

Examining Critical Thinking Skill in Terms of Various Variables

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Abstract: It is mentioned by scientists so many times that there are serious differences between individuals who have gained critical thinking skill in using knowledge, expressing themselves and being successful in life and those who couldn't gain this skill. The purpose of this study is putting forward the effects of socio-economic and cultural factors on critical thinking skills of secondary school students. In this research, it is referred to descriptive research method. A critical thinking skill scale created by the authors is used as a data collection tool in this study. All secondary school students in the Centrum of Siirt province have constituted the population of the research. 6,000 students in total who have been reached by random sampling method have composed the sample of the research. Obtained data are examined by SPSS 21 package program and alpha reliability coefficient of the questionnaire is found as .71. By the analysis results, it is determined that there is no meaningful difference between the opinions of the students on critical thinking competences according to gender, working status of the parents, number of books read, factor of being an extend or elementary family and the literacy of their mothers. It is observed that critical thinking competence of students coming from families with high level of income and having literate fathers is higher.

Keywords: Critical Thinking, Thinking Skill, Socio-economic differences.

INTRODUCTION

Basic skills in the Primary Education Turkish Lessons Curriculum and Guide [1] are; using Turkish correctly, well and effectively, creative thinking, communicating, problem solving, researching, decision making, using information technologies, entrepreneurship and critical thinking.

Each of these skills constitutes an important bar in Turkish education. Although each of these skills have particular importance, continuously developing technology of the 21st Century and density of knowledge traffic definitely require critical thinking skill acquisition because critical thinking skill gains the individual the skills as making conscious choices, solving problems correctly, taking right decisions, critical questioning, and analytic thinking required both for life and examination successes. Paul [2] has stated that critical thinking is a necessity to keep up with the rapidly changing world and survive in life economically and socially [3]. It shall be possible for an individual to keep up with the rapidly changing world order only by having critical thoughts. An individual has to think to be able to approach to his targets in the society he lives, be helpful to his surrounding, take correct decisions, produce new things and hold on to life. It is observed that in new curriculums it is intended to bring

up a thinking, questioning, criticizing, free thinking, researching, making inferences, reasoning, and entrepreneur student model instead of memorizing and passive student model. Critical thinking becomes even more important for this reason. Effectiveness of critical thinking skill oriented education and training depends primarily on knowing what critical thinking is.

What is critical thinking?

One of the most important and basic skills which mankind has is thinking. Thinking is a mental process composed of activities as analysis, synthesis and communicating. In TDK Dictionary [4] thinking is defined as the independent and unique status of mind apart from sensation and impressions and designs; competence of comparing, separating, combining, and competence of conceptualizing connections and shapes. People who are able to use this skill are able to show great improvements both in their academic and social lives.

As for that, critical thinking expresses use of strategies, methods and skills to succeed the desired results. John Dewey [5]), one of the significant names of critical thinking, has defined critical thinking as a process of evaluating beliefs which are performed in an active, constant and careful way and to believe in

something whatever the results shall be and reasoning process in the light of beliefs. Robert Ennis[6] who has great influence on the development of critical thinking defines critical thinking as a logical and thoroughly thinking when deciding on what to believe and what to make. According to Richard Paul [7] who has studies on critical thinking, it is the individual's undertaking the responsibilities of his own thinking in a professional way by adding intellectual standards to his thoughts on a subject, contents or a problem. Gürkaynak, Üstel and Gülgöz [8] takes critical thinking as an action individuals perform intentionally and under their controls. Besides, they have defined critical thinking as a thinking way where prejudices, assumptions and all kinds of knowledge are examined, evaluated, judged and discussed, opinions are analyzed and evaluated; reasoning, logic and comparison are used.

The word "critical" in English is derived from the Greek term "kritikos" expressing the meanings of evaluating, judging and distinguishing, has been passed to Latin as "criticus" and spread to other languages by this way [9] [10]. TDK [4] specifies criticizing specifically as examining, testing and judging the foundations of knowledge and status of its accuracy.

While rapid change in social lives of people and exceptional development and changes in science and technology have provided better living opportunities for people, they've also have provided increase in critical thinking skills. Being able to access knowledge fast and changing knowledge around people day by day have required development of the skill of judging and questioning security of knowledge source. Halpern [11], states that new generation focused on critical thinking in education and training has recognized the necessity of taking manners and tendencies of the students as a target of critical thinking training.

Critical thinking is a thinking way (1) recognizing incorrect thinking ways, attaching importance to evidences and results, displaying deeper thinking intention, attitude and skill, based on researching, and (2) by this way, aiming to reach to consistent and reasonable results and judgments rather than only to any result, (3) by taking some scales and methods as clarity, consistency, rationality, skepticism and correct reasoning as the basis; and (4) which is open to change by keeping own thinking process continuously under control and to correct himself (5) by both problem solving and problem seeing capacity [12].

Critical thinking is a skill of looking at subjects, commenting and deciding with a suspicion based quizzical approach.

It includes sub-skills as finding cause and effect relation, capturing similarities and differences in

details, arranging by using various criteria, specifying acceptability and validity of the given information, analyzing, evaluating, interpretation and making an inference [13].

Besides explanations of critical thinking with these different points of view, there have also been studies conducted on making an interdisciplinary description. For instance, as a result of the studies performed in 1990 by participation of 46 theoreticians from the United States of America and Canada under the leadership of American Psychological Association (APA), critical thinking is defined as "the individual's making conscious judgment aiming analytical evaluation for deciding on what to do and believe, and express these judgments" [14], [10].

