The Analysis of the Relation Between Metacognitive Awareness of Reading Strategies and Critical Thinking Attiude of Pre-Service Classroom Teachers

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Abstract

The study's major goal was to analyze the relation between preservice classroom teachers' metacognitive awareness of reading practices and critical thinking attitudes. The Metacognitive awareness of reading strategies inventory (MARSI-TR), Critical thinking attitude scale (CTS), and demographics information form were utilized to collect data for the study. A total of 294 pre-service classroom teachers in the first and the fourth grades from two public universities constituted the sample. The results showed that women had both higher metacognitive awareness and critical thinking attitudes than men. As for the mother and father's education level, significant differences were found between sub-dimensions of critical thinking attitude scores of preservice classroom teachers. All of the correlations among the factors of metacognition and critical thinking attitude showed significant values, the direction of the relationships are all positive where the use of metacognition awareness factor increases with the scores on the factors of critical thinking. Additionally, critical thinking sub-dimensions explain 11% of the change in metacognitive awareness of reading strategies.

Keywords: Metacognitive Awareness of Reading Strategies, Critical Thinking Attitude, Metacognition

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INTRODUCTION

Thinking is a main ability of human beings. Everyone has bilions of neuorons in his brain and thinks consciously or unconsciously while doing his daily routines. Lightening fast developing techonology, just being able to think is not enough, one must learn to think critically. Critical thinking should not be seen as an option of educational goals because thinking critically is an ethical right that every individual should have (Şahinel, 2007).

It can be said that critical thinking is different from the usual thinking process in terms of receiving, systematizing, comparing, and evaluating information actively and effectively. Thinking may not happen towards a certain purpose, but critical thinking is an organized process. Critical thinking, according to Ennis (2011), is reasonable, and thoughtful thinking focused on determining what to believe, or do. It is an art of thinking which has the process of examining and assessing one's own thinking in order to improve it by having self-discipline, self-management, self-monitoring, where the individual who thinks about any issue, problem or content increases the quality of his thinking and imposes intellectual standards on it by adding a second level to critical thinking to ordinary thinking (Paul & Elder, 2002).

In Bloom's taxonomy, critical thinking is about higher thinking processes, which focuses on cognitive targets such as analysis, evaluation, and synthesis instead of being associated with lower-order thinking processes such as remembering, and understanding. Likewase, Demirel (2007) stated that critical thinking is based on the ability and tendencies to acquire, evaluate and use information effectively and explained the five main rules of critical thinking as follows: consistency, combining, practicability, competence, and ability to communicate. It is a disciplined, and self-controlled way of thinking that reveals flawless thinking about a particular field or form of thought (Şahinel, 2002).

As Facione (1995) reported in The Delphi Project, like any other skill, critical thinking is the ability to participate in an action, process, or approach. In general, having a talent means doing the right thing at the right time. But first of all, getting a skill needs having positive attitude of it. Attitude is defined as "a learned tendency that causes us to behave consistently towards certain persons, objects and events in the same way" (Dictionary of education terms, 1974). Critical thinking attitude, on the other hand, can be expressed as individuals' development of positive opinions on systematic and self-disciplined thinking skills. It is well acknowledged that critical thinking abilities alone are insufficient. He or she must also be willing to put them to use: proper attitudes or dispositions are essential for someone to be a critical thinker in the first place (Millman, 1988). Therefore, it is important for individuals to develop a positive attitude towards critical thinking skills before acquiring them. Particularly critical thinking cognitive abilities, may be taught in a variety of ways, including making the techniques unambiguous, depicting how they are to be used and performed, explaining and showing their correct usage, and supporting their application (Facion, 1995). So it can be concluded that when one has the right attitude to think critically, he starts learning how to use metacognitive abilities.

Metacognition is expressed as the ability of the individual to control and direct their own mental processes (Reeve & Brown, 1985). One of the most important reasons for the concept of metacognition to come to the fore is the claim that it is effective in gaining the ability of the individual to plan his own learning process (Akpunar, 2011). Similarly, individuals with high metacognitive awareness and using metacognitive strategies play an important role in regulating and controlling their own learning by providing control in learning. Metacognition teaching understands how one's own mental processes work; it is based on the assumption that it can control these processes and use these processes more effectively by rearranging them for a more qualified learning (Ülgen, 2004). According to Flavell (1985), whom the concept of metacognition was first used by in the early 1970s, there are four components that make up the metacognition as follows; metacognitive experiences, metacognitive knowledge, goals, and strategies. Costa (1984) suggested 12 strategies for teachers to improve students' metacognitive skills like planning, helping students make informed choices, producing questions, evaluating based on various conditions, giving feedback, not using the word 'I

can't', explaining students' thoughts in detail, naming students' behaviors, explaining students' terminology, role and imitation, thinking diary holding and being a role model.

Not only metacognitive strategies can be taken into consideration as a whole, but also can be investigated in awareness of 4 main components of languge skills as listening, reading, writing, and speaking. In this study metacognitive awareness of reading strategies was investigated. Reading skills encompass a variety of skills that includes many physical and brain-based mental processes. One of the ways to increase the effectiveness of the reading process and improve the level of reading comprehension is that the reader can choose and apply the appropriate strategy for the text to be read. However, during the implementation of the chosen strategy, the ability of the individual to control his / her own reading process and to find solutions to emerging problems is related to the reader's level of metacognitive awareness (Azizoğlu & Okur, 2020).

When reading comprehension and metacognition strategies are evaluated together, it can be classified under three main headings as "before reading", "during reading" and "after reading" similar to metacogitive strategies defined as prediction, monitoring, and evaluation (Özbay & Bahar, 2012). So individuals who use metacognitive strategies while reading are expected to use their critical thinking skills or having a positive attitude towards thinking critically as good readers. As indicated by Halpern's (1998) four-part model, metacognition, and critical thinking together could be fitted. It was perceived that once taking part in critical thinking, students get the chance to persevere through explicit metacognitive skills like perception their reasoning strategy determining if sufficient progress toward an appropriate objective is being accomplished, assuring precision, and making judgments based on the effort of time and mental energy (Magno, 2010). This obviously implies that critical thinking is a function of metacognition, which provides a direction in the forecasting of the two elements.

In the light of these opinions, the importance of the present study can be summarized as below:

The importance of the role of teachers during students' acquisition period of metacognitive skills is prominent. Since the teacher has become a guide who teaches learning ways rather than a person who gives information to students, some duties fall to the teacher at the point of transferring metacognitive skills (Çakıroğlu, 2007). Also, studies show that the higher success levels of metacognitive strategies that the students have, the higher performance in their lessons that they get (Özsoy, 2008).

