



Research Article

Investigation of pre-service teachers' cognitive awareness and their perspectives on educational philosophy

Mustafa Yeler

Burdur Mehmet Akif Ersoy University, Faculty of Education, Turkey

Correspondence should be addressed to Mustafa Yeler  myeler@mehmetakif.edu.tr

Received 17 May 2022; Revised 11 June 2023; Accepted 22 August 2023

The purpose of this study was to examine pre-service teachers' cognitive awareness of constructivism and perspectives on educational philosophy in their 4th year. A correlational study was conducted on a group of 362 pre-service teachers studying in various programs of the faculty of education, 102 of whom were male and 260 female. Data were collected through the Cognitive Awareness Scale for Constructivist Learning Theory (CASCLT) and the Educational Thought and Applications Scale (ETAS). Analyses of the obtained data were conducted using non-parametric tests and descriptive statistics. According to the results of the analysis, the cognitive awareness level of the pre-service teachers was found to be at a low level, there was no difference in the sub-dimensions of the nature and formation of knowledge and the physical characteristics of the classroom variables according to the gender variable, while a significant difference was found in other sub-dimensions and in terms of the total mean score. In terms of the department variable, significant differences were observed in the sub-dimensions of learning and teaching process and physical characteristics of the classroom. Nevertheless, there were no significant differences in other subdimensions and the mean score as a whole. There was also no significant difference between those who took the philosophy of education course versus those who did not. As a result of gender variables, preservice teachers' perspectives on educational philosophy differed in favor of female preservice teachers in traditional dimensions, but there were no differences when it came to taking philosophy of education courses or not and department variables. Finally, an examination of the correlation between pre-service teachers' cognitive awareness of constructivism and their opinions on educational philosophy revealed a positive and low level correlation.

Keywords: Constructivist learning, cognitive awareness, educational philosophy, educational thoughts and applications

1. Introduction

Three different approaches have been proposed to explain how learning occurs and how a person learns so far. These are behavioral, cognitive, and constructivist approaches (Ertmer & Newby 2013). Cognitive experts view learning as the functioning of the mental processes as a result of active interaction with the environment, along with the association of old and new information, while behavioral approaches consider learning to be passive realization of learning from the environment.

Constructivists believe that learning occurs when an individual acquires information in his or her mind through experiences and applies it to life again. The constructivist perspective on learning considers learning as the creation of new meanings by learners through experience and interaction (Brooks & Brooks, 1993; Driscoll, 2000; Ertmer & Newby 2013). Throughout this process, each learner questions, interprets, explores, deepens, associates and makes sense of previous and new information. Individual differences therefore need to be considered when designing teaching-learning activities based on constructivism. Students are at the center of the teaching-learning process (Jones & Araje, 2002). Taking into consideration the characteristics the student brings to the learning environment (Naylor & Keogh 1999; Perkins, 1999), as well as the interests and needs of the student, deep and meaningful learning is expected to occur by actively participating in multifaceted thinking processes and solution-generation processes in order to

solve life-related problems through cooperation, communication and interaction (Brooks & Brooks, 1993; Cohen et al., 2004; Crawford & Witte, 1999; Gagnon & Collay, 2001; Rikers et al., 2008). A teacher in this context facilitates students' interaction with primary sources, helps them think creatively and productively, and helps them relate what they have learned to what they will learn in the future (Djamarah, 2005; Fosnot, 1996; Tobbin & Tippins, 1993).

In order to train teachers who can fulfill these roles required by the constructivist understanding (CU), they should have learning experiences that will serve to gain cognitive awareness in pre-service training processes. The metacognitive concept of cognitive awareness (Akyüz, 2020; Doğanay, 2008) in the literature (Namlu, 2013) has a similar meaning with different concepts such as metacognition (Yıldız et al., 2009), metacognition (Özsoy, 2007) and executive cognition (Senemoğlu, 2018). A person's cognitive awareness refers to his or her understanding of the learning process and the process of the individual, as well as being aware of whether the person knows or not as well as various aspects of his/her own thinking (Demir & Doğanay, 2009; Flavell, 1979; Namlu, 2004). The ability to learn and control mental processes is exhibited by individuals with cognitive awareness through their ability to focus, develop a positive attitude, plan, implement, evaluate, and correct mistakes. To summarize, those with cognitive awareness have an understanding of what they learn, how they learn, what thinking processes they use, and how they integrate them into their lives (Gelen, 2003). The cognitive awareness level of preservice teachers about CU can be defined as knowing how much they share the characteristics of CU's principles, criteria, and practices, producing thoughts about them, and understanding their mental processes. Students' active participation in learner-centered learning experiences is crucial to developing pre-service teachers' cognitive awareness towards CU (Yesilyurt, 2013a; Yurdakul, 2004). In order for pre-service teachers to achieve cognitive awareness and professional competence, these experiences provide them with information about what constructivism expects from teachers and students and how these roles should be fulfilled.

When making decisions to fulfill their duties in implementing the curriculum, teachers and pre-service teachers with this awareness and professional competencies must act within a framework of certain predefined boundaries and bases. The Educational Philosophy (EP) is one of the most important factors that determine this framework, since the decisions regarding the elements and processes of the training program are based on its views and principles, which serve as the basis for its development. Therefore, the success of an educational program is dependent on the teachers' understanding and fulfillment of the program's goals. Thus, teachers are able to describe the success of the curriculum provided that they reflect the philosophy behind the curriculum (Bybee, 1993). Consequently, teachers are required to adopt the EP understanding and know about the features of the EP understanding on which the curriculum is based in order to facilitate teaching-learning activities (Levitt, 2001). The curriculum can only be used when teachers with this cognitive awareness make decisions according to the philosophy of the program.

In the literature, the basic characteristics of the five frequently mentioned educational movements, namely, perennialism, essentialism, progressivism, reconstructionism and existentialism, which affect educational practices (Akpınar, 2019; Cevizci, 2023; Gutek, 2019; Ornstein & Hunkins, 2009; Sönmez, 2020) have been widely discussed. Perennialism, and essentialism are teacher and subject-centered and consider education as a means of adapting individuals to a universal or social reality. These approaches, which advocate an unchanging reality, reveal practices in which discipline and rules are very important, primarily lecture, memorization, and repetition teaching methods are used, where the teacher plays the role of expert, model, authority, and the student is a passive actor. Progressivism, based on the phenomenon of change, advocates raising individuals in a way that will adapt to and create new changes. To accomplish this, it places the student at the center, developing problem-solving skills and abilities, fostering cooperation and democracy, learning by doing and living, and using what has been learned. Reconstructivist education emphasizes rearrangement of social problems and living conditions, even though it is based on change. This approach focuses on the school as a reform institution that promotes democracy, cooperation, problem-solving, and project

production. Both progressivism and reconstructionism emphasize student participation and teacher guidance. According to existentialism, because human beings are unique and free, they must oppose anything that restricts their freedom. In this context, education should help people to realize their own existence freely. It is therefore crucial to consider the individual as a whole, to discover their own potential, and to individualize education, with teachers serving as guides.