Critical thinking is a process. Critical thinking process includes the following skills:

1. Explanation: Situation considered as a problem is defined.
2. Establishing Hypothesis: Hypotheses related to the problem are established.
3. Collecting Information: Information required are determined, collected and adequate ones are selected.
4. Interpretation and Generalization: Available information are compared, interpreted and tried to make generalizations.
5. Reasoning: Logical errors are examined within the framework of cause and effect; additional information are presented at points if needed.
6. Evaluation: Scales are determined, adequacy of data are evaluated and provisions are approached.
7. Practicing: Provisions obtained by induction are applied [15].

Almost everyone working in critical thinking tradition has prepared a list on principal thinking skills they see as the basis of critical thinking. For example, Glaser[1, presents the following list:

1. Recognizing the problems,
2. Determining adequate tools for problem solving,
3. Collecting information on problems,
4. Recognizing unexpressed assumptions and values;
5. Interpreting obtained data,
6. Comprehending and using language accurately, clearly and articulately,
7. Evaluating proofs and evidences,
8. Identifying logical relations between propositions,
9. Being able to approach to valid results and generalizations,
10. Testing generalizations and results reached,

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11. Being able to reconstruct existing opinions and beliefs on the basis of available experiences”[12], [16].

When critical thinking is expressed generally, it is examining, weighing, questioning and evaluating and consequently judging a knowledge or situation an individual encounters with. For instance, advertisements taking place in media, statements having a coverage in politics or even a gossip our neighbor has told us should be filtered for logic and questioned. It should not be ignored that power of thinking is an excellent characteristic of mankind. How much we use this excellent characteristic and how much reasoning we can make depends on the quality of education and training. In Turkish education, education should be performed by giving critical thinking skill along with four basic language skills. The major factor as a source for construction of our era and future is education. Quality of education is equivalent to the light of the route a country shall cover in development. [17]. Being well educated and intellectual shall only be possible when generation overcomes bigotry, sluggishness and lack of reasoning power. If students of the classes of 5, 6, 7 and 8 in secondary school start using logical and questioning thinking styles in cognitive processes in terms of development features and if a suitable environment is provided, they shall develop their styles.

In this period, Turkish education should have a structure to trigger this upper cognitive thinking styles of the students and transform these to skills to be able to be used lifelong. Reading, writing, listening/watching and speaking which compose the four basic language skills should be arranged with critical structures, and the student’s accepting doubtlessly as it is whatever he reads, writes, listens or talks should be avoided. Our people believing for years in frauds which have been subject to news and to statements which are impossible to be real have caused them fall into traps which has been either monetary or moral threats and mostly a threat to both assets. The greatest gap causing this is failure in stimulating upper cognitive thinking ways. An education phenomenon which does not give place for activities providing upper cognitive movement cannot be said that it is appropriate for the requirements of the age.

Critical thinking is one of the upper cognitive thinking types and is the most necessary thinking way for the existence of science. The way leading us to scientific studies is critical thinking way. It is questioning. It is weighing. An individual who has not gain critical thinking skill cannot produce unique and creative ideas. For this reason, critical thinking structure is pole apart from dogmatic thoughts. Suspicion based questioning thinking has saved Europe from middle age thinking. The world being round, Satan not entering into patients with mental and neurological disorders or

gates of heaven not being purchased from churches with deeds are realities reached by critical thinking. Today, which thinking skills should lead to unknown rather than what the unknown is has gained importance.

In education, learning to think rather than knowledge exchange is gaining importance. For this reason, in modern schools, individuals who think, criticize, produce and know the ways of reaching to knowledge are being tried to be brought up and education programs intended to gain thinking skills to students are being prepared [10].

Teachers supporting critical thinking in their classes make great contribution to cognitive development of the students and increase the critical thinking intended positive approach. When critical thinking skills are regularly used in lessons, contribution to critical thinking process of the students is in the tendency of increasing. Patrick [18] states that teaching critical thinking depending on the subject field is an effective tool in providing the skills learned in lessons to be used in similar subject areas and similar situations out of lessons because training concentrated on only critical thinking independent from a subject field is insufficient in gaining critical thinking skills. In compliance with the general opinion, Huitt [19] has also stated that critical thinking skills are best gained when associated with a subject field. Huitt also stated that it shouldn’t be expected only one critical thinking course make the students to be critical thinking individuals, that the students may lose critical thinking skills if they don’t use these skills they gain and for this reason curriculums at all levels should be prepared in a way to lead student use their critical thinking skills (Patrick[10]; Huitt[20]).

Topbaş [20] lists affective and cognitive characteristics which critical thinking skills shall provide to individuals as the following.

- Affective Characteristics;
- Being realistic
- Accepting changes
- Developing Empathy
- Accepting Contrary ideas
- Tolerating ambiguity
- Accepting prejudice
- Cognitive Characteristics;
- Independent thinking
- Identifying problems correctly
- Analyzing data
- Using different mental processes in problem solution
- Synthesizing
- Avoiding extreme generalization

Based on the above definitions, we may say that critical thinking is a complex mental process. Critical thinking individuals are aware of what they do and why; they have a scientific, analytic and questioning point of

view. They use problem solving method very well. A critical thinking individual has the following characteristics:

- Asks questions freely on any opinion which comes into his mind
- Questions knowledge he obtains in his own way and is able to create unique opinions.
- Is able to test accuracy of knowledge obtained.
- Recognizes inconsistent judgments.
- Uses verbal and written expression effectively.
- Questions authorities, habits, traditional thoughts and beliefs
- Brings alternative opinions forward and tries to prove them.
- Makes objective observations, uses these observations in the most effective way.
- Compares new learned knowledge with previously known, makes analysis.
- Has interest in learning.
- Makes discussions and submits evidences to prove the values he believes in.
- Establishes hypothesis, presents evidences masterfully and freely.
- Thinks incidents and situations along with their causes and results.