There have been studies investigating metacognitive awareness solely (Öztürk & Açıl, 2020; Topkaya, Şentürk & Yılar, 2021; Yemenici & Ulu, 2020), critical thinking attitudes (Kutluca, Yılmaz & İbiş, 2018), critical thinking skills, abilities or standarts with and different combinations of the variables (Akkaya, 2015; Arslan, 2015; Çakıcı, 2018; Çelebi & Kusucuran, 2018; Karaoğlan-Yılmaz, Yılmaz, Üstün & Keser, 2019; Safitri, Suhaedir Bachtiar, Irmawanty, Rukman, 2019; Semerci & Elaldı, 2014). Also, Can (2021) examined critical thinking attitudes and listening metacognitive abilities, and Ulu (2019) as the most similar to our study investigated the relationships between the attitudes towards reading and reading habits, metacognitive awareness of reading strategies, and critical thinking tendencies of pre-service teachers were examined. In a short, it was seen that there have been studies with different samples and instruments but directly no studies examined critical thinking as an attitude so it is hoped that this study will contribute to the literature.

In this study, classroom teachers were taken as participants for being the first role model for students especially in terms of and integrating metacognitive reading strategies as well as critical thinking into all lessons. Through the curriculum, classroom teachers can transfer their basic thinking skills to their students so that they can be used in their daily lives. The teachers who will guide in thinking and reaching new information from knowledge and developing new strategies about higher levels of thinking must first train themselves in these subjects and gain these skills themselves (Kiewra, 2002). After recognized metacognitive awareness of readings skills, the preservice teachers

could be more efficient critical thinkers. Therefore, in this study, the link between preservice classroom teachers' critical thinking attitude and metacognitive awareness of reading strategies was studied.

The purpose of the study

The main objective of this study is to look into the relationship between pre-service classroom teachers' critical thinking skills and metacognitive awareness of reading strategies, as well as to see if there is a statistical difference between gender, age, class level, mother's and father's education level variables on pre-service classroom teachers.

Answers to the following sub-questions were requested for this purpose:

1. Do critical thinking skills of pre-service classroom teachers differ by gender/class level/ mother's and father's education level variables?

2. Do metacognitive awareness of reading strategies differ by gender/class level /mother's and father's education level variables?

3. Is there a correlation between critical thinking abilities and metacognitive awareness of reading strategies among pre-service classroom teachers?

4. Does critical thinking attitude have a predictive power on metacognitive awereness of reading strategies of pre-service classroom teachers?

METHOD

Methodological aspects of the study are provided in this section. The research methodology, study population, and validity and reliability study of data collection instruments and other tests utilized for data processing are all described in this regard.

Research Design

In this study prospective classroom teachers' critical thinking attitude and metacognitive awareness of reading strategies were investigated according to class level, gender, mother's and father's education level variables. Additionally, the relation between critical thinking attitude and metacognitive awareness of reading strategies of the prospective teachers were investigated. The research was designed in this setting using the relational survey model, which is one of the main survey models used to determine the existence and degree of co-exchange between variables (Karasar, 2005), and it does so by using a correlation coefficient (Fraenkel, Wallen, & Hyun, 2009). In such an arrangement, the variables that will be related to each other are symbolized separately and must be made in a way that allows a relational analysis (Karasar, 2006). In this way, correlation type relational survey method was used to observe the relationships between variables.

Study Population

The study's population included 294 pre-service classroom instructors from the first and fourth grades enrolled in two public universities (Aydin Adnan Menderes University & Gazi University) in Turkey during 2018-2019 academic year. The frequency distrubution of the characteristics of the sample was presented in Table 1.

Table 1. Frequency Distribution of the Sample's Demographic Characteristics

Demografic variables	Groups	N	%
University	A University	161	54,8
	B University	133	45,2
Class	1st grade	151	51,4
	4th grade	143	48,6
Gender	Women	220	74,8
	Men	74	25,2
Mother's education level	Not graduate a school	33	11,2
	Primary education	129	43,9
	Secondary education	58	19,7
	High school education	46	15,6
	University education	28	9,5
Father's education level	Not graduate a school	22	7,5
	Primary education	93	31,6
	Secondary education	57	19,4
	High school education	62	21,1
	University education	60	20,4
Total			294

As it was presented in Table 1, two different universities were preferred in the selection of the sample in order to ensure the representation of prospective teachers, one of which is a well-established and the other a newer university, by making purposeful sampling. In addition, in the same way, the primary reason for conducting the research from the selected universities on 1st and 4th grade students is to determine whether there will be a differentiation in the critical thinking attitudes, and metacognitive reading strategies of the students in different age groups over time with the education they receive.

For determing the sample, firstly statistical information was obtained from students' affair services in two universities. It was observed that 550 students were enrolled in 1st, and the 4th grades of Classroom education in normal and evening classes. By using purposeful and convenient sampling method, 294 pre-service students voluntarily completed the forms. Based on sampe size formule the sample group was acceptable as p=.005 error size significance (Yazıcıoğlu & Erdoğan, 2004).

Data Collecting Procedure

Firstly, permissions were obtained from the owners of the scales via by e-mail, and the scales were applied in the designated classes on a voluntary basis based on ethical considerations during break time in classess withouth interrupting the lessons in the spring term of 2018-2019 academic year. After giving a brief information about the study, the scales were applied to the students by the researchers in two different cities during the same time period.The data was collected with in four days, and it took 5-8 minutes for students to complete the forms.

Data Collection Instruments

Two data collection tools were used in the scope of the research. These are explained below:

Critical Thinking Attitude Scale (CTAS): The Likert-type five-point measuring instrument consisting of 19 questions and five sub-dimensions namely gathering information willingness, self-regulation, inference, evidence based decision making and opennes to searching for a reason was developed by Yılmaz Özelçi and Saracaloğlu (2017). Among these items, there are 11 positive and 8 negative items. The scale was created with the help of university students. The maximum potential score was determined to be 75.

Critical Thinking Attitude Scale Exploratory and Confirmatory Factor Analysis Results

As for exploratory analysis, item-total correlations were found to be higher than 0.30 (between 0.32 and 0.68) for all items in the scale for the current study. When the reliability and validity analysis results are evaluated together, it can be stated that the 19 items in the scale have high validity, distinguish the sample in terms of the behavior desired to measure, and the items in the scales are items intended to measure the same behavior within the scale.