Each EP has its own definitions, priorities, perspectives, and practices regarding what educational objectives should be, what courses and subjects should be taught, how teachers and students should be positioned, and how assessment and teaching should be conducted. The literature discusses these approaches separately as well as categorizes them as traditional and contemporary. As such, perennialism and essentialism are classified as traditional educational philosophies, while progressivism, reconstructivism, and existentialism are classified as contemporary educational philosophies (Phillips, 2003). Progressivism, reconstructivism, and existentialism, which form the philosophical foundations of CU, support educational practices with their perspectives (Baş, 2016; Cevizci, 2023; Sönmez, 2020). In this framework, the views of contemporary educational philosophies, the knowledge, learner and teacher roles, the principles and characteristics of the learning process are parallel to many issues of constructivism.

A fundamental change in teacher training programs was made by the Higher Education Council in Turkey in 2006 to train teachers who have competencies for implementing curriculum prepared by the Ministry of National Education since 2004-2005 in accordance with CU and its principles. In spite of the efforts to train teachers who can apply CU-based curricula since then, some studies in the literature concluded that many teachers did not feel competent, did not implement the curriculum in a proper manner, or encountered various problems (e.g. Adanur-Kudal & Altun, 2012; Bay et al., 2014; Çaycı & Altunkeser, 2015; Çiftçi et al., 2013; Çubukçu, 2006; Gür-Erdoğan & Kanbur, 2013; Özaydın-Özkara, 2017; Yücel et al., 2006).

Teachers and pre-service teachers are not aware of CU and EP or cannot adopt them, which may be the cause of these problems. Within the framework, it was considered that it would be appropriate to investigate the relationship between the requirements of CU and the philosophies on which it is based and to what extent pre-service teachers have these requirements. A key objective of the study will be to develop suggestions for teacher candidates on how to become aware and competent in order to successfully implement the curriculum in accordance with its philosophy. The results of the study are considered important for developing suggestions for teacher candidates. The aim of this study is to determine the relationship between cognitive awareness of 4th-year pre-service teachers studying at the faculty of education on constructivist learning and their perspectives on EP.

This research seeks to answer the following research questions:

RQ 1) What is the cognitive awareness level of pre-service teachers for constructivist learning?

RQ 2) Does the cognitive awareness level of pre-service teachers towards constructivist learning differ significantly in terms of variables of a) gender, b) the department, c) whether taking EP classes or not, and d) their thoughts towards implementation after appointment?

RQ 3) What is the level of pre-service teachers' views on EP?

RQ 4) Do the views of pre-service teachers on EP differ significantly in terms of variables of a) gender, b) the department, c) whether taking EP classes or not?

RQ 5) Is there a significant relationship between pre-service teachers' cognitive awareness on constructivist learning and their views on EP?

2. Method

A correlational model was used in this study to examine the relationship between pre-service teachers' cognitive awareness levels regarding the constructivist learning approach and their views on EP. By examining data obtained from the same individuals recently, the correlational model attempts to provide insight into the factors that constitute a complex structure, and to reveal relationships and changes between at least two variables (Mertens, 2015).

2.1. Population and Sample

The sample of this study consisted of 362 participants, 102 males and 262 females, who were randomly selected from 646 pre-service teachers studying in their last year at an education faculty and participated in the scale application on a voluntary basis. The sample group represents 56% of the total population. Table 1 shows the distribution of participants based on department and gender variables.

Table 1

Distribution of pre-service teachers by department and gender variables

Departments	Population (N)			Sample (n)			%
	Male	Female	Total	Male	Female	Total	
	f	f	f	f	f	f	
Science Teaching	14	68	82	4	41	45	55
Primary Mathematics Teaching	30	51	81	16	25	41	51
Pre-school Teaching	35	97	132	13	44	57	43
Classroom Teaching	33	86	119	22	46	68	57
Social Sciences Teaching	46	35	81	20	23	43	53
Turkish Teaching	21	48	69	13	43	56	81
English Teaching	27	55	82	14	38	52	63
Total	206	440	646	102	260	362	56

2.2. Data Collection Tools

In this study, two data collection tools were used to determine pre-service teachers' constructivist cognitive awareness and their views on educational thought and applications. The first data collection tool was the "Cognitive Awareness Scale for Constructivist Learning Theory" (CASCLT) developed by Yeşilyurt (2013a). This scale consists of 56 items in 5-Likert type and eight factors in order to reveal the cognitive awareness level of pre-service teachers about CU. These factors were determined by Yeşilyurt (2013a) as the nature and formation of the information, thinking, being active, student-centered, the role of teacher, education and teaching process, assessment and evaluation and physical properties of the classroom, respectively. The answers to the items on the scale ranged between "5- I am completely aware; 4-I am mostly aware; 3-I am moderately aware; 2- I am little aware; 1-I am not aware at all" (Yeşilyurt, 2013a).

Another data collection tool was the "Educational Thought and Applications Scale (ETAS)" developed by Kumral (2014). The items on the scale ranged between "5- I totally agree; 4- I mostly agree; 3-I am neutral; 2-I mostly disagree, and 1-I do not agree at all". The scale consists of 42 items in 5-point Likert type and two sub-dimensions as "traditional" and "contemporary applications". There are 21 items in both sub-dimensions. Realistic philosophical understanding, perennialism, and essentialism are components of the "traditional" sub-dimension. On the other hand, in the "contemporary" sub-dimension, the characteristics of a more pragmatic, existentialist and constructivist, progressive and reconstructive educational understanding and philosophy are determined (Kumral, 2014). Table 2 shows the number of items in the sub-dimensions of both scales and Cronbach Alpha (α) reliability values.

As seen in Table 2, in this study, $\alpha=.952$ was obtained for the total score of CASCLT. In addition, $\alpha=.918$ was obtained for the total score of the ETAS.

2.3. Data Analysis

Based on the normality test performed on the scores obtained, Table 3 did not demonstrate a normal distribution. To analyze the data, Mann-Whitney U and Kurskal-Wallis tests, Spearman correlations, and descriptive statistics (arithmetic mean, standard deviation, percentage, and

Table 2
Cronbach Alpha values of CASCLT and ETAS

Sub-dimensions	Item number	a value in the original study	a value in this study
CASCLT			
The nature and formation of the information	6	.814	.729
Thinking	6	.870	.846
Being active	6	.833	.813
Student-centered	8	.822	.793
The role of teacher	8	.862	.761
Learning and teaching process	10	.918	.888
Assessment and evaluation	6	.855	.735
Physical properties of the classroom	6	.859	.812
Total	56	.979	.952
ETAS			
Traditional ETAS	21	.98	.872
Contemporary ETAS	21	.95	.918
Total	42	.94	.918

frequency) were used among non-parametric statistics. A significance level of .05 was considered in Mann-Whitney U tests, and the Bonferroni correction was used in multiple comparisons (Kuskal-Wallis).