They don't believe everything they read or listen at once, they pass them through a critical questioning

Origin of critical thinking is based on the day of existence of mankind. Because the creator has created mankind as a being who can think, make reasoning and can construct. Being able to use this skill is possible as much as he is free, peaceful and he finds the democratic conditions in his surroundings. Critical thinking constituted of mental processes as reasoning, analysis, questioning point of view and evaluating includes thinking processes on concrete and abstract subjects. Individual who think critical put forward a unique idea from all senses and verbal and written statements by gathering data they obtain from observations, experiments and inferences. Critical thinking has a significant contribution to the individual in distinguishing discussions from nonsenses, power of judging capability, forming his beliefs and his preferences and actions to be correct and valid.

Güneş [13] also states that critical thinking includes sub-skills as finding cause and effect relation, capturing similarities and differences in details, arranging by using various criteria, specifying acceptability and validity of the given information, analyzing, evaluating, interpretation and making an inference. And to use these sub-skills, having a specific mental capacity is not enough. We may say that in people who think with a logical and systematic questioning view also have a strong critical thinking

skill. In order to have a critical thinking skill for an individual, his thinking sub-structure should be strong.

Reading, listening, visual reading and therefore, understanding are the basic steps of critical thinking. An individual having a critical point of view performs critical thinking with high level skills as being able to make analysis, question, establishing relations between texts, being able to make comments and evaluations during the skills listed above. For this reason, an individual should have primarily the sub-skills for the critical thinking to be formed in him. A world of opinion to be constituted with sub-skills is the base of critical thinking. Critical thinking forms by gathering constant and logical meaning connections of sub-skills systematically. Gelder [21] states that existence of subskills is not sufficient for critical thinking, critical thinking shall be possible only by bringing subskills together in a correct way and that critical thinking is a thinking where subskills are correctly and constantly gathered.

Critical thinking constitutes one of the nine basic skills expected to be approached in elementary education Turkish lesson curriculum and guide. Experiencing information pollution in today's world makes this skill a "must". A person should be able to identify the matter correctly, examine the problem in a multidimensional way and evaluate in an objective and rational way during each incident, opinion and practice. "For this reason, in Turkish education, learning and teaching media should be arranged in a way to develop creative and critical thinking skills, support originalities and encourage them to learn and tell their opinions. The most important person who shall provide this is the teachers. Teachers should use the suitable strategy, methods and techniques in education environment to provide children to think multidimensional" [15]. Peaceful and comfortable learning environment shall make students handle the incidents in different points of view easily. Otherwise, development of critical thinking skills of students should not be expected before a harsh and bigot class management. "Teachers supporting critical thinking in their classes make great contribution to the cognitive developments of the students and increase the positive attitude toward critical thinking. When critical thinking skills are regularly used in lessons, the students' attending to critical thinking process shows a tendency to increase" [10].

It is found that students with developed critical thinking skill have high school success and mental skills as thinking, comprehending, questioning, associating, classifying, arranging, etc. "As teachers make practices on critical thinking, they shall be gradually more successful in an education where critical thinking is used. It is natural to have differences in critical thinking training practices due to differences as the teachers' own tendencies, fields, classes, education

models in the institutions they belong. However, despite their differences, critical thinker teachers never forget that there is no relation between trying to ensure the students think “as we do in terms of content” with increasing the quality of thinking. Because, they are aware that function of schools is not only giving knowledge but also teaching thinking, or rather critical thinking. Effort to increase quality and quantity of thinking is as old as the effort of increasing quality and quantity of science and knowledge in history and relation between them is usually the second being subject to the first because, critical thinking is a mental hygiene protecting people against damages and harms of wrong thinking. It is not possible to expect acquiring science, accurate knowledge and tolerance and democracy without critical thinking in a society.” [12]. “In learning thinking, individuals’ examining and criticizing in all aspects the stimulants offered to him is an important point because the individual may perceive, interpret and evaluate stimulant much easier by criticizing. From this aspect, criticizing is an important feature in understanding stimulants by revealing points important or unimportant for himself.” [22].

When looking from this point, individual who can read, write, talk and listen critically can analyze many incidents correctly and display right behaviors and reactions. These are the primary features among required features in people. For this reason, criticizing and critical thinking have taken place among the concepts people being curious about and developed in the world in the last half century.

Critical thinking skill takes place among the basic targets of contemporary education programs performed in all developed countries of the world and is also the desired target of recent education programs. Developed countries which have comprehended the reality of the importance of critical thinking gave place to sub-skills of critical thinking skill intensively both in education curriculums and in school books. They have recognized the reality of the importance of thinking skill in learning process.

Teachers may provide the creation of critical thinking skill in students by ensuring a free and comfortable class environment during lessons. Students capturing a comfortable and free expression environment in lessons may approach to incidents and situations in more freedom and develop more questioning and more creative opinions. Creatively thinking students may handle incidents and situations in different and original ways also. Teachers who support cognitive and mental developments of students shall lead the way for raising a generation critically thinking, questioning and making analytical evaluations. If a teacher displays manners and attitudes avoiding creativity in class and gives lectures with a rigid class management, he disables development of creative and

critical thinking skills of the students. “Teachers who support critical thinking in their classes makes significant contribution to cognitive development of the students and increase positive behavior about critical thinking. When critical thinking skills are regularly used in classes, participation of the students to critical thinking process shows a tendency to increase”[10].

