an ideal critical thinker as well as identifying skill and dispositional dimension of critical thinking. The findings of this project are published with the name of Delphi Report. In this report, critical thinking is defined as 'the process of 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.'

Schafersman (1991) supports the view that there are many components of critical thinking and he defines it as follows:

> Critical thinking means correct thinking in the pursuit of relevant and reliable knowledge about the world. Another way to describe, it is reasonable, reflective, responsible, and skilful thinking that is focused on deciding what to believe or do. A person who thinks critically can ask appropriate questions, gather relevant information, efficiently and creatively sort through this information, reason logically from this information, and come to reliable and trustworthy conclusions about the world that enable one to live and act successfully in it (p. 3).

According to Paul (1993), critical thinking is 'a systematic way to formally shape one's thinking. It functions purposefully and exactingly.' (p. 12). He adds that critical thinking is also 'disciplined, comprehensive, based on intellectual standards, and, as a result, well-reasoned.' (p. 20). With a more extensive description, he states that there are some features of critical thinking that distinguish it from other thinking.

Firstly, the thinker is aware of the systematic nature of a good thinking and in a continuous effort to improve his or her thinking. Moreover, the thinker can apply all the components of critical thinking efficiently to academic learning as well as to learning in every dimensions of life.

According to Paul (1993), there are two forms of critical thinking, the first of which is *sophistic* or *weak sense* critical thinking. It is disciplined to serve the interests of a particular individual or group, to exclusion of other relevant persons, and groups. The second one is *fair-minded* or *strong sense* critical thinking. This one is disciplined to consider the interests of diverse people or groups.

Paul (1993) gives an overview of the concept of critical thinking in the Table 1 below. The table gives a detailed list of components of critical thinking and explanations of these components.

Table 1: The Concept of Critical Thinking

WHAT IS CRITICAL THINKING?	
A unique kind of purposeful thinking	in any subject area or topic, whether academic or practical, requiring **intellectual fitness training for the mind** akin to physical fitness training for the body
In which the thinker systematically and habitually	**actively develops traits** such as intellectual integrity, intellectual humility, fair-mindedness, intellectual empathy, and intellectual courage
Imposes criteria and intellectual standards upon the thinking	**identifies the criteria of solid reasoning,** such as precision, relevance, depth, accuracy, sufficiency and **establishes a clear standard** by which the effectiveness of the thinking will be finally assessed

Taking charge of the construction of thinking	**awareness of the elements of thought**, such as assumptions and point of view, that are present in all well-reasoned thinking; **a conscious, active and disciplined effort** to address each element is displayed
Guiding the construction of the thinking according to the standards	**continually assessing** the course of construction during the process, **adjusting, adapting, improving,** using the candles of criteria and standards to light the way
Assessing the effectiveness of the thinking according to the purpose, the criteria, and the standards	Deliberately **assessing the thinking to determine its strengths and limitations**, according to the defining purpose, criteria and standards**, studying the implications** for further thinking and improvement

At this point, different perspectives on critical thinking can be given. Fisher and Scriven (1997) show the nature of the concept as an essential academic ability as they define critical thinking as 'a skilful and active interpretation and evaluation of observations and communications, information and arguments.' Ivie (2001) perceives critical thinking as 'the ability that enables individuals to establish clear and logical connection between beginning premise, relevant facts, and warranted conclusions' (p.10). For Browne and Keeley (2004), critical thinking is not only an ability to ask and respond to critical questions, but also a willingness to actively utilize such questions at an appropriate time. With a more extensive description, critical thinking, according to Elder (2007), is self-guided, self-disciplined thinking which tries to reason at the highest level of quality in a fair-minded way. She asserts that critical thinkers consistently try to live rationally, reasonably, empathically as they are keenly aware of the inherently flawed nature of human thinking when it is

not checked. In a similar vein, Halpern (2010) endorses that critical thinking is the utilization of cognitive skills and strategies which increase the probability of a desirable outcome. Critical thinking is 'purposeful, reasoned, and goal directed'. It is involved in solving problems, formulating inferences, calculating likelihoods, and making decisions, when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task (p. 382). Furthermore, Cottrell (2011) supports the view that critical thinking is a complex process of deliberation which involves a wide range of skills and attitudes.

Brookfield (2012) explains what the basic process of critical thinking entails as follows:

1. identifying the assumptions that frame our thinking and determine our actions,

2. checking out the degree to which these assumptions are accurate and valid,

3. looking at our ideas and decisions (intellectual, organizational, and personal) from several different perspectives,

4. on the basis of all this, taking informed actions.

When defining critical thinking, there are some limitations as it is such a complex concept. However, the noticeable point in the various definitions given above is that all of them admit the effective role of critical thinking in many disciplines because of its association with abilities, such as problem solving and decision making. Although there may be controversy in these definitions, there are also many common abilities such as reasoning, identifying underlying assumptions, decision making, problem solving, and evaluation. The usefulness of these definitions cannot be denied, however, instead of taking only one of these definitions, a number of definitions are given. Because, on the one hand, each definition underlines a different dimension of critical thinking and on the other hand has its limitations.

2.3.2 Characteristics of Critical Thinking and Critical Thinkers

Defining critical thinking leads us to define also who a critical thinker is. Bearing all the definitions given in mind, the necessity of critical thinking can be summarized with Brookfield's (1987) words: 'when we think critically we become aware of the

diversity of values, behaviours, social structures, and artistic forms in the word'. It can be concluded that critical thinking leads people to be open to differences and creative. Glaser (1941) has another point of view about critical thinkers and believes that they consistently attempt to live in a rational, reasonable and empathic way. At this point, Facione (1989) explicates that critical thinking is 'purposeful, self-regulatory judgment'. The judgment leads the thinker to interpret, analyse, evaluate, and make inferences. In addition, that judgment is based on explanation of some considerations, such as evidential, conceptual, methodological, criteriological, or contextual considerations.

Critical thinking has some certain characteristics. There are three groups of components in the Paul-Elder model of critical thinking. These are intellectual standards, elements of thought and intellectual traits. Paul (1993) argues that comprehensive critical thinking has the following characteristics:

Critical thinking is responsive to and guided by intellectual standards without which thinking cannot achieve excellence. The development of intellectual traits is intentionally supported by critical thinking. These traits are characteristic of a critical thinker. When it comes to elements of thought, a critical thinker can identify them which are available in all instances of thinking or reasoning. The critical thinker can make the logical connection between the elements and the problem confronted, and will usually ask himself or herself questions, such as these:

- What is the **purpose** of my thinking?
- What precise **question** am I trying to answer?
- Within what **point of view** am I thinking?
- What **information** am I using?
- How am I **interpreting** that information?
- What **concepts** or ideas are central to my thinking?
- What **conclusions** am I coming to?
- What am I taking for granted, what **assumptions** am I making?
- If I accept the conclusions, what are the **implications**?
- What would the **consequences** be, if I put my thought into action?

Paul and Elder (2008) develop a 'Critical Thinking Model'. In this model, the critical thinkers have personal standards to believe any subject. The first stage is to analyse the subject, which is clear enough to survey. Here they check the accuracy, relevance, logicalness, depth, fairness and precision. While they are taking the information, the source should be significant and the information should be

completeness. The purposes, inferences, implications, assumptions also have to have these characteristics or else the critical thinker would understand that experiment would not be impartial. Here are these components and their relation to each other:

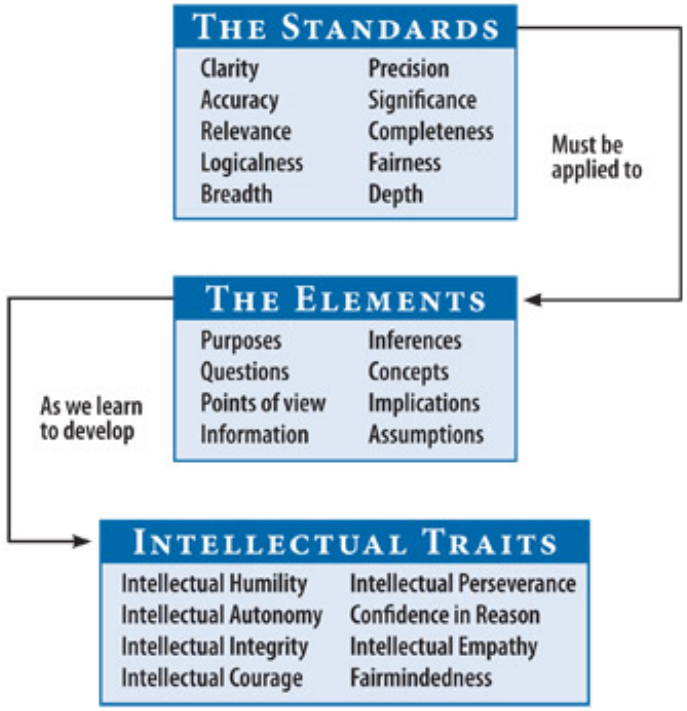

Figure 3: Paul- Elder Critical Thinking Model

According to Paul and Elder (2010), critical thinkers routinely apply intellectual standards to the elements of reasoning so as to develop intellectual traits.

The thoughts of people are shaped with many components such as purpose, questions, perceptions from the implications, notions and so on. People define their goals, information, results, signs, implications and assumptions with the help of these components of the thought. Paul and Elder (2010), in the *Miniature Guide to Critical Thinking*, presents the elements of thought as follows:

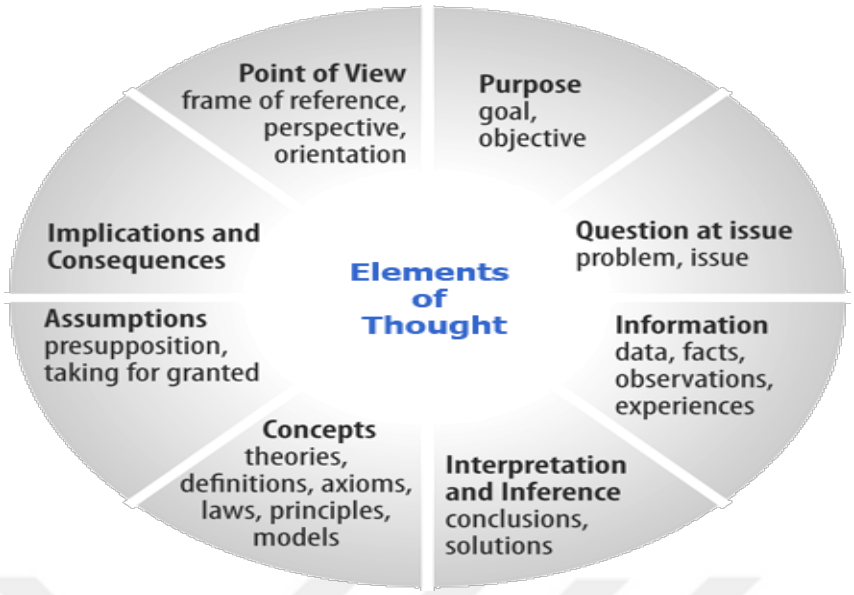

Figure 4: The Elements of Thought

According to Paul and Elder (2010), students need to master two essential dimensions of thinking so as to learn to improve their thinking. They need to be able to identify the elements of thought, and to assess their use of these elements, as follows:

- All reasoning has a purpose.
- All reasoning is an attempt to figure something out, to settle some question, to solve some problem.
- All reasoning is based on assumptions.
- All reasoning is done from some point of view.
- All reasoning is based on data, information, and evidence.
- All reasoning is expressed through, and shaped by, concepts and ideas.
- All reasoning contains inferences by which we draw conclusions and give meaning to data.
- All reasoning leads somewhere, has implications and consequences.

As for dimensions of critical thinking, these are critical thinking skills and critical thinking dispositions. While skills are the cognitive aspect of CT, dispositions are the affective aspect (Aloqaili, 2012). The first dimension focuses on cognitive strategies whereas the second dimension emphasizes on the attitudinal elements and the internal motives for problem solving. The elaborate explanations of CT skills and CT dispositions will be made. Then, the distinction between them is to be given.

2.3.3 Critical Thinking Skills

Critical thinking skills are cognitive skills by nature which an ideal critical thinker must possess. There are various lists of these skills by different scholars. For example, Cottrell (2011) presents critical thinking skills as shown below:

- Focusing attention so as to recognise the significance of fine details
- Using attention to fine detail in order to recognise patterns, such as similarities and differences, absence and presence, order and sequence
- Using recognition of pattern in order to compare and contrast items and to predict possible outcomes
- Sorting and labelling items into groups, so that they form categories
- Using an understanding of categories to identify the characteristics of new phenomena and make judgements about them.

According to Cottrell (2011), people apply these thinking skills in their daily lives easily. They find it generally not that difficult to adapt these skills to different circumstances; for instance, while solving a new problem or studying academically. The reason behind this situation might be that people may be unaware of what strategies they use while applying these skills in unfamiliar contexts even though the skills are used in known contexts. Moreover, when people are accustomed to using these skills without much effort in a known context, it may become more difficult to recognize the skills that is used.

In Table 2, the list of critical thinking skills and subskills, which is taken from the Delphi Report (1990), is given:

Table 2: Cognitive Skill Dimension of Critical Thinking

SKILL	SUBSKILLS
1. Interpretation	Categorization, Decoding significance, Clarifying meaning
2. Analysis	Examining ideas, Identifying arguments, Analysing arguments
3. Evaluation	Assessing claims, Assessing arguments
4. Inference Querying	Evidence, Conjecturing alternatives, Drawing conclusions
5. Explanation	Stating results, Justifying procedures, Presenting arguments
6. Self-Regulation	Self-examination, Self-correction

Six critical thinking skills can be seen in the Table 2. These skills have also some subskills. The first cognitive skill is interpretation which is ‘to comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures, or criteria’.

The second one is the skill of analysis referring ‘to identify the intended and actual inferential relationships among statements, questions, concepts, descriptions or other forms of representation intended to express beliefs, judgments, experiences, reasons, information, or opinions’.

Another skill is evaluation which is defined as assessing ‘the credibility of statements or other representations which are accounts or descriptions of a person's perception, experience, situation, judgment, belief, or opinion; and to assess the logical strength of the actual or intend inferential relationships among statements, descriptions, questions or other forms of representation’.

Next skill is inference which means ‘to identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information and to deduce the consequences flowing from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or other forms of representation’.

Explanation is defined as ‘to state the results of one's reasoning; to justify that reasoning in terms of the evidential, conceptual, methodological, criteriological and contextual considerations upon which one's results were based; and to present one's reasoning in the form of cogent arguments’.

The last skill of self-regulation means ‘self-consciously to monitor one's cognitive activities, the elements used in those activities, and the results educed, particularly by applying skills in analysis and evaluation to one's own inferential judgments with a view toward questioning, confirming, validating, or correcting either one's reasoning or one's results’.

