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Research Article

An Evaluation of Gifted Students' Perceptions on Critical Thinking Skills

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Abstract

The present study is a qualitative research which aims to identify gifted students' perceptions on critical thinking skills. The participants of the study are 34 students who are still enrolled to Science and Arts Center in Hatay, Turkey. As data analysis method, content analysis has been used, and the data has been gathered through a semi-structured interview form which consists of open-ended questions. The gathered data has been analyzed with NVivo11Pro and SPSS 20,0 programs. The results of the study show that the perceptions of gifted students on critical thinking skills are in line with the literature. However, it has been revealed that they have a fundamental problem in their "perceptions on critical thinking skills" as they perceive the word "critics" as a negative concept. As a result, it is suggested that educators working at Science and Arts Centers should know the concepts they use. Besides that they should also head for academical and in class activities if there is a misconception to identify and fix them.

Keywords

gifted student, science and arts center, critical thinking skills

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Introduction

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People differ from each other in their cognitive skills like they show differences in their emotions and thoughts. In other words, there are differences among people in terms of the quantity and pace of the information they processes. As a result, an understanding of conducting a special education in accordance with the interests and talents for the people who are different arises. Based on this understanding, "Gifted Children" who have a prominent place in development of humanity constitutes an essential aspect among educational facilities (Özenç & Özenç, 2013).

Tannenbaum (2003) defines it as "the performance which comes out of the abilities". In Turkey, the term "giftedness" is described as "showing superior performance in a specific field compared to their peers in the perspectives of variables such as academical or intelligence, creativity, arts or leadership" (MEB, 2007).

Generally, the gifted children need special conditions to improve their intense curiosity, interests, sophisticated imagination, potentials arising from their abilities such as creative problem solving (Kontaş, 2009; Renzulli, 1999). The reason is that gifted students and special students generally are different from the other individuals from many aspects (cognitive, social, etc.) (Demir, 2017a, Demir, 2017b, Tortop, 2015). Because of these distinct characteristics, it is essential to support individuals according to their innate superior abilities, to apply enriched and various teaching methods and techniques for higher level learnings, to help them improve themselves in line with these abilities (Renzulli, 1977).

In Turkey, Science and Arts Centers (SAC) are responsible for providing opportunities to gifted students to make them improve themselves according to their abilities. The aims of Science and Arts Centers are to provide the opportunities to make these gifted students become aware of their individual skills by also internalizing the principles and reforms of Ataturk, and to make them use these skills in higher levels improving their capacity continuously and improve them; in addition, by raising individuals holistically who can solve the problems they encounter by developing their social and affective aspects and who find opportunities of conducting scientific work, it is aimed to give gifted children chances of carrying out projects which may contribute to the development of the country (MEB, 2007). While gifted students are provided with these opportunities, they try to utilize their the most outstanding characteristics such as learning fast, remembering correctly, storing the information in their mind deeply, showing a rapid improvement in their ability in literacy, understanding and using the numbers in an effective way, being able to evaluate new ideas, getting highly motivated in a short time, intense interest in research, and sophisticated imagination in the most effective way (Whitmore, 1980; Tardif & Sternberg, 1988).At the meantime, gifted students are also known as individuals who are able to use their "higher level thinking skills" at a tremendously proficient level.

Higher level cognitive skills is a term that has an increasing importance in education and recently it has been involved in plentiful studies all around the world (Fogarty & McTighe 1993; Carnine 1993; Nakhleh 1993; Lewis & Smith 1993; Zoller, 1993; Zoller, Lubezky, Nakhleh, Tessier & Dori 1995; Paul, 1996; Halpern, 1999; Pushkin, 2000, 2001; Renaud, 2002; Bailin, 2002; Zohar, 2004; Danilive Reid 2004). It is accomplished when the person understands how his/her own thinking processes function and controls these processes (Güneş, 2012). In other words, higher level thinking skills consist of the skills such as being able to analyze, evaluate, synthesize latest information, make decisions, solve problems, think reasonably, think creatively, and especially think critically (Lewis & Smith, 1993; Zoller, 1993).