It is found that students with developed critical thinking skill have high school success and mental skills as thinking, comprehending, questioning, associating, classifying, arranging, etc..

In order to develop critical thinking skill in students, primarily a discussion and opinion stating environment, tolerant and safe for difference of opinions and different ideas, where the students shall be able to tell their opinions as they wish should be arranged. Primarily, the students should have a world of thought providing them to escape from prejudices completely or the teachers should inspire the students in this way. Students should be enabled to ask questions comfortably on subjects they can’t understand, comprehend or they are curious about and to question incidents and situations. Besides, opportunity to evaluate both their own opinions and their friends’ opinions should be given to the students. In this process, teachers organizing activities which shall lead students to questioning and critical thinking continuously shall enable continuous critical thinking skill in students. The teacher should make guidance for students to bring original and unique solutions to questions or problems and provide them to own an extraordinary world of thought. The teacher should ask constructive questions suitable for discussing and be a leader for the development of ideas and imaginary worlds of the students.

Besides, the teacher should make practices enabling students to tell their positive and negative opinions on the book they read and provide students with different opinions to talk on the subject to develop critical thinking skill in students.

Students discussing contradictory incidents and situations in the book they read, reading articles with different opinions and making comments and evaluations on them are situations which shall be effective on gaining critical thinking skill in students.

Critical Thinking in Four Basic Language Skills

Basic purpose of language education is developing thinking and communication skills of people [23]. Constituting listening /watching, speaking, reading and writing processes in Turkish education on the basis of critical thinking is also taken into consideration in Turkish Lesson curriculum. Among the purposes of Turkish Lessons curriculum under the title of Basic Approach in the Program, while stating “*training*

individuals who comprehend what they listen, watch and read; explain their feelings, opinions and imaginations; think critically and creatively, undertake responsibilities, entrepreneur, in harmony with people around them, making researching, questioning, criticizing and interpretation of incidents, situations and information a habit on the basis of their own backgrounds”[1] critical thinking is also emphasized. Comprehending and explaining skills of a person also carries marks of cognitive competencies of him. For this reason, free climates where the student shall be mentally, socially and emotionally active should be constituted in training environments because individuals having critical point of view can only be trained in free and tolerant environments.

In Turkish Lessons curriculum [1], within the framework of practices on basic language skills a method and technique putting relation of each language skill with critical thinking forward as “critical listening / watching, critical speaking, critical writing, critical reading” is included.

Critical Listening Training

According to Akyol [24], critical listening constitutes the advanced dimension of transferring listening. Starting from the first classes, critical listening has gained more importance specifically at the present time because we're living in an era which there is less reading and a media trying to effect people multilaterally. Every day we face with hundreds of propaganda, convincing speeches and visual presentations. Many issues as interpreting films, judging informative texts and evaluating political expressions require critical listening skills.

Television commercials addresses to millions with various formats everyday both to convince and make propaganda. Majority of these commercials take directly children as the target. The more the target audience is conscious, the less exploitation and waste of resources there shall be.

According to Akyol [24], critical listening studies on a commercial recorded to video can easily be carried out in a class environment. The stages of this is given below.

1. Introduction of a commercial: Primarily, the teacher should constitute a discussion environment for the commercials and enable students to talk on various commercials. Then, the recorded commercial samples shall be watched and discussed together in the class and tried to determine the purpose of the commercials [24].
2. Analyzing the content: Message the commercial is giving to the audience and the language used should be specified. What may be the unnoticed negative ways of the products... While students are

explaining these opinions, brain storming or six thinking hats technique may be practiced.

Critical Reading Training

In the program, it is intended for students to be able to evaluate what they read by reading learning field and interpret by a critical point of view [1]. Individuals having critical thinking skills have a strong doubtful approach to the text they read. They ask questions themselves while reading the text and search for answers to these questions. They try to explain the text by examining the reason of writing the text. While the reader approaches some opinions in the text with a positive point of view, he gives a negative reaction to some. He thinks on these opinions; establishes relations between the main idea and the supplementary opinions and is curious about the consistency and accuracy of the opinions [25].

Attitude of the teacher in the class should be in a way to provide the students opportunity to question and research what they read instead of memorizing. For this, critical reading studies may be performed on a newspaper report in class environment. The following stages should be considered for this:

- Introduction of the newspaper report: Examinations shall be made on the newspaper report samples with the students and the characteristics a newspaper news should bear should be mentioned.
- Analysis of the newspaper news: A discussion may be performed by collecting information on the paper news and incorrect information and in which other points of view the news could be handled may be discussed. Purpose of the author and what kind of language is used in reaching this purpose may be determined.

Critical Speaking Training

The main purpose in speaking training is providing the person express his intention correctly, briefly and effectively with correct intonations. However today, most of the “speeches” are not made with their correct expressions or shapes. Students should be brought up fully equipped in this subject against this defect in society. At this point, gaining students a critical point of view in Turkish education provides these defects to be noticed. To provide this skill, a student’s speech may be recorded in the classroom and negative and positive ways of this speech may be emphasized. On the other hand, students preparing a speech with a critical respect and present it enables gaining of this skill.

Critical Writing Training

Nowadays, written media tools carry effective marks on society at least as much as visual media tools. Man of this century should be at a level to reach these

written media tools and write his congratulations and complaints effectively when necessary.

