

# The Relationship between Prospective Teachers' Critical Thinking Dispositions and Their Educational Philosophies<sup>1</sup>

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**Abstract** The aim of this research is to investigate the relationship between prospective teachers' critical thinking dispositions and their educational philosophies. The research used relational screening model. The study hosts a total of 429 prospective teachers selected by the simple random sampling method. Research data has been collected through Critical Thinking Disposition Scale and Philosophy Preference Assessment Scale. The research's analysis utilized pearson product moment correlation and multiple linear regression analysis. The current study found that there is a positive significant relationship between the scores of prospective teachers' critical thinking dispositions and those of contemporary educational philosophy dimension of the philosophy preference assessment scale; in traditional educational philosophy dimension, there is a positive but insignificant relationship between the scores; moreover, the relationship between the dimensions of critical thinking disposition scale such as cognitive maturity, engagement and innovation and their contemporary educational philosophies have been found to be significant. These three dimensions explain 14% of the educational philosophies and there is not a significant correlation with the traditional educational philosophies.

**Keywords** Critical Thinking, Critical Thinking Disposition, Philosophy of Education

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## 1. Introduction

Nowadays, several countries that are constantly struggling for developing themselves aim to bring up individuals who access to information, who can control the accuracy of the information and who have different point of views. For this purpose, individuals are required to gain critical thinking skills which are among the higher-order thinking skills. In

fact, it is of paramount importance for developed and developing countries to provide individuals with gaining critical thinking skills and organizing training programs in this context. The main objective of curriculum developed on the basis of the constructive approach in the 2005-2006 academic year in Turkey is to ensure individuals to possess critical thinking skills [1].

So far, numerous definitions have been made by various researchers on critical thinking. Paul and Elder [2] have defined critical thinking as an analyzing and evaluating art to develop thinking while Yildirim and Sensoy [3, p. 525] have noted that critical thinking is "a purposeful, self-regulatory decision-making mechanism" that results in the explanations of conceptual, methodological, criterion or contextual analysis along with the interpretation, analysis, evaluation and deduction on which the decision based. Those who possess critical thinking skills are expected of solving the problems with different perspectives as well as supporting their proposals and evidence that they have developed with proof. Therefore, students are required to gain critical thinking skills in all levels of education starting from primary school to higher education [4]. Individuals who have the critical thinking skills question the accuracy of the existing information, develop different point of views and reconsider the events. On this point, philosophy has precisely become indispensable.

Erisen [5, p. 2] defines philosophy as of the structure and layout of universe, the meaning of life and its purpose, the source of knowledge and reliability rating, what is good, beautiful and true, in other words, a field of occupation about the perennial questions and problems related to information, entity and values. Sonmez [6, p. 7] describes philosophy as "the bonding process of the truth by which dynamic products are obtained based upon the whole and justification". Cevizci [7] thinks of philosophy as a thinking and questioning-based activity. Bolay [8] indicates that philosophy holds depth of thinking, critical thinking and questioning. Gokberk [9]

emphasizes that philosophical thinking is skeptical, exploratory, analytical, critical and versatile way of thinking. All these explanations reveal that philosophy is associated with the critical thinking.

Educational philosophies assess all theories and practices related to education with a holistic perspective [10] and guide the goals/acquisitions, content, test status [6] and training policies as well as implementation [11]. Educational philosophy plays a significant role in determining the acquisitions, regulating the content, selecting teaching methods and techniques and assessment and evaluation tools, evaluating the programs including classroom management models that teachers use. Demirel [12] concludes that “philosophy reflects a way of thinking, views and beliefs for school; further, it holds a very important place in curriculum development activities”. Wiles and Bondi [12] have announced the philosophies of education in 6 categories; perennialism, essentialism, progressivism, re-constructionism, naturalism and existentialism. Upon analyzing the relevant literature, educational philosophies are mostly classified in four categories as perennialism, essentialism, progressivism, re-constructionism [14, 15].