Table 3

Normality test results of scale scores

<i>Sub-dimensions</i>	<i>Kolmogorov-Smirnov</i>		
	<i>Statistic</i>	<i>df</i>	<i>Sig.</i>
CASCLT			
The nature and formation of the information	.144	362	.000
Thinking	.152	362	.000
Being active	.184	362	.000
Student-centered	.128	362	.000
The role of teacher	.124	362	.000
Learning and teaching process	.156	362	.000
Assessment and evaluation	.127	362	.000
Physical properties of the classroom	.088	362	.000
Total	.098	362	.000
ETAS			
Traditional ETAS	.070	362	.000
Contemporary ETAS	.054	362	.013
Total	.065	362	.001

3. Findings

3.1. Cognitive Awareness Levels of Pre-service Teachers for CU

Data regarding the cognitive awareness levels of pre-service teachers for CU are summarized in Table 4.

Table 4

Descriptive statistics for CASCLT

<i>Sub-dimensions</i>	<i>n</i>	<i>Mean</i>	<i>SD</i>
The nature and formation of the information	362	1.57	.5122
Thinking	362	1.64	.6198
Being active	362	1.66	.6133
Student-centered	362	1.72	.5573
The role of teacher	362	1.74	.5761
Learning and teaching process	362	1.64	.6105
Assessment and evaluation	362	1.73	.5820
Physical properties of the classroom	362	2.18	.8672
Total	362	1.73	.6173

According to Table 4, the arithmetic mean values of pre-service teachers' levels of cognitive awareness about CU range from 1.57 to 2.18 across all subdimensional dimensions of the scale, which indicates low levels of cognitive awareness among pre-service teachers.

Distribution of the scores obtained from the CASCLT is presented in Table 5. Based on the responses to the scale items, 89% of the teacher candidates showed a lack of cognitive awareness in the nature and formation of knowledge dimension; 85% in the thinking dimension, 84% in being active, 78% in the student-centered dimension, 81% in the teacher role dimension, 84% in the learning and teaching process dimension, 82% in the assessment and evaluation dimension, 65% in the physical properties sub-dimension and 81% in the total mean score obtained from the scale.

Table 5
Distribution of the scores obtained from the CASCLT

Sub-dimensions	5		4		3		2		1	
	f	%	f	%	f	%	f	%	f	%
The nature and formation of the information	3	1	7	2	31	9	111	31	210	58
Thinking	3	1	7	2	40	11	113	31	197	54
Being active	2	1	13	4	43	12	106	29	197	55
Student-centered	6	2	19	5	52	14	106	29	178	49
The role of teacher	7	2	15	4	44	12	106	29	190	52
Learning and teaching process	3	1	11	3	43	12	102	28	203	56
Assessment and evaluation	3	1	13	3	54	15	108	30	185	52
Physical properties of the classroom	20	6	37	10	72	20	93	26	141	39
Total	6	2	15	4	47	13	106	29	188	52

Note. (* 5- I am completely aware; 4-I am mostly aware; 3-I am moderately aware; 2- I am little aware; 1-I am not aware at all)

3.2. Findings obtained from CASCLT

3.2.1. Comparison of the scores obtained from CASCLT in terms of gender variable

Table 6 compares the scores from CASCLT according to gender variable. Based on the data in Table 6, a significant difference in gender and cognitive awareness among preservice teachers was found, as well as thinking, being active, student-centered, teaching and learning process, assessment and evaluation subdimensions and the total mean CASCLT score. For both the sub-dimensions and the total mean score of the scale, the difference was in favor of male pre-service teachers. In other words, male pre-service teachers were found to have a higher level of cognitive awareness towards CU than females. Each of these sub-dimensions was calculated to have an effect size of $r=16$ and 21 and had a small effect level. No significant difference was found between the scores of gender, the nature and formation of knowledge, and the physical properties of the class sub-dimensions.

3.2.2. Comparison of the scores obtained from CASCLT in terms of department variable

Table 7 compares the scores from CASCLT according to department variable. It is evident from Table 7 that there is a significant difference between learning and teaching processes, physical properties of classroom sub-dimensions, and the total mean score. In contrast, the department variable did not differ from the scores obtained from the other subdimensions of the scale. The Mann-Whitney U test was used to determine the source of significance. Based on the Bonferonni correction, the significance level for these tests was determined as $p < .007$. In the learning and teaching sub-dimension, significant differences were obtained between Science-Social Sciences ($U=581$; $p < .007$); Mathematics-Social Sciences ($U=516$; $p < .007$); Preschool-Social Sciences ($U=660.5$; $p < .007$) and Turkish-Social Sciences ($U=782$; $p < .007$) departments and this difference was found to be in favor of Social Studies department. In the physical properties of the classroom sub-dimension, it was determined that there was a significant difference between the Science-Mathematics ($U=536$; $p < .007$); Mathematics and Preschool ($U = 732$; $p < .007$) departments and these differences were in favor of the teacher candidates studying in the Mathematics department. In the total mean score of the CASCLT, it was observed that there was a significant difference ($U=814.5$; $p < .007$) between pre-school and social studies pre-service teachers and this difference was found to be in favor of social studies department.

3.2.3. Comparison of the scores obtained from CASCLT in terms of taking the EP course or not variable

Table 8 compares the scores from CASCLT based on whether the EP course was taken or not. According to Table 8, significant differences were observed between the CASCLT scores of the stu-

Table 6
Comparison of the scores obtained from CASCLT in terms of gender variable

	Groups	n	Mean Rank	Sum of Ranks	U	Z Value	p	r
1. The nature and formation of the information	Male	102	198.52	20249.00	11524.000	-1.954	.051	
	Female	260	174.82	45454.00				
2. Thinking	Male	102	209.93	21413.00	10360.000	-3.275	.001*	.17
	Female	260	170.35	44290.00				
3. Being active	Male	102	211.17	21539.50	10233.500	-3.404	.001*	.17
	Female	260	169.86	44163.50				
4. Student-centered	Male	102	217.35	22169.50	9603.500	-4.088	.000*	.21
	Female	260	167.44	43533.50				
5. The role of teacher	Male	102	209.35	21353.50	10419.500	-3.181	.001*	.16
	Female	260	170.58	44349.50				
6. Learning and teaching process	Male	102	208.62	21279.50	10493.500	-3.099	.002*	.16
	Female	260	170.86	44423.50				
7. Assessment and evaluation	Male	102	203.83	20790.50	10982.500	-2.556	.011*	.13
	Female	260	172.74	44912.50				
8. Physical properties of the classroom	Male	102	190.13	19393.50	12379.500	-.985	.324	
	Female	260	178.11	46309.50				
Total	Male	102	211.07	21529.50	10243.500	-3.368	.001*	.17
	Female	260	169.90	44173.50				

Table 7
Comparison of the scores obtained from CASCLT in terms of department variable