In critical writing, the subject which the teacher should be careful about at the most is providing the students constitute their writing for logical reasons rather than emotional reasons because logical inferences constitutes the essence of the critical thinking.

Purpose and the Method of the Research

Purpose of this research is determining the relation between some socio-economic and cultural factors and critical thinking skills of secondary school students and how these factors affect critical thinking skills of secondary school students. Descriptive research method is referred to within the framework of this purpose. As is known, in descriptive researches, an existing situation, a program in practice or operation of the system, its current status and effectiveness is researched. Again in descriptive researches, a sampling is made on all population or on a sample having representation capability to reach to a general judgment on the population constituted of a large number of members of participants [26]. Also in this study, it is aimed to reach a general judgment on effects of socio-economic factors on critical thinking skills considering the sampling group selected from different socio-economic environments to represent students studying at Centrum and Country secondary schools in the province of Siirt.

As a data collecting scale of the researcher, a critical thinking scale prepared by the researcher is used. Answers to the questionnaire articles are arranged as "I totally agree", "I agree", "I'm neutral", "I disagree", "I disagree totally".

The articles are scored as 1, 2, 3, 4, 5 respectively. Level of agreeing with articles are scored as "1.00- 1.80: I disagree totally", "1.81- 2.60: I disagree", "2.61- 3.40: I'm neutral", "3.41- 4.20: I agree", "4.21- 5.00: I totally agree". However, the scale is first prepared by scanning the relevant field literature and researches. After receiving opinions and suggestions from experts on the field of the subject and academicians who are expert on educational sciences on scope and appearance validity of the scale, the draft questionnaire is read to 10 students from 8th class in secondary school who are randomly selected, with regards to comprehensibility of the language. According to the result obtained, the questionnaire is finalized. In the first application of the questionnaire and also in the analysis of data used in the research, Cronbach alpha reliability coefficient is found .71. According to this

finding, reliability coefficient of the questionnaire is found at reasonable level.

All secondary school students in the Centrum of Siirt province are selected as the population of the research. As sampling, 6170 students from schools at different socio-economic and cultural environments have constituted the population by random sampling but after elimination those who have filled the questionnaire carelessly and imprecisely, the remaining 6000 students have constituted the original sampling.

Data obtained in the research are analyzed by SPSS 21 package program and frequency, percentage, independent groups t test and one-way variance analysis are used.

FINDINGS

General Findings on Attendants and Variables

Findings on demographic characteristics of attendants are tried to be put forward by frequency, percentage, arithmetic mean and standard deviation which are among descriptive statistics methods and findings related to this are given in the table below.

As it is seen in the table-1,

- It is reached to the finding that arithmetic means of critical thinking skill perceptions of boy students are higher than girl students.
- It is reached to the finding that arithmetic means of level of perception related to critical thinking skill increases as the level of income of the families of students increases.
- It is reached to the finding that arithmetic means of level of perception related to critical thinking skill increases as the number of books read increases.
- It is reached to the finding that arithmetic means of level of perception related to critical thinking skill of students living in elementary family environment increases.
- The finding showing that critical thinking skill perception of students whose parents are alive is higher is obtained.
- It is reached to the finding that arithmetic means of level of perception related to critical thinking skill increases as the literacy levels of the parents of the students increase.

Critical Thinking Scale Articles Arithmetic Mean, Standard Deviation Standard Deviation and Findings Related to Participation Levels

In this stage, findings related to arithmetic mean, standard deviation Cronbach alpha reliability coefficient values reached on questionnaire articles are included and shown in Table-2.

Table-1. General Findings on Attendants and Variables

	VARIABLE TYPE	N	%	X	Ss
GENDER	MALE	3040	50.7	3.3384	.39831
	FEMALE	2960	49.3	3.2879	.40886
	TOTAL	6000	100	3.31	0.40
WORKING STATUS OF MOTHER-FATHER	MOTHER WORKING	550	9.2	3.3284	.39505
	FATHER WORKING	5450	90.8	3.3121	.40521
	TOTAL	6000	100	3.31	0.40
LEVEL OF INCOME	0-1000	2060	34.3	3.2502	.37144
	1000-2500	2760	46.0	3.3301	.39593
	2500 AND OVER	1180	19.7	3.3859	.46136
	TOTAL	6000	100	3.31	0.40
NUMBER OF BOOKS READ IN A MONTH	BETWEEN 1- 3	4430	73.8	3.3102	.38774
	BETWEEN 3- 5	1060	17.7	3.3182	.43053
	5 AND OVER	510	8.5	3.3333	.48598
	TOTAL	6000	100	3.31	0.40
FAMILY TYPE	EXTENDED FAMILY	960	16.0	3.2841	.37513
	ELEMENTARY FAMILY	5040	84.0	3.3192	.40938
	TOTAL	6000	100	3.31	0.40
STATUS OF MOTHER FATHER	MOTHER FATHER TOGETHER	5750	95.9	3.3153	.40631
	MOTHER FATHER DIVORCED	80	1.3	3.3939	.42916
	MOTHER FATHER PASSED AWAY	20	.3	3.2273	.14999
	ONE OF THEM HAS PASSED AWAY	150	2.5	3.1879	.35175
	TOTAL	6000	100	3.31	0.40
FATHER'S LEVEL OF EDUCATION	ILLITERATE	1210	20.2	3.2522	.35487
	ELEMENTARY SCHOOL	2170	36.2	3.3233	.41433
	SECONDARY SCHOOL	1290	21.5	3.2749	.40551
	HIGH SCHOOL	990	16.5	3.3698	.40464
	UNIVERSITY	340	5.7	3.4519	.45552
	TOTAL	6000	100	3.31	0.40
MOTHER'S LEVEL OF EDUCATION	ILLITERATE	340	5.7	3.2157	.30874
	ELEMENTARY SCHOOL	990	16.5	3.2834	.33393
	SECONDARY SCHOOL	760	12.7	3.2807	.35853
	HIGH SCHOOL	2050	34.2	3.2943	.42296
	UNIVERSITY	1860	31.0	3.3820	.44188
	TOTAL	6000	100	3.31	0.40