What is more, using critical thinking skills has many advantages. According to Cottrell (2011), these benefits are that critical thinking skills improve attention and

observation; provide people with more focused reading; improve the ability to identify the main points in a text or any kind of message instead of being distracted by points that are not as much significant; make people better at responding to the relevant points in a message; let people know the ways to express themselves more efficiently; provide people with analytical skills to be applied in different circumstances.

2.3.4 Critical Thinking Dispositions

This study mainly focuses on critical thinking dispositions, which is a field that has been relatively less studied. In Delhi Report (1990), it is concluded that there are two dimensions of critical thinking which are skills and dispositions. Critical thinking skills are defined in general as competences that are applied while making decisions and judgments. When it comes to critical thinking dispositions, they are the inclination of using critical thinking skills.

Broadly defined by Norris (1994), critical thinking dispositions are aptitude of thinking in a certain way in certain circumstances. Siegel (1988) supports the significance of critical thinking dispositions by defining critical thinking as being able to assess reasons in a proper way and being eager or inclined to act and believe on the basis of reasons. This definition includes both skills and dispositions. In fact, it can be said that when people have disposition to think critically, they improve their critical thinking skills and are able to use them. This can be counted as the main advantage of critical thinking disposition.

Critical thinking disposition also refers to having a 'spirit of inquiry', being open minded, drawing unwarranted assumptions carefully, and evaluating the reliability of evidence (Pithers and Soden, 2000).

According to Facione (1990), people who have good critical thinking disposition in general are inclined to have an inquiring mind, concern to stay well-informed, trust in reason, self- confidence, open-mindedness, flexibility, comprehension of other people's views, fair-mindedness, honesty in facing personal prejudices, cautiousness in making or altering judgments, willingness to reassess the issues. These are approaches that a critical thinker applies in general situations. Furthermore, there are approaches one can use when encountered a specific issue or problem. At that point,

a critical thinker has tendency to be clear in asking questions, orderly in complicated situations, diligent to seek relevant information, reasonable while applying criteria, focused on the present issue, persistent even when problems are faced, precise to the degree that the subject and the circumstances of inquiry permit. All of these dispositions which critical thinkers exhibit are given in a list by Facione (1990) as in Table 3 below:

Table 3: Dispositions of Critical Thinking

APPROACHES TO LIFE AND LIVING IN GENERAL:	APPROACHES TO SPECIFIC ISSUES, QUESTIONS OR PROBLEMS:
- inquisitiveness with regard to a wide range of issues, - concern to become and remain generally well-informed, - alertness to opportunities to use CT, - trust in the processes of reasoned inquiry, - self-confidence in one's own ability to reason, - open-mindedness regarding divergent world views, - flexibility in considering alternatives and opinions, - understanding of the opinions of other people, - fair-mindedness in appraising reasoning, - honesty in facing one's own biases, prejudices, stereotypes, egocentric or sociocentric tendencies, - prudence in suspending, making or altering judgments, - willingness to reconsider and revise views where honest reflection suggests that change is warranted.	- clarity in stating the question or concern, - orderliness in working with complexity, - diligence in seeking relevant information, - reasonableness in selecting and applying criteria, - care in focusing attention on the concern at hand, - persistence though difficulties are encountered, - precision to the degree permitted by the subject and the circumstance.

At this point, Facione (1990) expresses the importance of these dispositions as asserting that people may have critical thinking skills; however, when they do not develop these dispositions, they cannot probably make effective use of the skills they already have. Actually, a person who has necessary skills, but has not the tendency to use them cannot apply these skills in his or her life as effectively as the one who has

developed critical thinking dispositions. Therefore, it is important to cultivate these dispositions so as to ensure the use of critical thinking skills when needed.

Other than Facione, Ennis (1987) also identifies critical thinking dispositions. In his list, a person who thinks critically tends to:

- seek a clear statement of the thesis or question;
- seek reasons;
- try to be well informed;
- use and mention credible sources;
- take into account the total situation;
- try to remain relevant to the main point;
- keep in mind the original or basic concern;
- look for alternatives;
- be open-minded;
- take a position (and change a position) when the evidence and reasons are sufficient to do so;
- seek as much precision as the subject permits;
- deal in an orderly manner with the parts of a complex whole;
- use one's critical thinking abilities;
- be sensitive to the feelings, level of knowledge, and degree of sophistication of others.

From a practical view, there is an interdependent relation between critical thinking skills and disposition. For example, possessing critical thinking skills without willingness to apply them decreases their effectiveness. Vice versa, an individual who is motivated to think in a critical way, yet lacks skills might lose the willingness to think critically by time. Furthermore, critical thinking disposition is also indispensable in school life, initially to teach how to apply critical thinking skills in classes and afterwards in their personal life and career. Nevertheless, when compared to CT skills, we have relatively limited information about what contributes to critical thinking disposition and how it influences academic performance.

To sum up, quoting from Facione et al. (2000), 'information and skills alone cannot guarantee success in the workplace or in school. People must also be disposed to use what they have learned' (p. 82).

2.3.5 Tools to Measure Critical Thinking Disposition

As there are limited instruments to measure how people are disposed to think, it is not that easy to assess critical thinking disposition. California Critical Thinking Disposition Inventory (CCTDI) which was created by Peter Facione and Noreen Facione (1992) is the most well-known and frequently used instrument in the

assessment of critical thinking dispositions. These dispositions are categorized into seven subscales, such as truth-seeking, inquisitiveness, open-mindedness, confidence, analyticity, systematicity, and maturity. Sub-scores of these dispositions are summed up and a total score is obtained showing the level of a person's disposition to think critically. The instrument is a Likert scale including six points (from agree to disagree) and has 75 items (Facione, Facione, and Sanchez, 1994a).

The seven critical thinking dispositions measured by the CCTDI include truth-seeking

Truth-seeking: A courageous desire for the best knowledge, even if such knowledge fails to support or undermines one's preconceptions, beliefs or self-interests.

Open-mindedness: Tolerance of divergent views, self- monitoring for possible bias.

Inquisitiveness: Curious and eager to acquire knowledge and learn explanations even when the applications of the knowledge are not immediately apparent.

Analyticity: Demanding the application of reason and evidence, alert to problematic situations, inclined to anticipate consequences.

Systematicity: Valuing organization, focus and diligence to approach problems of all levels of complexity.

Self-confidence: Trusting of one's own reasoning skills and seeing oneself as a good thinker.

Cognitive Maturity: Prudence in making, suspending, or revising judgment, an awareness that multiple solutions can be acceptable, an appreciation of the need to reach closure even in the absence of complete knowledge (Facione, Facione, and Giancarlo, 2000).

Derived from CCTDI, various instruments have been developed so far. Here are some other scales which were based on CCTDI:

Kökdemir (2003) adapted CCTDI to Turkish so as to measure the critical thinking dispositions of primary school secondary stage students. The new inventory consists

of 51 items and 6 subscales which are analyticity, open mindedness, curiosity, self-confidence, search for truth and systematicity, which lacks cognitive maturity. The items of inventory are answered with six-point Likert scale.

2.3.6 Teaching Critical Thinking

Children who are said to be future of the communities must be taught how to use their thinking abilities. Teaching students how to become better thinkers and aiding them to make better decisions result in many benefits. Critical thinking is useful not only in academic life but also in employment. Therefore, critical thinking should be an essential objective in education. This objective is teaching students to improve the way they think by themselves. By this way, they become able to control their thinking and to improve it continuously. As a result, they also learn how to take command of their lives. Hence, their life standard is improved (Paul, 1993). Rivas (2011) has endorsed Paul's (1993) views about benefits of critical thinking saying that students will have the ability of good reasoning and making their own conclusions by considering other perspectives.

As critical thinking has gained more importance recently, many studies on critical thinking skills has been done. Therefore, there is a growing necessity to focus more on critical thinking in modern times.

Teachers have the key point in education. Therefore, it is important that they help their students learn how to think critically. There are a number of techniques to be used to teach critical thinking. Critical teaching is defined by Shor (1980) as helping people to be aware of their assumed ideas about the world. He states that 'by identifying, abstracting and problematizing the most important themes of student experience, the teacher detaches students from their reality and then represents the material for their systematic scrutiny (p.100). In a similar vein, Siegel (1980) supports the view that it is not possible for students to become genuine critical thinkers unless they develop 'the critical spirit', and that students will not develop critical spirit unless they are taught in 'the critical manner'. Teaching in the critical manner has some requirements from a teacher. First of all, a teacher should be aware of the fact that students have right to question and ask for reasons as well as that he or she must give the students reasons no matter when they ask. Moreover, teacher

should be honest and give genuine reasons. In addition, students should be provided with allowance of evaluating the reasons given. In short, this kind of teaching supports students' critical spirit. A teacher teaching in critical manner tries to improve students' critical thinking skills and dispositions.

According to Facione (1990), critical thinking skills can be taught 'by making the procedures explicit, describing how they are to be applied and executed, explaining and modelling their correct use, and justifying their application' (p. 16). Among the ways to teach these skills are to expose students to circumstances where there are good reasons to apply the desired procedures, to judge their performance, and provide them with constructive feedback about their competency and how they can make it better. What is more, while teaching such skills, learners should be motivated to reach higher levels of proficiency and autonomy.

Teachers have a great role in fostering their students' critical thinking as teachers themselves must be critical thinkers. Paul (1993) reasonably comments on the inevitable role of teachers in teaching how to think critically as below:

> To be in the best position to encourage critical thinking in their students, teachers must first value it highly in their personal, social, and civic lives. A teacher of critical thinking must be a critical person, a person comfortable with and experienced in critical discussion, critical reflection, and critical inquiry; must be willing to make questions rather than assertions the heart of his or her contribution to student learning; must explicitly understand his or her own frame of reference and that fostered in the society at large.; must be willing to treat no idea as intrinsically good or bad; must have confidence in reason, evidence, and open discussion; must deeply value clarity, accuracy, and firm mindedness; and must be willing to help students develop the various critical thinking micro-proficiencies in the context of these values and ideals (p. 225).

According to Facione (1989), the most effective way to teach critical thinking is by modelling critical thinking skills and dispositions while the teacher instructs. No matter what the teacher instructs, he or she must encourage students to be curious, to object and to question. Moreover, the teacher must clarify, interpret, and examine these objections and questions in an objective way. Besides, teacher must give students proper reasons to do something in a certain way instead of just telling them how to do it.

As stated before, there are techniques for teachers to aid students to use critical thinking. Using open-ended questions in the lessons is one of these techniques.

Teachers can use these types of questions to generate multiple points of views from learners. With regard to open-ended questions, Brookfield (2012) alleges that such questions help students think and find genuine solutions to problems as well as expand their intellectual and emotional horizons with the help of discussions raised by these questions. In other words, the purpose of open-ended questions is to help create as many different understandings, interpretations, or explanations as possible. Their openness can cause creativity.

Furthermore, Brookfield (2012) gives some samples of open-ended questions as below:

- Instead of looking at this from the author's viewpoint, how do you think author X or Y would approach this? (Offering a concrete beginning point, such as how a different theorist or researcher would treat the problem, gives students experience of looking at things differently, yet keeps them reassuringly tied to a specific viewpoint.)
- Try to imagine you have never read any previous work on this topic. Where would your instinct tell you to start? (a much more difficult question to answer.)
- Let's try to think of the most unlikely or off-the –wall ways of understanding this, the weirder the better! What would they be? (Here you are giving permission for a variation of brainstorming. Students sometimes respond well to the invitation to weirdness, particularly if you begin by making a strange initial suggestion yourself.)
- Whose perspective is missing in this work and what would it look like if it was included? (Here you ask students directly to think about research perspectives they have studied and speculate what difference including them would make.)
- What are some different options available that X could have explored in solving this problem? (Here you just throw out a free-for-all invitation to think of multiple options the author could have considered.)
- What questions or issues have been raised for us today? (This teaches students that critical discussion always generates new lines of analysis. It can also be a good set-up for the next class session.)
- What remains unsolved or contentious about this issue? (A variant on the question above.)

Brookfield (2012) points out that when it comes to teaching students critical thinking, the major problem is to prepare students for the disposition of openness. Because the move from fixed, dualistic modes of thinking (there is always a right and wrong, correct or incorrect answer) to relativistic or multiple modes (the answer depends on a lot of different variables and could change as those variables change) is challenging. Hence, it is a requirement for teachers of critical thinking that they study how students experience the onset of ambiguity peculiar to critical thinking. The job of teachers is viewed by many students as reliable answer giver or assurance provider. For this reason, when a teacher answers a question with the response that 'it depends', an expression of frustration can be expected from students.

2.4 Studies on Relationship Between Bilingualism and Critical Thinking

Since the aim of the present study is to investigate the existence of correlation between bilingualism and critical thinking disposition, the previous studies about this topic has been investigated and their results, which support this study as well, are briefly mentioned here.

To start with, theories of Whorf (1956) and Vygotsky (1934/1962, 1978) support the link between bilingualism and critical thinking disposition by suggesting that language and thought is related and that language has a role of mediator in bilinguals' cognitive functioning. In addition, as mentioned before, the study of Peal and Lambert's (1962) showed the positive effects of bilingualism on cognitive functioning.

Carringer (1974) has carried out a research on bilingual high school students who have different level of bilingual competence and concluded that creative thinking abilities are promoted by bilingualism which partly helps 'to free the mind from the tyranny of words' (p. 502).

Another research carried out to find out if bilingualism and critical thinking correlate is by Garnes (1977) who compared bilinguals with monolinguals. The result is that bilinguals have better perception ability.

In Merrikhi's (2011) study, which evaluated and compared the creative thinking abilities of monolinguals and bilinguals of ELT MA students coming from different countries and sociocultural backgrounds with the help of a questionnaire used, it is concluded that bilinguals are better. Moreover, male and female students were compared; however, no significant difference between them could be found. The results of this study show that bilinguals outnumbered monolinguals in their critical thinking skills. Therefore, the author suggests that bilingualism should have a priority in Iranian Education system.

As is seen, many studies have been conducted to check whether there is a correlation between bilingualism and critical thinking. They indicate that there is a relationship between bilingualism and critical thinking and subcategories of it.

CHAPTER THREE

III. METHODOLOGY

This chapter discusses research design, research site and participants, data collection instruments and procedures.

3.1 Research Design

This study is designed to compare the critical thinking dispositions of monolingual and bilingual children. The purpose of this study is to find out whether there is a relationship between bilingualism and critical thinking dispositions as well as the relationship between monolingualism and critical thinking dispositions. This study is a descriptive research. The method applied in this study is survey method in which events and objects are showed describing what the present situation is. (Büyüköztürk et al., 2009, p. 16-17; Kaptan, 1998, p. 46-59; Karasar, 1995, p. 77; Sönmez and Alacapınar, 2011).