According to the preliminary findings of the confirmatory factor analysis, which was conducted using the scale's original structure of 19 items and 5 dimensions, the fit indices were generally at acceptable levels; factor loadings and correlation between factors were found to be within acceptable range as it was shown in Table 2.

Table 2. Critical Thinking Attitude Scale Confirmatory Factor Analysis Fit Indices

Model Fit Indices	DFA	Acceptable	Good/Very Good
X^2/sd	1,58	$0 < X^2/sd < 5$	$0 < X^2/sd < 3$
RMSEA	0,04	$0,00 \leq RMSEA \leq 0,10$	$0,00 \leq RMSEA \leq 0,05$
SRMR	0,05	$0,00 \leq SRMR \leq 0,08$	$0,00 \leq SRMR \leq 0,05$
GFI	0,93	$0,90 \leq GFI \leq 1,0$	$0,95 \leq GFI \leq 1,0$
NFI	0,92	$0,90 \leq NFI \leq 1,0$	$0,95 \leq NFI \leq 1,0$
NNFI	0,96	$0,90 \leq NNFI \leq 1,0$	$0,95 \leq NNFI \leq 1,0$
CFI	0,97	$0,90 \leq CFI \leq 1,0$	$0,95 \leq CFI \leq 1,0$

When the item fit in the model was examined, it was found that the fit indices of the scale consisting of 19 items and 5 dimensions were generally at acceptable levels, factor loads were over 0.40, error variances were low, and t values were significant (Çokluk, Şekercioğlu, & Büyüköztürk, 2010:271-272; Meydan and Şenen, 2011:37). Confirmatory factor analysis revealed that the scale had the optimal structure, consisting of five factors and 19 items. (Table 3).

Table 3. Critical Thinking Attitude Scale Reliability and Validity Results

Factor	Item	Std. β	T	R^2	r	α (0,89)
Willingness	1	0,69		0,47	0,53	0,83
	2	0,82	**11,99****	0,68	0,63	
	3	0,79	**11,67****	0,63	0,60	
	4	0,68	**10,23****	0,46	0,48	
Self Regulation	5	0,59		0,35	0,44	0,84
	6	0,74	9,61**	0,55	0,59	
	7	0,72	9,43**	0,52	0,55	
	8	0,76	9,71**	0,57	0,58	
	9	0,77	9,83**	0,60	0,61	
Inference	10	0,84		0,71	0,68	0,83
	11	0,85	16,22**	0,72	0,65	
	12	0,68	12,28**	0,46	0,42	
Evidence based decision making and	13	0,79		0,63	0,32	0,79
	14	0,85	12,46**	0,72	0,42	
	15	0,62	10,05**	0,38	0,39	
Opennes to searching for a reason.	16	0,75		0,56	0,51	0,82
	17	0,80	12,67**	0,63	0,59	
	18	0,76	12,23**	0,58	0,54	
	19	0,62	9,99**	0,39	0,41	

* p<0,05   **p<0,01   r: Item total corelation α: Cronbach Alpha

The Cronbach Alpha coefficient of the scale was 0.89 when the reliability analysis findings were analyzed, and the coefficients of the sub-dimensions were found to be 0.83- 0.84- 0.83- 0.79 and 0.84. Item-total correlations for all items in the scale were found to be higher than 0.30 (range 0.32 to

0.68) (Table 3). When the reliability and validity analysis results are evaluated together, it can be interpreted that the validity of the 19 items in the scale is high, they distinguish the sample in terms of the behavior to be measured, and the items in the scales are items in the scale aimed at measuring the same behavior.

Metacognitive Awareness of Reading Strategies Scale (MARSI): The Mokhtari and Reichard (2002) scale, translated to Turkish by Öztürk (2012), was used as a self-report tool to measure teenagers' metacognitive awareness and reported use of reading strategies when reading academic texts. The measurement tool consists of 30 items and 3 subscales. It is able to uncover students' generalized use of reading strategies within the context of academic or school-related reading (Mokhtari, Dimitrow, & Reichard, 2018). The metacognitive awareness of reading strategies Inventory assessed three subscales of reading strategies: global reading strategies, problem-solving strategies, and support reading strategies (Mokhtari & Reichard, 2002).

Reading Strategies Metacognitive Awareness Scale Exploratory and Confirmatory Factor Analysis Results

In the exploratory factor analysis of the Reading Strategies Metacognitive Awareness Scale, KMO was 0.93; the significance threshold of Bartlett's sphericity test was p=0.01. It was found that exploratory factor analysis using data from the application and a sample of 294 participants was adequate.

The fit indices were largely satisfactory, according to the preliminary findings of the confirmatory factor analysis performed with the 23 items and 3-dimensional structure of the scale. Since it was determined that the factor loadings and the correlation between the factors were in the acceptable range (Table 4), all fit indices were tried to be improved with the covariance connections in accordance with the modification suggestions as it was presented in Table 4.

Table 4. Reading Strategies Metacognitive Awareness Scale Confirmatory Factor Analysis Fit Indices

Model Fit Indices	1st DFA	Last DFA	Acceptable	Good/Very Good
X^2/sd	1,99	1,77	$0 < X^2/sd < 5$	$0 < X^2/sd < 3$
RMSEA	0,06	0,05	$0,00 \leq RMSEA \leq 0,10$	$0,00 \leq RMSEA \leq 0,05$
SRMR	0,05	0,05	$0,00 \leq SRMR \leq 0,08$	$0,00 \leq SRMR \leq 0,05$
GFI	0,87	0,90	$0,90 \leq GFI \leq 1,0$	$0,95 \leq GFI \leq 1,0$
NFI	0,83	0,86	$0,90 \leq NFI \leq 1,0$	$0,95 \leq NFI \leq 1,0$
NNFI	0,90	0,92	$0,90 \leq NNFI \leq 1,0$	$0,95 \leq NNFI \leq 1,0$
CFI	0,91	0,93	$0,90 \leq CFI \leq 1,0$	$0,95 \leq CFI \leq 1,0$

As a result of the covariance connections made in accordance with the modification suggestions, it was determined that the fit indexes of the 23 items and 3 dimensions reached acceptable levels in general, the factor loads were above 0.40, the error variances were low and the t values were significant at the 0.01 level (Çokluk, Şekercioğlu and Büyüköztürk, 2010:271-272; Meydan and Şeşen, 2011:37). With three factors and 23 items, the scale was found to have the best structure (Table 5).