As critical thinking is a multifaceted process including cognitive activities, the students who can think critically are open to innovation in their classes. They can go down to the roots of a problem and then identify the important points by trying to reach a resource they can rely on and taking the whole into consideration. While respecting to the views of the others, they take other people's opinions into account, and they elaborate on basing their own ideas on a solid scientific basis (Doğanay, 2000). According to Schafersman (1991), critical thinking means to think correctly on the way of acquiring valid and reliable knowledge about the world as in a way critical thinking resembles to scientific method. A problem is identified, hypothesis is set, related data is searched and gathered, the hypothesis can be tested according to reasonable norms, and it is tried to come to a reliable conclusion with the possible results. Consequently, critical thinking is a scientific method that is used specifically in daily life more than scientific subject areas and struggles (Kazancı, 1989; Paul vd, 1990; Banks, McCarthy &Rasool, 1993; Facione & Facione, 1996; Kaya, 1997; İpşiroğlu, 2002; Aybek, 2006; Demir, 2006; Sünbül, Çalışkan & Kozan, 2006; Yağcı, 2008). On the other hand, according to Ennis (1987), critical thinking is reasonable, reflective, responsible-skillful thinking that focuses on deciding to what we will believe and what we will do. Taking all these into consideration, how gifted students perceive critical thinking skills should definitely be investigated.

Our study is of vital importance as it is a qualitative research conducted specifically to discover the perspectives of gifted individuals attending at Science and Arts Centers on the concept of critical thinking. It is also crucial as it guides to develop the curriculum in Science and Arts Centers, to related managers and teachers. Because teachers and administrators are the foundation of the school. Besides, in addition to contributing to related literature, it is expected that the present study will shed light on to the studies which attempt to understand the cognitive constructions and thinking ways of gifted students currently studying at Science and Arts Center. Taking all these reasons into consideration, the questions for which answers are sought in this study are below:

- How do the gifted students define the concept of critical thinking skill?

- How do the gifted students describe the behaviors of a person who thinks critically?
- How do the gifted students express the need for the concept of critical thinking?
- What are the views of gifted students in terms of using critical thinking skills in the classroom?

Method

The present study which aims to identify the perceptions of gifted students on critical thinking skills is a qualitative research in phenomenology pattern. In phenomenological studies, the aim is generally to identify and interpret the perceptions or viewpoints of individuals on a specific phenomenon (Yıldırım and Şimşek, 2011). The phenomenon dealt in the study is critical thinking skills. It is required in phenomenological research to investigate the views of participants in detail to get to the core of the phenomenon (Patton, 2002). Likewise, in this study it is aimed to explore the viewpoints of gifted students studying at Hatay Science and Arts Center on critical thinking skills.

Participants

In the study, there are 34 participants who study at Science and Arts Center in Hatay, and they volunteered to participate in the study. The age range was 12-15, 25 out of 34 (73,5%) of the participants were male and 9 out of 34 (26,5%) were female. 6th, 7th, and 8th grade gifted students were selected as participants. Before the study the question "Do you define yourself as a critical thinker?" was asked to the students, and 11 of them said "yes", 2 said "sometimes", 11 said "no", and 2 said "I do not know" while 8 students gave no answer.

Data Collection Tool and Data Collection

In the study, the semi-structured interview form which was created by the researchers was used to collect the data. The tool aimed to gather information about the participants' experiences, complaints, views, and attitudes. In addition, while the participants answered the questions flexibly as the questions were semi-structured, the researcher collected detailed information about the topic (Yıldırım & Şimşek, 2006).