In this study, quantitative method has been used. Dörnyei (2007) describes this method as a method relying basically on numerical data to be analysed by statistical approaches. The advantages of this method are that it measures the data accurately and gives reliable data. Moreover, one can later replicate and generalize obtained data to other contexts. Questionnaire which is a typical quantitative research method is apparently an efficient tool to determine if there is a relationship between bilingualism and critical thinking dispositions, thus has been used an instrument for the data.

3.2 Research Site and Participants

A comparative study was carried out on monolingual and bilingual children. The total sample comprised of 196 participants. These participants included students from the 5th, 6th, 7th, 8th and 9th grades who attend three different public secondary schools in Aschaffenburg, Germany. The survey took place in Hefner Alteneck Secondary School, Ascapha Secondary School and Laufach Secondary School between late

June and early July 2018 by permission taken from the managements of these schools (See Appendix 4,5 and 6).

Besides, a required permission from the ethics committee of Ondokuz Mayıs University was taken in order to carry out this study (See Appendix 3). The research was implemented through also the permission of the parents. Participants are under 18 years. Therefore, their parents were asked to sign a consent letter which allows their children to participate in this study. After receiving parents' consent, the survey was administered to those children who were voluntary to take part in this study. The aims and design of the research were explained to parents in the letter and the participants themselves before the application of the questionnaire. The participants were assured that their answers would be confidential and anonym. Throughout the data collection process, a cooperative work has been carried out with school managers, teachers and students.

The demographic information about the participants is given in Table 4 below.

Table 4: Distribution of Participants' Demographic Information

		N	%
Gender	Female	84	42,9
	Male	112	57,1
Age	10-11	33	16,9
	12-13	79	40,3
	13+	137	69,8
Grade	5	36	18,4
	6	25	12,8
	7	57	29,1
	8	48	24,5
	9	30	15,3
Language Spoken	German	82	41,8
	Turkish	51	26,0
	Other	63	32,2
Groups	Control	82	41,8
	Experimental	114	58,2

As shown in Table 4, the sample group consists of 196 children, 84 of whom were females and 112 of whom are males. Their ages are between 10 and 14. While 82 of the participants are monolingual of German language, 114 of them are bilingual. Monolingual group consists of 34 female and 48 male students, whereas bilingual group consists of 50 female and 64 male students. As this study was conducted to all the classes of three different schools, there were participants from 5^{th} ,6^{th} ,7^{th}, 8^{th} and 9^{th} grades. With the percentage of 90.8, quite most of the participants were born in Germany, while the other 9.2 % of the participants were born in other countries such as Turkey, Russia and Italy. However, these participants have lived in Germany for more than 5 years. Therefore, they are competent in German language. In analysis process of the data collected, some students who were born in other countries like Syria and have lived in Germany for less than 5 years were encountered. However, they were not included in this study. Because their level of German is insufficient to comprehend the statements in the questionnaire. Therefore, they could answer the questions in the questionnaire without understanding the statements clearly and their answers would mislead the study.

There were two groups of participants which are monolinguals and bilinguals. Monolinguals were taken as the control group while bilinguals were taken as experimental group. Control group consisted of 82 participants, whereas experimental group consisted of 114 participants. That is to say, 41.8 % of the participants are monolingual whereas 58. 2% of the participants are bilingual. The mother tongue of the 26 % of the bilingual children was Turkish, while 32.2 % of the participants' mother tongues are varied. Among the other mother tongues are Russian, Italian, Arabic, Polish and Greek. The most common languages that are spoken by bilingual children in this study are respectively Turkish, Italian, Russian, Arabic etc. However, as the birth place of all the participants is Germany, their second language is German.

As the main purpose of this study is comparing the critical thinking dispositions of monolingual and bilingual children in terms of independent variables, such as gender and age, it is important to see the demographic information of monolingual and bilingual participants.

The distribution of demographic information of control and experimental groups can be seen in Table 5.

Table 5: Distribution of Participants' Demographic Information according to Control and Experimental Groups

		Control (Monolingual)		Experimental (Bilingual)	
		N	%	N	%
Gender	Female	34	41,5	50	43,9
	Male	48	58,5	64	56,1
Age	10-11	21	25,6	23	10,5
	12-13	31	37,8	48	42,1
	13+	30	36,6	54	47,4

As shown in Table 5 above, while the control group consists of 82 children, 34 females and 48 males, the experimental group consists of 50 female, 64 male children and in total 114 children.

In the control group, there are 21 children aged 10-11, 31 children aged 12-13 and 30 children aged over 13. In the experimental group, there are 23 children aged 10-11, 48 children aged 12-13 and 54 children aged over 13.

3.3 Data Collection Instruments and Procedures

The data collection started at the end of June, 2018 and was completed in mid-July, 2018. This descriptive study is based on quantitative data collected through a questionnaire (Semerci, 2016). The participants were applied this questionnaire consisting of two main parts: A Personal Information Section and Critical Thinking Disposition Scale. The Personal Information Section, which is prepared by the researcher, has been used in order to gather data about the independent variables of the research. In this part, the participants indicate their gender, age, grade and place of birth. Students whose place of birth was different from Germany were later eliminated from the research in order to create a balanced sample group. The participants also indicate their mother tongue and second language in the questionnaire. Thus, control and experimental groups have been created.

The second part of the questionnaire is 'Critical Thinking Disposition Scale' (Semerci, 2016). This is a Likert-type item scale. The scale has 49 items which are responded in a five-point format ranging from strongly disagree to totally agree. Participants evaluate the items with responses of '1. I strongly disagree, 2. I mostly disagree, 3. I partially agree 4. I mostly agree, 5. I totally agree'. This 1to 5 coding system is arbitrary, and it is only used to facilitate the data analysis. The participants were asked to agree or disagree on these statements. This scale is multi-dimensional. There are 49 items and five subscales: metacognition (14 items), flexibility (11 items), systematicity (13 items), tenacity-patience (8 items) and open-mindedness (3 items). Critical thinking dispositions of monolingual and bilingual children were compared in terms of these five subscales.

The questionnaire was given in three languages: German, English and Turkish. Participants were free to choose among them according to their comprehension. The questionnaire was administered in German as the participants are all fluent in German language. The Turkish children were also given the Turkish version of the questionnaire together with the German version in case they have problem in understanding the statements. However, they chose German version for their better understanding. Therefore, they preferred to fill in the German version of the questionnaire. After the questionnaires were given to the students, necessary explanations about the questionnaire and the answering process were made. A relaxed atmosphere was created for the participants to answer the questionnaire and to feel free to ask question when they have problem. The participants were not restricted by time. They were given about 45 minutes to answer the questionnaire. During this data collection process, together with the researcher, German teachers were also present so as to help when needed. The students felt themselves free to ask any question about the process and the questionnaire. In addition, they were also free to give up participating the study when they had a problem in understanding the items of the questionnaire because of the language barriers. Apart from that, all the unclear points were explained by the researchers and the classroom teachers. Therefore, the process was carried out successfully without any problems.

CHAPTER FOUR

IV. FINDINGS

This chapter includes the description of the present study and the data analysis. The aim of this chapter is to indicate the findings of the study in relation to the research questions.

4.1 Present Study

The main purpose of this study is comparing critical thinking dispositions of the monolingual and bilingual children. This comparison is to be done after critical thinking dispositions of monolingual children and bilingual ones in succession are identified. Then, critical thinking dispositions are to be compared in terms of the five subscales which have already been explained. Finally, the data have been analysed in terms of gender and age of the participants.

4.2 Analysis of the Data

The data from 196 participants have been analysed quantitatively by SPSS 23 for Windows package software and it was worked at 95% confidence level. Descriptive statistics were calculated. Frequency and percentage values of all demographic variables and Likert questions are given. Likert questions are given descriptive statistics of scale scores. Independent Two Samples t-test is used in the study. Independent Two Samples t-test is a test technique utilized to compare two independent groups in terms of a quantitative variable (Özdamar, 2004). Independent groups were analysed by Independent Two Samples t-test for the differences in scale scores according to demographic variables such as gender and age in the study.

4.3 The Results of the Instruments and Discussions

This section includes the comparison of critical thinking dispositions of monolingual and bilingual students. In order to compare critical thinking dispositions of monolingual and bilingual students, Independent Two Samples t-test was used. The results have been discussed in accordance with the research questions.

Findings of this research which aims to determine critical thinking dispositions of the monolingual and bilingual children, to detect the effect of gender and age variables on critical thinking dispositions, to investigate the relation between bilingualism and critical thinking dispositions are given in the tables and explained below.

4.3.1 Research Question 1: What are critical thinking dispositions of monolingual children?

So as to identify the critical thinking dispositions of monolingual children, their answers to the statements of the scale have been analysed.

Table 6: Descriptive Statistics of Critical Thinking Dispositions of Control Group

Subscales	M	SD
Metacognition	3,54	7,01
Flexibility	3,30	6,36
Systematicity	3,21	7,89
Tenacity-patience	3,05	5,34
Open-mindedness	3,60	2,28
Critical Thinking Disposition	163,11	23,61

Table 6 shows mean scores of control group and standard deviations for each critical thinking disposition subscale. According to these results, the highest mean scores were obtained by the open-mindedness subscale (M = 3,60 ± 2,28) and the lowest mean value was yielded by the tenacity-patience subscale (M = 3,05 ± 5,34). The total score of the monolingual students in Critical Thinking Dispositions Scale has been calculated as 163,11± 23.61. While possible minimum total score to be obtained on the scale is 49, possible maximum total score is 245. As monolingual students obtained 163,11, it can be concluded that monolingual children's critical thinking dispositions is at the medium level.

In order to discuss these results in a detailed way, the frequency of students' answers to the items in each subscale is shown in the following tables.

Table 7: Descriptive Statistics of the Metacognition Subscale of Control Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	SD
1	0	0,0	11	13,4	37	45,1	27	32,9	7	8,5	3,37	0,82
2	2	2,4	3	3,7	29	35,4	24	29,3	24	29,3	3,79	0,99
3	2	2,4	15	18,3	33	40,2	22	26,8	10	12,2	3,28	0,98
4	3	3,7	4	4,9	18	22,0	16	19,5	41	50,0	4,07	1,12
5	1	1,2	12	14,6	19	23,2	33	40,2	17	20,7	3,65	1,01
6	3	3,7	10	12,2	33	40,2	23	28,0	13	15,9	3,40	1,02
7	4	4,9	13	15,9	39	47,6	19	23,2	7	8,5	3,15	0,96
8	3	3,7	11	13,4	17	20,7	25	30,5	26	31,7	3,73	1,16
9	0	0,0	7	8,5	32	39,0	30	36,6	13	15,9	3,60	0,86
10	6	7,3	9	11,0	30	36,6	25	30,5	12	14,6	3,34	1,09
11	1	1,2	7	8,5	30	36,6	23	28,0	21	25,6	3,68	0,99
12	2	2,4	14	17,1	16	19,5	23	28,8	27	32,9	3,72	1,17
13	4	4,9	12	14,6	18	22,0	29	35,4	19	23,2	3,57	1,14
14	6	7,3	9	11,0	30	36,6	28	34,1	9	11,0	3,30	1,05

Table 7 shows the frequency of answers and mean scores of control group for the items on metacognition subscale. The items from 1 to 14 check the subscale of metacognition. As shown in the Table 7, the highest mean score corresponds to the item 4 which states that respondents try to expand their knowledge in their field. While more than 96 % of the students partially, mostly or totally agreed to this statement, half of the students tend to strongly agree. Besides, 94 % of the students agree on the item 2 stating that they are aware of how their behaviours affect other people. The item 8 checks awareness of feelings and nearly 83 % of the students agree that they are aware of how and when their feelings affect them. On the other hand, the lowest mean score corresponds to the item 7. Over 20 % of students disagreed that thinking of any subject, if they notice that they think inside the box, they try to overcome it. Only 8,5 % of students strongly agreed to this item. This may result from the fact that monolingualism affects the way of their thinking and monolingual students cannot change their perspective easily.

Table 8: Descriptive Statistics of the Flexibility Subscale of Control Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	Sd
15	5	6,1	10	12,2	42	51,2	19	23,3	6	7,3	3,13	0,94
16	7	8,5	13	15,9	24	29,3	23	15	15	18,3	3,32	1,20
17	6	7,3	18	22,0	31	37,8	24	3	3	3,7	3,00	0,98
18	1	1,2	14	17,1	37	45,1	23	7	7	8,5	3,26	0,89
19	4	4,9	17	20,7	36	43,9	20	5	5	6,1	3,06	0,95
20	6	7,3	5	6,1	18	22,0	30	23	23	28,0	3,72	1,16
21	5	6,1	18	22,0	38	46,3	14	7	7	8,5	3,00	0,99
22	1	1,2	14	17,1	25	30,5	26	16	16	19,5	3,51	1,03

23	4	4,9	11	13,4	22	26,8	21	24	24	29,3	3,61	1,18
24	4	4,9	14	17,1	32	39,0	22	10	10	12,2	3,24	1,04
25	2	2,4	11	13,4	28	34,1	24	17	17	20,7	3,52	1,04

Table 8 shows the frequency of answers and mean scores of control group for items on flexibility subscale. The items from 15 to 25 check the subscale of flexibility. The highest mean score (3,72) corresponds to item 20 which states that respondents know how to access the information they need in any issue. 73 % of the monolingual students partially, mostly or totally agreed on this statement. In addition, the lowest mean score corresponds to the items 17 and 21 which have the same mean score (3,00). While only 6,7 % of the students mostly and totally agree, over 29 % of them disagreed on the item 17 stating that they can suggest several different solutions to solving the problem. As is seen, monolingual students think that they do not have good problem-solving ability which is an indispensable part of critical thinking. In addition, whereas 15,5 % of the monolingual students agree, over 28 % of students disagreed on the item 21 which states that they can go into details when comparing events or information. As results show, monolingual students think they are not able to make a comparison of events or information in a detailed way. This may be because monolingual students have experience in one culture, they may not have much chance to compare information in their daily life.