Table 5. Reliability and Validity Results of Reading Strategies Metacognitive Awareness Scale

Factors	Items	Std. β	T	R^2	r	α (0,92)
Global reading strategies	m5	0,48		0,24	0,38	0,83
	m6	0,63	7,91**	0,40	0,53	
	m9	0,62	7,01**	0,38	0,53	
	m12	0,67	7,29**	0,45	0,58	
	m20	0,67	7,28**	0,44	0,55	
	m24	0,68	7,34**	0,46	0,51	
	m28	0,71	7,48**	0,50	0,55	
Problem solving strategies	m8	**0,60**		0,36	0,54	0,85
	m13	**0,59**	8,38**	0,35	0,54	
	m16	**0,60**	8,50**	0,36	0,51	
	m18	**0,72**	9,61**	0,52	0,62	
	m21	**0,59**	8,34**	0,35	0,53	
	m26	**0,67**	9,17**	0,45	0,54	
	m27	**0,75**	9,91**	0,56	0,62	
	m30	**0,68**	9,21**	0,47	0,58	
Supporting reading strategies	m2	0,58		0,33	0,53	0,84
	m3	0,69	10,19**	0,48	0,64	
	m7	0,69	8,79**	0,47	0,58	
	m10	0,60	8,09**	0,36	0,54	
	m17	0,59	7,89**	0,34	0,50	
	m19	0,68	8,79**	0,46	0,58	
	m22	0,60	7,92**	0,36	0,51	
	m23	0,65	8,54**	0,43	0,56	

* p<0,05   **p<0,01   r: Item total corelations   α: Cronbach Alpha

When the results of the reliability research were evaluated, the Cronbach Alpha coefficient of the scale was 0.92. The coefficients of the sub-dimensions were found to be 0.83- 0.85 and 0.84. Item-total correlations for all items in the scale were found to be higher than 0.30 (range 0.38 to 0.64) (Table 5). For the suitability of the structure of the scale consisting of 30 items and 3 sub-dimensions, the difference between the load values in the factor to which the items belong, the load values in the other factors and the loads in more than one factor were examined. It was determined that 7 items in the scale (15,11,1,4,14,25,29) were not included in appropriate dimensions and had high load values in different sizes, and items that did not comply with the rules were eliminated gradually. When the reliability and validity analysis results are evaluated together, remaining 23 items in the scale can be regarded as having high validity, because they distinguish the sample in terms of the behavior to be investigated, and the items in the scales are items intended to measure the same behavior in the scale. It can be contented that according to obtained reliability and validity studies, the two data collecting tools were valid and reliable instruments for this sample group.

Data Analysis

A statistical package program for social science 16.0 and AMOS 21.0 programs were used in the analysis of the data. Exploratory factor analysis, confirmatory factor analysis, lower and upper 27% t tests, item total correlation and Cronbach Alpha tests were applied within the scope of the reliability and validity studies of the scales.

The Skewness coefficient was used to test the normality of the scale and sub-dimension scores. The fact that the skewness coefficient used in the normal distribution feature of the scores obtained from a continuous variable is within the limits of ±1 can be interpreted as the scores do not show a significant deviation from the normal distribution. Parametric tests can be used by providing the normal distribution of the scores with square root, logarithmic or inverse methods (Büyüköztürk, 2011: 40). In the comparison of the variables according to gender and class variables, from two independent samples t-test; One-way analysis of variance (One Way ANOVA) test was used to compare the variables of age, mother's education level, father's education level and the book he read. When a significant difference was observed between the groups in the ANOVA test, the LSD post hoc test was used to determine between which two groups the difference was. Pearson correlation to

determine the relationship between scale scores. The influence of critical thinking attitude on reading strategies and metacognitive awareness was examined using regression analysis. The significance threshold in the analyses was maintained at 0.05 (p<0.05).

FINDINGS

Along with the sub-problems of the study, the findings of the Critical Thinking Attitude Scale Scores and Metacognition awareness of reading strategy scale scores based on variables (gender, class level, education level of mother and father) were given orderly in tables in this part.

Findings along with the First Sub-Problem of the Study

The first sub-problem of the study investigates whether whether the pre-service teachers' critical thinking attitude scores differ significantly according to gender, age, class level, mother's, and father's education level. The results of the analysis were presented in Tables 6, 7, 8 & 9.

The Pre-service Classroom Teachers' Critical Thinking Attitude Levels by Gender

Table 6. T-Test Results of Critical Thinking Attitude Scale Scores by Gender

Sub-dimensions	Gender	N	$\overline{X}$	SS	T	P
Information Acquisition Willingness	Female	220	3,81	0,75	2,47	0,014*
	Male	74	3,55	0,95		
Self-regulation	Female	220	3,67	0,82	1,36	0,175
	Male	74	3,52	0,91		
Inference	Female	220	4,06	0,91	2,18	0,030*
	Male	74	3,78	1,03		
Evidence Based Decision Making	Female	220	3,33	0,94	-0,97	0,334
	Male	74	3,46	1,00		
Reason seeking	Female	220	4,03	0,82	1,62	0,106
	Male	74	3,82	0,98		
CRITICAL THINKING ATTITUDE TOTAL	Female	220	3,78	0,59	1,87	0,062
	Male	74	3,63	0,71		

Based on the results shown in Table 6, Information acquisition willingness (t=2,47; p<0,05) and inference (t=2,18; p<0,05) sub-dimensions differed significantly according to gender. Female students' information acquisition willingness (3,81 ± 0,75) and inference scores were significantly higher than male students' score (4,06 ± 0,91). On the other hand self regulation, evidence based decision making, reason seeking and critical thinking attitude scores of the students didn't differ according to gender.

Pre-service Classroom Teachers' Critical Thinking Attitude Scale Scores By Class Level

Table 7. T-Test Results Of Critical Thinking Attitudes According To Class Level

Sub-dimensions	Class	N	$\overline{X}$	SS	T	P
Information Acquisition Willingness	1st class	151	3,84	0,78	1,99	0,047*
	4th class	143	3,65	0,83		
Self regulation	1st class	151	3,74	0,84	2,18	0,030*
	4th class	143	3,52	0,84		
Inference	1st class	151	4,10	0,93	2,19	0,029*
	4th class	143	3,88	0,95		
Evidence Based Decision Making	1st class	151	3,44	0,99	1,31	0,193
	4th class	143	3,29	0,92		
Reason seeking	1st class	151	4,07	0,86	2,08	0,039*
	4th class	143	3,87	0,86		
CRITICAL THINKING ATTITUDE	1st class	151	3,84	0,62	2,71	0,007*
	4th class	143	3,64	0,62		

*p<.005

As it's seen in table 3, as for critical thinking scale significant differences were found between willingness to gather information (t = 1.99; p <0.05), self-regulation (t = 2.18; p <0.05), inference (t = 2.19; p <0.05) except for evidence based decision making (p>.05) sub-dimension and class level. 1st grade students 'willingness to gather information (3.84 ± 0.78), self-regulation score (3.74 ± 0.84), 'openness to search (4.07 ± 0.86) and also the critical thinking attitude score of the 1st grade students (3.84 ± 0.62) were significantly higher than 4th grade students' score.