Sub-dimensions	Groups	n	Mean	SD	Mean Rank	df	χ^2	p				
1. The nature and formation of the information	Science	45	1.5370	.49860	174.32	6	6.901	.330				
	Mathematic	41	1.4472	.36598	162.22							
	Preschool	57	1.5497	.53076	174.25							
	Classroom	68	1.6176	.45170	198.67							
	Social Sciences	43	1.6550	.48577	204.19							
	Turkish	56	1.5536	.64753	167.45							
	English	52	1.5897	.53876	184.78							
	Total	362	1.5681	.51220								
	2. Thinking	Science	45	1.5704	.55561				172.83	6	11.669	.070
		Mathematic	41	1.5163	.57832				161.24			
Preschool		57	1.5760	.56701	173.29							
Classroom		68	1.6225	.58279	181.95							
Social Sciences		43	1.8450	.56155	224.09							
Turkish		56	1.6012	.73007	165.97							
English		52	1.7372	.69885	194.88							
Total		362	1.5681	.51220								
3. Being active		Science	45	1.5148	.48177	160.68	6	8.315	.216			
		Mathematic	41	1.6504	.61555	182.04						
	Preschool	57	1.5848	.52622	172.88							
	Classroom	68	1.6299	.60323	178.83							
	Social Sciences	43	1.8953	.70338	220.34							
	Turkish	56	1.6667	.66439	178.59							
	English	52	1.6827	.65285	183.06							
	Total	362	1.6556	.61331								
	4. Student-centered	Science	45	1.6063	.46256	162.87				6	8.712	.190
		Mathematic	41	1.7979	.54933	199.33						
Preschool		57	1.6303	.53386	161.15							
Classroom		68	1.7363	.48887	189.73							
Social Sciences		43	1.9020	.65521	210.06							
Turkish		56	1.7309	.61536	179.13							
English		52	1.7060	.57850	174.05							
Total		362	1.7249	.55730								

Table 7 continued

Sub-dimensions	Groups	n	Mean	SD	Mean Rank	df	χ^2	p			
5. The role of teacher	Science	45	1.6833	.53672	171.86	6	12.594	.050			
	Mathematic	41	1.7439	.51002	187.21						
	Preschool	57	1.5855	.53356	152.75						
	Classroom	68	1.6838	.54012	172.75						
	Social Sciences	43	1.9738	.61935	222.07						
	Turkish	56	1.7857	.67324	181.96						
	English	52	1.7933	.55786	194.26						
	Total	362	1.7410	.57610	171.57						
	Science	45	1.5622	.51092	171.39				20.957	.002*	
	Mathematic	41	1.5195	.41184	148.58						
6. Learning and teaching process	Preschool	57	1.4965	.58827	179.74	6	20.957	.002*			
	Classroom	68	1.6000	.53838	240.66						
	Social Sciences	43	2.0326	.71438	177.29						
	Turkish	56	1.6196	.61153	192.07						
	English	52	1.7462	.71550	182.08						
	Total	362	1.6453	.61052	188.32				8.725	.190	
	Science	45	1.7111	.51908	174.45				6	20.827	.002*
	Mathematic	41	1.7439	.53632	187.10						
	Preschool	57	1.6754	.52177	203.13						
	Classroom	68	1.7598	.59040	148.72						
Social Sciences	43	1.8527	.61744	193.45							
Turkish	56	1.5804	.59712	147.73							
English	52	1.8205	.65832	227.87							
Total	362	1.7307	.58197	161.37	13.032	.043*					
Science	45	1.9222	.88020	159.76	6	13.032	.043*				
Mathematic	41	2.5772	.87647	191.88							
Preschool	68	2.1838	.85137	157.07							
Classroom	57	2.0029	.80023	185.38							
Social Sciences	43	2.2558	.84151	220.09							
Turkish	56	2.0387	.90117	169.31							
English	52	2.3686	.80868	195.06							
Total	362	2.1800	.86717	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73				6	13.032	.043*	
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73	6	13.032	.043*				
Science	45	1.6433	.45839	159.76							
Mathematic	41	1.7504	.41443	191.88							
Preschool	57	1.6303	.44640	157.07							
Classroom	68	1.7300	.43300	185.38							
Social Sciences	56	1.7028	.52365	220.09							
Turkish	43	1.9356	.54248	169.31							
English	52	1.7998	.51405	195.06							
Total	362	1.7361	.48173	147.73							

Table 8
Comparison of the scores obtained from CASCLT in terms of taking the EP course or not variable

	Groups		n	Mean Rank	Sum of Ranks	U	Z Value	p	r
	Yes	No							
1. The nature and formation of the information	Yes	No	125	187.54	23442.00	14058.000	-.804	.422	
	No	Yes	237	178.32	42261.00				
2. Thinking	Yes	No	125	178.00	22250.00	14375.000	-.467	.640	
	No	Yes	237	183.35	43453.00				
3. Being active	Yes	No	125	176.12	22014.50	14139.500	-.716	.474	
	No	Yes	237	184.34	43688.50				
4. Student-centered	Yes	No	125	176.70	22087.00	14212.000	-.635	.525	
	No	Yes	237	184.03	43616.00				
5. The role of teacher	Yes	No	125	163.63	20454.00	12579.000	-2.366	.018*	-.12
	No	Yes	237	190.92	45249.00				
6. Learning and teaching process	Yes	No	125	165.53	20691.50	12816.500	-2.116	.034*	-.11
	No	Yes	237	189.92	45011.50				
7. Assessment and evaluation	Yes	No	125	181.33	22666.00	14791.000	-.023	.982	
	No	Yes	237	181.59	43037.00				
8. Physical properties of the classroom	Yes	No	125	172.70	21587.00	13712.000	-1.165	.244	
	No	Yes	237	186.14	44116.00				
Total	Yes	No	125	172.47	21558.50	13683.500	-1.193	.233	
	No	Yes	237	186.26	44144.50				

dents and the roles of the teacher, as well as the teaching and learning process subdimensions. The differences were in favor of pre-service teachers who did not take the EP course. Other subdimensions and the total mean score of the scale were not affected by taking the EP course.

3.2.4. Pre-service teachers' preferences to apply CU when they are appointed as a teacher

It was obtained that 96% (n=346) of the pre-service teachers stated that they would apply CU practices after being appointed. On the other hand 4% (n=16) of the pre-service teachers stated that they would not apply CU after being appointed. Accordingly, the values were obtained as follows: In the nature and formation of information sub-dimension (U=2317; $p > .05$); in thinking sub-dimension (U=2661, $p > .05$); in being active sub-dimension (U=2561; $p > .05$); in student-centered sub-dimension (U=2542; $p > .05$); in the role of the teacher sub-dimension (U=2402.5; $p > .05$); in the teaching and learning process sub-dimension (U=2470; $p > .05$); in the assessment and evaluation sub-dimension (U = 2471,5; $p > .05$); in the physical properties of the classroom sub-dimension (U = 2213; $p > .05$) and in the total mean score of the scale (U=2260; $p > .05$).

3.3. Descriptive Statistics Regarding the Views of Pre-service Teachers on EP

Table 9 summarizes descriptive statistics about the views of preservice teachers on EP.

Table 9

Descriptive statistics on the views on EP

Sub-dimensions	n	Mean	SD
Traditional EP	362	2,74	.798
Contemporary EP	362	1,85	.510
Total	362	2,41	.570

According to Table 9, pre-service teachers' opinions regarding contemporary EP are low at a mean score of 1.85, while their views regarding traditional EP are at a medium level at a mean score of 2.74. Using the total mean score of pre-service teachers for their opinions on EP, the mean score is 2.41, which indicates a medium level of opinion. Based on the standard deviation values, it was determined that the scores ranged between .510 and .798.

The distribution of ETAS scores is shown in Table 10.

