

The Relationship between Critical Thinking Skills and Democratic Attitudes of 4th Class Primary School Students

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Abstract

This research aims to explore the relationship between critical thinking skills and democratic attitudes of 4th class primary school students. The research used a relational screening model, which is one of the screening models. The sample consisted of 221 4th class students who were selected by the simple random sampling method. The study has employed the ‘Critical Thinking Scale’ and the ‘Democratic Attitude Scale’. Descriptive statistics, multivariate analysis of variance (MANOVA), Pearson product-moment correlation analysis and simple linear regression analysis were used to analyse the data. The results have revealed that 4th class primary school students have a high level of critical thinking skills and democratic attitudes. No significant difference has been determined between students’ critical thinking skills in terms of gender, while a significant difference has been identified for democratic attitudes in favour of female students. The results also have suggested a medium-level relationship between students’ critical thinking skills and their democratic attitudes, and that critical thinking skills significantly predict democratic attitudes.

Keywords: Attitude, critical thinking, democratic attitude, primary school, thinking

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Introduction

The need for qualified individuals has increased recently. Qualified individuals can be trained with qualified training. In fact, the major aim of education is to raise qualified individuals who can keep up with the times. To achieve this goal, many developed and developing countries alter their teaching programmes and try to provide individuals with high-level thinking skills and democratic values.

Critical thinking is a matter of analysing the facts by taking all of the circumstances into account, producing ideas about them, organizing them on the basis of an objective, defending the results and comparing them with opposite opinions, achieving some conclusions from the judgments and solving the problems through evaluation (Lau, 2011). Kurnaz (2013) defines critical thinking as ‘the tendency or skill to engage in an activity with skeptical and in-depth thinking while giving rational decisions about what the individual has done or believed’. Tittle (2011) also describes critical thinking as ‘making reasonable deduction about what to do with what is believed’. Even though there are different definitions, it may be wise to mention that critical thinking is the ability and tendency to acquire, compare, evaluate, refine, use and apply knowledge. At that point, critical thinking differs from ordinary thinking.

Critical thinking is a multifaceted mental process. Having learned to think critically, an individual can find solutions to the problems he or she encounters, be open minded to new ideas, develop different perspectives towards events when required, respect other people's ideas, behave without prejudice, adapt to change and development, recognize his or her own deficiencies and eliminate them, and discover new knowledge by producing knowledge (Eryaman, 2008, 2009). The ability of individuals to possess such skills will help them to produce healthy and accurate solutions to the challenges they face in their respective lives. Those who cannot think critically are in tendencies of behaviour such as an inability to produce solutions to the events, general prejudice towards the knowledge or events presented to them, and accepting a situation as is without questioning or completely resisting it (Aybek, 2010; Paul & Elder, 2007; Sogukpinar, 2017). Aybek (2010) states that one of the most significant reasons for critical thinking is the ability to sustain and develop democratic culture. The researcher also presupposes that critical thinking skills are among the distinctive ones that a democratic citizen should possess. Ruggiero (1988) has noted that prejudice may be eliminated through critical thinking. In this respect, critical thinking is of great importance to a democratic society.

To create a democratic society, it is important to raise individuals who possess a democratic attitude. Demirsoz (2010) points out that a democratic attitude is based on ‘the ability to adopt and exhibit principles such as respect for rights, respect for person, justice, responsibility, equality, openness, honesty, tolerance, cooperation, appreciation, guidance’. Individuals with democratic attitude are considered equalitarian, respectful of rights and freedom, responsible, unprejudiced, and having different perspectives and critical thinking skills.

Upon examining the relevant literature in Turkey, few studies have been conducted on the students' critical thinking skills (Akar & Kara, 2017; Demir, 2006, Gorucu, 2014; Kalkan, 2008) and their democratic attitudes (Erbil & Kocabas, 2017; Kardas, 2013). No research has been found that examines the relation between critical thinking skills and democratic attitudes of 4th class primary school students. The researcher views this dearth as a shortcoming. It is essential that critical thinking, which is one of the basic skills that educational programmes must offer, be effectively acquired in primary school. Aybek (2010) has emphasized that individuals' critical thinking skills need to be improved, starting from early childhood.

For a large group of people to live together, such people should respect one another in the first place. The need for people to be receptive to the differences of others and to respect their rights and freedom—that is, to have the necessary democratic attitudes—requires a certain moral maturity. Therefore, it is important to develop democratic attitudes from primary school years. Kardas (2013)

states that the democratic attitude must be acquired from childhood. In this regard, it would be useful to examine the critical thinking skills and democratic attitudes of primary school students. This study is thought to contribute to science and provide a feedback to the classroom teachers. The research is expected to contribute to the related field.