Pre-service Classroom Teachers' Critical Thinking Attitude Scale Scores by Mother's education level

Table 8. ANOVA Test Results of Critical Thinking Attitude Scale Scores by Mother's education level

Sub-dimensions	Mothers' education	N	$\overline{X}$	SS	F	P	Significant difference
Information Acquisition Willingness	A-Any graduation	33	3,61	0,95	0,83	0,504	
	B-Primary	129	3,84	0,67			
	C-Secondary	58	3,73	0,91			
	D-High school	46	3,67	0,76			
	E-University	28	3,65	1,07			
Self regulation	A-Any graduation	33	3,51	0,89	0,86	0,488	
	B-Primary	129	3,72	0,75			
	C-Secondary	58	3,63	0,88			
	D-High school	46	3,50	0,91			
	E-University	28	3,58	1,00			
Inference	A-Any graduation	33	3,85	1,13	0,29	0,883	
	B-Primary	129	4,06	0,87			
	C-Secondary	58	3,98	0,98			
	D-High school	46	3,95	0,92			
	E-University	28	3,94	1,05			
Evidence Based Decision Making	A-Any graduation	33	3,05	0,89	2,92	0,022	C,D>A,B
	B-Primary	129	3,25	0,95			
	C-Secondary	58	3,63	0,88			
	D-High school	46	3,54	0,89			
	E-University	28	3,43	1,18			
Reason seeking	A-Any graduation	33	3,72	0,91	1,29	0,274	
	B-Primary	129	4,02	0,89			
	C-Secondary	58	4,09	0,81			
	D-High school	46	3,95	0,79			
	E-University	28	3,87	0,92			
CRITICAL THINKING ATTITUDE TOTAL	A-Any graduation	33	3,55	0,65	1,15	0,331	
	B-Primary	129	3,78	0,58			
	C-Secondary	58	3,81	0,65			
	D-High school	46	3,72	0,58			
	E-University	28	3,69	0,76			

*p<0.05

As it's shown in Table 8, it was determined that only evidence-based decision sub-dimension scores differed significantly from the level of mother's education (F = 2.92; p <0.05). Per the findings of LSD post hoc test on which groups the difference is, the evidence-based sub-dimension scores of students whose mothers' education level was secondary school (3.63 ± 0.88) and high school (3.54 ± 0.89) were significantly higher than the scores of students whose mother did not graduate a school (3.05 ± 0.89) and whose mother graduated from primary school level (3.25 ± 0.95).

Pre-service Classroom Teachers' Critical Thinking Attitude Scale Scores by Father's education level

Table 9. ANOVA Test Results of Critical Thinking Attitude Scale Scores by Father's education level

Sub-dimensions	Father's education	n	$\overline{\text{X}}$	SS	F	P	Significant difference
Information Acquisition Willingness	A-Any graduation	22	3,50	1,12	1,08	0,366	
	B-Primary	93	3,76	0,63			
	C-Secondary	57	3,83	0,87			
	D-High school	62	3,83	0,79			
	E-University	60	3,65	0,88			
Self regulation	A-Any graduation	22	3,52	0,99	1,00	0,407	
	B-Primary	93	3,76	0,65			
	C-Secondary	57	3,62	0,79			
	D-High school	62	3,62	0,94			
	E-University	60	3,50	0,98			
Inference	A-Any graduation	22	3,88	1,26	0,66	0,621	
	B-Primary	93	4,08	0,83			
	C-Secondary	57	4,06	0,69			
	D-High school	62	3,98	1,08			
	E-University	60	3,86	1,05			
Evidence Based Decision Making	A-Any graduation	22	3,45	1,00	2,48	0,044	C,E>B
	B-Primary	93	3,12	0,87			
	C-Secondary	57	3,53	0,97			
	D-High school	62	3,41	1,01			
	E-University	60	3,52	0,96			
Reason seeking	A-Any graduation	22	3,99	0,94	0,67	0,610	
	B-Primary	93	3,90	0,95			
	C-Secondary	57	3,96	0,95			
	D-High school	62	4,13	0,71			
	E-University	60	3,95	0,79			
CRITICAL THINKING ATTITUDE	A-Any graduation	22	3,67	0,68	0,41	0,798	
	B-Primary	93	3,72	0,55			
	C-Secondary	57	3,80	0,65			
	D-High school	62	3,79	0,64			
	E-University	60	3,69	0,68			

*p<0.05

As it's seen in Table 9, it was found that evidence-based decision-making sub-dimension scores differed significantly according to the level of father's education (F = 2.48; p <0.05). Findings of LSD post hoc test on which groups cause the difference, revealed that the evidence-based sub-dimension scores of students whose father's education level was secondary school (3,53 ± 0,97) and university (3,52 ± 0,96) were significantly higher than the students' scores whose father's education level is primary school (3.12 ± 0.87).

The Findings Of The Second Sub-Problem Of The Study

The second sub-problem of the study investigates whether whether the pre-service teachers' metacognitive awareness of reading strategy scores vary significantly according to gender, age, class level, mother's, and father's education level. The results of the analysis were presented in Tables 10, 11, 12 & 13.

Table 10. T-Test Results of Metacognitive awareness of reading strategies scale by gender

Strategy use	Gender	N	$\overline{X}$	Sd	T	P
Global reading strategy	Female	220	3,65	0,71	2,44	0,015*
	Male	74	3,41	0,75		
Problem solving strategy	Female	220	3,87	0,66	2,66	0,008*
	Male	74	3,63	0,70		
Supporting reading strategy	Female	220	3,54	0,69	2,56	0,011*
	Male	74	3,29	0,82		
MARSI Total "	Female	220	3,69	0,56	3,02	0,003*
	Male	74	3,44	0,69		

Gender, and global reading strategy (t = 2.44; p <0.05), problem solving strategy (t = 2.66; p <0.05), supportive reading strategy (t = 2.56; p <0.05), and MARSI total (t = 3.02; p <0.05) were shown to have significant differences. Likewise female's overall reading strategy score (3.65 ± 0.71) was significantly higher than male's score (3.41 ± 0.75). Also female participants'problem solving strategy score (3.87 ± 0.66) was significantly higher than men's score (3.63 ± 0.70). The score of female students supporting reading strategies (3.54 ± 0.69) was significantly higher than the score of male students (3.29 ± 0.82). And also total metacognitive awareness of reading strategies of female students were significantly higher than those (3.69 ± 0.56) from male students (3.44 ± 0.69).