Table 10

Distribution of the scores obtained from the ETAS scale

Sub-dimensions	**5		4		3		2		1	
	f	%	f	%	f	%	f	%	f	%
Traditional EP										
Contemporary EP	14	4	30	8	65	18	108	30	145	40
Total	48	13	69	19	76	21	86	23	83	23

Note. ** 5- I totally agree; 4- I mostly agree; 3-I am neutral; 2-I mostly disagree, 1-I do not agree at all.

Considering the distribution of answers given to the ETAS items in Table 10, it can be seen that 30% of pre-service teachers agree with the traditional philosophy of education, 21% were neutral, and 48% disagreed. In contrast, 11% of the participants agreed with the contemporary EP perspective; 20% were neutral, and 71% disagreed.

3.3. Findings obtained from ETAS

3.3.1. Comparison of the scores obtained from ETAS in terms of gender variable

Table 11 illustrates the comparison of ETAS scores by gender.

Table 11

Comparison of the scores obtained from ETAS in terms of gender variable

	Groups	n	Mean Rank	Sum of Ranks	U	Z Value	p	r
Traditional EP	Male	102	155.13	15823.50	10570.500	-3.003	.003	-.16
	Female	260	191.84	49879.50				
Contemporary EP	Male	102	199.11	20309.00	11464.000	-2.006	.045	_____
	Female	260	174.59	45394.00				
Total	Male	10	171.15	17457.50	12204.500	-1.179	.239	_____
	Female	260	185.56	48245.50				

The comparison of the gender variable and the ETAS scores of the pre-service teachers showed a significant difference in favor of the female candidates in the views reflecting traditional philosophies. There was no significant difference between the total mean score of the scale and the contemporary EP sub-dimension. In terms of both the contemporary sub-dimension and the total mean score, pre-service teachers have similar views.

3.3.2. Comparison of the scores obtained from ETAS in terms of department variable

Table 12 illustrates the comparison of ETAS scores by department.

Table 12

Comparison of the scores obtained from ETAS in terms of department variable

	Groups	n	Mean	SD	Mean Rank	df	χ^2	p
Traditional EP	Science	45	2.8021	.70103	190.93	6	16.168	.013
	Mathematic	41	3.0081	.84535	214.17			
	Preschool	57	2.8855	.83274	198.21			
	Classroom	68	2.8074	.71877	187.70			
	Social Sciences	43	2.7752	.97331	177.42			
	Turkish	56	2.4073	.78697	138.37			
	English	52	2.6639	.71484	170.98			
	Total	362						
Contemporary EP	Science	45	2.1122	.55996	196.88	6	10.292	.113
	Mathematic	41	1.9803	.36234	161.12			
	Preschool	57	2.1312	.57540	200.99			
	Classroom	68	1.9944	.47409	169.56			
	Social Sciences	43	2.2270	.83789	193.03			
	Turkish	56	1.8886	.50447	151.80			
	English	52	2.1218	.53630	200.95			
	Total	362						
Total	Science	45	2.4571	.55171	194.61	6	14.616	.023
	Mathematic	41	2.4942	.45234	198.35			
	Preschool	57	2.5084	.53069	202.39			
	Classroom	68	2.4009	.46535	180.49			
	Social Sciences	56	2.5011	.82086	181.94			
	Turkish	43	2.1480	.56976	136.11			
	English	52	2.3929	.52809	183.80			
	Total	362						

In Table 12, a significant difference was found in traditional EP approaches sub-dimension and total mean scores of the ETAS. The Mann-Whitney U test was applied to the department studied separately in pairs in groups to determine from which program groups these differentiation resulted by. The significance level was determined as a result of the Bonferonni correction

($p < .007$). When the source of the difference in traditional EP scores was examined, significant differences were obtained between Mathematics-Turkish ($U=696$; $p < .007$); Preschool-Turkish ($U=1096.5$; $p < .007$) and Classroom-Turkish ($U = 1341$; $p > .007$) departments. The differences were found to be in favor of Turkish Teaching department. Accordingly, pre-service teachers in Turkish Teaching department have lower levels of traditional philosophies than their counterparts in Mathematics, Preschool, and Classroom Teaching departments.

When the source of the difference observed in the EP total score was investigated, significant differences were obtained between Mathematics-Turkish ($U=739$; $p < .007$); Preschool-Turkish ($U=1029.5$; $p < .007$) departments. The differences were found to be in favor of Turkish Teaching department. It is concluded that pre-service teachers studying in Turkish Teaching had more traditional EP views compared to those studying in Mathematics and Pre-school Teaching.

3.3.3. Comparison of the scores obtained from ETAS in terms of taking the EP course or not

Table 13 illustrates the comparison of ETAS scores by taking the EP course or not.

Table 13

Comparison of the scores obtained from ETAS in terms of taking the EP course or not

Sub-dimensions	Groups	n	Mean Rank	Sum of Rank	U	Z value	p
Traditional EP	Yes	125	192.49	24061.50	13438.500	-1.452	.147
	No	237	175.70	41641.50			
Contemporary EP	Yes	125	182.51	22813.50	14686.500	-.133	.894
	No	237	180.97	42889.50			
Total	Yes	125	190.48	23810.00	13690.000	-1.186	.236
	No	237	176.76	41893.00			

According to Table 13, scores obtained from ETAS did not differ significantly depending on whether the EP course was taken [$p < .05$].

3.4. Correlation Analyses between the CASCLT and ETAS scores

Results of the correlation analyses between CASCLT and ETAS are presented in Table 14.

Table 14

Correlation analyses results between the CASCLT and ETAS scores

	1	2	3	4	5	6	7	8	9	10	11	12
1. NFoI	—											
2. T	.643**	—										
3. BA	.538**	.729**	—									
4. SC	.560**	.686**	.881**	—								
5. RoT	.478**	.577**	.646**	.698**	—							
6. TaLP	.521**	.621**	.665**	.702**	.699**	—						
7. AE	.468**	.482**	.490**	.544**	.548**	.675**	—					
8. PPC	.325**	.310**	.290**	.367**	.448**	.374**	.533**	—				
9. T-EP	.014	-.084	-.099	-.066	-.099	-.098	.002	.117*	—			
10. C-EP	.334**	.373**	.378**	.400**	.359**	.402**	.376**	.303**	.324**	—		
11. ET	.165**	.097	.090	.128*	.082	.100	.178**	.216**	.874**	.700**	—	
12. CASCLTT	.679**	.755**	.778**	.858**	.831**	.838**	.755**	.642**	-.044	.467**	.173**	—

Note. NFoI: The nature and formation of the information; T: Thinking; BA: Being active; SC: Student centered; RoT: The role of teacher; TaLP: Teaching and Learning Process; AE: Assessment and Evaluation; PPC: Physical Properties of the Classroom; T-EP: Traditional EP; C-EP: Contemporary EP; ET: Etas Total; CASCLTT: CASCLTT Total.

As can be seen in Table 14, while there was a positive and low level correlation between pre-service teachers' CASCLT scores and the total mean ETAS scores ($r=.173$), there was also a significant positive correlation between CASCLT scores and contemporary EP opinions, with the correlation finding slightly below moderate levels. Except for the physical properties of the

classroom, there was no significant correlation between CASCLT scores and traditional EP opinions.