This research aims to explore the relationship between critical thinking skills and democratic attitudes of 4th class primary school students. To meet this goal, answers to the following questions have been sought:

- 1) What are the students' critical thinking skills and democratic attitude levels?
- 2) Is there a significant difference between students' critical thinking skills and their democratic attitudes in terms of gender?
- 3) Is there a significant relationship between students' critical thinking skills and their democratic attitudes?
- 4) Is there a predictive relationship between students' critical thinking skills and their democratic attitudes?

Method

Research Design

The research used a relational screening model, which is one of the screening models. Screening models are research models that are conducted to describe the relationship between two or more variables and to analyse the relationships in-depth (Karakaya, 2012). This model seeks prediction and exploration among variables (Sonmez & Alacapinar, 2011). As the relation between critical thinking skills and democratic attitudes of 4th class students in primary school has been examined, this research used relational screening model.

Population and Sample

The research population consists of 4th class primary school students who study in Elazig province during the 2016–2017 academic year. The sample has 221 4th class students who were selected by the simple random sampling method. This sampling selection method requires that each participant have an equal chance to participate in the study (Fraenkel, Wallen & Hyun, 2014). Among the participants, 125 were female and 92 were male.

Data Collection Tools

This research has deployed two data collection tools: critical thinking scale and democratic attitude scale, as described below.

Critical Thinking Scale: This study used the 'Critical Thinking Scale', developed by Gorucu (2014). The scale was conducted on 200 students studying in the 2012–2013 academic year. The researcher performed the exploratory factor analysis (EFA) to demonstrate the validity of the scale.

The analysis results revealed that the scale comprises four factors and explains 51.43% of the total variance (Gorucu, 2014). The first factor, 'communication', has four items; the second factor, 'searching for truth', has six items; the third factor, 'self-confidence', has three items; and the fourth factor, 'prejudice', has four items. The researcher determined that the factor loadings of the measured items vary across .34 and .78 (Gorucu, 2014). Such items regarding the factors can be presented as: searching for truth: '*I have analyzed the problem from different perspectives, not the one way*';

prejudice: *'I find it more right for others to give important decisions'*; communication: *'I listen to the conversations of people who think differently from me until the very end'*; and self-confidence: *'I constantly worry that I cannot make the right decisions'* (Gorucu, 2014).

The internal consistency coefficient was examined to determine the reliability of the scale. Using a 5-point Likert-type scale, the internal consistency coefficients of the scale were found to be .45 for the first factor, .58 for the second factor, .66 for the third factor, .63 for the fourth factor and .69 for the overall scale (Gorucu, 2014).

Democratic Attitude Scale: The 'Democratic Attitude Scale' developed by Erbil and Kocabas (2017) was used as the second data collection tool. The scale was conducted on a total of 350 primary school students in two schools in Izmir. Researchers applied the EFA to determine the validity of the scale, and then the confirmatory factor analysis (CFA) to check whether the factors related to the scale were verified.

EFA has suggested that the scale is composed of one factor, 10 items and explains 32.63% of the total variance (Erbil & Kocabas, 2017). The factor loadings of the measured items vary between .41 and .66 (Erbil & Kocabas, 2017). Some examples of the scale include *'Nobody should be friends with poor children'* and *'Everyone has basic rights'* (Erbil & Kocabas, 2017). Being a 3-point Likert-type scale, Cronbach's alpha reliability coefficient was determined to be .76 for the overall scale (Erbil & Kocabas, 2017).

Within the scope of the study, permission was obtained for both scales, and they were used in this research. The critical thinking scale was developed by including secondary school students in the sample, while the democratic attitude scale was developed by selecting 3rd class primary school students as a sample. These measurement instruments were presented to three specialist faculty members, and their opinions were asked about whether the scales could be used for the 4th class primary school students. In consideration of the experts' feedback, the scales were used in the research.

EFA related to scales was carried out once more. The results were in line with those of the actual scales. Moreover, internal consistency coefficients of the scales were also examined. Hence, Cronbach's alpha coefficient of the democratic attitude scale was found to be .74, and the critical thinking skills scale was .63. Ozdamar (2013) stated that Cronbach's alpha coefficient is acceptable at .60 and over. Based on this reference, the scales may be said to be reliable.

Data Collection

The researcher collected the data between 8 May 2017 and 12 May 2017 in the spring semester of the 2016–2017 academic year. The researcher went to primary schools, distributed the scales to students and told them how to fill the scales. Students filled the scales within the framework of the voluntary principle. It took students 20 minutes to respond to the scales.