Pre-service Classroom Teachers' Metacognitive Awareness Of Reading Strategies Scale Scores By Class Level

Table 11. T-Test results of metacognitive awareness of reading strategies scale scores by class

Sub dimensions	Class	N	$\overline{X}$	SS	T	P
Global reading strategy	1st class	151	3,53	0,78	-1,50	0,135
	4th class	143	3,65	0,66		
Problem solving strategy	1st class	151	3,84	0,71	0,59	0,556
	4th class	143	3,79	0,65		
Supporting reading strategy	1st class	151	3,35	0,73	-3,01	0,003*
	4th class	143	3,60	0,70		
MARSI	1st class	151	3,57	0,62	-1,58	0,116
	4th class	143	3,68	0,59		

In Table 11, it was found that only difference was found between the reading support scores and the class level (t =-3.01; p <0.05). 4th grade students' support for reading strategies (3.60 ± 0.70) was significantly higher than 1st grade students (3.35 ± 0.73).

Pre-service Classroom Teachers' Metacognitive Awareness Of Reading Strategies Scale Scores By Mother's Education Level

Table 12. ANOVA Test Results of Metacognitive Awareness Reading Strategies Scale Scores by Mother's Education Level

Sub-dimensions	Mother's education level	N	$\overline{X}$	Sd	F	P
Global reading strategy	A-Not finished a school	33	3,67	0,63	0,59	0,669
	B-Primary school	129	3,60	0,75		
	C-Secondary	58	3,64	0,76		
	D-High school	46	3,46	0,77		
	E-University	28	3,53	0,55		
Problem solving strategy	A-Not finished a school	33	3,97	0,51	0,93	0,448
	B-Primary school	129	3,83	0,67		
	C-Secondary	58	3,81	0,78		
	D-High school	46	3,74	0,64		
	E-University	28	3,67	0,72		

Supporting reading strategy	A-Not finished a school	33	3,59	0,72	1,19	0,315
	B-Primary school	129	3,46	0,72		
	C-Secondary	58	3,56	0,79		
	D-High school	46	3,46	0,62		
	E-University	28	3,24	0,78		
MARSI Total	A-Not finished a school	33	3,67	0,63	0,99	0,414
	B-Primary school	129	3,60	0,75		
	C-Secondary	58	3,64	0,76		
	D-High school	46	3,46	0,77		
	E-University	28	3,53	0,55		

The metacognitive awareness scale and subscale scores of reading strategies were seen to be unaffected by the mother's educational level (p> 0.05).

Pre-service Classroom Teachers' Metacognitive Awareness Of Reading Strategies Scale Scores By Father's Education Level

Table 13. ANOVA Test Results Of Metacognitive Awareness Reading Strategies Scale Scores by Father's Education Level

Sub dimensions	Father's education level	N	$\overline{X}$	Sd	F	p
Global reading strategy	A-Not finished a school	22	3,82	0,72	0,65	0,627
	B-Primary school	93	3,55	0,72		
	C-Secondary	57	3,58	0,69		
	D-High school	62	3,60	0,80		
	E-University	60	3,56	0,69		
Problem solving strategy	A-Not finished a school	22	3,94	0,69	0,47	0,755
	B-Primary school	93	3,78	0,72		
	C-Secondary	57	3,84	0,62		
	D-High school	62	3,86	0,69		
	E-University	60	3,74	0,66		
Supporting reading strategy	A-Not finished a school	22	3,68	0,88	0,79	0,533
	B-Primary school	93	3,43	0,64		
	C-Secondary	57	3,47	0,72		
	D-High school	62	3,54	0,81		
	E-University	60	3,41	0,73		
MARSI Total	A-Not finished a school	22	3,82	0,72	0,82	0,512
	B-Primary school	93	3,55	0,72		
	C-Secondary	57	3,58	0,69		
	D-High school	62	3,60	0,80		
	E-University	60	3,56	0,69		

The metacognitive awareness of reading strategies scale and subscale scores were shown to be unaffected by the father's educational level (p> 0.05).

The Findings Of The Third Sub-Problem

Related to the third sub-problem of the study, the relation between critical thinking attiude and metacognitive awareness of reading strategy scale was calculted by using pearson correlation analyisis as presented in Table 14.

Table 14. Pearson Correlation Analysis Results Between Variables

Variables	2	3	4	5	6	7	8	9	10
1- Information Acquisition Willingness	0,53**	0,50**	0,19**	0,43**	0,73**	0,15**	0,33**	0,23**	0,28**
2- Self regulation	1	0,64**	0,16**	0,32**	0,74**	0,33**	0,13**	0,10*	0,22**
3- Inference		1	0,15*	0,34**	0,74**	0,18**	0,08	0,02	0,09**
4- Evidence Based Decision Making			1	0,53**	0,59**	0,26**	0,20**	0,09	0,21**
5- Reason seeking				1	0,74**	0,18**	0,28**	0,15**	0,24**
6-CRITICAL THINKING ATTITUDE total					1	0,31**	0,28**	0,14*	0,28**
7-Global Reading Strategy						1	0,56**	0,53**	0,82**
8-Problem Solving Strategy							1	0,65**	0,86**
9-Supporting reading Strategy								1	0,86**
10-MARSI total									1

*: Since the points show distortion, normal distribution is achieved by making square root conversions.

In table 10, global reading strategy with self-regulation attitude (r = 0.33; p <0.05), problem solving strategy (r = 0.13; p <0.05), supporting reading strategies (r = 0.10; p <0.05) and reading strategies were found to have a positive and significant relationship between metacognitive awareness (r = 0.22; p <0.05). The attitude of inference and the global reading strategy were shown to have a significantly positive relation (r = 0.18; p <0.05). No significant relation was found between the attitude of making inferences and the problem solving strategy, supporting reading strategies, and reading strategies metacognitive awareness (p> 0.05).

Between evidence-based decision making attitude and global reading strategy (r = 0.26; p <0.05), problem solving strategy (r = 0.20; p <0.05) and reading strategies metacognitive awareness (r = 0, 21; p <0.05), a positive and significant relationships were found (p <0.05). No significant relationship was found between the evidence-based decision making attitude and supporting reading strategies (p> 0.05). Critical thinking attitude and global reading strategy (r = 0.31; p <0.05), problem solving strategy (r = 0.28; p <0.05), supporting reading strategies (r = 0.14; p <0.05) and reading strategies were found to have a positive and significant relationship with metacognitive awareness (r = 0.28; p <0.05).

