

Investigation of the Effect of Pre-Service Classroom Teachers' Critical Thinking Disposition on Their Media Literacy

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ABSTRACT

It is important to develop a critical perspective in terms of interpreting the messages to be given to the individuals through media and questioning the authenticity and content of these messages. It is therefore necessary to train the individuals called media literate who can critically perceive and evaluate the information conveyed through the media to increase the positive effects of the media and to reduce their negative effects as much as possible. The purpose of the study is to investigate the effect of the pre-service teachers' critical thinking disposition on their media literacy. The study employed the relational survey model, one of the quantitative research methods. In order to collect data, a personal information form, the Critical Thinking Disposition Scale, and the Media Literacy Level Determination Scale were used as the data collection instruments. As a result of the study, the critical thinking disposition of the pre-service teachers was found to be medium and their media literacy was found to be high. The critical thinking disposition was found to be varying significantly depending on their gender and grade level; their media literacy was found to be varying depending on grade level but not on gender. There is a positive but low relationship between critical thinking disposition and media literacy and critical thinking is a significant predictor of media literacy.

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1. INTRODUCTION

The twenty-first century is an era in which technological developments and information production are continuing rapidly. Thus, education has started to attach greater importance to the development of various skills for individuals to catch up with the information age. One of these skills is critical thinking, which can be seen as the basic requirement for the development of some other skills such as entrepreneurship, reasoning and problem solving. Moreover, critical thinking is considered to be a basic skill to be possessed by all professionals [1]. This skill seems to be more important for the classroom teachers working in the first level of compulsory education as they are responsible for guiding the development of children who are at the most important stage of their development because a classroom teacher with developed critical thinking skill can make important contributions to the development of children's critical thinking skills.

When the concept of critical thinking is examined, it is possible to encounter different definitions and approaches. Drennan [2] defines it with the concepts of problem solving, decision making, making inferences and reasoning; Paul and Elder [3] defines it as the art of analysis and evaluation to foster thinking; Halpern [4] defines it as a means of increasing the desired behaviors through the use of cognitive skills or strategies; Ennis [5] defines it as a way of profound and reasonable thinking while making decisions; McPeck [6] defines it as the skill of skeptical analysis of the encountered new information. When all these definitions

are examined, critical thinking can be expressed as the thinking and learning activity including higher order cognitive skills.

When the relevant literature is reviewed, it is seen that critical thinking has been researched in many different disciplines. In addition, when the research on critical thinking in the field of education is examined, it is seen that critical thinking has a positive effect on achievement, attitude and skills in different courses.

Another skill thought to be affected by critical thinking is media literacy. Media has become an important source of data vital to us as a result of technological developments. However, this does not mean that each data released by media is necessarily correct. Media can affect perceptions, attitudes and opinions by getting various ideas across masses [7, 8]. For this reason, individuals should have critical point of view and media literacy so that they can analyze the data sent from a source to determine whether there is misinformation or distortion of data and can seek for confirmation; in short, they should be media literate.

Media literacy requires the effective use of media sources and analysis of the messages coming from media sources with a critical point of view. Thus, the media literacy of the individuals with developed critical thinking skill is also expected to be developed because the individuals thinking critically are in the pursuit of understanding the causes of events and of questioning the incidences they encounter [9]. The relationship between critical thinking and media literacy can be emphasized through the definition of media literacy. Media literacy can be defined as the ability of having access to the messages of media published in different sources, analyzing, evaluating and communicating them [10, 11, 12, 13]. Thus, it can be argued that media literate individuals should have critical thinking skills in the consumption of media [14]. In other words, it is necessary to have critical thinking skills about media.

When the related literature is reviewed, it can be seen that there is a large amount of research on critical thinking and media literacy, the number of studies focusing on the relationship between critical thinking and media literacy is quite limited [15, 16, 17, 12, 14]. Thus, the aim of the present study is to identify the effect of the pre-service classroom teachers' critical thinking disposition on their media literacy. To reach this goal, this study seeks to find answers to the following questions:

- ✓ What are the pre-service classroom teachers' critical thinking disposition and media literacy levels?
- ✓ Do the pre-service classroom teachers' critical thinking disposition and media literacy vary significantly depending on gender and grade level?
- ✓ Is the pre-service classroom teachers' critical thinking disposition a significant predictor of their media literacy?