Perennialism is based on the philosophy of idealism and realism. Perennialism deems that the focus of education should be the ideas that are tailored depending on universal attributions. Human nature and moral principles do not change. People should be trained according to these unchanging moral principles [16, p. 134]. Essentialism is influenced by idealism and realism. Accordingly, human intellect at birth resembles a tabula rasa. It means humans do not have the innate knowledge. Therefore, knowledge is subsequently acquired depending on the essentialism [17, p. 4]. Essentialism is teacher-centered which means that teacher is the mere authority in the class and gives punishment if required [6]. Progressivism was developed based upon pragmatism. Progressivists believe that education should continuously teach changing life rather than traditional standards and uniformities that are traditionally ongoing within society [18]. It is student-centered. It advocates the use of student-centered methods and techniques in teaching and learning environment. School is not the preparation for the school life but the life itself [6]. Reconstructionism seems like a continuation of the progressivism. Reconstructionism aims to create a new and better society. It highlights that education is not the creator or changing tool of social order but a balance tool. Reconstructionism highlights that education is to re-establish the society in order to overcome cultural crisis [19]. Reconstructionist educators believe that as society is constantly changing, curriculum in turn should be changed. A curriculum that supports the direct transfer of cultural heritage emphasizes that the culture and civilizations should be examined critically [20].

When the related literature has been analyzed, there are various studies regarding teachers and prospective teachers' educational philosophies in terms of different variables [21, 22]. Likewise, some studies have been investigated to

examine the relationship between prospective teachers' critical thinking dispositions and different variables [23, 24]. There is also one study that analyzes prospective teachers' beliefs in education and their critical thinking dispositions [25]. No study has been found on whether there is a relationship between prospective teachers' educational philosophies and their critical thinking dispositions. On this subject, such a study investigated a small numbers of studies that examine the relationship between prospective teachers' critical thinking dispositions and their educational philosophies. Besides, this research will also provide with understanding the relationship between prospective teachers' critical thinking dispositions and their educational philosophies. Determining as to how prospective teachers' critical thinking dispositions predict their educational philosophies will contribute to understanding how well faculty members organize teaching-learning environment within the context of teacher training programs.

The aim of this research is to investigate the relationship between prospective teachers' critical thinking dispositions and their educational philosophies. In accordance with the main objective, answers for the following questions have been sought:

- 1) Is there a significant relationship between prospective teachers' critical thinking dispositions and their educational philosophies?
- 2) Do prospective teachers' sub-scales of critical thinking dispositions significantly predict their educational philosophies?

## 2. Materials and Methods

### 2.1. Research Model

The research used relational screening models, which are a variety of screening models. Relational screening models are those which aim to analyze the existing relations profoundly in order to depict the degree of changes between two or more variables [26, p. 68]. In the current study, relational screening method was used since the relationship between prospective teachers' critical thinking dispositions and their educational philosophies has been investigated.

### 2.2. Population and Sample

The population of the research consists of prospective teachers studying in the Faculty of Education at a Turkish state university. The research was carried out with 429 prospective teachers who were selected by the simple random sampling method. This sampling method indicates that each participant is required to have an equal chance to participate in the study [27]. This research also used simple random sampling method as prospective teachers have been included in the study with an equal chance. Table 1 displays the characteristics of prospective teachers.

**Table 1.** The characteristics of the research group

Gender	<i>f</i>	%
Female	286	67
Male	143	33
Grade		
1 <sup>st</sup> grade	226	53
4 <sup>th</sup> grade	203	47
Department		
Classroom Teaching	59	14
Science Teaching	59	14
Social Studies	57	13
Turkish	40	9
Preschool	51	12
English	46	11
Psychological Counseling and Guidance	61	15
Computer	56	12
Total	429	100

Table 1 depicts that the number of female prospective teachers (67%) are much more compared to males; they are at the 1st grade studying at Psychological Counseling and Guidance.

### 2.3. Data Collection Tools

The study deployed three data collection tools. These are as follows:

*Critical Thinking Disposition Scale (CTDS)*: Critical thinking disposition scale was developed by Ricketts and Rudd (2005). The Turkish adaptation of this scale was created by Demircioglu [28]. The exploratory factor analysis was conducted through using principal components analysis method. The analysis suggest that the scale has a three-factor structure with its original structure in a similar manner and the items of each factor is collected under its own factors and they have been found to have high load factors. However, unlike the original structure, it has been determined that the second factor and the third factor is replaced. Confirmatory factor analysis was performed with the aim of determining as to what extent the basic components of the scale determined by the exploratory factor analysis explain the structure of the scale and critical thinking disposition. Thus, it was determined that as a model of a three-factor structure, CTDS has high fit index. Correlation analysis was conducted in order to identify the relationship between CTDS' subscales and total scores. Based upon the correlation analysis, it was concluded that the subscales are correlated with the total score and these correlations were found to be statistically significant at the level of .01. Internal consistency coefficients for the scale and its subscales were calculated for CTDS' reliability analysis. The reliability coefficient was found to be .88 for the overall scale. For the CTDS and its subscales- Cognitive