Table-2. Findings on Critical thinking Scale Articles Arithmetic Mean, Standard Deviation and Participation Levels

Articles	X	Ss	r
1. I think in different ways in solving a problem.	4.32	.87	.71
2. I struggle to understand real opinions of other people.	3.97	1.02	.71
3. I display a critical perspective to solve the problems	3.89	1.06	.71
4. Everything I read is correct for me.	3.16	1.34	.69
5. I don't act quizzical on articles I read.	3.01	1.26	.70
6. I like to search cause effect relationships of events.	3.74	1.18	.71
7. I cannot express my thoughts clearly when I argue with someone.	3.25	1.43	.69
8. I'm open to different opinions but I reason out all of them.	3.93	1.15	.70
9. I usually avoid arguing with people around me.	2.55	1.42	.71
10. I don't attach great importance on the opinions behind the words told me.	3.51	1.39	.69
11. I suspect the truth of the article I read.	3.18	1.24	.72
12. I cannot tolerate people's criticizing me.	2.63	1.43	.70
13. I act without thinking while trying to solve a problem.	3.84	1.36	.69
14. I instantly give up at the moment I encounter with a barrier while solving a problem.	3.77	1.33	.69
15. My family reacts when I bring a new opinion forward.	3.58	1.36	.70
16. My feelings are always ahead of my opinions in my decisions.	2.71	1.30	.70
17. I don't object at once to opinions which are not suitable for me.	2.53	1.30	.72
18. I definitely need others' help when deciding on something.	2.47	1.22	.71
19. I have difficulty in accepting new ideas.	3.22	1.27	.69
20. I do not ask too many questions to myself on subjects sticking in my mind.	3.45	1.31	.69
21. I immediately distinguish conflicting expressions in texts.	3.77	1.09	.71
22. I prefer not to ask too much questions to my teachers and parents.	2.87	1.41	.71
23. I never back down from my opinions regardless of whoever is standing in front of me.	2.32	1.27	.72
24. In order to accept something as correct, believing it is sufficient for me.	2.43	1.33	.71
25. I love to argue with others on any subject.	3.57	1.30	.71
26. I take decisions related to me, not my family.	3.03	1.40	.72
27. I believe in what people around me says without suspicion.	3.82	1.27	.69
28. I don't have a curious or researcher personality.	3.51	1.33	.69
29. If there is a problem, I try to solve it immediately.	3.93	1.07	.71
30. I'm always be opinionated to what I listen and read.	2.42	1.33	.74
31. I'm uncomfortable when talking to people who I don't share their opinions.	3.23	1.40	.70
32. I believe everything on TV at once. I don't question.	4.11	1.23	.69
33. I don't make any comparison between opinions.	3.48	1.34	.69

Group Independently According to Gender t Test Findings

Table-3. Group Independently According to Gender t Test Findings

Groups	N	Arithmetic Mean	Standard Deviation	F	t	Degree Of Freedom	p
FEMALE	3040	3.33	.39	0.14	1.53	597	0.12
MALE	2960	3.28	.40				

It is determined by the analysis results that there is no meaningful difference between opinions on

critical thinking competency of the students according to gender ($0.26 > 0.05$).

Group Independently According to Working Status of Parents t Test Findings

Table-4. Group Independently According to Working Status of Parents t Test Findings

Groups	N	Arithmetic Mean	Standard Deviation	F	t	Degree Of Freedom	p
MOTHER WORKING	550	3.32	.39	0.14	0.28	597	0.77
FATHER WORKING	5450	3.31	.40				

It is determined by the analysis results that there is no meaningful difference between opinions on

critical thinking competency of the students according to the working status of their parents ($0.77 > 0.05$).

Descriptive Statistics Findings according to Level of Income

Table-5. Descriptive Statistics Findings according to Level of Income

Groups	N	Arithmetic Mean	Standard Deviation
0-1000	2060	3.25	.37
1000-2500	2760	3.33	.39
2500 AND OVER	1180	3.38	.46
TOTAL	6000	3.31	.40

As it is seen in the table above, it is found that Arithmetic Means of critical thinking skills of students coming from families with high level of income is higher than the Arithmetic Means of critical thinking

skills of students coming from families with other level of income. It is tried to determine by one-way variance analysis whether this difference is meaningful or not.

Table-6. One-way Analysis of Variance Findings according to Level of Income

Source of Variance	Sum of Squares	Degree of Freedom	Mean Squares	F	P*	Source of Difference LSD	P*
Intergroup	1.51	20	.757	4.698	.00	0-1000 TL - 1000-2500 TL 0-1000 TL -2500 AND OVER TL	0.03 0.00
In-group	96.08	5960	.161				
Total	97.59	5980					

P* Significance degree is taken as 0.05.