2. RESEARCH METHOD

This research study aiming to identify the impact of the pre-service classroom teachers' critical thinking disposition on their media literacy was conducted according to the relational survey model descriptive in nature. The relational survey model intends to identify the relationship between two or more variables and to elicit the degree of this relationship [18].

2.1. Study Group

The study group of the current research is comprised of a total of 303 pre-service classroom teachers from the Education Faculty of Muğla Sıktı Koçman University in 2017-2018 academic year. The distribution of the pre-service teachers according to their gender, grade level and grade point average is given in Table 1.

Table 1. Distribution of the pre-service teachers according to their gender, grade level and grade point average

Grade		1 st year		2 nd year		3 rd year		4 th year		Total	
		n	%	n	%	n	%	n	%	n	%
Gender	Female	49	22.9	52	24.3	68	31.8	45	21.0	214	70.6
	Male	29	32.6	32	36.0	17	19.1	11	12.4	89	29.4
Grade Point Average	1.99 and lower	7	31.8	10	45.5	3	13.6	2	9.1	22	7.3
	2.00-2.49	23	33.8	17	25.0	17	25.0	11	16.2	68	22.4
	2.50-2.99	24	21.8	32	29.1	33	30.0	21	19.1	110	36.3
	3.00-3.49	21	22.8	22	23.9	29	31.5	20	21.7	92	30.4
	3.50 and higher	3	27.3	3	27.3	3	27.3	2	18.2	11	3.6
Total		78	25.7	84	27.7	85	28.1	56	18.5	303	100

As can be seen in Table 1, 70% of the pre-service teachers are females. This is natural as the department attended is more preferred by female students. In terms of the grade level variable, there is a

balanced distribution across the levels. In terms of their grade point averages, a high majority of the pre-service teachers have 2.50 or higher grade point averages.

2.2. Data Collection Instruments

In the present study, the *Critical Thinking Disposition Scale* developed by Akbıyık [19] and the *Media Literacy Scale* developed by Karataş [20] were used as data collection instruments. Furthermore, a personal information form to elicit personal information about gender, grade level and academic achievement was used.

Critical thinking disposition scale

The Critical Thinking Disposition Scale developed by Akbıyık [19] is a scale used to identify the critical thinking level of a person. The Critical Thinking Disposition Scale is a five-point Likert scale. It consists of a single dimension having 15 positive and 15 negative items, a total of 30 items. The internal consistency coefficient of the original scale is .87; in the current study it was found to be .89.

Media literacy scale

The Media Literacy Scale developed by Karataş [20] is a scale proved to be reliable and valid to determine the media literacy of a person. The scale is a five-point Likert scale consisting of 17 items. It has three factors; having knowledge (7 items), being able to analyze (6 items) and being able to judge (4 items). The internal consistency coefficient of the original scale was found to be .72 for the sub-dimension of having knowledge, .72 for the sub-dimension of being able to analyze, .68 for the sub-dimension of being able to judge 0.68 and .84 for the whole scale. In this study, it was found to be .86 for the sub-dimension of having knowledge, .82 for the sub-dimension of being able to analyze, .77 for the sub-dimension of being able to judge and .92 for the whole scale.

2.3. Data Collection

The data were gathered by the researchers going to the classes in the Department of Classroom Teacher Education in July 2018 after having taken the required permissions. The participation was on a volunteer basis. After the collection of the scales, the uncompleted or erroneously completed scales were discarded and a total of 303 scales were entered into the data base.

2.4. Data Analysis

There are two different scales that were used in the present study. First, the reliability coefficients for the scales were calculated. Then, the mean and standard deviation values for the scales and their sub-dimensions were found. Büyüköztürk [21] states that when the number of sub-groups is 15 or more, the use of parametric statistics does not lead to significant deviation in the significance level. Yet, in order to determine whether the scores taken from the scales exhibit a normal distribution or not, Kurtosis and skewness coefficients were calculated. Kurtosis and skewness values in the range of +1 and -1 show that the distribution is normal. The skewness coefficient for the scores of the critical thinking disposition scores was found to be .177 and the Kurtosis coefficient was found to be -.775; the skewness coefficient for the media literacy scores was found to be -.491 and the Kurtosis coefficient was found to be .939. These values show that the distribution is normal.