Maturity, Innovation and Engagement- Cronbach's alpha internal consistency coefficients were determined to be  $\alpha = .71$ ,  $\alpha = .87$  and  $\alpha = .84$ , respectively. Test-retest reliability was lastly examined regarding the reliability. Two trials were performed for this and the relationships between the scores that have been obtained from these two trials were calculated through Pearson Product Moment technique. Thus, it was found that there is a significant and high level positive correlation between the scores (General  $r = .78$ , Engagement  $r = .76$ , Cognitive Maturity  $r = .70$ , Innovation  $r = .71$ ), thereby indicating that test-retest reliability is sufficient. The lowest score that can be obtained from the scale is 25 while the highest score is 125 [28]. It is a five-point Likert-type scale; 1 strongly agree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree. Finally, the scale was reexamined by researchers.

*Philosophy Preference Assessment Scale (PPAS)*: The study employed Philosophy Preference Assessment Scale, which was developed by Cetin, Ilhan and Arslan [29]. The scale was carried out with 310 prospective teachers who studied Primary School Teaching at Marmara University Atatürk Faculty of Education in the 2011-2012 academic year. With the goal of investigating the construct validity of the scale, exploratory factor analysis (EFA) was done. After determining whether data are suitable for factor analysis, analysis was conducted via using principal component technique. It was determined that the scale consists of two factors and it explains the 35.68% of the total variance. Exploratory factor analysis shows that the first factor consisted of 17 items which reflects progressivism and re-constructionism explains 22.91% of the total variance. The factor loadings of these items available in this factor ranged from .34 to .76. Composed of 22 items, the second factor that reflects perennialism and essentialism has been found to explain the 12.77% of the total variance. The factor loadings of these items available in this factor ranged from .34 to .69. The items including perennialism and essentialism are considered as "Traditional Educational Philosophy (TEP)" while progressivism and re-constructionism are regarded as "Contemporary Philosophy of Education (CPE)" by researchers. Such items can be presented as the examples of TEP "Teachers should convey to students the basic cultural values.", "There is no need to take account of individual differences in education." On the other, the following items signify CPE "Situations that may be encountered in real life should be included in the curriculum.", "The objective of education should be to teach values such as cooperation, democratic way of life." The reliability of PPAS was calculated by means of internal consistency and split-half reliability analysis. Internal consistency coefficients were determined to be .90 and .86 for CPE and TEP, respectively. The reliability coefficients which were calculated via split-half reliability analysis were found to be .85 for CPE and .84 for TEP. The lowest score of the scales is 39 while the highest score is 195 [29]. It is a five-point Likert-type scale; 1 strongly agree, 2 disagree, 3

neutral, 4 agree and 5 strongly agree. After obtaining the necessary permits, both scales have been deployed in the study. Cronbach's alpha coefficients of the Critical Thinking Disposition Scale and Philosophy Preference Assessment Scale were determined to be .87 and .80, respectively. Fraenkel, Wallen and Hyun [27] stated that Cronbach Alpha coefficient should be of .70 or more. Based on this reference, it can be mentioned that both scales are reliable.

**2.4. Data Analysis**

The research data were analyzed through the use of the statistical package program. First, the study confirmed if data provided the general requirements of the parametric tests. Besides, the Kolomogrov Smirnov test evaluated whether the data were distributed normally. The results of the analyses show that philosophy assessment preference test demonstrated normal distribution (KSZ=.03,  $p>0,5$ ); that is not the case for the critical thinking disposition scale (KSZ=.05,  $p<0,00$ ). In the researches holding a lot of participants, even very small deviations are determined to be statistically significant. Skewness and kurtosis coefficients and histogram and Q-Q plot were analyzed so as to get rid of the tricky effect of this situation and make the final decision concerning the normality of the data related to the critical thinking disposition [30, 31]. As a result of the analyses, the data demonstrated normal distribution. The variance's homogeneity was tested conducting Levene's test for the analysis of data obtained in the current study. Pearson Product Moment Correlation Analysis and Multiple Linear Regression analysis were used during the data analysis. Pearson Product Moment Correlation Analysis was performed with a view to identifying the relationship between prospective teachers' critical thinking dispositions and philosophy preference assessment scale. Green and Salkind [32] stated that normal distribution is to be provided and data pairs should be selected randomly and the variables that make up data pairs should be independent from each other so that correlation analysis can be conducted. This research used Pearson product moment correlation analysis as normal distribution is provided and independent continuous variables. In addition, Multiple Linear Regression Analysis (MLRA) was also used in the study. It was determined whether certain assumptions are met to perform MLRA. The sample must