The semi-structured interview form consisted of six open-ended questions in order to identify gifted students' perceptions on critical thinking skills. In the process of writing semi-structured questions, firstly, the related literature was reviewed; also, expert opinions (education science faculty members) were taken into consideration. A pilot study was conducted prior to the present study to check the language validity of questions in the interview form. The form was reconsider after taking the feedback from the pilot study, views from two curriculum experts and one Turkish

language teaching expert were also taken to validate the questions. After this step, the data was collected in 40 minutes without any trouble. While the data was collected, the researcher was also at the place to prevent any problems in the classroom and intervened when it was necessary.

Data Analysis

The data collected through the interview was analyzed with content analysis. Content analysis is a method which is used in qualitative studies. This method is a systematic and replicable technique in which a researcher analyzes the texts using codes based on certain rules and then takes some words from the texts and places them into smaller content categories. And this is completely in parallel with the purpose of the study (Patton, 2002; Büyüköztürk, et. al, 2013).

For the analysis, the data gathered through semi-structured interview forms was transferred to computer as a Microsoft Word document. After this stage, coding was managed in parallel with a general evaluation.

Eight (23,5%) of the semi-structured interview forms were selected taking the randomness principle into consideration and the written forms were coded by different coders according to content analysis format. The formula suggested by Miles & Huberman (1994) (reliability= agreement number/ (agreement number + disagreement number) was used in order to find out the reliability of the agreement between these two codings. The agreement between the coders was also calculated and the agreement was found to be .90, this showed to the readers that the agreement was considerably high (Miles & Huberman, 1994). In addition, SPSS 20.0 program was used in related sections of the data, and descriptive statistics such as percentage, frequency, etc. were utilized. The researchers were careful about being objective in describing and interpreting the data to ensure the validity and reliability, the results were submitted to expert opinion to secure the reliability of the qualitative analysis results. Comparing the results reached by the field expert and the coders, some disagreements were identified then necessary corrections were made; consequently, it was ensured that the researcher continuously questioned himself/herself and the process, and it was checked whether the analysis-interpretations reflected the reality or not. Moreover, it was handled carefully that "how the results were reached" and "the proofs about the inferences made" were explained clearly and in detail to make sure that third person could understand the process. Finally, themes and codes were explanatory while presenting them, and in findings section, direct quotations were used from the answers of gifted students.

Results

Findings about the Definition of Critical Thinking

The gifted students were directed a question "What comes to your mind when you think of critical thinking?" asking them define the term. The codes and themes emerged after the analysis of the answers provided by the students are presented in Table 1:

Table 1.
Codes and Themes Emerged for Definition of Critical Thinking

	Themes	Codes	Participants
Definition of Critical Thinking	Positive viewpoint	Different Points	S1, S4, S5, S7, S8, S9, S18, S24, S25, S26, S32
		Analytical Thinking	S10, S11, S22, S27, S30
	Misconceptions	Criticism	S12, S14, S15, S16, S17, S19, S20, S21, S23, S28,S29, S31, S34
		Negative Thoughts	S2, S3, S13, S23

The codes emerged from the answers of the students to the question "What is critical thinking?" were brought under the themes "misconceptions" and "positive viewpoint". Under "positive viewpoint" theme the codes "different points" (f:11) and "analytical thinking" (f:5), under "misconceptions" theme the codes "criticism" (f:13) and "negative thoughts" arose. Most of the gifted students gave satisfactory answers which were in line with the literature to the codes under the theme "positive viewpoint". For example, some student answers for that question are below:

> *S11: "It is the work of analyzing and evaluating a subject through scientific proofs consisted of cognitive processes"*
>
> *S5: "It is identifying the positive and negative sides of a situation."*
>
> *S17: "It is the evaluation of views coming to our mind on a topic we are knowledgeable."*
>
> *S26: "It is refusing to accept something as it is, instead, it is finding its drawbacks, difference, right way, and fault."*
>
> *S4: "It is thinking in a constructive way. It is thinking of an entity (action, object) taking positive and negative sides into consideration."*

S22: "When I think of critical thinking, the concept of questioning comes to my mind as the concept "criticism" makes you think and question."