4. Discussion, Conclusion and Suggestions

Across all sub-dimensions of CASCLT, pre-service teachers demonstrated inadequate cognitive awareness of CU. When the responses "I am not at all aware" and "I am very little aware" were taken into account for the total mean score obtained from CASCLT, 81% of the participants had insufficient cognitive awareness of CU. The results of this study are consistent with findings from other studies (Baştürk, 2016; Kardaş, 2014; Köse et al., 2014; Şentürk & Zeybek, 2019), which indicate low levels of constructivism competency among teacher candidates. These findings contradict those found in Bilasa and Taşpınar (2016) regarding the dimensions of CASCLT, which indicate that pre-service teachers possess high cognitive awareness. Furthermore, Bahçivan (2014) and Chan et al. (2007) found that pre-service teachers adopt a constructivist approach, which is contrary to this study's findings.

In terms of the sub-dimensions of CASCLT, significant differences were found in terms of gender variable and thinking, student-centered, the role of the teacher, being active, assessment and evaluation, and learning and teaching process. As a result of the differences obtained in these sub-dimensions, it can be said that male pre-service teachers have higher cognitive awareness levels than female pre-service teachers. This result is in agreement with those of Yener and Yılmaz (2017) and Tunca et al., (2015). Meanwhile, some studies have found a significant difference in favor of female teacher candidates (Bilasa & Taşpınar, 2016; Elverişli, 2019; Yalçın-İncik, 2018; Zeidan, 2015). In some other studies, (Coşkun, 2013; Özmen & Üredi, 2016; Yaralı, 2020; Yeşilyurt, 2013b), no significant differences were obtained in terms of gender variables. It was determined that the effect of gender is low in these sub-dimensions. The results of this study also support those of Bilasa and Taşpınar (2016). No significant difference was found between gender variable and the nature and formation of the information, and the physical characteristics of the classroom sub-dimensions.

A significant difference was observed in the learning and teaching process, the physical properties of the classroom sub-dimensions, and the total mean score of the scale when pre-service teachers' scores were compared by department. However, there was no significant difference between the department variable and the other sub-dimensions. Significant differences were found between Science-Social Sciences, Mathematics-Social Sciences and Preschool-Social Sciences departments in the learning and teaching sub-dimension, with the Social Studies department prevailing. Based on the results of the physical properties of the classroom subdimension, it was determined that there was a significant difference between Science-Mathematics; Mathematics; and Preschool departments; and these differences favored the Mathematics department teacher candidates. As for the physical properties of the classroom sub-dimension, there was no differentiation between the other departments. According to the CASCLT results, there was a significant difference between Pre-school and Social Studies Pre-service Teachers and this difference was in favor of students studying Social Studies Teaching. Similar results were found by Bilgin and Aykaç (2016), who found that departmental variables showed significant differences. On the other hand, in some studies (Oğuz, 2011; Şahan & Terzi, 2015), it was found that pre-service teachers studying in the Social Sciences department have a higher level of adoption of constructivism than the pre-service teachers studying in the Science Teaching department. However, Elverişli (2019) found that pre-

service teachers studying in Science Teaching department, and Kösterelioğlu and Yapıcı (2016) found that pre-service teachers studying in Turkish Teaching department adopted constructivism more than pre-service teachers studying in other departments, which contradicts the findings obtained in this study.

In addition, 96% of pre-service teachers indicated they would apply CU practices when they were appointed to their positions. However, 81% of participants believe that their cognitive awareness of CU is inadequate in each of the subdimensions. Similarly, Baştürk (2016) found that teacher candidates who view themselves as insufficient in constructivism will apply the principles of CU once they are appointed as teachers. Based on these results, it appears that multiple variables influence pre-service teachers' feelings of inadequacy and application preferences.

There were significant differences between students' CASCLT scores and the role of teacher as well as the teaching and learning process sub-dimensions of the scale based on whether they took the EP course or not. The differences were found to be in favor of the pre-service teachers who did not take the EP course. As a result, no relationship can be established between EP subjects and CU principles due to the way the courses are taught or pre-service teachers' learning expectations and approaches.

It was observed that pre-service teachers' opinions of contemporary EP were low and their views of traditional EP were medium. In this context, 30% of participants agreed with traditional EP opinions, 21% were neutral, and 48% disagreed. Among the participants, 11% agreed with the thoughts reflecting the contemporary EP perspective, 20% were neutral, and 71% disagreed. Upon reviewing these results, it can be seen that the participants do not completely and precisely adopt contemporary or traditional educational philosophies, but rather adopt multiple EPs. Similar findings have been found by Hayırsever and Oğuz (2017).

As a result of the comparison of the gender variable and ETAS scores of the pre-service teachers, a significant difference was determined in favor of the female candidates in the views reflecting the traditional philosophies. Therefore, it can be said that female pre-service teachers have more traditional philosophical views than male pre-service teachers. This result contradicts with the findings of the studies (Alkın-Şahin et al., 2014; Aslan, 2017; Berkant & Özaslan, 2019; Biçer et al., 2013; Kozinoğlu & Erden, 2018; Kumral, 2015; Sönmez-Ektem, 2019; Yılmaz & Tosun, 2013) suggesting that females have contemporary educational philosophies and males have more traditional educational philosophies. On the other hand, no significant difference was observed in the total mean score of the scale and the contemporary EP sub-dimension. This can be evaluated in the way that pre-service teachers have similar views both in contemporary sub-dimension and the total mean score of the scale. According to the results, pre-service teachers' perspectives on EP were not determined by gender variables, as found in some studies (Altinkurt et al., 2012; Aybek & Aslan 2017; Biçer et al., 2013; Doğanay & Sarı, 2003; Görmez, 2015; Ilgaz et al., 2013; Türkeli, 2011). However, there is evidence that pre-service teachers hold similar views regardless of gender.

When the scores from ETAS were compared in terms of department variable, significant differences were found in traditional EP approaches sub-dimension and total mean scores of the ETAS. When the source of the difference in traditional EP scores was examined, significant differences were obtained between Mathematics-Turkish; Preschool-Turkish and Classroom-Turkish departments. Comparing ETAS scores by department variable, significant differences were found in traditional EP approaches sub-dimension and ETAS total mean scores. Mathematics-Turkish, Preschool-Turkish, and Classroom-Turkish departments showed

significant differences in traditional EP scores. The differences were found to be in favor of Turkish Teaching department. The pre-service teachers studying in the Turkish Teaching department have lower levels of traditional philosophies than their counterparts in the Mathematics, Preschool, and Classroom Teaching departments. Based on the differences observed in EP total mean scores, significant differences were found between Mathematics-Turkish and Preschool-Turkish departments. Differences were found to favor Turkish Teaching department. Thus, pre-service teachers studying in Turkish Teaching department had more traditional EP views than those studying in Mathematics or Pre-school Teaching department. Similar findings have been reported by other studies indicating significant differences between department variables and ETAS scores (e.g. Aybek & Aslan, 2017; Beytekin & Kadi, 2015; Doğanay & Sarı, 2003). The findings obtained are similar to those obtained by Kumral (2015), who found that students in the Preschool, Classroom and Social Studies Teaching department had traditional philosophical views while students in the Turkish Teaching department had more contemporary philosophical views.