be a sufficient number in order to conduct MLRA. Pallant [33] noted that at least 40 participants for each predictor variable are required for MLRA. The study includes more than 40 participants for each subscales of the critical thinking disposition scale. It should not be a multiple linear equation for MLRA [34]. The present study depicts that there is low level relationship between critical thinking disposition scale and philosophy preference assessment scale. It is essential that normality and the absence of extreme values be ensured for MLRA [31]. Univariate normality was achieved within the study. Mahalanobis distance values assessed whether multivariate normality was met [33]. Mahalanobis values were analyzed and no extreme values were observed in the study.

**3. Results**

This part presents findings that determine whether there is a significant relationship between prospective teachers' critical thinking dispositions and their educational philosophies and whether the subscales of critical thinking dispositions predict prospective teachers' educational philosophies.

Table 2 depicts the summary as to whether there is a relationship between prospective teachers' critical thinking dispositions and their educational philosophies.

As a result of Pearson correlation analysis carried out to determine whether there is a relationship between prospective teachers' critical thinking dispositions and their educational philosophies; it was determined that there is a positive low level and in significant relationship between prospective teachers' critical thinking dispositions and traditional educational philosophy ( $r=.042$ ,  $p<.01$ ) while a positive moderate [35] and significant ( $r=.333$ ,  $p<.01$ ) relationship was found between prospective teachers' critical thinking dispositions and contemporary educational philosophy. Accordingly, when the scores of prospective teachers' critical thinking dispositions increase, contemporary educational philosophy is likely to increase as well.

Table 3 presents whether the subscales of critical thinking dispositions-engagement, cognitive maturity and innovation-predict their educational preferences.

**Table 2.** The relationship between prospective teachers' critical thinking dispositions and their educational philosophies

Variables	Critical Thinking Dispositions	Traditional Educational Philosophy	Contemporary Educational Philosophy
Critical Thinking Dispositions	1	-	-
Traditional Educational Philosophy	,042	1	-
Contemporary Educational Philosophy	,333*	-,099	1

N=429, \* $p<.01$

**Table 3.** Multiple linear regression analysis results related to whether critical thinking dispositions predict their philosophical preferences

The Predicted Variables	The Predictor Variables	B	Standard Error	$\beta$	t	p	Binary r	Partial r
Contemporary Educational Philosophy	Constant	2,685	,207		12,988	,00		
	Engagement	,081	,066	,077	1,227	,22	,259	,059
	Cognitive Maturity	,021	,060	,023	,356	,72	,249	,017
	Innovation	,275	,052	,305	5,304	,00	,360	,249
$R = ,368$ $R^2 = ,135$ $F_{(3-428)} = 22,171$ $p = ,00$								
Traditional Educational Philosophy	Constant	2,599	,273		9,508	,00		
	Engagement	,011	,088	,008	,123	,90	,034	,006
	Cognitive Maturity	,021	,079	,018	,260	,80	,038	,013
	Innovation	,027	,069	,025	,399	,69	,039	,019
$R = ,044$ $R^2 = ,002$ $F_{(3-428)} = ,273$ $p = ,84$								

The findings regarding multiple linear regression analysis that was conducted to reveal how cognitive maturity, engagement and innovation subscales of critical thinking dispositions predict prospective teachers' contemporary educational philosophy suggest that there is a significant ( $R = ,368$   $R^2 = ,135$ ) relationship between the subscales and contemporary educational philosophies ( $F_{(3-428)} = 22,171$   $p < ,01$ ). These three variables together explain nearly 14% of the philosophy of contemporary education.