Table 9: Descriptive Statistics of the Systematicity Subscale of Control Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	Sd
26	6	7,3	18	22,0	30	36,6	17	20,7	11	13,4	3,11	1,12
27	8	9,8	8	9,8	31	37,8	24	29,3	11	13,4	3,27	1,12
28	14	17,1	10	12,2	19	23,2	15	18,3	24	29,3	3,30	1,45

29	6	7,3	16	19,5	23	28,0	23	28,0	14	17,1	3,28	1,18
30	7	8,5	13	15,9	32	39,0	23	28,0	7	8,5	3,12	1,06
31	7	8,5	16	19,5	32	39,0	23	28,0	4	4,9	3,01	1,01
32	4	4,9	13	15,9	31	37,8	23	28,0	11	13,4	3,29	1,05
33	6	7,3	12	14,6	29	35,4	21	25,6	14	17,1	3,30	1,14
34	3	3,7	19	23,2	37	45,1	18	22,0	5	6,1	3,04	0,92
35	4	4,9	14	17,1	27	32,9	30	36,6	7	8,5	3,27	1,01
36	10	12,2	11	13,4	24	29,3	19	23,2	18	22,5	3,29	1,29
37	2	2,4	21	25,6	35	42,7	21	25,6	3	3,7	3,02	0,87
38	1	1,2	15	18,3	25	30,5	23	28,8	18	22,0	3,51	1,07

Table 9 shows the frequency of answers and mean scores of monolingual children for the items on systematicity subscale. The items from 26 to 38 check the subscale of systematicity. The highest mean score (3,51) corresponds to the item 38 which states that respondents can ask questions to understand information, thoughts and ideas better. More than 81 % of students partially, mostly or totally agreed on this statement. The next high score (3,30) belongs to the items 28 and 33 which have the same mean score. 70,8 % of the monolingual students agree that they enjoy taking part in class discussions and 78,1 % of them agree that they investigate the reasons behind any event. When it comes to the lowest mean score (3,02), it corresponds to the item 37. While 42,7 % of the students partially agree, only 3,07 % of them strongly agreed that they can analyse the problem objectively with its causes and consequences. This result leads us to conclude that monolingual students may be weak at making analysis.

Table 10: Descriptive Statistics of the Tenacity-Patience Subscale of Control Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	SD
39	10	12,2	15	18,3	27	32,9	21	25,6	9	11,0	3,05	1,17
40	13	15,9	18	22,0	36	43,9	8	9,8	7	8,5	2,73	1,11
41	5	6,1	10	12,2	19	23,2	21	25,6	27	32,9	3,67	1,23
42	9	11,0	21	25,6	25	30,5	22	26,8	5	6,1	2,91	1,10
43	4	4,9	16	19,5	19	23,2	23	28,0	20	24,4	3,48	1,20
44	16	19,5	21	25,6	24	29,3	15	18,3	6	7,3	2,68	1,20
45	6	7,3	20	24,4	34	41,5	20	24,4	2	2,4	2,90	0,94
46	7	8,5	21	25,6	28	34,1	17	20,7	9	11,0	3,00	1,12

Table 10 shows the mean scores of monolingual children and frequency of answers for items on tenacity-patience subscale. The items from 39 to 46 check the subscale of tenacity-patience. The highest mean score (3,67) corresponds to item 41. More than 81% of the respondents partially, mostly or totally agreed that they are self-confident. The next high mean score is 3,48 corresponding to the 43rd item which states that students do not give up when they encounter an obstacle while dealing with a work. The other mean scores are relatively low and the lowest mean score (2,68) corresponds to the item 44 which states that respondents evaluate a homework, project or work after finishing it. 54,9 % of the monolingual students partially, mostly or totally agreed on this item and only 7,3 % of them totally agreed.

Table 11: Descriptive Statistics of the Open-mindedness Subscale of Control Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	SD
47	3	3,7	11	13,4	22	26,8	21	25,6	25	30,5	3,66	1,16
48	1	1,2	12	14,6	32	39,0	25	30,5	12	14,6	3,43	0,96
49	4	4,9	10	12,2	16	19,5	26	31,7	26	31,7	3,73	1,18

Table 11 shows the mean scores and frequency of answers of monolingual children for the items on open-mindedness subscale. This subscale is the one which has had the highest scores out of five subscales. The items from 47 to 49 check the open-mindedness subscale. The highest mean score (3,73) corresponds to the item 49. More than 63,4 % of the monolinguals tend to mostly and totally agree that they can be flexible when necessary. The item 47 is at the second rank as nearly 83 % of the monolinguals tend to agree that they take nothing at its face value. As for the item 48, 84,1 % of the monolinguals partially, mostly or totally agree that they collect sufficient data before making decision.

4.3.2 Research Question 2: What are critical thinking dispositions of bilingual children?

The answers of the bilingual children to the items of the scale have been analysed so as to identify their critical thinking dispositions.

Table 12: Critical Thinking Dispositions of Experimental Group

Subscales	M	SD
Metacognition	3,65	6,93
Flexibility	3,53	4,93
Systematicity	3,43	6,94

Tenacity-patience	3,33	5,16
Open-mindedness	3,60	2,11
Critical Thinking Disposition	172,09	21,11

Table 12 shows mean scores of the bilingual students and standard deviations for each subscale. As shown in the Table 12, the highest mean scores were obtained by metacognition subscale (M = 3,65 ± 6,93) and the lowest mean value was yielded by tenacity-patience subscale (M = 3,33 ± 5,16). Open-mindedness subscale also has a high mean score as it has 3,60. The total score of the students in Critical Thinking Dispositions Scale has been calculated as 172,09± 21.11. In the light of these results, it can be concluded that the critical thinking dispositions of the experimental group is at medium level.

Table 13: Descriptive Statistics of the Metacognition Subscale of Experimental Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	SD
1	2	1,8	6	5,3	45	39,5	38	33,3	23	20,2	3,65	0,92
2	2	1,8	10	8,8	31	27,2	32	28,1	39	34,2	3,84	1,05
3	4	3,5	9	7,9	52	45,6	38	33,3	11	9,6	3,38	0,90
4	1	0,9	5	4,4	24	21,1	39	34,2	45	39,5	4,07	0,93
5	3	2,6	10	8,8	20	17,5	50	43,9	31	27,2	3,84	1,01
6	4	3,5	8	7,0	40	35,1	45	39,5	17	14,9	3,55	0,95
7	3	2,6	16	14,0	42	36,8	42	36,8	11	9,6	3,37	0,93

8	5	4,4	6	5,3	23	20,2	40	35,1	40	35,1	3,91	1,08
9	1	0,9	9	7,9	37	32,5	38	33,3	29	25,4	3,75	0,96
10	2	1,8	11	9,6	45	39,5	42	36,8	14	12,3	3,48	0,89
11	4	3,5	10	8,8	36	31,6	45	39,5	19	16,7	3,57	0,99
12	6	5,3	8	7,0	27	23,7	29	25,4	44	38,6	3,85	1,17
13	4	3,5	11	9,6	39	34,2	45	39,5	15	13,2	3,49	0,96
14	3	2,6	17	14,9	39	34,2	37	32,5	18	15,8	3,44	1,01

Table 13 shows the mean scores of the experimental group for the items on metacognition subscale which has had the highest mean value out of five subscales. The highest mean score corresponds to the item 4. 94,8 % of the bilingual students partially, mostly or totally agreed on this statement stating that they try to expand their knowledge in their field. The item 8 has also a high mean score (3,91). 90,3 % of the bilinguals agree that they are aware of how and when their feelings affect them. The lowest mean score corresponds to the items 7 and 3 which have scores of 3,37 and 3,38 respectively. 83,2 % of the bilingual students agree that thinking of any subject, if they notice that they think inside the box, they try to overcome it. 88,5 % of the bilinguals agree that they can find the contrasts between the information in what is told and what is read. As is seen, even the lowest mean scores are not that low in the metacognition subscale. That is to say, bilingual students have good metacognitive abilities. These results are consistent with studies of Bialystok (2009) and Kroll, Dussias, Bogulski, and Kroff (2012) as they assert that bilingualism affects strongly cognitive development.

Table 14: Descriptive Statistics of the Flexibility Subscale of Experimental Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	SD
15	4	3,5	11	9,6	52	45,6	33	28,9	14	12,3	3,37	0,94
16	3	2,6	20	17,5	24	21,1	43	37,7	24	21,1	3,57	1,09
17	3	2,6	20	17,5	36	31,6	39	34,2	16	14,0	3,39	1,02
18	2	1,8	10	8,8	42	36,8	44	38,6	16	14,0	3,54	0,90
19	4	3,5	16	14,0	54	47,4	31	27,2	9	7,9	3,22	0,91
20	1	0,9	9	7,9	23	20,2	42	36,8	39	34,2	3,96	0,97
21	5	21	21	18,4	53	46,5	30	26,3	5	4,4	3,08	0,89
22	2	9	9	7,9	40	35,1	41	36,0	22	19,3	3,63	0,94
23	1	0,9	16	14,0	12	10,5	45	39,5	40	35,1	3,94	1,05
24	2	1,8	18	15,8	46	40,4	31	27,2	17	14,9	3,38	0,98
25	0	0,0	10	8,8	33	28,9	46	40,4	25	21,9	3,75	0,90

Table 14 shows the mean scores of the experimental group for items on flexibility subscale. The highest mean score (3,96) corresponds to the item 20. 91,2 % of the bilingual students partially, mostly or totally agreed on this statement stating that they know how to access the information they need in any issue. Another mostly agreed item is 23 which has 3,94 mean score. 85,1 % of the bilingual students agree that they listen carefully to other people's ideas. The lowest mean score (3,08) corresponds to the item 21. 77,2 % of the bilinguals agreed on the item 21 which states that they can go into details when comparing events or information. The reason why the bilingual students seem to be flexible may be that they use two different

languages and interact in two different cultures. In the same vein, Peal and Lambert (1962) assert that a bilingual's experience with two language system lead him to have flexibility and diversified set of mental competences.

Table 15: Descriptive Statistics of the Systematicity Subscale of Experimental Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	SD
26	8	7,0	24	21,1	44	38,6	25	21,9	13	11,4	3,10	1,08
27	4	3,5	8	7,0	31	27,2	39	34,2	32	28,1	3,76	1,05
28	19	16,7	11	9,6	21	18,4	23	20,2	40	35,1	3,47	1,47
29	6	5,3	15	13,2	40	35,1	29	25,4	24	21,1	3,44	1,12
30	3	2,6	22	19,3	41	36,0	34	29,8	14	12,3	3,30	1,00
31	2	1,8	15	13,2	43	37,7	39	34,2	15	13,2	3,44	0,94
32	5	4,4	11	9,6	36	31,6	30	26,3	32	28,1	3,64	1,12
33	4	3,5	13	11,4	50	43,9	36	31,6	11	9,6	3,32	0,93
34	5	4,4	21	18,4	46	40,4	35	30,7	7	6,1	3,16	0,95
35	3	2,6	13	11,4	29	25,4	48	42,1	21	18,4	3,62	1,00
36	6	5,3	16	14,0	37	32,5	35	30,7	20	17,5	3,41	1,10
37	1	0,9	12	10,5	68	59,6	26	22,8	7	6,1	3,23	0,75
38	4	3,5	13	11,4	27	23,7	40	35,1	30	26,3	3,69	1,09

Table 15 shows the frequency of answers and mean scores of the experimental group for the items on systematicity subscale. The highest mean score (3,76) corresponds to the item 27. 89,5 % of the bilingual students partially, mostly or totally agreed on

this statement stating that they check their thoughts before making their decision. In addition, the item 38 is at the second rank as 85,1 % of the bilingual students partially, mostly or totally agreed on this statement stating that they can ask questions to understand information, thoughts and ideas better. Furthermore, the items 32 and 35 have also high mean scores (3,64 and 3,62 respectively). While 86 % of the bilingual students indicate that they do not talk and write without thinking, 85,9 % of them agree that they collect appropriate data before their decision. On the other hand, the lowest mean score (3,10) corresponds to the item 26 as only 33,3% of the bilingual students mostly or totally agree on the item 26 stating that when they read any article, they can quickly find the main idea.

Table 16: Descriptive Statistics of the Tenacity-Patience Subscale of Experimental Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	SD
39	5	4,4	19	16,7	38	33,3	35	30,7	17	14,9	3,35	1,06
40	13	11,4	29	25,4	34	29,8	29	25,4	9	7,9	2,93	1,13
41	6	5,3	7	6,1	18	15,8	41	36,0	42	36,8	3,93	1,12
42	3	2,6	16	14,0	44	38,6	33	28,9	18	15,8	3,41	1,00
43	2	1,8	12	10,5	29	25,4	31	27,2	40	35,1	3,83	1,08
44	22	19,3	25	21,9	31	27,2	25	21,9	11	9,6	2,81	1,25
45	8	7,0	21	18,4	45	39,5	26	22,8	14	12,3	3,15	1,08
46	8	7,0	19	16,7	39	34,2	31	27,2	17	14,9	3,26	1,12

Table 16 shows the frequency of answers and mean scores of the experimental group for items on tenacity-patience subscale which has had the lowest mean value out of five subscales. The highest mean score corresponds to the item 41 which checks the

self-confidence of the respondents. 88,6 % of the bilingual students partially, mostly or totally agreed on this statement. Only 58,7 % of the bilingual students partially, mostly or totally agreed on the item 44 which checks if the respondents evaluate a homework, project or work after finishing it. Being a bilingual does not seem to be as advantageous as it is in the other subscales. The reason why the items in this subscale have not had as many scores as the other subscales may be that these items seem to check mostly how students study their lessons.

Table 17: Descriptive Statistics of the Open-mindedness Subscale of Experimental Group

	Strongly disagree		Mostly disagree		Partially agree		Mostly agree		Totally agree			
Q	N	%	N	%	N	%	N	%	N	%	X	SD
47	11	9,6	14	12,3	30	26,3	33	28,9	26	22,8	3,43	1,24
48	0	0,0	12	10,5	38	33,3	44	38,6	20	17,5	3,63	0,90
49	2	1,8	10	8,8	35	30,7	36	31,6	31	27,2	3,74	1,01

Table 17 shows the mean scores of the experimental group for items on open-mindedness subscale. The highest mean score corresponds to the item 49 which checks if the respondents can be flexible when necessary. 89,5 % of the respondents partially, mostly or totally agreed on this statement. It can be concluded that bilinguals have the ability to be flexible when necessary. This may result from the fact that bilingual students are familiar with different cultures and ways of life which may lead them tolerate differences and be accustomed to changes easily. As for the 48th item, 89,4 % of the bilingual students partially, mostly or totally agreed on this item stating that they collect sufficient data before deciding. Finally, 78% of the bilingual students partially, mostly or totally agreed on the item 47 which states that the respondents take nothing at its face value. This may be because bilinguals are familiar with different perspectives.

4.3.3 Research Question 3: Is there a significant difference between critical thinking dispositions of monolingual and bilingual children?

For the third research question, Independent Two Samples t-test has been carried out to compare the critical thinking dispositions of control and experimental group.

Table 18: A Cross Table for the Difference between Critical Thinking Dispositions of Control and Experimental Group

Group	N	M	SD	t	p
Control	82	163,11	23,61	-2,794	0,006*
Experimental	114	172,09	21,11		

*: $p < a=0,05$

The Table 18 shows that there is a significant difference between critical thinking dispositions of control and experimental group. As shown in the Table 18, experimental group has higher mean score (M= 172,09) on the scale when compared to control group which has 163,11 mean score. When critical thinking disposition scores of monolingual and bilingual children are analysed in a holistic way, a statistically significant difference has been found. As bilingual children's critical thinking disposition scores are higher, it can be said that they have better critical thinking disposition than monolingual children.