In order to identify the pre-service classroom teachers' critical thinking disposition and media literacy, descriptive analyses were used. In this regard, the states of the participants are defined as follows depending on their scores taken from the scales: 1-2.33 "low", 2.34-3.67 "medium", 3.68-5.00 "high". In order to determine whether the participants' level of media literacy varies significantly depending on gender, t-test; one of the parametric analyses, was used and to determine whether it varies significantly depending on grade level, variance analysis was used. In order to determine the source of difference, Dunnett C, one of the Post-Hoc analysis techniques, was used. Moreover, regression analysis was run to determine the effect of critical thinking disposition on media literacy. The findings of the analyses are presented below.

3. FINDINGS

The results of the analyses obtained for the sub-problems of the study determined are presented in tables and then interpreted.

The findings related to the pre-service classroom teachers' critical thinking disposition and media literacy levels are presented in Table 2 and Table 3.

As can be seen in Table 2, the pre-service teachers' critical thinking disposition and media literacy means are $\bar{X}=3.60$ and $\bar{X}=3.79$, respectively. The pre-service classroom teachers' critical thinking disposition was found to be "medium", media literacy level was found to be "high". Moreover, when the pre-

service classroom teachers' media literacy was examined in terms of its sub-dimensions, it was found that "having knowledge" and "being able to judge" are high and "being able to analyze" is medium.

As it can be seen in Table 3, the critical thinking disposition of 154 pre-service teachers is medium and the critical thinking disposition of 149 pre-service teachers is high. The media literacy level of 196 pre-service teachers is high, that of 102 pre-service teachers is medium and that of 5 pre-service teachers is low.

Table 2. Descriptive statistics concerning the pre-service classroom teachers' critical thinking disposition and media literacy levels

	N	\bar{X}	ss	Level
Critical thinking disposition	303	3.60	.48	Medium
Media literacy	303	3.79	.57	High
<i>Having knowledge</i>	303	3.94	.59	High
<i>Being able to analyze</i>	303	3.67	.67	Medium
<i>Being able to judge</i>	303	3.72	.66	High

Table 3. Distribution of the pre-service classroom teachers according to their critical thinking disposition and media literacy levels

	Low		Medium		High		Total	
	n	%	n	%	n	%	n	%
Critical thinking disposition	-	0	154	50.8	149	49.2	303	100
Media literacy	5	1.7	102	33.7	196	64.7	303	100

The findings showing whether the pre-service teachers' critical thinking disposition and media literacy level vary significantly depending on gender are presented in Table 4.

Table 4. T-test results concerning the pre-service classroom teachers' critical thinking disposition and media literacy scores in relation to the gender variable

	Groups	N	\bar{X}	S	Sd	t	p	d
Critical thinking disposition	Females	214	3.64	.46	301	2.25	.02	.41
	Males	89	3.50	.51				
Media literacy level	Females	214	3.78	.54	301	-.85	.39	-
	Males	89	3.84	.65				

The t-test results presented in Table 4 related to the pre-service classroom teachers' critical thinking disposition scores in relation to the gender variable are examined, it is seen that the critical thinking disposition mean scores of the female and male pre-service teachers are $\bar{X}=3,64$ and $\bar{X}=3,50$, respectively. The t-test results have revealed that the critical thinking mean scores of the female and male students vary significantly by gender in favor of the female students [$t_{(301)}= 2,25;p<.05$]. On the other hand, it has been revealed that the difference between the media literacy mean scores of the female and male students is not statistically significant [$t_{(301)}= -.85;p>.05$]. Thus, it can be argued that while the pre-service teachers' critical thinking disposition varies significantly depending on gender, their media literacy levels do not vary significantly depending on gender.

The findings showing whether the pre-service classroom teachers' critical thinking disposition varies significantly depending on the grade level variable are presented in Table 5.