According to the standardized regression coefficients, the order of importance of the predictor variables on contemporary educational philosophies are innovation ( $\beta = ,305$ ), engagement ( $\beta = ,077$ ) and cognitive maturity ( $\beta = ,023$ ). Given the significant tests of regression coefficients, innovation variable, which is a variety of predictor variables, has been observed as a significant predictor on contemporary educational philosophies.

The multiple linear regression analysis performed to reveal how cognitive maturity, engagement and innovation subscales of critical thinking dispositions predict prospective teachers' traditional educational philosophy demonstrated that there is not a significant relationship ( $R = ,044$   $R^2 = ,002$ ) between the subscales and contemporary educational philosophies ( $F_{(3-428)} = ,273$   $p > ,01$ ). These three variables together explain nearly 14% of the philosophy of contemporary education.

#### 4. Discussion, Results and Recommendations

This research has examined the relationship between prospective teachers' critical thinking dispositions and their educational philosophies. To that end, the relationship between prospective teachers' critical thinking dispositions and their educational philosophy has been investigated. The research analysis found that there is a positive moderate and significant relationship between prospective teachers' critical thinking dispositions and their contemporary educational philosophy. It is a known fact that there is a relationship between thinking and philosophy as humans has revealed philosophies through thinking. Critical thinking is one of the higher-order thinking skills. Critical

thinking necessitates to ask questions, analyze and skepticism which are also available for philosophy. In this regard, there may be a relationship between critical thinking and the philosophy. When the findings were analyzed in detail, it was determined that there is a medium level relationship between prospective teachers' critical thinking dispositions and their contemporary educational philosophies (progressivism and re-constructionism). However, prospective teachers' critical thinking dispositions and traditional educational philosophies (perennialism and essentialism) have been found to be insignificant. Based on this finding, it can be stated that prospective teachers who possess critical thinking dispositions mostly prefer contemporary philosophy of education. This is determined as a positive result by researchers since prospective teachers who possess critical thinking dispositions will largely teach based upon contemporary educational philosophy in learning-teaching environment when appointed, thus it will make the implementation of curriculum which has been developed based on constructivist approach with re-constructionism and progressivism philosophy much easier. Besides, this study shows that prospective teachers adopt the philosophy of education much more consciously and questioning and they support a student-centered approach. Considering work from the literature related to these findings, Alkın-Sahin, Tunca and Ulubey [25] have emphasized that there is a significant positive correlation between prospective teachers' critical thinking dispositions and educational beliefs. This is likely to support the result of this study. Within the studies that examine the relationship between prospective teachers' critical thinking dispositions and learning styles [36], media literacy [37], multicultural attitudes towards education [23], reading habits [38], educational beliefs [25], attitudes towards reading [39] and cognitive awareness [40], the results show that there are significant and positive relationships with the critical thinking dispositions.

In the present study, it was examined as to how cognitive maturity, engagement and innovation subscales of critical thinking dispositions predict prospective teachers' educational philosophies. The research results revealed that the relationship between cognitive maturity, engagement and innovation subscales of critical thinking dispositions

and prospective teachers' educational philosophies is significant. These three variables together explain nearly 14% of the philosophy of contemporary education. The order of importance of the predictor variables on contemporary educational philosophies are innovation, engagement and cognitive maturity. As a result of the analyses, innovation variable has been determined as a significant predictor on contemporary educational philosophies. That the life of prospective teachers as well as knowing much more about the world and new challenges and research to find more information can be said to increase their curiosity for educational philosophy [28]. The relationship between cognitive maturity, engagement and innovation subscales of critical thinking dispositions and traditional educational philosophy was found to be insignificant.

All in all, the present study plays a significant role as contemporary educational philosophy is associated with critical thinking dispositions. The study also reveals which educational philosophies form the basis of the curriculum preparation will contribute to raise individuals who possess critical thinking skills, one of the aims of today's education.

Based on the research findings, the following recommendations are provided:

- 1) The availability of courses related to critical thinking and educational philosophies will have a positive effect on prospective teachers' critical thinking dispositions; therefore, it facilitates the upbringing of critically thinking individuals. Besides, the courses on the philosophy of education will ensure individuals to adopt contemporary educational philosophies, which will provide the implementation of the curriculum developed based on the constructivist approach.
- 2) Experimental and qualitative researches on critical thinking and educational philosophies conducted via using different data collection tools will contribute to the relevant literature.
- 3) Comparative studies can be carried out in different regions, departments, grades and universities.

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