Data Analysis

The research data were analysed using a SPSS 21 statistical package program. First, the research confirmed whether the data provided the general requirements of the parametric tests. The presence or absence of extreme values was checked through the *z*-test and no extreme values were found. Afterwards, the Kolmogorov–Smirnov (K–S) test was used to evaluate whether the data were distributed normally. As a result of the analyses, the critical thinking scale demonstrated normal distribution (K–S = .05, $p > .5$); whereas that is not the case for democratic attitude scale (K–S = .14, $p < .5$).

It is suggested that the coefficients of skewness and kurtosis be examined to determine whether the data demonstrates normal distribution (Ho, 2006; Secer, 2015). The skewness of the democratic attitude scale is -.553 and the standard error is .164, while the kurtosis value is -.377 and the standard error is .326. Based on these results, the data showed normal distribution.

Descriptive statistics, multivariate analysis of variance (MANOVA), Pearson product-moment correlation analysis and simple linear regression analysis were used during data analysis. To apply MANOVA, the assumptions, such as sample size, extreme value analysis, linearity, homogeneity of regression, multicollinearity and homogeneity of variance and covariance matrices, have to be met (Pallant, 2016). These assumptions were determined to have been met during the analysis. Green and Salkind (2013) have stated that normal distribution should be achieved; that the data pairs should be randomly selected and that the variables forming the data pairs should be independent of each other for the correlation analysis. Pearson product-moments correlation analysis was conducted because the data showed normal distribution and continuous variables independent from each other were used. To use simple linear regression analysis, it is necessary to have a linear relationship between the predicted and predicting variables and normally distributed data (Field, 2009).

Results

Table 1 depicts the participation levels of students regarding their critical thinking skills and democratic attitudes.

Table 1. Students' critical thinking skills and democratic attitudes participation levels

Variables	<i>N</i>	\bar{X}	Sd	Max	Min	Level
Critical Thinking Skills	221	3.57	.55	4.76	2.10	Agree
Democratic Attitudes	221	2.67	.22	3.00	1.35	Yes

Upon examining Table 1, students expressed their opinions as 'agree' on the critical thinking skills scale ($\bar{X} = 3.57$) and 'Yes' on the democratic attitude scale ($\bar{X} = 2.67$).

Table 2 displays one-factor MANOVA results for the students' critical thinking skills and their democratic attitudes in terms of gender.

Table 2. One-factor MANOVA results of students' critical thinking skills and their democratic attitude levels in terms of gender

Dependent Variable	Gender	<i>n</i>	\bar{X}	Sd	df	<i>F</i>	<i>p</i>	η^2
Critical Thinking Skills	F	125	3.61	.54	1-219	2.093	.14	.00
	M	96	3.50	.56				
Democratic Attitudes	F	125	2.72	.22	1-219	10.270	.00*	.04
	M	96	2.61	.25				

* $p < .05$

A one-factor MANOVA was conducted to determine the effect of gender on students' critical thinking skills and their democratic attitudes. When the premises of the MANOVA analysis were checked, the homogeneity premise of diffusion matrix according to Box M statistic was ensured ($F_{3,6832201,878} = 1.029, p = .378$). The results of the Wilks' lambda test revealed a significant difference in the linear combinations of the dimensions of students' critical thinking skills and their democratic attitudes in terms of gender (Wilks' $\Lambda = .953, F_{(1,219)} = 5.401, p = .00$).

One-factor ANOVA results for students' critical thinking skills and their democratic attitudes are shown in Table 2. No significant difference has been determined between students' critical thinking skills in terms of gender ($F_{1-219} = 2.093, p > .05$), while a significant difference has been identified for democratic attitudes in favour of female students ($F_{1-219} = 10.270, p < .05$). In addition,

the interaction between gender and critical thinking skills and democratic attitudes is low (Green & Salkind, 2013).

The relationship between the students' critical thinking skills and their democratic attitudes has been presented in Table 3.

Table 3. Distribution of the relation between students' critical thinking skills and their democratic attitudes

Variables	Critical Thinking Skills	Democratic Attitudes
Critical Thinking Skills	1	-
Democratic Attitudes	.334*	1

$N = 221$, * $p < .01$

A positive, medium level (Tuna, 2016) and significant ($r = .334$, $p < .01$) relation have been determined as a result of the Pearson correlation analysis to determine whether there is a significant relation between students' critical thinking skills and their democratic attitudes. Thus, it is likely that students' democratic attitude scores will increase when their critical thinking scores increase.

Table 4 presents the results about whether students' critical thinking skills predict their democratic attitudes.

Table 4. Results of simple linear regression analysis related to the prediction of democratic attitude by critical thinking skills

Predicted Variable	Predicting Variable	B	Standard Error	β	t	p
	Constant	2.138	.404		5.28	.00
Democratic Attitude	Critical thinking skills	.535	.150	.334	3.55	.00
		$R = .334$	$R^2 = .11$	$F_{(1,219)} = 12.662$	$p = .00$	

Simple linear regression analysis results have revealed a medium level and significant relation between democratic attitude and critical thinking skill ($R = .334$, $R^2 = .11$, $p = .00$). Therefore, critical thinking skills' contribution to the democratic attitudes' total variance is 11%. When the standardized β coefficient and t values were examined, critical thinking is likely to be a significant predictor of democratic attitude.