Table 5. Results of One Way ANOVA conducted to determine whether the pre-service teachers' critical thinking disposition varies significantly depending on grade level

Group	f, \bar{X} and SS Values				ANOVA Results						
	N	\bar{X}	SS	Var. K.	KT	Sd	KO	F	P	d	Difference Dunnet C Test
1 st Grade	78	3.65	.48	Between Groups Within Groups Total	6.84	3	2.28	10.69	.00	.09	1 st grade >2 nd grade 3 rd grade >2 nd grade 3 rd grade >4 th grade
2 nd Grade	84	3.41	.46		63.74	299	.21				
3 rd Grade	85	3.80	.42		70.58	302					
4 th Grade	56	3.54	.47								

As can be seen in Table 5, the pre-service classroom teachers' scores for their critical thinking disposition vary significantly depending on grade level [$F_{(299)}=10.69, p<.00, d=.09$]. In order to determine

the source of the difference, Dunnet C test was run. The difference was found to be between 1st and 2nd grade levels in favor of 1st grade level, between 3rd grade and 2nd grade levels in favor of 3rd and between 3rd and 4th grade levels in favor of 3rd grade level.

The results of the analysis conducted to reveal whether the pre-service classroom teachers' media literacy level varies significantly depending on grade level are given in Table 6.

Table 6. Results of One Way ANOVA conducted to determine whether the pre-service teachers' media literacy varies significantly depending on grade level

Group	<i>f</i> , \bar{X} and <i>SS</i> Values			ANOVA Results							
	<i>N</i>	\bar{X}	<i>SS</i>	Var. K.	<i>KT</i>	<i>Sd</i>	<i>KO</i>	<i>F</i>	<i>P</i>	d	Difference
1 st Grade	78	3.77	.60	Between Groups Within Groups Total	5.72	3	1.90	5.96			
2 nd Grade	84	3.61	.57		95.61	299	.32		.00	.05	3 rd grade > 2 nd grade
3 rd Grade	85	3.98	.49		101.33	302					
4 th Grade	56	3.81	.59								

As can be seen in Table 6, the pre-service classroom teachers' scores for their media literacy vary significantly depending on grade level [$F_{(299)} = 5.96$, $p < .00$, $d = .05$]. In order to determine the source of this difference, Dunnet C test was conducted. This difference was found to be between 3rd and 2nd grade levels in favor of 3rd grade level.

Pearson Correlation Coefficient analysis conducted to reveal the correlation between the pre-service classroom teachers' critical thinking disposition scores and media literacy scores are given in Table 7.

Table 7. Pearson Correlation Coefficient Test results related to the relationship between the pre-service classroom teachers' critical thinking disposition and media literacy level

Variables	Critical thinking disposition	Media literacy	Having knowledge	Being able to analyze	Being able to judge
Critical thinking disposition	-	.38**	.43**	.27**	.34**
Media literacy		-	.92**	.90**	.87**
Having knowledge			-	.71**	.74**
Being able to analyze				-	.70**
Being able to judge					-

$n=303$, ** $p < .01$

Correlation analysis is used to determine and interpret the relationships between two variables. If the correlation coefficient value is 0.70-1.00, it is considered to be "high", if it is 0.70-0.30, then it is considered to be "medium" and if it is 0.30-0.00 then it is considered to be "low" [21]. As can be seen in Table 7, there is a positive and significant correlation between their critical thinking disposition and media literacy and sub-dimensions of media literacy ($p < .01$). The correlation between critical thinking disposition and media literacy was found to be positive and medium ($r = .38$). The correlation between critical thinking disposition and the media literacy's sub-dimensions of "having knowledge ($r = .43$)" and "being able to judge ($r = .34$)" is positive and medium. There is a significant and low correlation with the other sub-dimension of media literacy "being able to analyze" ($r = .27$).

The results of the regression analysis conducted to determine the extent to which the pre-service classroom teachers' critical thinking disposition predicts their media literacy are given in Table 8.

Table 8. The extent to which the pre-service classroom teachers' critical thinking disposition predicts their media literacy

	R	R ²	F	B	Sd	Beta	t	p
Critical thinking disposition	.38	.15	53.37	.46	.06	.38	7.30	.00*

As can be seen in Table 8, as a result of the simple linear regression analysis conducted to determine the extent to which the pre-service classroom teachers' critical thinking disposition predicts their media

literacy, a correlation was found between critical thinking disposition and media literacy ($R = .38$, $R^2 = .15$). Critical thinking disposition was found to be a significant predictor of media literacy ($F_{(1,302)} = 53.37$, $p < .05$). Critical thinking disposition explains 15% of the scores obtained for media literacy. The significance test of the principal predictor variable coefficient ($B = .46$) in the regression equation also revealed that critical thinking disposition is a significant predictor ($p < .01$).