As a result of one-way variance analysis, it is determined that arithmetic means of critical thinking skills of students from families having high level of income are higher and this difference is at a meaningful level. To determine in which intergroup this difference

is seen, it is referred to Post HOC LSD test and as a result of the analysis, it is found that perception average relevant to critical thinking skill is increasing as the level of income increases (as it is also seen in the table)

Descriptive Statistics Findings according to the Number of Books Read

Table-7. Descriptive Statistics Findings according to the Number of Books Read

Groups	N	Arithmetic Mean	Standard Deviation
BETWEEN 1-3	4430	3.31	.38
BETWEEN 3-5	1060	3.31	.43
5 AND OVER	510	3.33	.48
TOTAL	6000	3.31	.40

As it is seen in the table above, majority of the attendants were reading between 1-3 books in a month, but it is determined that only Arithmetic Mean of those

who read 5 or over books in a month is higher than others.

Table-8. One-way Analysis of Variance Findings according to the Number of Books Read

Source of Variance	Sum of Squares	Degree of Freedom	Mean Squares	F	P*
Intergroup	.027	20	.01	.08	.92
In-group	97.57	5960	.16		
Total	97.59	5980			

P* Significance degree is taken as 0.05.

At the end of the one-way variance analysis performed, it is determined that there is no meaningful difference between perceptions on critical thinking

skills of the students according to the number of books read ($p=0.092>0.05$).

Group Independently according to the Life Style of the Family t Test Findings

Table-9. Group Independently according to the Life Style of the Family t Test Findings

Groups	N	Arithmetic Mean	Standard Deviation	F	t	Degree Of Freedom	p
EXTEND FAMILY	960	3.28	.37	0.98	-.77	597	0.43
ELEMENTARY FAMILY	5040	3.31	.40				

It is determined by the analysis results that there is no meaningful difference between opinions on critical thinking competency of the students according

to the family factor of being extend or elementary family ($0.43>0.05$).

Descriptive Statistics Findings According to Mother Father Togetherness

Table-10. Descriptive Statistics Findings According to Mother Father Togetherness

Groups	N	Arithmetic Mean	Standard Deviation
MOTHER FATHER TOGETHER	5750	3.31	.40
MOTHER FATHER DIVORCED	80	3.39	.42
MOTHER FATHER PASSED AWAY	20	3.22	.14
ONE OF THEM HAS PASSED AWAY	150	3.18	.35
TOTAL	6000	3.31	.40

As it is seen in the table above, it is found that perception average related to critical thinking skill of 8 students (even their number is quite few) whose parents are divorced is a little higher than the other students.

However, it is determined by the following one-way variance analysis that this difference is not at a meaningful level.

Table-11. One-way Analysis of Variance Findings according to Mother Father Togetherness

Source of Variance	Sum of Squares	Degree Of Freedom	Mean Squares	F	P*
Intergroup	.35	40	.08	.541	.70
In-group	97.24	5940	.16		
TOTAL	97.5	5980			

P* Significance degree is taken as 0.05.

At the end of the one-way variance analysis performed, it is determined that there is no meaningful difference between perceptions on critical thinking

skills of the students according to whether parents are living together or being alive ($p=0.70>0.05$).

Descriptive Statistics Findings according to Father's Literacy

Table-12. Descriptive Statistics Findings according to Father's Literacy

Groups	N	Arithmetic Mean	Standard Deviation
ILLITERATE	1210	3.25	.35
ELEMENTARY SCHOOL	2170	3.32	.41
SECONDARY SCHOOL	1290	3.27	.40
HIGH SCHOOL	990	3.36	.40
UNIVERSITY	340	3.45	.45
TOTAL	6000	3.31	.40

As it is seen in the table above, it is found that arithmetic means of perception related to critical thinking skill of students increase as their fathers'

literacy level increases. It is determined by one-way variance analysis whether this increase is at a meaningful level.

Table-13. One-way Analysis of Variance Findings according to Father's Literacy

Source of Variance	Sum of Squares	Degree Of Freedom	Mean Squares	F	P*	Source of Difference LSD	P*
Intergroup	1.63	40	.40	2.52	.04	HIGH SCHOOL - ILLITERATE UNIVERSITY - ILLITERATE UNIVERSITY - SECONDARY SCHOOL	0.03 0.01 0.02
In-groups	95.9	5940	.162				
TOTAL	97.59	5980					

As a result of the one-way Variance analysis performed, it is determined that among opinions of students related to critical thinking skill, there is a meaningful difference ($p=0.04 < 0.05$) between opinions of the students according to the father's level of

literacy. To specify the intergroup in which this meaningful difference is, it is referred to Post HOC LSD test. As a result of the test, it is determined that there is a meaningful difference on behalf of students whose fathers are high school and university graduates.

Descriptive Statistics Findings according to Mother's Literacy

Table-14. Descriptive Statistics Findings according to Mother's Literacy

Groups	N	Arithmetic Mean	Standard Deviation
ILLITERATE	340	3.21	.308
ELEMENTARY SCHOOL	990	3.28	.33
SECONDARY SCHOOL	760	3.28	.35
HIGH SCHOOL	2050	3.29	.42
UNIVERSITY	1860	3.38	.44
TOTAL	6000	3.31	.40

As it is seen in the table above, it is found that arithmetic means of perception related to critical thinking skill of students increase as their mothers'

literacy level increases. It is determined by one-way variance analysis whether this increase is at a meaningful level.

Table-15. One-way Analysis of Variance Findings according to Mother's Literacy

Source of Variance	Sum of Squares	Degree of Freedom	Mean Squares	F	P*
Intergroup	1.44	40	.36	2.23	.06
In-groups	96.15	5940	.16		
TOTAL	97.59	5980			

At the end of the one-way variance analysis performed, it is determined that there is no meaningful difference between opinions on critical thinking skills

of the students according to the mother's level of literacy ($p=0.06 > 0.05$).