It was obtained that the scores obtained from ETAS did not differ significantly in terms of taking the EP course or not. According to Çelik and Orçan (2016), taking the EP course had no significant impact on pre-service teachers' views on educational philosophy. Similarities between these findings can be explained by the EP course's teaching approaches, low expectations, and low awareness of the course.

Pre-service teachers' CASCLT scores and ETAS total mean scores had a positive and low level correlation. This level of correlation, however, is considered to be far below the levels emphasized in the literature. It may be possible that participants' responses to the scale items include hesitations and contradictions as a result of insufficient knowledge. The correlation between CASCLT scores and contemporary EP opinions, on the other hand, was found to be slightly below moderate. Furthermore, only the physical properties of the classroom sub-dimension showed a significant correlation between CASCLT scores and traditional EP opinions. These results are in line with the findings of Baş (2016), which indicate there are significant positive relationships between the progressive, reconstructivist and existentialist (contemporary) EP views and constructivist learning theory principles, but there is no meaningful relationship with perennialism understanding.

This study suggests that preservice teachers should organize their teaching-learning experiences in accordance with the philosophical foundations and principles on which the curriculum is based. What is more, lecturers should implement such practices in their own classes as well as adopt the primary goal of establishing a relationship between theory and practice. These course contents are also expected to be more easily understood and adopted by pre-service teachers because they provide integrity and interdisciplinary understanding. In this field, longitudinal and cross-sectional studies that combine both experimental and qualitative research designs are recommended to make evaluations by obtaining richer data.

Acknowledgements: Part of this study is presented in the 2nd International Congress of Pedagogical Research (ICOPR-2021).

Funding: No funding source is reported for this study.

Declaration of interest: No conflict of interest is declared by the author.

References

- Adanur-Kudal, Z. & Altun, T. (2012). Valuation of teachers' views on applicability of constructivist approach in joint classrooms: Sample of Trabzon. *The Journal of Academic Social Science Studies*, 5(8), 89-109. https://doi.org/10.9761/jasss_367
- Akyüz, B. (2020). *Investigation of the relationship between metacognition, cognitive flexibility and self-efficacy levels of pre-service teachers*. (Unpublished Master's Thesis). İzmir Democracy University Institute of Social Sciences, İzmir.
- Alkın-Şahin, S., Tunca, N., & Ulubey, Ö. (2014). The relationship between pre-service teachers' educational beliefs and their critical thinking tendencies. *Elementary Education Online*, 13(4), 1473-1492. <https://doi.org/10.17051/ieo.2014.56482>
- Altinkurt, Y., Yılmaz, K. & Oğuz, A. (2012). Educational beliefs of primary and secondary school teachers. *Ondokuz Mayıs University Journal of Faculty of Education*, 31(2), 1-19.
- Aslan, S. (2017). An investigation of the educational beliefs of primary school teachers in terms of several variables. *Kastamonu Education Journal*, 25(4), 1453-1458.
- Aybek, B. ve Aslan, S. (2017). An Investigation of educational philosophies that teacher candidates adopt through critical thinking tendencies in terms of several variables. *Gaziantep University Journal of Social Sciences*, 16(2), 373-385. <https://doi.org/10.21547/jss.281737>
- Bahçivan, E. (2014). Investigating coherence between preservice science teachers' conceptions of learning and teaching science: A phenomenographic study. *Ahi Evran University Journal of Kirsehir Education Faculty*, 15(3), 147-166.
- Baş. G. (2015). Correlation between teachers' philosophy of education beliefs and their teaching-learning conceptions. *Education and Science*, 40(182), 111-126. <https://doi.org/10.15390/EB.2015.4811>
- Baştürk, S. (2016). Primary pre-service teachers' perspectives on constructivism and its implementation in the schools. *Universal Journal of Educational Research* 4(4), 904-912. <https://doi.org/10.13189/ujer.2016.040428>
- Bay, E., İlhan, M. Aydın, Z., Kınay, İ., Yiğit, C., Kahramanoğlu, R., Kuzu, S., & Özyurt, M. (2014). An investigation of teachers' beliefs about learning. *Croatian Journal of Education*, 16, 55-90.
- Berkant, H. & Özasan, D. (2019). Exploring prospective teachers' educational beliefs in terms of various variables. *Eskişehir Osmangazi University Journal of Social Sciences*, 20, 923-940. <https://doi.org/10.17494/ogusbd.555081>
- Beytekin, O. F. & Kadı, A. (2015). A study on the values and educational beliefs of student teachers. *The Journal of Academic Social Science Studies*, 31(1), 327-341. <https://doi.org/10.9761/JASSS2658>
- Biçer, B., Er, H., & Özel, A. (2013). The relationship between the epistemological beliefs and educational philosophies of the teacher candidates adopted. *Journal of Theory and Practice in Education*, 9(3), 229-242.
- Bilasa, P. & Taşpınar, M. (2016). Cognitive awareness levels of teacher candidates towards constructivist learning theory (The case of Gazi University). *Education Sciences*, 11(2), 61-81. <https://doi.org/10.12739/NWSA.2016.11.2.1C0654>
- Bilgin, H. & Aykac, N. (2016). Pre-service teachers' teaching-learning conceptions and their attitudes towards teaching profession. *Educational Process: International Journal*, 5(2), 139-151. <https://doi.org/10.12973/edupij.2016.52.5>
- Brooks, J. G. & Brooks, M. G. (1993). *In search for understanding the case for constructivist classrooms*. ASCD.
- Bybee, R. (1993). *Instructional model for science education, in developing biological literacy*. Biological Sciences Curriculum Studies.
- Cevizci, A. (2023). *Eğitim felsefesi*. (6. Baskı). Say yayınları.
- Chan, K., Tan, J. & Khoo, A. (2007). Pre-service teachers' conceptions about teaching and learning: A closer look at Singapore cultural context. *Asia-Pacific Journal of Teacher Education*. 35(2), 181-195. <https://doi.org/10.1080/13598660701268593>
- Cohen, L., Manion, L., & Morrison, K. (2004). *A guide to teaching practice*, (5.Edition). Routledgefalmer.
- Coşkun, M. K. (2013). Critical thinking level and dispositions of pre-service teachers of religious culture and ethics knowledge. *Journal of Atatürk University Institute of Social Sciences*, 17(1), 143-162.
- Crawford, M., & Witte, M. (1999). Strategies for mathematics: Teaching in context. *Educational Leadership* 57(3), 34-38.
- Çaycı, B. & Altunkeser, F. (2015). Opinions for efficiency and attitudes towards constructivist approach of teacher candidates. *Bartın University Journal of Faculty of Education XIV. International Participation Symposium of Primary School Teacher Education Primary School Teacher Education (21-23 May, 2015) Special Issue*, 44-61.