Table 19: A Cross Table for the Difference between Critical Thinking Dispositions of Control and Experimental Group

Subscales		N	M	SD	t	p
Metacognition	Control	82	49,66	7,01	-1,521	0,130
	Experimental	114	51,19	6,93		
Flexibility	Control	82	36,38	6,36	-2,919	0,004*
	Experimental	114	38,83	4,93		

Systematicity	Control	82	41,83	7,89	-2,592	0,010*
	Experimental	114	44,59	6,94		
Tenacity-patience	Control	82	24,43	5,34	-2,965	0,003*
	Experimental	114	26,68	5,16		
Open-mindedness	Control	82	10,82	2,28	-0,060	0,953
	Experimental	114	10,80	2,11		

*: $p < a=0,05$

Independent Two Samples t-test results are presented for comparing the critical thinking dispositions of control and experimental groups in the Table 19. As the scale which has been used in this study is a multi-dimensional scale, the comparison has been made in terms of the subscales of the scale. Table 19 shows that experimental group has higher mean scores on all of the subscales. However, while there is a significant difference in subscales, such as flexibility, systematicity and tenacity-patience, there is not a significant difference in metacognition and open-mindedness subscales. With regard to these results, it can be said that bilingual children have better scores in critical thinking dispositions than monolingual children as the bilingual participants scored better than monolingual ones in three out of five subscales. That is to say, as an answer to the third research question, it can be said that there is a significant difference between critical thinking dispositions of monolingual and bilingual children.

T-test results show that there is a statistically significant difference in flexibility score between monolingual and bilingual children. Bilingual children have a higher flexibility level (M=38,83) than monolingual students. Many researchers allege that bilingual people have more cognitive flexibility than monolingual ones. In addition, various studies suggest that balanced bilinguals have a greater flexibility than monolinguals in their performance on different cognitive tasks (Balkan, 1970). At this point, this study is not an exception in that the results show that bilingual children have more flexibility than monolingual ones.

As shown in Table 19, there is a statistically significant difference between monolingual and bilingual children in systematicity subscale and bilingual children have higher score (M=44,59). This result is consistent with the study of Wenner (2009) who claims that monolingual and bilingual people think in different ways and bilingual children are able to solve problems much more easily than monolingual ones. Furthermore, there is a statistically significant difference between the monolingual and bilingual children in tenacity-patience subscale. Bilingual children have higher tenacity-patience level (M=26,68) than monolingual ones (M=24,43).

However, there has not been found a statistically significant difference between the monolingual and bilingual children in terms of metacognition and open-mindedness. This conclusion is consistent with the results of the studies of Vaezzi, Zolfaghari and Rahimi (2012) that indicate that there is not a significant difference between mental performance, cognitive abilities and intelligence in bilingual and monolingual individuals.

Table 20: A Cross Table of the Metacognition Subscale of Control and Experimental Group

	Control Group		Experimental Group		Test	
Questions	X	SD	X	SD	t	p
1. If I have weaknesses in my work or in any subject, I try to overcome them.	3,37	0,82	3,65	0,92	-2,217	0,028*
2. I am aware of how my behaviours affect other people.	3,79	0,99	3,84	1,05	-0,332	0,740
3. I can find the contrasts between the information in what is told or what I read.	3,28	0,98	3,38	0,90	-0,715	0,476
4. I try to expand my knowledge in my field.	4,07	1,12	4,07	0,93	0,020	0,984
5. After I decide how to solve the problem, I definitely try that solution.	3,65	1,01	3,84	1,01	-1,339	0,182
6. I can regularly organize the information and ideas that are meaningful to me.	3,40	1,02	3,55	0,95	-1,060	0,291
7. Thinking of any subject, if I notice that I think inside the box, I try to overcome it.	3,15	0,96	3,37	0,93	-1,625	0,106

8. I am aware of how and when my feelings affect me.	3,73	1,16	3,91	1,08	-1,123	0,263
9. I try to overcome the ambiguities encountered while working on any subject.	3,60	0,86	3,75	0,96	-1,114	0,267
10. I apply appropriate criteria, models or rules in my work.	3,34	1,09	3,48	0,89	-0,992	0,322
11. I can do verbal expressions in accordance with the rules.	3,68	0,99	3,57	0,99	0,787	0,432
12. I express my thoughts clearly about anything.	3,72	1,17	3,85	1,17	-0,776	0,439
13. I am curious about other areas of life and different thoughts.	3,57	1,14	3,49	0,96	0,528	0,598
14. I use original solutions when solving problems.	3,30	1,05	3,44	1,01	-0,897	0,371

*: $p < a=0,05$

As seen in Table 20, the items from 1 to 14 check metacognition of control and experimental group and compare the mean scores. The only significant difference is seen in the 1st item. While the experimental group has 3,65 mean score, the control group has 3,37 mean score. Bilingual students have higher scores as they state that if they have weaknesses in their work or in any subject, they try to overcome them. It may be because of their awareness of their weaknesses. Even though there is not a significant difference in the other items, experimental group has better mean scores in nearly all the items. The items 2 and 8 are about the effects of feelings on behaviours. Bilingual students have better mean scores in these items. The item 2 is about being aware of how their behaviours affect other people. As is seen in the Tables 7 and 13, while 94% of monolingual students partially, mostly or totally agree on this item, 89,5 % of bilinguals partially, mostly or totally agree. The item 8 checks awareness of how and when one's feelings affect him or her. Monolinguals have 3,73 mean score, while bilinguals have 3,91 mean score. For the item 3 which checks the ability to find the contrasts between the information in what is told or what is read, monolinguals have 3,28 mean score whereas bilinguals have 3,38. As is seen in the Tables 7 and 13, 79 % of monolinguals partially, mostly or totally agree on this item while 88,5 of bilinguals partially, mostly or totally agree. Moreover, monolingual and bilingual students have the same mean score (4,07) in the item 4 which is about expanding their knowledge in their field. Bilingualism does not seem to affect

people's effort to expand their knowledge in their field. Items 5 and 14 are about problem solving skills. For the item 5, monolinguals have 3,65 mean score while bilinguals have 3,84. As shown in the Tables 7 and 13, for these items, 84,1 % of the monolinguals and 88,6 of the bilinguals partially, mostly or totally agree that after they decide how to solve the problem, they definitely try that solution. For the item 14 which checks using original solutions when solving problems, monolinguals have 3,30 mean score whereas bilinguals have 3,44 mean score. These results about problem solving skills are in line with the claim of Baker (1996) that bilinguals develop their language proficiencies from some cognitive processes, such as abstract thinking and problem solving. When it comes to the item 6 which is about being able to regularly organize the information and ideas that are meaningful to them, monolinguals have 3,40 mean score while bilinguals have 3,55. This result may be related with the results of Peal and Lambert' s (1962) study which concludes that bilinguals have superiority in concept formation. For the item 7 which states that thinking of any subject, if they notice that they think inside the box, they try to overcome it, while monolinguals have 3,15 mean score, bilinguals have 3,37 mean score. It can be said that bilinguals are better at changing their perspectives when they are aware of the fact that they think within a limited perspective. Moreover, the item 9 is about ambiguities. While monolinguals have 3,60 mean score, bilinguals have 3,75 mean score as they state that they try to overcome the ambiguities encountered while working on any subject. For the item 10 which is about applying appropriate criteria, models or rules in their work, monolinguals have 3,34 mean score whereas bilinguals have 3,48. Furthermore, bilinguals have better score in the item 12 as they have 3,85 mean score while monolinguals have 3,72. Therefore, it can be said that bilinguals can express their thoughts more clearly about anything than monolinguals. This result supports McLaughlin's (1984) claim that bilinguals are linguistically more advantageous than monolinguals. Because bilinguals are aware of the fact that they can express the same thing in two different ways. However, monolingual students have better mean scores in the item 11 which is about doing verbal expressions in accordance with the rules as monolingual students have 3,68 while bilingual students have 3,57. In addition, monolingual students have also better mean scores in the item 13 which is about being curious about other areas

of life and different thoughts while monolinguals have 3,57 mean score, bilinguals have 3,49.

Table 21: A Cross Table of the Flexibility Subscale of Control and Experimental Group

	Control Group		Experimental Group		Test	
Questions	X	SD	X	SD	t	p
15. I check whether ideas and thoughts are trustworthy or not.	3,13	0,94	3,37	0,94	-1,718	0,087
16. I try to access all the information I need while preparing an assignment.	3,32	1,20	3,57	1,09	-1,541	0,125
17. I can suggest several different solutions to solving the problem.	3,00	0,98	3,39	1,02	-2,717	0,007*
18. Before starting a work, I think about where my decisions will take me.	3,26	0,89	3,54	0,90	-2,217	0,028*
19. I make absolutely use of the criteria while evaluating my work.	3,06	0,95	3,22	0,91	-1,181	0,239
20. I know how to access the information I need in any issue.	3,72	1,16	3,96	0,97	-1,551	0,123
21. I can go into details when comparing events or information.	3,00	0,99	3,08	0,89	-0,582	0,561
22. I can apply what I have learned to other areas.	3,51	1,03	3,63	0,94	-0,840	0,402
23. I listen carefully to other people's ideas.	3,61	1,18	3,94	1,05	-2,010	0,046*
24. I become aware of information that is not related to the subject I am interested in and eliminate it.	3,24	1,04	3,38	0,98	-0,916	0,361
25. I can understand what the person whose ideas I listen to or read wants to tell.	3,52	1,04	3,75	0,90	-1,651	0,100

*: $p < a=0,05$

As seen in the Table 21, the items from 15 to 25 check flexibility of control and experimental group and compare the mean scores. Hence, we can have a better insight into what is the reason behind the difference in flexibility of monolingual and bilingual students. To start with, for the item 15, monolinguals have 3,13 mean score while bilinguals have 3,37 mean score. That is to say, bilinguals are better at checking whether ideas and thoughts are trustworthy or not. As for the item 16 which

is about trying to access all the information they need while preparing an assignment, monolinguals have 3,32 mean score while bilinguals have 3,57. Even though bilinguals have better scores in these two items, there is not a significant difference. According to the results, a significant difference has been detected at the 0,007 significance level for the item 17 which indicates that bilingual children are better at suggesting several different solutions to solving a problem. As shown in the Tables 8 and 14, while 44,5 % of monolinguals partially, mostly or totally agree on this item, 79,8 % of bilinguals partially, mostly or totally agree. This result is in line with the study of Diaz and Klingler (1991) which shows that the bilinguals had more advantages over their monolingual counterparts in nonverbal problem-solving tests. As the results of their study show that fully balanced bilingual children perform better than partial bilinguals or monolinguals on nonverbal problem-solving tests. Another difference is seen in the 18th item with 0,028 significance level and bilinguals have higher score as they have 3,54 mean score whereas monolinguals have 3,26 mean score. As is seen in the Tables 8 and 14, 60,6 % of the monolingual students partially, mostly or totally agree on the item 18 while 89,4 of the bilinguals agree. Therefore, it can be said that bilingual children think better about where their decisions will take them before starting a work. When it comes to the item 19, even if there is not a significant difference, bilingual students have better mean score as they have 3,22 while monolinguals have 3,06 mean score. As is seen in the Tables 8 and 14, 82,5 % of the bilinguals and 55 % of the monolinguals agree that they make absolutely use of the criteria while evaluating their work. The item 20 is about knowing how to access the information they need in any issue. While monolingual students have 3,72 mean score, bilinguals have a better one with 3,96 mean score. The item 21 is about being able to go into details when comparing events or information. As monolingual students have 3,00 mean score while bilingual ones have 3,08, the results are nearly the same. As for the item 22 which checks the ability to apply what have been learned to other areas, bilinguals are better than the monolinguals. Whereas monolinguals have 3,51 mean score, bilinguals have 3,63. The last item in which there is a significant difference is the item 23 as monolingual students have 3,61 mean score while bilinguals have 3,94. As shown in the Tables 8 and 14, 85,1 % of the bilingual students partially, mostly or totally agree while 80,1 % of the monolinguals partially, mostly or totally agree on this item stating that they

listen carefully to other people's ideas. The item 24 checks if students become aware of information that is not related to the subject they are interested in and eliminate it. Bilingual students have better mean score (3,38) than monolinguals who have 3,24 mean score. The last item in this subscale is the item 25 which is about being able to understand what the person whose ideas they listen to or read wants to tell. While monolinguals have 3,52 mean score, bilinguals have 3,75. As a result of the analysis of the data, it can be said that bilingual students have better scores in all of the items in flexibility subscale. Therefore, the results of the study are consistent with Balkan (1970) in that bilinguals have a tendency to have more flexibility than monolinguals.