Discussion, Results and Recommendations

This research aims to examine the relation between critical thinking skills and democratic attitudes of 4th class primary school students. Research results have revealed that the 4th class primary school students have a high level of critical thinking skills and democratic attitudes. The researcher has positively assessed this.

One of the major aims of education in the 21st century is to provide students with democratic values and critical thinking skills, a higher-level thinking skill. Thus, students' high level of critical thinking and democratic attitudes suggest that individuals who can keep up with the times are being trained. In addition, primary school programmes have been organized in Turkey based on the constructivist approach since the 2005–2006 academic year. Primary school programmes were finally revised in 2017.

When the renewed primary school programmes are examined, students are expected to gain critical thinking skills and democratic values (MNE, 2017a, 2017b, 2017c). Teachers may be said to urge students for developing critical thinking skills and democratic attitudes through making activities depending on the new curriculum. Demir (2006), Kalkan (2008), Karabacak (2011) and Yildiz (2011) have concluded that students' critical thinking levels are higher. These are in parallel to the results of

the current study. In studies conducted by Araz (2013) and Akar and Kara (2016), students have been identified to have a medium level of critical thinking skills. This difference may result from the use of a different measuring instrument and the conduction of the researches in different regions. Kardas (2013) has noted that students' democratic attitude levels are high, which is parallel to the result of this research.

The present study has also examined whether the critical thinking skills and democratic attitudes of 4th class primary school students vary across gender. As a result of the analyses, no significant difference has been determined among students' critical thinking skills in terms of their gender; on the other hand, students' democratic attitudes have shown a significant difference in favour of female students. Thusly, it may be emphasized that critical thinking skills do not differ in terms of gender, yet it is a variable that makes a significant difference with regard to democratic attitude.

Upon analysing the literature, various studies have been conducted on the fact that critical thinking skills vary across gender. In fact, similar results emerged in studies carried out by Akar and Kara (2016), Chin (2005), Belhan and Lacin-Simsek (2012). This result is in line with the relevant literature. Likewise, in his study, Kardas (2013) has found a significant difference between students' democratic attitudes in terms of gender. This is in agreement with the result of this research.

This study has also analysed whether there exists a significant relation between students' critical thinking skills and their democratic attitudes. Accordingly, a positive medium level and significant relation has been found between students' critical thinking skills and their democratic attitudes. Students' democratic attitude scores will increase if students' critical thinking scores increase. An individual with critical thinking skills has different perspectives and democratic values; moreover, s/he is unprejudiced and tolerant (Aybek, 2010; Facione & Facione, 1996). Democratic individuals are those who are unprejudiced, tolerant, respectful of differences and able to express their thoughts (Cavkaytar, 2013; Demirsoz, 2010). There are numerous common characteristics between individuals with critical thinking skills and those that are democratic. In this respect, there may be a relation between critical thinking and democracy, which is a situation supported by this research.

The present study has explored whether students' critical thinking skills predict their democratic attitudes. The analysis results have displayed a medium level and significant relation between democratic attitude and critical thinking skill. Critical thinking skills' contribution to the democratic attitudes' total variance is 11%. When the standardized β coefficient and t values have been analysed, critical thinking may be a significant predictor of democratic attitude. Based upon this result, the following can be said to have predicted democratic attitudes: distinguishing between necessary and unnecessary information; determining the accuracy of the statements; making analysis, evaluation and inferences; evaluating prejudices, consistency and inferences; distinguishing first and second sources; using various criteria while analysing; trying to find new solutions to problems; judging after examining and analysing all the data; being modest and curious; asking questions constantly; and giving people feedback after listening them carefully (Beyer, 1988; Facione, 2004; Facione & Facione, 1996; Ferret, 1997; Norris, 1985; Nosich, 2012; Ozden, 2003; Paul & Elder, 2007).

Based upon the research results, the following recommendations have been provided:

- 1) The research results have revealed a medium-level relationship between students' critical thinking skills and their democratic attitudes, and that critical thinking skills significantly predict democratic attitudes. In this regard, it will be useful for teachers to organize student-centred activities to develop critical thinking skills and democratic attitudes while planning the teaching-learning process. In this way, students' critical thinking skills and democratic attitudes may be improved, and individuals who are able to keep up with the times may be trained.
- 2) Research conducted on larger groups will contribute to the related field.

- 3) Using research models such as experimental, qualitative and mixed will contribute to the field.

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