S24: "It is thinking about a topic or a concept at all points."

S34: "Critical thinking is a person's statements about their ideas on a topic with their own comments."

It was observed that under the theme of "Misconceptions", the answers from the participants about critical thinking were irrelevant to the topic itself. Exemplary sentences for the codes under this theme are like presented below:

S23: "Critical thinking is a person's heart-breaking speech while trying to find the faults of other people."

S3: "Critical thinking is perceiving the world negatively and disliking yourself."

S23: "Critical thinking is holding the faults of people against them."

Findings about the Behaviors of Critical Thinkers

The question "How do you describe a critical thinker?" was asked to gifted students participated in the study and the results showed that while some of the participants described the critical thinker in parallel with literature, some others had still misconceptions. In Table 2, the codes and the themes came out after examining the answers about the behaviors of critical thinkers:

Table 2.
Codes and Themes Emerged for Behaviors of Critical Thinkers

	Themes	Codes	Participants
Behaviors of Critical Thinkers	Positive Behaviors	Correct Expression	S2, S5, S8, S10, S11, S14, S15, S16, S21, S22
		Skill of Elaborate Thinking	S7, S9, S18, S24, S32, S34
		Thinking in Different Aspects	S1, S13, S19, S26, S27, S30, S31
		Curiousness	S12, S28
	Negative Behaviors	Finding Mistakes	S4,S6, S17, S23, S33
		Mistreatment	S3, S29
		Thinking in One Way	S20, S25

In terms of critical thinkers' behaviors, two themes emerged namely "positive behaviors" and "negative behaviors". The codes correct expression (f: 10), thinking in various aspects (f: 7), skill of elaborate thinking (f: 6) and curiousness (f: 2) emerged under the theme positive behaviors. Besides, the codes finding mistakes (f:5), mistreatment (f:2) and one-way thinking (f:2) emerged under the theme negative behaviors. Some of the student statements under positive behaviors theme are presented below:

> *S18: "The person who thinks critically approaches a situation from several aspects."*
>
> *S4: "The person who thinks critically can see their own and others' mistakes and look for solutions."*
>
> *S9: "A critical thinker is a person who thinks elaborately. For example, an architect should act considering the color of the house he/she is building, and the materials' quality. If he/she only thinks his/her profit, then negative outcomes may arise. It can affect people's health. Thinking in detail like this is a behavior that critical thinkers hold."*
>
> *S24: "A critical thinker is a person who questions the things in his/her mind."*
>
> *S21: "To me, a critical thinker is a person that contributes to me and my thoughts with his/her criticism."*

Some of the student statements under the theme negative behaviors towards behaviors of critical thinkers are:

> *S3: "A critical thinker has biases. They break everyone's heart and make them sad. They behave badly. They say to others sentences like you are a bad person, you are a loser. They underestimate other people."*
>
> *S31: A critical thinker is a person who sees the world negatively and looks for mistakes."*
>
> *S33: "A critical thinker is a person who tries to find lack of a topic or idea, and then discredits that lack to the end."*
>
> *S14: "A critical thinker is a person who tries to make fun of other people."*

Findings about the Need of Critical Thinking

The questions "Is there a need for critical thinking? Why?" were asked to the gifted students who took part in the study, and the majority of them agreed that it was necessary to think critically and there was a need for it. In Table 3, the codes and themes emerged from students' responses' analysis are presented:

Table 3.