CONCLUSION AND RECOMMENDATION

By the analysis results, it is determined that there is no meaningful difference between the opinions of students on critical thinking competency in terms of both gender and parents' working status. Based on this, it can be stated that gender and parents' working status are not significant factors on perception about critical thinking skill. Walsh and Hardy [27]; Öztürk and Ulusoy [28] have not determined a difference in critical thinking according to gender in their studies with nurses. Besides, in the study Şen [29] has performed with Turkish teacher candidates, it is determined that critical thinking does not show difference according to gender variable. These studies are parallel with the results obtained in our research. However, Bökeroğlu and Yılmaz [30] have determined difference in the manners of university students on critical thinking according to gender. Similarly, results obtained in the studies Çekiç [31], Çetin [32] and Özdemir [33] have performed, contradict with the results on gender of this research.

Arithmetic means of critical thinking skill competency of students coming from families with high level of income is seen to be higher than the arithmetic means of critical thinking skill competency of students coming from families with other level of income. Whether this difference is meaningful or not is tried to be determined by one-way variance analysis. As a result of one-way variance analysis, it is determined that perception average on critical thinking skill increases as the level of income increases. A similar result, shows a parallelism with the results Akar [34] has obtained in his study. However, in the study Çekiç [31] has performed with Turkish teacher candidates and in the study of Şen [29], results which are contradicting in terms of level of income and critical thinking competency variable with the results of this research are reached and it is concluded that level of income is not a significant variable in terms of critical thinking.

It is determined that majority of the attendants read between 1-3 books in a month, but only those reading 5 and over books have higher arithmetic mean than the others. However, as a result of one-way Variance analysis performed, it is determined that there is no meaningful difference in the perception related to critical thinking skills of the students according to the number of books read.

Şen [29] also has not found a difference in critical thinking according to the frequency of book reading in his study with Turkish teacher candidates.

With the analysis results, it is determined that there is no meaningful difference between opinions of students on critical thinking competency according to the family factor in terms of being extend or elementary family.

It is seen that perception average related to critical thinking skill of 8 students (even their number is quite few) whose parents are divorced is a little higher than the other students. However, it is determined by one-way variance analysis that this difference is not at a meaningful level. In the study Akar [34] has performed, it is determined that critical thinking manner decreases as the number of member of the family increases. Also it is seen that the arithmetic means of perception on critical thinking skill of students increase as the literacy level of fathers increases.

As a result of one-way variance analysis performed, it is determined that there is a meaningful difference between the opinions of students on critical thinking skill according to the literacy level of fathers on behalf of students whose fathers are high school or university graduate.

On the basis of this result, it is possible to say that literacy level of fathers is an important variable in development of critical thinking skills of the students. However, it is seen that the result obtained contradicts with the results of the studies performed by Çekiç ([31], Çetin [23], Şen [29] and Özdemir [33].

It is seen that the arithmetic means of perception on critical thinking skill of students increase as the literacy level of mothers increases. However, it is determined by one-way variance analysis that this difference is not at a meaningful level. On the basis of this result, it is possible to say that literacy level of mothers is not an important variable in development of critical thinking skills of the students. While this result obtained shows a parallelism with the studies of Çekiç [31], Çetin [23], and Özdemir [33], it contradicts with the study Tümkaya and Aybek [35] have performed. On the basis of this result, it is possible to say that in receiving different results from different studies on the same variable, socio-economic and cultural features of the attendants constituting the sampling of the research is effective.

Benefiting from the results stated above, it is possible to say that teachers have significant responsibility to develop critical thinking skill in students. Teachers are the people who spread the first seeds of critical thinking skill in individuals. Teachers should build up passion of critical thinking skill in students, should be able to open horizons opening the doors of new opinions, gain them skill of versatile and analytical evaluation of the incidents, problems of situations, provide them to create new and original opinions on those, practice activities developing minds, encourage them, enrich their imaginary worlds and have them make discussions in groups. Besides these, the below recommendations can be made on the basis of the research:

1. Primarily, teachers should be trained by seminars and in-service training on gaining critical thinking.
2. For developing critical thinking skills of students, an environment approaching different opinions tolerantly should be established by at home and school.
3. For gaining and developing questioning point of view, which is the heart of critical thinking, teachers should be ensured to bring up students having this perspective, starting from elementary school.
4. Students thinking differently and originally should be encouraged, their opinions should never be underestimated, and their opinions should be considered important.
5. One of the important concepts in developing critical thinking skill is developing language skill. Both elementary school teachers and secondary school Turkish teachers should prepare and apply required activities for developing language skills of the students.
6. In-class activities and out-of-class activities on critical thinking should take more place in curriculums. These activities should be started in the lower classes of elementary school.
7. For gaining critical reading and critical listening skills which are the subskills of critical thinking, Turkish teachers should make the required activities to gain this skill to the students.
8. For developing problem solving skill which is another subskill of critical thinking, teachers should organize activities which shall develop problem solving skill, a subskill of critical thinking, for students to solve healthily the problems they encounter with in education-training period.
9. Families also have great responsibilities in developing critical thinking skill. Families should listen to their children very carefully when they're talking, should not interrupt their speech, appreciate their opinions, encourage children for expressing their own opinions and support them.
10. Lessons/courses on critical thinking should be added to the curriculums of the relevant departments of Faculties of education training Turkish and Turkish Language and Literature teachers.
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