Table 22: A Cross Table of the Systematicity Subscale of Control and Experimental Group

	Control Group		Experimental Group		Test	
Questions	X	SD	X	SD	t	p
26. When I read any article, I can quickly find the main idea.	3,11	1,12	3,10	1,08	0,083	0,934
27. I check my thoughts before making my decision.	3,27	1,12	3,76	1,05	-3,161	0,002*
28. I enjoy taking part in class discussions.	3,30	1,45	3,47	1,47	-0,798	0,426
29. Before I start a work or decide, I think how to do it and plan it.	3,28	1,18	3,44	1,12	-0,953	0,342
30. I try to see the different perspectives before solving the problem.	3,12	1,06	3,30	1,00	-1,185	0,237
31. I can easily recognize the challenges.	3,01	1,01	3,44	0,94	-3,031	0,003*
32. I do not talk and write without thinking.	3,29	1,05	3,64	1,12	-2,199	0,029*
33. I investigate the reasons behind any event.	3,30	1,14	3,32	0,93	-0,129	0,898
34. I take changes into consideration when analysing information.	3,04	0,92	3,16	0,95	-0,895	0,372
35. I collect appropriate data before my decisions.	3,27	1,01	3,62	1,00	-2,443	0,015*
36. I can concentrate my attention on my lessons and works.	3,29	1,29	3,41	1,10	-0,699	0,485

37. I can analyse the problems objectively with its causes and consequences.	3,02	0,87	3,23	0,75	-1,745	0,083
38. I can ask questions to understand information, thoughts and ideas better.	3,51	1,07	3,69	1,09	-1,155	0,250

*: $p < a=0,05$

Table 22 shows the items from 26 to 38 which check systematicity of control and experimental group and compare the mean scores. Firstly, the mean scores of monolingual students (3,11) and bilingual ones (3,10) are nearly the same in the item 26 which checks being able to find the main idea quickly, when reading any article. According to the results, a significant difference has been detected in the item 27 which indicates that bilingual children are better at checking their thoughts before making their decisions. Bilingual students have better mean score (3,76) than monolinguals who have 3,27 mean score in this item. As for the item 28, while monolinguals have 3,27 mean score, bilinguals have 3,47 mean score as they state that they enjoy taking part in class discussions. Bilinguals have better scores, but there is not a significant difference in this item. Similarly, bilinguals have better mean scores in the item 29, which states that before they start a work or decide, they think how to do it and plan it, as they have 3,44 mean score while monolinguals have 3,28. In a similar way, without there being a significant difference, bilinguals have better mean score (3,30) than monolinguals (3,12) in the item 30 which is about trying to see the different perspectives before solving the problem. This result is in line with Paul's (1993) views about the advantages of critical thinking as he states that students can have a good reasoning ability and make their own conclusions by considering other perspectives. On the other hand, there is a significant difference in the 31st item which states that they can easily recognize the challenges and the 32nd item which states that they do not talk or write without thinking. As is seen from the table, experimental group has higher scores in these items. Monolingual students have 3,01 mean score while bilinguals have 3,44 mean score in the item 31. It can be concluded from these results that bilingualism is advantageous at recognizing challenges. Moreover, monolingual students have 3,29 mean score while bilinguals have 3,64 mean score in the item 32. As a result, it can be said that being a bilingual affects decision making procedure and checking one's own thoughts before expressing oneself. As for the item 33, monolinguals and bilinguals have nearly the

same mean scores, 3,30 and 3,32 respectively. That is to say, both of these groups investigate the reasons behind any event in the same extend. Even though there is not a significance in these five items, bilingual students have better mean scores in these items. Monolingual students have 3,04 mean score whereas bilinguals have 3,16 in the item 34 which checks taking changes into consideration when analysing information. As is seen, although bilinguals have better score, the results are close to each other. The item 35 is about decision making which is an important skill in critical thinking. Monolinguals have 3,27 mean score while bilinguals have 3,62, which means that bilinguals are better at collecting appropriate data before their decisions. When it comes to the item 36 which checks the ability to concentrate one's attention on his/her lessons and works, monolinguals have 3,29 mean score whereas bilinguals have 3,41. The item 37 is about analysis as it checks the ability to analyse the problems objectively with its causes and consequences and monolinguals have 3,02 mean score while bilinguals have 3,23. Lastly, the item 38 which checks the ability to ask questions to understand information, thoughts and ideas better and bilinguals seems to be better at this ability as they have 3,69 mean score whereas monolinguals have 3,51 mean score.

Table 23: A Cross Table of the Tenacity-Patience Subscale of Control and Experimental Group

	Control Group		Experimental Group		Test	
Questions	X	SD	X	SD	t	p
39. I go into my homework and tasks I do wholeheartedly.	3,05	1,17	3,35	1,06	-1,877	0,062
40. To better understand what I am doing, first I break it up, then reassemble it again.	2,73	1,11	2,93	1,13	-1,216	0,225
41. I am self-confident.	3,67	1,23	3,93	1,12	-1,512	0,132
42. I constantly take care of my lessons and their requirements.	2,91	1,10	3,41	1,00	-3,287	0,001*
43. I do not give up when I encounter an obstacle while dealing with a work.	3,48	1,20	3,83	1,08	-2,184	0,030*
44. I evaluate a homework, project or work after finishing it.	2,68	1,20	2,81	1,25	-0,697	0,487

45. I usually do what I do precisely.	2,90	0,94	3,15	1,08	-1,663	0,098
46. I can motivate myself in my studies.	3,00	1,12	3,26	1,12	-1,620	0,107

*: $p < a=0,05$

As shown in the Table 23, the items from 39 to 46 check tenacity-patience of control and experimental group and compare the mean score. The results show that experimental group has better scores in all of the items. Firstly, for the item 39 stating that they go into their homework and tasks they do wholeheartedly, monolinguals have 3,05 mean score while bilinguals have 3,35 mean score. Moreover, the mean score of monolinguals is 2,73 while the mean score of bilinguals is 2,93 in the item 40, which states that to better understand what they are doing, first they break it up, then reassemble it again. As is seen, even if bilinguals' have better mean score, both groups' mean scores are relatively low in this item. Next, the item 41 checks the self-confidence of the respondents. The mean score of the monolingual students is 3,67 whereas the mean score of bilinguals is 3,93. Even though the mean score of bilinguals is higher, there is not a significant difference in this item. However, there has been a statistically significant difference found in the item 42 which checks taking care of their lessons and their requirements. Bilingual students have higher mean score as monolingual students have 2,91 mean score while bilinguals have 3,41. This may stem from bilinguals' learning autonomy. As is seen in the Tables 10 and 16, while 83% of the bilingual students agree that they constantly take care of their lessons and their requirements, 63,4 % of the monolinguals agree. Furthermore, there has been a statistically significant difference found in the item 43 as monolinguals have 3,48 mean score while bilinguals have 3,83 mean score. As is seen in the Tables 10 and 16, 87,7 % agree that they do not give up when they encounter an obstacle while dealing with a work while 75,6% of the monolinguals agree on this statement. It can be concluded from this result that bilinguals seem more determent than monolinguals. The lowest mean scores of monolinguals and bilinguals (2,68 and 2,81 successively) are seen in the item 44 which checks if they evaluate a homework, project or work after finishing it. In light of the result of the analysis, it can be inferred that neither monolinguals nor bilinguals have good evaluation skill. As for the last two items, the results clarify that

bilinguals are better at doing what they do precisely and motivating themselves in their studies.

Table 24: A Cross Table of the Open-mindedness Subscale of Control and Experimental Group

	Control Group		Experimental Group		Test	
Questions	X	SD	X	SD	t	p
47. I take nothing at its face value.	3,66	1,16	3,43	1,24	1,309	0,192
48. I collect sufficient data before deciding.	3,43	0,96	3,63	0,90	-1,535	0,126
49. I can be flexible when necessary.	3,73	1,18	3,74	1,01	-0,033	0,974

*: $p < a=0,05$

As shown in the Table 24, the items from 47 to 49 check open-mindedness of control and experimental group and compare the mean score. As seen from the results, there is not any significant difference in these three items. For the item 47, monolingual students have 3,66 mean score, whereas bilinguals have 3,43. As is seen, monolinguals have better score in this item stating that they take nothing at its face value. The item 48 checks if participants collect sufficient data before deciding and bilinguals have a better mean score (3,63) than monolinguals (3,43). As is seen, bilinguals have better mean scores than monolinguals which leads us to conclude that bilinguals are more inclined to be open-minded. Finally, the mean scores in the item 49 are nearly the same. Monolinguals have 3,73 mean score, while bilinguals have 3,74. In light of the result of the analysis, it can be said that monolingual and bilingual students are able to be flexible when necessary in the same extend.

4.3.4 Research Question 4: Is there any statistically significant difference between critical thinking dispositions of monolingual and bilingual children in terms of Gender?

For the fourth research question, the Independent Two Samples t-test has been carried out to compare the critical thinking dispositions of the children in both groups in terms of gender.

Table 25: A Cross Table for the Difference of Critical Thinking Dispositions of the Female Monolingual and Bilingual Children

Group	N	M	SD	t	p
Control	34	161,26	22,29	1,925	0,058
Experimental	50	169,74	17,94		

*: p < a=0,05

Table 25 shows the difference of critical thinking dispositions of the male monolingual and bilingual children. As shown in the Table 25, there has not been a statistically difference found in critical thinking dispositions of the female monolingual and bilingual children. These results have similarities with the studies of Çekin (2015) and Topoğlu and Öney (2013). Because they did not see any difference in the students' critical thinking dispositions according to their genders.

Table 26: A Cross Table for the Differences of Subscales of the Female Monolingual and Bilingual Children

Subscales	Groups	N	M	SD	t	p
Metacognition	Control	34	48,97	6,74	-1,195	0,236
	Experimental	50	50,72	6,48		
Flexibility	Control	34	36,41	5,63	-1,821	0,072
	Experimental	50	38,36	4,18		
Systematicity	Control	34	42,35	7,24	-0,987	0,327
	Experimental	50	43,78	5,96		

Tenacity-patience	Control	34	22,91	5,79	-2,582	0,012*
	Experimental	50	26,06	5,27		
Open-mindedness	Control	34	10,62	2,37	-0,415	0,680
	Experimental	50	10,82	2,07		

*: p < a=0,05

Table 26 shows a cross table for the differences of subscales of the female monolingual and bilingual children. Table 26 above shows t-test results which are presented for comparing the subscales of female monolingual and bilingual children. According to t test results, on one hand, there is a statistically significant difference in terms of tenacity-patience scores between female monolingual and bilingual students. Bilingual girls have higher tenacity-patience level (M=26,06) than monolingual ones (M=22,91). On the other hand, there has not been found a statistically significant difference in terms of metacognition, flexibility, systematicity and open-mindedness scores. Hence, it can be interpreted that there is not a statistically significant difference between critical thinking dispositions of the female monolingual and bilingual students.

Table 27: A Cross Table for the Difference of Critical Thinking Dispositions of the Male Monolingual and Bilingual Children

Group	N	M	SD	t	p
Control	48	164,42	24,65	-2,086	0,039*
Experimental	64	173,92	23,27		

*: p < a=0,05

Table 27 shows the difference of critical thinking dispositions of the male monolingual and bilingual children. As shown in the Table 27, there has been a statistically difference found in critical thinking dispositions of the male monolingual and bilingual children. Bilingual male children have higher critical thinking disposition level (M=173,92) than monolingual male children (M=164,42). In order

to understand this difference, male children in the control and experimental group have been compared according to the five subscales.

Table 28: A Cross Table for the Differences of Subscales of the Male Monolingual and Bilingual Children

Subscales	Groups	N	M	SD	t	p
Metacognition	Control	48	50,15	7,23	-1,021	0,310
	Experimental	64	51,56	7,29		
Flexibility	Control	48	36,35	6,90	-2,361	0,020*
	Experimental	64	39,20	5,45		
Systematicity	Control	48	41,46	8,37	-2,480	0,015*
	Experimental	64	45,22	7,61		
Tenacity-patience	Control	48	25,50	4,78	-1,755	0,082
	Experimental	64	27,16	5,06		
Open-mindedness	Control	48	10,96	2,22	0,425	0,672
	Experimental	64	10,78	2,16		

*: $p < a=0,05$

Table 28 shows a cross table for the differences of subscales of the male monolingual and bilingual children. As shown in Table 28, Independent Two Samples t-test results are presented for comparing male monolingual and bilingual students in terms of the subscales. According to t test results, there is a statistically significant difference between the monolingual and bilingual male children in terms of flexibility and systematicity scores. Bilingual male children show higher flexibility level (M=39,20) than monolingual ones (M= 36,35). Moreover, a statistically significant difference has been found in systematicity subscales and bilingual male

children have higher systematicity level (M=45,22) than monolingual ones (M=41,46). However, there is not a statistically significant difference in terms of the other subscales, such as metacognition, tenacity-patience and open-mindedness scores.

According to these results, it can be said that there is a statistically significant difference in critical thinking dispositions of monolingual and bilingual male children, while there is not in female children. This result may stem from the fact that, as Willingham (2007) states, the cognitive development of girls and boys are different in adolescence period.

4.3.5 Research Question 5: Is there any statistically significant difference between critical thinking dispositions of monolingual and bilingual children in terms of age?

In order to probe the fifth research question, an Independent Two Samples t-test was applied to compare critical thinking dispositions of monolingual and bilingual children aged 10-11, 12-13 and over13.

Table 29: A Cross Table for the Differences of Critical Thinking Dispositions of the Monolingual and Bilingual Children aged 10-11

Group	N	M	SD	t	p
Control	21	165,67	24,48	-1,522	0,138
Experimental	12	177,75	16,36		

*: $p < a=0,05$

Independent Two Samples t-test results for the comparison of the monolingual and bilingual children aged 10-11 are presented in Table 29. As shown in Table 29, a statistically difference has not been found in critical thinking dispositions of the monolingual and bilingual children aged 10-11. This may be because these children have not reached adolescence period yet and they have not gained the ability of abstract thinking.

Table 30: A Cross Table for the Differences of Critical Thinking Dispositions of the Monolingual and Bilingual Children aged 10-11

Subscales	Groups	N	M	SD	t	p
Metacognition	Control	21	49,71	6,14	-2,110	0,043*
	Experimental	12	54,00	4,49		
Flexibility	Control	21	35,71	6,43	-1,753	0,089
	Experimental	12	39,33	4,08		
Systematicity	Control	21	42,67	8,59	-0,648	0,522
	Experimental	12	44,67	8,40		
Tenacity-patience	Control	21	26,14	5,94	-1,106	0,277
	Experimental	12	28,33	4,52		
Open-mindedness	Control	21	11,43	2,27	0,015	0,988
	Experimental	12	11,42	1,93		

*: $p < a=0,05$

According to t test results shown in Table 30, there is not a statistically significant difference in the subscales flexibility, systematicity, tenacity-patience, open-mindedness. However, there is a statistically significant difference in metacognition scores of monolingual and bilingual children aged 10-11 and bilingual children have higher metacognition level (M=54,00) than monolingual ones (M=49,71). Accordingly, Siegal, Surian, Matsuo, Geraci, Iozzi, Okumura, and Itakura (2010) conclude that being exposed to more than one language facilitate children's metalinguistic awareness which is an advantage on children's cognitive development. According to them, even if the children sometimes may have difficulties in vocabulary comprehension, they overcome this with age.

Table 31: A Cross Table for the Differences of Critical Thinking Dispositions of the Monolingual and Bilingual Children aged 12-13

Group	N	M	SD	t	p
Control	31	163,52	23,83	-1,434	0,156
Experimental	48	170,67	20,11		

*: p < a=0,05

Table 31 above shows Independent Two Samples t-test results which are presented for comparing the critical thinking dispositions of monolingual and bilingual children aged 12-13. As is seen, a statistically difference between the critical thinking dispositions of the control and experimental group has not been found.

Table 32: A Cross Table for the Differences of Critical Thinking Dispositions of the Monolingual and Bilingual Children aged 12-13

Subscales	Groups	N	M	SD	t	p
Metacognition	Control	31	49,97	6,94	-0,019	0,985
	Experimental	48	50,00	7,63		
Flexibility	Control	31	36,94	6,70	-1,011	0,317
	Experimental	48	38,33	4,71		
Systematicity	Control	31	41,74	7,55	-1,999	0,049*
	Experimental	48	44,75	5,79		
Tenacity-patience	Control	31	24,48	4,56	-2,490	0,015*
	Experimental	48	27,15	4,69		
Open-mindedness	Control	31	10,39	2,19	-0,098	0,922
	Experimental	48	10,44	2,26		

*: p < a=0,05

In Table 32, Independent Two Samples t-test results are presented for comparing the subscales of monolingual and bilingual children aged 12-13. According to the results, there is a statistically significant difference in systematicity and tenacity- patience subscales and the experimental group seem to have higher scores. On the other hand, there is not a statistically significant difference in metacognition, flexibility and open-mindedness subscales. Therefore, it is concluded that there is not a statistically difference between the critical thinking dispositions of monolingual and bilingual children.