Codes and Themes Emerged for the Need of Critical Thinking

	Themes	Codes	Participants
The Need of Critical Thinking	Needed	Discovering Different Aspects	S8, S11, S16, S18, S20, S22, S24, S27
		The Skill of Expressing	S1, S2, S9, S10, S12, S13, S14, S15, S19, S21, S25, S27, S31, S34
		Recognizing Deficiencies	S17, S23, S26, S32
	Not Needed	Negative Description	S3, S29, S33
	Partly Needed	Controlling Yourself	S4, S6, S30

After the analysis of the answers for the questions about the need of critical thinking, the themes "needed", "not needed", and "partly needed" came to exist. Under the theme "needed", the codes discovering different aspects (f:8), the skill of expressing (f:14) and recognizing deficiencies (f:4) emerged. Under the theme "not needed", negative description (f:3), and lastly, under the theme "partly needed", the code controlling yourself (f:3) showed up. The student statements towards the codes under the theme "needed" are listed below:

> *S8: "I think it is necessary because critical thinking is discovering good sides and drawbacks of a point. As a result, to minimize the mistakes, critical thinking is a requirement. At the same time, it a necessity to think critically to be able to approach things objectively."*
>
> *S11: "Critical thinking is a need. Because it is something good to discover a point's right way by questioning and find out good and bad sides."*
>
> *S14: "Yes, critical thinking is needed as people would not be able to improve themselves without it. Besides, we would not be able to recognize our deficiencies and improve ourselves."*
>
> *S34: "Of course it is needed as that system provides you with the chance of criticizing yourself positively or negatively, and then lets you move one or more steps further."*

The statements which indicated that there is no need for critical thinking were gathered together under the theme "not needed". Exemplary student statements for this theme are presented below:

> *S33: "Critical thinking is unnecessary as it is not right to approach everything negatively."*

S29: "There is no need for critical thinking as it just helps breaking people's heart, nothing else."

Findings about Use of Critical Thinking in the Classroom

The question "How can we make use of critical thinking in the classroom?" was asked to gifted students participated to the study, the codes and themes emerged from the responses they gave are shown in Table 4:

Table 4.
Codes and Themes Emerged for Use of Critical Thinking in the Classroom

	Themes	Codes	Participants
Use of Critical Thinking in Classroom	Being Affected Positively	Evaluating Distinctively	S1, S11, S15, S16, S22, S26, S31, S34
		Being Understandable	S8, S9, S10, S14, S25, S28
		Criticism	S17, S18, S29, S30
		Evaluating the Mistakes	S3, S4, S21, S23, S24, S32
		I do not have any idea	S2,S5, S6, S7, S12, S19, S20, S21, S33

After analyzing the students answers towards use of critical thinking in the classroom, the theme "being affected positively in the classes" arose. The codes evaluating distinctively (f:8), being understandable (f:6), evaluating the mistakes (f:6) and criticism (f:4) emerged under the theme "being affected positively." Nine students stated that they did not have any idea. Some of the student statements under the theme "being affected positively" are presented below:

S34: "It can be used to find the weaknesses of a topic and replace them with positive equals, and it can be used to for positive points to add more value. This way, students' way of thinking can also be improved."

S4: "During the classes, it may help finding deficiencies of some teaching methods seeing the drawbacks and advising accordingly. Thus, a more productive teaching environment can be created."

S22: "We can use critical thinking especially in group works. For example, our friends can evaluate and improve others' ideas."

S8: "We can help making a debate topic clearer and more explanatory in the classroom by thinking critically on the content."

S16: "For example, we can evaluate our friends' works at school by thinking critically."

S34: "We can look for a content that we can comment on, we can look for a concept that we can think critically. Thus, we can elaborate on the topic and content as much as possible."

S26: "We can evaluate the situations that story characters in verbal lessons are in a critical way. In social sciences lessons we can comment on the phenomenon critically, and we can change our related point of view."

S28: "We can critically investigate and explain the topic critically. In this way, we can understand the topic better and we can comprehend the concept better."