The Findings Of The Fourth Sub-Problem

In order to asses the effect of critical thinking attitude and its sub-dimensions on metacognitive reading strategies regression analysis were done as presented in Tables 15 and 16.

Table 15. Multiple Regression Analysis Of The Impact Of Critical Thinking Sub-Dimensions On Reading Strategies Metacognitive Awareness

Independent Variables	B	SH_B	β	t	*p*
Constant	2,101	0,502		4,185	0,000
Information Acquisition Willingness	0,157	0,052	0,212	3,033	0,003
Self regulation	0,124	0,054	0,174	2,301	0,022
Inference	-0,326	0,143	-0,170	-2,284	0,023
Evidence Based Decision Making	0,080	0,041	0,127	1,961	0,049
Reason seeking	0,169	0,147	0,082	1,153	0,250

R=0,359 R^2=0,129 ΔR^2=0,114
$F_{(5; 288)}$=8,503   p=0,000

The model showing the relationship between critical thinking sub-dimensions and reading strategies metacognitive awareness seems appropriate (F(5;288)=8,50; p<0,01). Critical thinking sub-dimensions explain 11% of the change in reading strategies metacognitive awareness variable as it was presented in Table 11.

Willingness to gather information when the t test result related to the significance of the regression coefficient was examined (t = 3.03; p <0.01); self-regulation (t = 2.30; p <0.05), inference making (t = 2.28; p <0.05), evidence-based decision making (t = 1.96; p <0.05) attitudes it has a positive and significant effect on reading strategies. When the importance order of critical thinking sub-dimensions on reading strategies metacognitive awareness is examined, the most important factor is willingness to gather information ($\beta = 0.21$); Then, it was determined that it was ordered as self-regulation ($\beta = 0.17$), inference ($\beta = 0.17$) and evidence-based decision making ($\beta = 0.13$).

According to the results of the regression analysis, the mathematical model for predicting reading strategies by meta-cognitive awareness sub-dimensions of critical thinking is as follows (WGI: Willingness to gather information, SR: Self-regulation, IN: Inference, EBDM: Evidence-based decision making, RS: Reason for searching):

MARSI = 2,10 + 0,21*WGI + 0,17*SR + 0,17*IN + 0,13*EBDM

Table 16. Multiple Regression Analysis Of The Effect Of Critical Thinking Attitude On Metacognitive Awareness Reading Strategies

Independent Variables	B	SH_B	B	T	P
Constant	2,601	0,206		12,619	0,000
Critical thinking attitude	0,274	0,054	0,283	5,040	0,000
R=0,283 R^2=0,080 ΔR^2=0,077					
$F_{(1; 151)}$=25,399 p=0,000					

The model illustrating the relation between critical thinking attitude and metacognitive knowledge of reading techniques appears to be acceptable (F (1;292) =25,40; p<0,01). Critical thinking attitude explains about 8% of the change in metacognitive awareness of reading strategies variable. When the significance of the regression coefficient is tested using the results of a t test, it is revealed that having a critical thinking attitude has a favorable influence on metacognitive awareness of reading strategies ($\beta = 0.28$; t = 5.04; p <0.01).

According to the results of the regression analysis, the mathematical model for predicting the variable of reading strategies when the critical thinking attitude variable is as follows: *Metacognitive awareness on Reading strategies = 2.60 + 0.28 * Critical thinking attitude.*

DISCUSSION AND CONCLUSION

The current study sought to investigate the relationship between preservice classroom instructors' metacognitive understanding of reading methods and critical thinking attitudes. Furthermore, this study attempted to investigate pre-service classroom teachers' critical thinking attitude and metacognitive awareness of reading techniques in terms of gender, class level, age, mother's and father's education level.

As for gender variable, significant relations were found in line with both critical thinking and metacognitive thinking awereness of undergraduates students. The sub-dimensions of "information acquisition willingness and inference" among the critical thinking attitude sub-dimensions were shown to be significantly different in favor of women. Similarly, The metacognition reading strategies, as well as the overall score, global reading strategy, problem solving strategy, supporting reading strategies sub-dimensions, and reading strategies higher cognitive awareness scale scores, were shown to be substantially different by gender. Another remarkable finding was that although they were not statistically significant in critical thinking attitude scores, they had a higher average in the evidence-based thinking sub-dimension than women. It means that women show a critical thinking attitude only when they find evidence that is when they are sure about the event.

In this study, women have higher critical thinking attitude more often than men to gather information and infer them. Also when looking at the metacognition awareness of reading strategies

with total score overall reading strategy, it was found that problem solving strategy, supporting reading strategies sub-dimensions and reading strategies showed a significant difference in favor of women. It can be said that women had both higher metacognitive awareness and critical thinking attitude than men.

For gender differences, there have been different results in the literature. Similiar to the results of current study, Veloo, Arsaythamby & Rani, Mariam & Krishnasamy, Hariharan (2014) found out that female students use metacognitive awareness reading strategies more frequently compared to male students while reading academic materials. Also Kocaman & Beşkardeşler (2016) found out that in two stategies (global, and support reading strategy use) women had higher metacognitive awareness reading strategy scores than men whereas no difference could be found in problem-solving strategy. Dawaideh & Al-Saadi (2013), Yemenici & Ulu (2019) indicated that gender variable was statistically significant in favor of the female students on metacognitive awareness on reading strategies. Along with these results, conversely there was no gender influence on MA or CTS, according to Çakıcı (2018), and Gencel (2016). Also Sakar & Aybek (2016) found no statistically difference for critical attitudes by gender. Due to the differences in the results of the study, extensive studies are required to say something clear about the gender variable.

The second variable to be investigated was class level of the preservice classroom teachers. As for critical thinking scores, inference sub-dimension and critical thinking attitude total scores significantly differed by age groups. Students' willingness to gather information, self-regulation, inference, openness to search were found to differ significantly in sub-dimensions. Willingness of 1st grade students to gather information, self-regulation, openness to searching was significantly higher than 4th grade students' score (3.65 ± 0.83). The critical thinking attitude score of the 1st grade students was significantly higher than the score of the 4th grade students. It may be resulted from hardwork of the students for the the university entrance exam. Especially younger students' having higher scores of inference dimension could be a serve as an evidence for this situation. Also there are some studies (Akkaya, 2015; Akkaya, İşçi & Susar Kırmızı, 2018) that were found no statistically differences by age groups in critical thinking attitudes of the students.