Table 33: A Cross Table for the Differences of Critical Thinking Dispositions of the Monolingual and Bilingual Children aged over 13

Group	N	M	SD	t	p
Control	30	160,90	23,37	-2,127	0,036*
Experimental	54	172,09	22,96		

*: p < a=0,05

In Table 33, the statistical analysis of critical thinking dispositions of the monolingual and bilingual children aged over 13 has been given. According to the results presented above, the difference between the two groups is considered to be statistically significant. Results show that bilingual children have higher critical thinking disposition level (M=172,09) than that of monolingual children (M=160,90). The reason why there is a statistically significant difference in only students aged over 13 may be that adolescence period starts at the age of 12-13. In this period, cognitive development can be seen and logical thinking reaches to adult level. Whitmire (2000) describes adolescence as an important period of complex cognitive and social growth. As students move through adolescence into the adult years, bilingual students make use of their mastering in two different language and experience in two different culture and social environment. This social and language development may also affect the development of critical thinking dispositions.

Table 34: A Cross Table for the Differences of Critical Thinking Dispositions of the Monolingual and Bilingual Children aged over 13

Subscales	Groups	N	M	SD	t	p
Metacognition	Control	30	49,30	7,83	-1,450	0,151
	Experimental	54	51,63	6,59		
Flexibility	Control	30	36,27	6,12	-2,265	0,026*
	Experimental	54	39,17	5,33		
Systematicity	Control	30	41,33	7,95	-1,754	0,083
	Experimental	54	44,43	7,63		
Tenacity-patience	Control	30	23,17	5,50	-2,145	0,035*
	Experimental	54	25,89	5,63		
Open-mindedness	Control	30	10,83	2,35	-0,307	0,760
	Experimental	54	10,98	1,99		

*: $p < a=0,05$

As shown in Table 34, Independent Two Samples t-test results are presented for comparing monolingual and bilingual children over 13 in terms of the subscales. According to t-test results, there is a statistically significant difference in flexibility scores, and the bilingual children have higher flexibility level (M=39,17) than monolingual ones (M=36,27). Moreover, there is a statistically significant difference in tenacity-patience scores, and the bilinguals have higher tenacity-patience scores (M=25,89). However, in metacognition, systematicity and open-mindedness subscales, there is not a statistically significant difference.

Regarding age, it can be concluded from the results of this study that there is a meaningful relation between age and critical thinking dispositions after adolescence period. As age increases, critical thinking levels also increase and the gap between critical thinking dispositions scores of monolingual and bilingual students extends. In

the same vein, Kelly (2003), in the research on candidate teachers, has also found out that the bigger the age is, the higher critical thinking levels are. However, Gülveren (2007) concludes that there is not a meaningful relation between age and critical thinking in a research carried out on the students in the faculty of education.

CHAPTER FIVE

V. CONCLUSION, DISCUSSION AND RECOMMENDATIONS

5.1 Concluding Remarks

The main purpose of the present study is to compare critical thinking dispositions of monolingual and bilingual children. Before this comparison, critical thinking dispositions of monolingual and bilingual children have been separately analysed. By this way, it has been checked whether a relationship between bilingualism and critical thinking dispositions exist or not. Another purpose of this study has been to compare critical thinking dispositions of monolingual and bilingual children according to gender and age.

This study has been conducted to 196 children between the ages of 10 and 14. The participants were divided into two groups as monolingual children of German language and bilingual children. There were 82 participants in the monolingual group while there were 114 participants in the bilingual group. Monolingual group consisted of 34 female and 48 male students, whereas bilingual group consisted of 50 female and 64 male students. In the bilingual group, mother tongue of the participants were varied, such as Turkish, Italian, Russian and Arabic while their second language was German. The bilingual participants were chosen from children whose birth and residence country were Germany and who are fluent in German language.

In order to collect data, a questionnaire that consisted of two parts, a Personal Information Section and Critical Thinking Disposition Scale, was given to bilingual and monolingual students. The Personal Information Section was created by the researcher so as to gather data about the independent variables of the research which are gender, age, place of birth and languages the participants speak, their first and second languages. In the second part of the questionnaire, 'Critical Thinking Disposition Scale' (Semerci, 2016) was used which is a Likert-type item scale. The participants were to agree or disagree with 49 statements in a format of a five-point response:1. I strongly disagree, 2. I mostly disagree, 3. I partially agree, 4. I mostly

agree, 5. I totally agree. Furthermore, this multi-dimensional scale which measures critical thinking dispositions has five subscales: metacognition (14 items), flexibility (11 items), systematicity (13 items), tenacity-patience (8 items) and open-mindedness (3 items). While comparing critical thinking dispositions of monolingual and bilingual students, these five subscales were taken as basis.

According to the results, a relationship between bilingualism and critical thinking dispositions has been revealed. The results of the analyses reveal that there are some significant differences between critical thinking dispositions of monolingual and bilingual children. These differences have been analysed in accordance with five subscales of critical thinking dispositions: metacognition, flexibility, systematicity, tenacity-patience and open-mindedness. The results show that bilinguals seem to have outperformed the monolinguals in all of these five subscales of critical thinking dispositions. However, there is a statistically significant difference in three of them which are flexibility, systematicity and tenacity-patience. That is to say, a statistically significant difference between monolingual and bilingual children in terms of metacognition and open-mindedness does not exist.

With regard to these results, it can be said that bilingual children have better scores in critical thinking dispositions than monolingual children. The findings of this study are in line with the results of the research of Konaka (1997) which suggests that bilingualism has positive effects on divergent thinking skills.

In this study, critical thinking dispositions of monolingual and bilingual children have also been compared in terms of gender and age. To start with, when comparing the critical thinking dispositions of female monolingual and bilingual students, it is seen that there is a statistically significant difference only in terms of tenacity-patience scores and bilingual girls have higher tenacity-patience level. However, there has not been found a statistically significant difference in terms of metacognition, flexibility, systematicity and open-mindedness scores between female monolingual and bilingual students. Hence, it can be interpreted that there is not a statistically significant difference between critical thinking dispositions of the female monolingual and bilingual students. When it comes to comparing the critical thinking dispositions of male monolingual and bilingual students, there is statistically

significant difference in two out of five subscales of critical thinking dispositions which are flexibility and systematicity. In both of these two subscales, bilingual male students have higher levels. However, a significant difference has not been detected for the other three subscales of critical thinking dispositions which are metacognition, tenacity-patience and open-mindedness. With these results, it can be said that bilingual male students have higher critical thinking disposition level than monolingual ones.

Besides, the other independent variable used in this study is age. Children are divided into three different age groups which are 10-11year-old, 12-13year-old and over 13year-old group. The results of the study have been evaluated in terms of these three age groups.

Firstly, a statistically difference between the critical thinking dispositions of monolingual and bilingual children aged 10-11 has not been found. According to study results, there is a statistically significant difference only in terms of metacognition scores as bilingual children aged 10-11 have higher metacognition level. However, in the other four subscales of flexibility, systematicity, tenacity-patience and open-mindedness scores, there has not been found a statistically significant difference between monolingual and bilingual children aged 10-11.

Secondly, while there is a statistically significant difference in terms of systematicity and tenacity-patience level in that bilingual children aged 12-13 have higher systematicity and tenacity-patience scores than monolingual ones, there is not a statistically significant difference in terms of metacognition, flexibility and open-mindedness levels. As is seen, a statistically significant difference between the critical thinking dispositions of monolingual and bilingual children aged 12-13 has not been found.

Unlikely to the previous two comparison of age groups, there is a statistically significant difference in critical thinking disposition scores in the last group of children aged over 13. According to the study, there is a statistically significant difference in terms of flexibility and tenacity-patience scores and bilingual children over 13 have higher flexibility and tenacity-patience level. Although there has not been found a statistically significant difference in terms of metacognition,

systematicity and open-mindedness scores, there is a statistically significant difference in critical thinking disposition of monolingual and bilingual children over 13. Because the overall critical thinking disposition scores of bilingual children over 13 are higher.

Consequently, it can be said that a relationship between bilingualism and critical thinking dispositions may exist according to the findings of the study.

5.2 Suggestions

In modern world, critical thinking skills are indispensable for people in their personal and academic life. As is seen, many studies indicate the significance of critical thinking. Therefore, it should be taught in schools at an early age in order to get more benefits of it. As Van Gelder (2005) suggests 'one of the main goals of education, at whatever level, is to help develop general thinking skills, particularly critical thinking skills' (p. 41). Critical thinking should have a priority in education system and it should be included in syllabus. According to Kabilan (2000), text books and lessons should contain components of critical thinking and they should promote critical thinking. In addition, teachers should be trained to be aware of critical thinking skills of children.

Teachers should raise their students' awareness of critical thinking skills and dispositions. Teachers should encourage their students to develop their critical thinking skills and to be eager to use these skills. This encouragement can be made by being a model for students and applying these skills in the lessons. Passmore (1967) claims that teaching critical thinking is only possible by people who are critical thinker.

When it comes to bilingualism, it is clear from the previous studies along with this particular study, bilingualism has positive effects on critical thinking. Therefore, bilingualism should also take part in education system. The number of bilingual children is increasing day by day worldwide. These children should be provided with appropriate language education in schools. Finally, the mother tongue of the students may be given place in formal education.

5.2.1 Suggestions for Prospective Studies

It is obvious that there is a need for more research so as to understand the relationship between bilingualism and critical thinking dispositions.

The monolingual participants in this study were German speakers while the bilingual participants speak different languages. This study can be replicated with other bilingual students elsewhere. Moreover, further studies can be carried out on high school students or university students and these groups can be compared.

Furthermore, variables have been restricted with gender and age, some other variables which were not investigated in the present study could be taken into consideration in future studies. Future studies about critical thinking can also contain qualitative data as well as quantitative.

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APPENDICES

Appendix 1: Questionnaire

QUESTIONNAIRE

I. Participants

1. Gender: (a) female (b) male

2. Age: (a) 10 (b) 11 (c) 12 (d) 13 (e) 14 (f) other…..……(please indicate)

3. Class : (a) 5 (b) 6 (c) 7 (d) 8 (e) 9

4. Place of Birth: (a) Germany (b) Turkey (c) other…..……(please indicate)

5. Since when do you live in Germany? ……..……..

6. Language (Which languages do you speak?)

(a) German (b) Turkish (c) other…..……(please indicate)

II. Critical Thinking Disposition Scale

Dear Students,

This survey was created to assess your critical thinking dispositions. Please read each question carefully and choose the answers that apply to you. Please do not skip any questions.

Thank you for your help!

1. I strongly disagree

2. I mostly disagree

3. I partially agree

4. I mostly agree

5. I totally agree

	1. I strongly disagree	2- I mostly disagree	3- I partially agree	4- I mostly agree	5- I totally agree
1. If I have weaknesses in my work or in any subject, I try to overcome them.					
2. I am aware of how my behaviours affect other people.					
3. I can find the contrasts between the information in what is told or what I read.					
4. I try to expand my knowledge in my field.					
5. After I decide how to solve the problem, I definitely try that solution.					
6. I can regularly organize the information and ideas that are meaningful to me.					
7. Thinking of any subject, if I notice that I think inside the box, I try to overcome it.					
8. I am aware of how and when my feelings affect me.					
9. I try to overcome the ambiguities encountered while working on any subject.					
10. I apply appropriate criteria, models or rules in my work.					

11. I can do verbal expressions in accordance with the rules.					
12. I express my thoughts clearly about anything.					
13. I am curious about other areas of life and different thoughts.					
14. I use original solutions when solving problems.					
15. I check whether ideas and thoughts are trustworthy or not.					
16. I try to access all the information I need while preparing an assignment.					
17. I can suggest several different solutions to solving the problem.					
18. Before starting a work, I think about where my decisions will take me.					
19. I make absolutely use of the criteria while evaluating my work.					
20. I know how to access the information I need in any issue.					
21. I can go into details when comparing events or information.					
22. I can apply what I have learned to other areas.					
23. I listen carefully to other people's ideas.					
24. I become aware of information that is not related to the subject I am interested in and eliminate it.					
25. I can understand what the person whose ideas I listen to or read wants to tell.					
26. When I read any article, I can quickly find the main idea.					
27. I check my thoughts before making my decision.					
28. I enjoy taking part in class discussions.					
29. Before I start a work or make a decision, I think how to do it and plan it.					
30. I try to see the different perspectives before solving the problem.					
31. I can easily recognize the challenges.					
32. I do not talk and write without thinking.					
33. I investigate the reasons behind any event.					
34. I take changes into consideration when analysing information.					
35. I collect appropriate data before my decisions.					
36. I can concentrate my attention on my lessons and works.					
37. I can analyse the problems objectively with its causes and consequences.					
38. I can ask questions to understand information, thoughts and ideas better.					
39. I go into my homework and tasks I do wholeheartedly.					
40. To better understand what I am doing, first I break it up, then reassemble it again.					
41. I am self-confident.					
42. I constantly take care of my lessons and their requirements.					
43. I do not give up when I encounter an obstacle while dealing with a work.					
44. I evaluate a homework, project or work after finishing it.					
45. I usually do what I do precisely.					
46. I can motivate myself in my studies.					
47. I take nothing at its face value.					
48. I collect sufficient data before making a decision.					
49. I can be flexible when necessary.					