Discussion and Conclusion

This study was conducted with the aim of revealing critical thinking skills perceptions of gifted students. Findings of the study showed that some gifted students could express critical thinking skills correctly in line with the definitions that were found in literature. Gifted students used concepts such as "scientific proofs, mental processes, constructive evaluation for both positive and negative opinions, questioning" frequently and defined critical thinking skills properly. However, some gifted students that were a minor proportion, perceived meaning of the word "critical" negatively and tried to define "critical thinking skills" based on that assumption. Especially definitions such as "disappointing someone by talking bad", "disliking oneself by looking at life negatively" showed that perceptions of these students for critical thinking skills were quite negative. Of course, it could be understood with ease that the students were seriously mistaken, when considered critical thinking skill is not "disappointing someone by talking bad". It might be misunderstood by some students if critical thinking skills are used in classroom activities without making an evaluation on this issue. Namely, teachers in classroom fall into trap of thinking that students, gifted or not, can change concepts that they have experienced in their lives and every student has same frame of mind on a concept (Marioni, 1989; Linder, 1993; Tytler, 1998; Tao and Gunstone, 1999; Wandersee, Mintes and Novak, 1999; Riche, 2000).

According to findings of another study on critical thinker behaviors, it draws attention that perceptions of major proportion of gifted students on acritical thinker were described as "a person who approaches things from a unique perspective, pays attention to details, contribute to other individuals' opinions. It was pleasing to see that these definitions correspond with previous studies on which a critical thinker were described (Paul, Binker, Jensen &Krelau, 1990; Facione, 1996; Kaya, 1997; İpşiroğlu, 2002; Demirel, 2002; Yağcı, 2008). Nevertheless, there were other findings

contradicting with these results. Some students defined a critical thinker as someone who is prejudiced, behaves in a bad way, dismissive of people, looking for a fault in everything, saying words as you are incompetent". It was considered that this definition emerged because the word "critical" taken from the phrase "critical thinker" was perceived by students prejudiced and negatively. As Banks, McCarthy & Rasool (1993) stated in their study, there is a prejudiced approach for the word "critical". Generally, this word is accepted as having a negative meaning. In other words, criticism is considered as an evaluation for discovering missing, negative and bad sides. However, "criticism" is not used for finding faults or blaming. Generally, it means detailing, analysis for explanation and evaluation (Banks, McCarthy & Rasool, 1993).

Another finding in the research process because of interviews conducted by the students was that students mostly expressed a need for critical thinking. It was especially a pleasant improvement that gifted students used expressions such as "critical thinking is required for objectivity and improvement; helps reducing mistakes, enables rise of innovative ideas. This is favorable in that most of the students expressed a need for critical thinking skills." Unfortunately, contrary to these opinions, minor proportion of students whose ideas developed based on their misconceptions, as we thought, expressed opinions such as critical thinking is not needed, it is useless, it only breaks people's heart". As this phenomenon is a misunderstanding of a concept, traces from students' daily lives (written and visual press, individual experiences, social environment) can be pointed out as the most important reason for the difference of frameworks created in students' brain from education given at school (Bozkurt and Koray, 2002).

The last finding found out in the research process as a result of interviews conducted by the students was on use of critical thinking by students during the lessons. Most of the students, as in the previous findings, made positive and parallel to literature definitions. Definitions of students as "using critical thinking adds value on our opinions by shaping them positively, improves thinking system, enhances efficiency of class atmosphere, gives ability to comment, makes content more explicit and clearer, enables topics and contents to be analyzed more carefully" are all quite suitable evaluations. The fact that some students expressed their opinions as "critical thinking skills can be effectively used in group works" also shows how some students were knowledgeable with use of critical thinking skills in group works in classroom activities. Unfortunately, contrary to the phenomenon mention above, the fact that some students, due to some reasons, said they neither use critical thinking in the classroom nor they think it is supposed to be, worried us. In this context, gifted students shouldn't be treated differently from the other students. Not to be able "create correct forms" in critical thinking which is such a basic and critical issue shows, how the situation is worse than thought for gifted students. For this

reason, it is suggested that teachers in Science and Arts Centers should recognize the concepts students have very well and canalize to studies that will identify misconceptions, if there is any, and use suggested classroom methods and techniques for concept teaching.

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