It was also determined that along with increasing age, there is a significant increase in the scores of supporting sub-dimension and total score of metacognitive awareness of reading strategies. It was also shown that there was a considerable difference in reading support scores, with 4th grade students showing much more support for reading strategies than 1st grade students. Kocaman & Beşkardeşler (2016) found that senior EFL students were reported to use reading strategies more than the other grades. Similiar to our study, 4th year students revealed substantial difference in the use of support reading strategies in comparison to the other grades. Çakıcı (2018) investigated that 4th grade students were discovered to have higher metacognitve awareness and critical thinking scores.

As for the mother and father's education level, significants differences were found between sub-dimensions. A remarkable finding was that the mother and father education level created significant differences in prospective teachers' critical thinking attitudes. While metacognitive reading awareness did not have a meaningful effect, critical thinking attitude had a significant increase in the scores of teacher candidates as the level of education increased similarly to the level of education based on evidence-based decision-making sub-dimension. With this finding, it was concluded that the education level of the parents affected the critical thinking attitudes of prospective teachers positively.

At last, the relation between criting thinking attitude and metacognitive awareness of reading strategies of preservice classroom teachers were investigated. Critical thinking attitude was selected in the present study to be a predictor of metacognition awareness of reading strategies. All of the correlations among the factors of metacognition and critical thinking attitude showed significant values, the direction of the relationships are all positive where the use of metacognition awareness factor increases with the scores on the factors of critical thinking. The strengths of the coefficients were found as moderate. Additionally the model seemed appropriate for the effect of critical thinking attitude on metacognitive awareness of reading strategies.

Different instruments were used in different studies used to assess metacognition awereness and critical thinking as a skill. This may be resulted from critical thinking was taken into consideration as a skill or standart in many studies not as attitude used in this study. However, there are some related studies with this study but there were no direct studies investigating these two variables. These are discussed with the results of the present study. Magno (2010) investigated the influence of metacognition on critical thinking skills in the study and it was hypothesized that critical thinking occurs when individuals use their underlying metacognitive skills and techniques for increasing the likelihood of a good results. Specifically, developing students' critical thinking skills is facilitated through metacognition. Karasakaloğlu, Saracaloğlu, and Özelçi (2012) performed a similar study with the goal of identifying Turkish language teacher candidates' metacognitive reading techniques, critical thinking attitudes, and motivating cognitive and metacognitive abilities using different instruments. That critical thinking attitude and metacognitive abilities scale had a strong positive correlation was explored. According to Başbay's (2013) study results, it can be said that critical thinking assessment affects epistemological beliefs and metacognition awareness has a partial mediating effect in this relationship. In their study, Su, Ricci & Mnatsakanian (2016) examined at mathematical teaching strategies: routes to critical thinking and metacognition. Effective cognitive approaches may be utilized to apply, practice, and develop critical thinking abilities when teaching mathematics. It was defined that when teaching mathematics, critical thinking skills can be used, practiced and enhanced by effective cognitive methods. Çakıcı (2018) studied pre-service EFL teachers' Metacognitive Awareness and Critical Thinking Skills. Years of experience and MA and CTS of pre-service EFL instructors had a strong connection, according to the data. Seniors were shown to be more self-aware of metacognition and critical thinkers than their counterparts. Considering Arslan (2015) discovered a positive link between metacognition and critical thinking dimensions, it was concluded that metacognition was favorably predicted by critical thinking. Kural & Elitok Kesici (2017) discovered positive relation between critical thinking skills and reading strategies of metacognitive awareness of teacher candidates. Also there was a positive moderate relation was found between critical thinking standards and metacognitive thinking skills among teacher candidates (Karaoğlan- Yılmaz, Yılmaz, & Üstün Keser, 2019). Ulu (2019) found that preservice teachers' metacognitive awareness of reading strategies has a significant and positive effect on the critical thinking tendency in her study. From a different perspective Can (2021) indicated a positive correlation between critical thinking attitudes, and metacognitive listening learning strategies. Research findings were consistent with these researches.

To summarize, As Maglo (2010) identied "The particularity of metacognition, as in the case of the current study, implies that people can recognize and utilize numerous metacognitive abilities when needed to think critically. The capacity to recognize explicit metacognitive skills that is anticipated to function admirably is a key component to arrive at critical thinking. This suggests that when higher order thinking skills are required, the individual begins to recognize different abilities to arrive at the objective. Having identified several skills provides a way to reach higher order thinking because the the individual uses a few meta-level assets that fills in as an extension to arrive at critical thinking." Critical thinking attitude can be seen a key determinant for reaching high order/metacognitive thinking awareness as it was indicated in current study. Based on the findings some certain suggestions both for practioneers, and researchers could be made as follows.

SUGGESTIONS

In the 21st century, it is considered necessary to train all teacher candidates with critical thinking attitude to gain critical thinking skills, which is one of the basic skills that teachers should have. It is obvious that teachers who lack the necessary critical thinking attitudes would be unable to teach critical thinking abilities.

Therefore, based on the results of this study, the reason of the reduction of critical thinking attitude with age can be supported by a qualitative study for deep understanding. By examining the program elements of teacher training programs in higher education (target-content-learning-teaching process-assessment &evaluation), it could be got to the root of the situation within the scope of needs

analysis. In this context what improvements in the classroom are required to promote critical thinking skills can be investigated during teacher training process as well as their metacognitive and metaaffective abilities in Educational Faculties. It could be started with improving critical thinking is to raise awareness among students as the first step in the curriculum basis activities in and outside the classroom activities such projects, deliberative approach practices, adding selective courses and giving seminars etc. Similarly, metacognitive awareness and motivation to use metacognitive reading strategies of the students could be impoved by practices in the lessons during university education.

Based on the idea that the higher the awareness of prospective classroom teachers and classroom teachers about critical thinking along with metacognitive reading strategies, the more they can use them, the more beneficial they can be for the students they will train. As for the researches, the critical thinking attitudes of academics and the attitudes of prospective teachers can be examined comparatively. Experimental studies could be encouraged for developing the awareness of the skills as comprehensive projects in the country basis.

Finally, in order to compete with other developed nations in international exams such as PISA, students' metacognitive reading habits should be encouraged with the appropriate strategies. In this study, the awareness of prospective classroom teachers' metacognitive reading strategies was investigated, their use of these skills and strategies in different studies and their reflections on performance can be investigated. In future studies, it will be beneficial to organize relationship studies with a big number of preservice teachers from diverse branches and some predictors such as critical thinking attitude, critical thinking abilities, and metacognitive listening or writing skills.

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