Appendix 2: Factor Loadings and Total Item Correlations of Critical Thinking Disposition Scale

Tablo 1. Eleştirel Düşünme Eğilimi Ölçeğinin faktör yükleri ve madde toplam korelasyonları

Taslak Ölçek Madde No	Nihai Ölçek Madde No	Maddeler	Faktör Yükü	Madde Toplam r
ÜSTBİLİŞ				
	1	Yaptığım işlerde ya da herhangi bir konuda zayıf olduğum noktalar varsa gidermeye çalışırım.	.40	.64*
	2	Davranışlarımın diğer kişileri nasıl etkilediğinin farkındayım	.52	.44*
	3	Anlatılanlarda ya da okuduklarımda bilgiler arasındaki zıtlıkları bulabilirim.	.55	.54*
	4	Alanımla ilgili bilgileri genişletmek için uğraşırım.	.48	.55*
	5	Problemin nasıl çözüleceğine karar verdikten sonra mutlaka o çözümü denerim	.59	.61*
	6	Benim için anlamlı olan bilgileri ve fikirleri düzenli bir şekilde organize edebilirim	.55	.48*
	7	Herhangi bir konuda düşündüğüm zaman bir kalıba bağlı kaldığımı fark edersem bunu aşmaya çalışırım	.54	.49*
	8	Duygularımın nasıl ve ne zaman beni etkilediğinin farkındayım.	.51	.49*
	9	Herhangi bir konuda çalışma yaparken karşıma çıkan belirsizlikleri gidermeye çalışırım.	.50	.68*
	10	Çalışmalarımda uygun kriterleri, modelleri ya da kuralları uygularım	.54	.65*
	11	Sözlü anlatımları kurallarına uygun olarak yapabilirim.	.57	.63*
	12	Herhangi bir şey hakkındaki düşüncelerimi açıkça ifade ederim.	.50	.54*
	13	Yaşamın diğer alanlarına ve farklı düşüncelerine karşı merak duyarım.	.50	.58*
	14	Problemleri çözerken orijinal çözüm yolları kullanırım	.44	.58*
ESNEKLİK				
	15	Fikirlerin ve düşüncelerin güvenilir olup olmadığını kontrol ederim	.52	.60*
	16	Bir ödev hazırlarken gerekli olan tüm bilgilere ulaşmaya çalışırım	.52	.62*
	17	Problemin çözümü için birden fazla farklı çözüm yolu önerebilirim.	.51	.67*
	18	Herhangi bir çalışmaya başlamadan önce verdiğim kararların beni nereye götüreceğini düşünürüm	.59	.62*
	19	Çalışmalarımı değerlendirirken mutlaka ölçütlerden yararlanırım	.54	.61*
	20	Herhangi bir konuda ihtiyacım olan bilgiye nasıl ulaşacağımı bilirim	.46	.66*
	21	Olayları ya da bilgileri karşılaştırırken ayrıntılara inebilirim	.53	.62*
	22	Öğrendiklerimi diğer alanlara uygulayabilirim	.53	.63*
	23	Diğer insanların fikirlerini dikkatli bir şekilde dinlerim	.41	.58*
	24	İlgilendiğim konu ile ilgili olmayan bilgilerin farkında olur ve onları ayıklarım	.45	.59*
	25	Fikirlerini dinlediğim ya da okuduğum kişinin ne anlatmak istediğini anlayabilirim	.33	.61*
SİSTEMATİKLİK				
	26	Herhangi bir yazı okuduğumda anafikri çabucak bulabilirim	.51	.58*
	27	Kararlarımı vermeden düşüncelerimi kontrol ederim	.63	.56*
	28	Derslerde tartışmalara katılmaktan zevk alıyorum	.47	.47*
	29	Herhangi bir işe başlamadan ya da karar vermeden önce nasıl yapacağımı düşünür ve planlarım	.51	.54*
	30	Problemi çözmeden önce değişik açılardan görmek için uğraşırım	.57	.61*
	31	Karşıma çıkan zorlukları kolayca tanıyabilirim	.63	.57*
	32	Düşünmeden önce konuşmam ve yazmam	.48	.48*
	33	Herhangi bir olayın ardında yatan nedenleri araştırırım	.54	.66*
	34	Bilgileri analiz ederken değişiklikleri göz önüne alırım	.50	.65*
	35	Kararlarımdan önce uygun verileri toplarım	.48	.62*
	36	Derslerime ve çalışmalarıma karşı dikkatimi yoğunlaştırabilirim	.40	.62*
	37	Neden ve sonuçlarıyla problemleri objektif olarak analiz edebilirim	.50	.69*
	38	Bilgi, düşünce ve fikirleri daha iyi anlamak için sorular sorabilirim	.43	.70*
AZİM VE SABIR				
	39	Yaptığım ödevlere ya da işlere dört elle sarılırım.	.41	.57*
	40	Yaptığım işlerin ne olduğunu daha iyi anlayabilmek için onu önce parçalara ayırır sonra tekrar birleştiririm	.35	.45*

	41	Kendime güvenirim	.63	.56*
	42	Derslerimle ve derslerimin gerekleriyle sürekli ilgilenirim	.68	.59*
	43	Herhangi bir işle uğraşırken bir engelle karşılaştığımda pes etmem.	.66	.58*
	44	Bir ödevi, projeyi ya da işi bitirdikten sonra onu değerlendiririm	.54	.61*
	45	Yaptıklarımı genelde kusursuz ve tam yaparım.	.48	.63*
	46	Çalışmalarımda kendi kendimi motive edebiliyorum	.47	.59*
AÇIK FİKİRLİLİK				
	47	Hiçbir şeyi dış görünüşüne göre değerlendirmem	.71	.30*
	48	Karar vermeden önce yeterli veri toplarım	.58	.60*
	49	Gerektiğinde esnek davranmasını bilirim	.69	.50*
**p<.01,				

Appendix 3: Permission of Ethics Committee of Ondokuz Mayıs University

T.C.
ONDOKUZ MAYIS ÜNİVERSİTESİ
SOSYAL VE BEŞERİ BİLİMLER ETİK KURUL KARARLARI

KARAR TARİHİ	TOPLANTI SAYISI	KARAR SAYISI
02.05.2018	4	2018 / 178

KARAR NO: 2018 - 178

Üniversitemiz Eğitim Bilimleri Enstitüsü yüksek lisans öğrencisi Emine ALTINTAŞ'ın Doç. Dr. Nalan KIZILTAN danışmanlığında "Tek Dilli ve Çift Dilli Çocukların Eleştirel Düşünme Eğilimlerinin Karşılaştırılması" isimli yüksek lisans tezine ilişkin anket çalışması okunarak görüşüldü.

Üniversitemiz Eğitim Bilimleri Enstitüsü yüksek lisans öğrencisi Emine ALTINTAŞ'ın Doç. Dr. Nalan KIZILTAN danışmanlığında "Tek Dilli ve Çift Dilli Çocukların Eleştirel Düşünme Eğilimlerinin Karşılaştırılması" isimli yüksek lisans tezine ilişkin anket çalışmasının kabulüne oy birliği ile karar verildi.

ASLI GİBİDİR.

Appendix 4: Administrative Academic Permission of the Research in Ascapha-Mittelschule Mainaschaff

Ascapha-Mittelschule Mainaschaff
Schillerstraße 1 ♦ 63814 Mainaschaff

Tel.: 06021/78170 ♦ Fax: 06021/781750

e-Mail: mail@vs-mainaschaff.de

Homepage: http://www.vs-mainaschaff.de/

Ascapha-Mittelschule Mainaschaff, Schillerstraße 1, 63814 Mainaschaff

Mainaschaff, 13.07.2018

Bestätigung

Frau Emine Altintas ist im Schuljahr 2017-18 Masterstudentin an der Ondokuz Mayis Universität, Institut für Erziehungswissenschaften.

Wir sind damit einverstanden, dass sie für ihre Magisterarbeit in unseren Jahrgangsstufen 5 bis 9 eine Umfrage zum Thema „Eine vergleichende Studie der kritischen Denkveranlagungen einsprachiger und zweisprachiger Kinder" mittels eines Fragebogens durchführt.

Mainaschaff, den 13.07.2018

A. Rothe-Thietke

Anna Rothe-Thietke, Rektorin

Appendix 5: English Translation of Administrative Academic Permission of the Research in Ascapha-Mittelschule Mainaschaff

Ascapha Secondary School Mainaschaff

Confirmation

Mrs. Emine Altıntaş is a master student at Educational Science Department, Ondokuz Mayıs University.

We have agreed that she carries out a survey by means of a questionnaire for her thesis 'A Comparative Study of Critical Thinking Dispositions of Monolingual and Bilingual Children' in our 5-9 classes.

Mainaschaff, 13.07.2018

Anna Rothe- Thietke, School Manager

Appendix 6: Administrative Academic Permission of the Research in Hefner Alteneck Secondary School

Hefner-Alteneck-MiS, Bavariastraße 39, 63743 Aschaffenburg

Bestätigung

Frau Emine Altintas ist im Schuljahr 2017-18 Masterstudentin an der Ondokuz Mayıs Universität, Institut für Erziehungswissenschaften.

Wir sind damit einverstanden, dass sie für ihre Magisterarbeit in unseren Jahrgangsstufen 5 bis 9 eine Umfrage zum Thema "Eine vergleichende Studie der kritischen Denkveranlagungen einsprachiger und zweisprachiger Kinder" mittels eines Fragebogens durchführt.

Aschaffenburg, den 5.6.2018

C. Fuchs

Cornelia Fuchs, Rektorin

Hefner-Alteneck-Mittelschule
Aschaffenburg

Bavariastraße 39
63743 Aschaffenburg
www.hefner-alteneck-vs.de

Tel. 06021 970129
Fax 06021 970086
E-Mail: sekretariat@hefner-alteneck-vs.de

Appendix 7: English Translation of Administrative Academic Permission of the Research in Hefner Alteneck Secondary School

Confirmation

Mrs. Emine Altıntaş is a master student at Educational Science Department, Ondokuz Mayıs University.

We have agreed that she carries out a survey by means of a questionnaire for her thesis 'A Comparative Study of Critical Thinking Dispositions of Monolingual and Bilingual Children' in our 5-9 classes.

Aschaffenburg, 05.06.2018

Cornelia Fuchs, School Manager

Appendix 8: Administrative Academic Permission of the Research in Laufach Secondary School

Mittelschule Laufach
Friedrich-Wilhelm-Düker-Str. 8
63846 Laufach
Tel: 06093 97120
Fax: 06093 971247

Fragebogen zur Master These "Vergleich der Trends des kritischen Denkens ein - und zweisprachiger Kinder " von Emine ALTINTAŞ

Ich bestätige, dass Frau Emine ALTINTAŞ, Studentin am Institut für Erziehungswissenschaften der Ondokuz Mayis Universität mit unserem Einverständnis an unserer Schule eine Befragung zu oben genannter Master These durchführen darf.

Grund- und Mittelschule Laufach
Friedrich-Wilhelm-Düker-Straße 8
63846 Laufach
Tel. 06093-97120 Fax 06093-971247

Laufach, 16.07.2018

Claudia Bachmann, Schulleiterin

Appendix 9: English Translation of Administrative Academic Permission of the Research in Laufach Secondary School

Questionnaire belonging to the master thesis 'A Comparative Study of Critical Thinking Dispositions of Monolingual and Bilingual Children' of Emine ALTINTAŞ

I confirm that Emine ALTINTAŞ who is a master student at Educational Science Department, Ondokuz Mayıs University is allowed to carry out a survey for the thesis mentioned above.

Laufach, 16.07.2018

Claudia Bachmann, School Manager

Appendix 10: Critical Thinking Dispositions of Monolingual and Bilingual Children

Table 35: Critical Thinking Dispositions of Monolingual and Bilingual Children

	Monolingual		Bilingual	
	Mean	Standart Deviation	Mean	Standart deviation
1. If I have weaknesses in my work or in any subject, I try to overcome them.	3,37	0,82	3,65	0,92
2. I am aware of how my behaviours affect other people.	3,79	0,99	3,84	1,05
3. I can find the contrasts between the information in what is told or what I read.	3,28	0,98	3,38	0,90
4. I try to expand my knowledge in my field.	4,07	1,12	4,07	0,93
5. After I decide how to solve the problem, I definitely try that solution.	3,65	1,01	3,84	1,01
6. I can regularly organize the information and ideas that are meaningful to me.	3,40	1,02	3,55	0,95
7. Thinking of any subject, if I notice that I think inside the box, I try to overcome it.	3,15	0,96	3,37	0,93
8. I am aware of how and when my feelings affect me.	3,73	1,16	3,91	1,08
9. I try to overcome the ambiguities encountered while working on any subject.	3,60	0,86	3,75	0,96
10. I apply appropriate criteria, models or rules in my work.	3,34	1,09	3,48	0,89
11. I can do verbal expressions in accordance with the rules.	3,68	0,99	3,57	0,99
12. I express my thoughts clearly about anything.	3,72	1,17	3,85	1,17
13. I am curious about other areas of life and different thoughts.	3,57	1,14	3,49	0,96
14. I use original solutions when solving problems.	3,30	1,05	3,44	1,01
15. I check whether ideas and thoughts are trustworthy or not.	3,13	0,94	3,37	0,94
16. I try to access all the information I need while preparing an assignment.	3,32	1,20	3,57	1,09
17. I can suggest several different solutions to solving the problem.	3,00	0,98	3,39	1,02
18. Before starting a work, I think about where my decisions will take me.	3,26	0,89	3,54	0,90
19. I make absolutely use of the criteria while evaluating my work.	3,06	0,95	3,22	0,91
20. I know how to access the information I need in any issue.	3,72	1,16	3,96	0,97
21. I can go into details when comparing events or information.	3,00	0,99	3,08	0,89
22. I can apply what I have learned to other areas.	3,51	1,03	3,63	0,94
23. I listen carefully to other people's ideas.	3,61	1,18	3,94	1,05
24. I become aware of information that is not related to the subject I am interested in and eliminate it.	3,24	1,04	3,38	0,98
25. I can understand what the person whose ideas I listen to or read wants to tell.	3,52	1,04	3,75	0,90

26. When I read any article, I can quickly find the main idea.	3,11	1,12	3,10	1,08
27. I check my thoughts before making my decision.	3,27	1,12	3,76	1,05
28. I enjoy taking part in class discussions.	3,30	1,45	3,47	1,47
29. Before I start a work or decide, I think how to do it and plan it.	3,28	1,18	3,44	1,12
30. I try to see the different perspectives before solving the problem.	3,12	1,06	3,30	1,00
31. I can easily recognize the challenges.	3,01	1,01	3,44	0,94
32. I do not talk and write without thinking.	3,29	1,05	3,64	1,12
33. I investigate the reasons behind any event.	3,30	1,14	3,32	0,93
34. I take changes into consideration when analysing information.	3,04	0,92	3,16	0,95
35. I collect appropriate data before my decisions.	3,27	1,01	3,62	1,00
36. I can concentrate my attention on my lessons and works.	3,29	1,29	3,41	1,10
37. I can analyse the problems objectively with its causes and consequences.	3,02	0,87	3,23	0,75
38. I can ask questions to understand information, thoughts and ideas better.	3,51	1,07	3,69	1,09
39. I go into my homework and tasks I do wholeheartedly.	3,05	1,17	3,35	1,06
40. To better understand what I am doing, first I break it up, then reassemble it again.	2,73	1,11	2,93	1,13
41. I am self-confident.	3,67	1,23	3,93	1,12
42. I constantly take care of my lessons and their requirements.	2,91	1,10	3,41	1,00
43. I do not give up when I encounter an obstacle while dealing with a work.	3,48	1,20	3,83	1,08
44. I evaluate a homework, project or work after finishing it.	2,68	1,20	2,81	1,25
45. I usually do what I do precisely.	2,90	0,94	3,15	1,08
46. I can motivate myself in my studies.	3,00	1,12	3,26	1,12
47. I take nothing at its face value.	3,66	1,16	3,43	1,24
48. I collect sufficient data before deciding.	3,43	0,96	3,63	0,90
49. I can be flexible when necessary.	3,73	1,18	3,74	1,01