4. DISCUSSION, RESULTS AND SUGGESTIONS

As a result of the current study, the pre-service classroom teachers' critical thinking disposition was found to be medium. Though medium level of critical thinking disposition seems to be good, it might be not enough for the classroom teachers of future. When the relevant literature is examined, it is seen that though most of the studies have reported that pre-service classroom teachers' critical thinking levels are not adequate [22, 23, 24, 25, 9, 26, 27], there are some other studies reporting that pre-service classroom teachers' critical thinking levels are good or high [28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40] and some others reported that their critical thinking levels are very low [41, 24, 42, 43, 44, 45].

The current study also found that the pre-service classroom teachers' media literacy levels are high. Moreover, when the sub-dimensions of media literacy were examined, it was found that the pre-service teachers have high levels of "having knowledge" and "being able to judge" and medium level of "being able to analyze". These findings seem to be promising for the pre-service teachers to be able to make use of media elements in their daily lives and educational and instructional activities because as the teachers of future, they will be able to impart this skill to their prospective students.

The pre-service classroom teachers' critical thinking disposition was found to be varying significantly by gender in favor of the female pre-service teachers. Saracaloğlu and Yılmaz [46] also investigated the relationship between the pre-service classroom teachers' critical thinking disposition and the gender variable and found a significant difference in favor of the female pre-service teachers. Thus, their finding concurs with the finding of the current study. Moreover, they found the effect size of the gender variable to be medium. Ay and Akgöl [47], in their study entitled "Critical Thinking Power and Gender, Age and Grade Level", found that the students' critical thinking power varies significantly by gender in favor of the female students. Female students' having higher scores is a finding parallel to the findings reported by many other studies [27, 44, 48, 49, 50, 51, 52, 53, 53, 54, 55, 56].

The pre-service classroom teachers' media literacy was found to be not varying significantly depending on gender.

When the pre-service classroom teachers' critical thinking disposition was examined in relation to the grade level variable, significant differences were found between 1st grade and 2nd grade students, between 3rd grade and 2nd grade students and between 3rd grade and 4th grade students. Moreover, the effect size of the grade level variable was found to be low. Although in many studies [47, 41, 58, 53, 59, 60, 61, 62] it was found that with increasing grade level, the level of critical thinking is also increasing, in the current study and in some other studies [52, 32], the exact opposite was found to be true; with increasing grade level, the level of critical thinking is decreasing. In another study, the pre-service teachers' critical thinking scores were found to be not varying depending on grade level. This seems to comply with the findings of the study conducted by Ekinçi and Aybek [63] to investigate the emphatic and critical thinking disposition of 671 pre-service teachers.

When the correlation between the pre-service classroom teachers' media literacy and grade level was examined, it was found that there is a significant difference between the 3rd grade and 2nd grade students in favor of the 3rd grade students. Moreover, effect size of the grade level variable was found to be low.

A positive, significant and low correlation was found between the pre-service classroom teachers' critical thinking disposition and media literacy level and the sub-dimensions of media literacy. Moreover, critical thinking disposition was found to be a significant predictor of media literacy. Critical thinking disposition was found to be explaining 15% of the total variance in media literacy. This seems to comply with the results of the study carried out by Semerci and Semerci [64] to determine the effect of the critical literacy of teacher candidates on their media literacy. In this respect, it can be argued that in order to be able to foster media literacy of students, first their critical thinking disposition should be improved. Critically thinking individuals evaluate an event or issue not from a single perspective but from multiple perspectives. Therefore, critically thinking individuals can look at the issues appearing in different sources of media from different perspectives; thus, they see alternatives not a single truth.

Considering the results of the present study, following suggestions can be made.

- ✓ The current study revealed that there is a correlation between critical thinking and media literacy. Yet, while the pre-service teachers' critical thinking disposition was found to be high in general, their media literacy level was found to be medium. Thus, the pre-service teachers can be given

courses with the content of media literacy and can be instructed about how to make use of critical thinking in developing their media literacy.

- ✓ Conducting experimental and qualitative research with different data collection tools on critical thinking and media literacy is believed to make contributions to the literature.

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