- Çelik, R. & Orçan, F. (2016). A study on prospective teachers' educational beliefs. *Journal of Theory and Practice in Education*, 12(1), 63-77.
- Çiftçi, S., Sünbül, A. M. & Köksal, O. (2013). Sınıf öğretmenlerinin yapılandırmacı yaklaşıma göre düzenlenmiş mevcut programa ilişkin yaklaşımlarının ve uygulamalarının değerlendirilmesi [Evaluation of primary school teachers' approaches and practices regarding the current curriculum organized according to the constructivist approach]. *Mersin University Journal of the Faculty of Education*, 9(1), 281-295.
- Çubukçu, Z. (2006). *Evaluating learning environment dimensions in student-centered education*. XV. Paper presented at the National Educational Sciences Congress, Mugla University, Mugla- Turkey.
- Demir, Ö. & Doğanay, A. (2009). Cognitive coaching approach in developing metacognitive skills. *Educational Administration: Theory and Practice*, 15(60), 601-623.
- Djamarah, S. B. (2005). *Teachers and learners in educational interaction psychological: A theoretical approach*. Rineka Cipta.
- Doğanay A. & Sarı, M. (2003). Evaluation of elementary school teachers' perceptions about their own educational philosophies. *Turkish Journal of Educational Sciences*, 1(3), 321-337.
- Doğanay, A. (2008). Üst düzey düşünme becerilerinin öğretimi [Teaching higher order thinking skills]. In A.Doğanay (Ed.). *Öğretim ilke ve yöntemleri* [Teaching principles and methods] (pp. 280-327). Pegem Akademi.
- Driscoll, M. P. (2000). *Psychology of learning for instruction*. Boston: Allyn & Bacon.
- Elverişli, T. N. (2019). *The investigation of the preferences of pre-service science teachers to create constructivist learning environment in terms of some variables*. (Unpublished Master's Thesis), Bolu Abant İzzet Baysal University Institute of Educational Sciences, Bolu.
- Ertmer, P. A., & Newby, T. J. (2013). Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 26(2), 43-71. <https://doi.org/10.1111/j.1937-8327.1993.tb00605.x>
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, 34(10), 906-911. <https://doi.org/10.1037/0003-066X.34.10.906>
- Fosnot, C. T. (1996). Constructivist: A psychological theory of learning. In C. T. Fosnot (Eds.), *Constructivism: Theory, Perspective and Practice* (pp. 8-13). Teacher College Press.
- Gagnon, G. W., & Collay, M. (2001). *Designing for learning: Six elements in constructivist classrooms*. Corwin Press, Inc.
- Gelen, İ. (2003). *The effects of metacognitive strategies on attitudes toward Turkish course, reading comprehension achievement and retention*. (Unpublished PhD Thesis), Çukurova University Institute of Social Sciences, Adana.
- Görmez, S. (2015). *Determination of teacher candidates and school teachers' philosophical of education and examination environment of education* (Unpublished Master's Thesis). Gazi University Institute of Educational Sciences, Ankara.
- Gutek, G. L. (2019). *Eğitimde Felsefi ve İdeolojik Yaklaşımlar* (3. basım) (Çev: Nesrin Kale). Ütopya Yayınevi.
- Gür Erdoğan, D., & Kanbur -Tuncel, M. (2008). Eğitim fakültesi son sınıf öğrencilerine göre ilköğretim öğretmenlerinde yapılandırmacı öğrenme ile ilgili gözlenen yeterlilikler.(Observed competencies related to constructivist learning in primary school teachers according to the last year students of the faculty of education.). *Journal of Sakarya University Faculty of Education*, 16, 91-108.
- Hayırsever, F. & Oğuz, E. (2017). Effects of teacher candidates' educational beliefs on their critical thinking tendencies. *Abant İzzet Baysal University Journal of the Faculty of Education*, 17(2), 757-778. <https://doi.org/10.17240/aibuofd.2017.17.30227-326596>
- Ilgaz G., Bülbül T., & Çuhadar, C. (2013). Investigation of the relationship between preservice teachers' educational beliefs and their perceptions of self-efficacy. *Abant İzzet Baysal University Journal of the Faculty of Education*, 13(1), 50-65.
- Jones M. Gail & Brader-Araje Laura (2002). The impact of constructivism on education: language, discourse, and meaning. *American Communication Journal*, 5(3), 1-10.
- Kardaş, M.N. (2014). Awareness and competences of the Turkish teacher candidates about constructive teaching approach. *The Journal of International Social Research*, 7(34), 779-791
- Kozikoğlu, İ. & Erden, R. Z. (2018). The investigation of the relationship between pre-service teachers' opinions concerning critical pedagogy and beliefs of educational philosophies. *Elementary Education Online*, 17(3), 1566-1582. <https://doi.org/10.17051/ilkonline.2018.466392>

- Köse, E.Ö., Gül, Ş., & Konu, M. (2014). The prospective teachers' opinions about constructivist learning approach and applicability in secondary education. *The Journal of Academic Social Science*, 2(2/1), 84-95. <https://doi.org/10.16992/ASOS.162>
- Kösterelioğlu, İ., & Yapıcı, M. (2016). The effects of activity based learning process on prospective teachers' perceptions of constructivist learning environment. *International Journal of Human Sciences*, 13(1), 1342-1354. <https://doi.org/10.14687/ijhs.v13i1.3640>
- Kumral, O. (2014). Developing the inventory of educational thought and applications: Its validity and reliability analysis. *Journal of Educational Sciences Research*, 4(2), 131-144.
- Kumral, O. (2015). Student teachers' philosophy of education: Case of Pamukkale University faculty of education. *HAYEF: Journal of Education*, 12(2), 59-68.
- Levitt, K. E. (2001). An analysis of elementary teachers' beliefs regarding the teaching and learning of science. *Science Education*, 86(1), 1-22. <https://doi.org/10.1002/sce.1042>
- Mertens, D. (2015). Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods (4th ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Namlu, A. G. (2004). Metacognitive Learning Strategies Scale: A Study of Reliability and Validity. *Anadolu University Journal of Social Sciences*, 4(2), 123-136.
- Naylor, S. & Keogh, B. (1999). *Constructivism in classroom: Theory into practice*. *Journal of Science Teacher Education*, 10, 93-106. <https://doi.org/10.1023/A:1009419914289>
- Oğuz, A. (2011). The democratic values of teacher candidates and their understanding of teaching and learning. *Journal of Values Education*, 9(22), 139-160.
- Ornstein, A. C., & Hunkins, F. P. (2009). *Curriculum: foundations, principles and issues*. (5th Ed.). Pearson Education
- Özaydın Ö. B. (2017). Evaluation of the educational environments of university students in terms of constructivism. *Journal of Süleyman Demirel University Institute of Social Sciences*, 4, 441-453.
- Özmen, G. & Üredi, L. (2017). Öğretmen adaylarının öğrenim gördüğü ortamları yapılandırmacı öğrenme ortamı açısından değerlendirilmelerine ilişkin bir araştırma [A research on the evaluation of teacher candidates' learning environments in terms of constructivist learning environment]. In Ö. Demirel & S. Dinçer (Eds.) *Eğitim bilimlerinde yenilikler ve nitelik arayışı* [Innovations and search for qualifications in educational sciences]. (pp. 909-924). Pegem. <https://doi.org/10.14527/9786053183563b2.056>
- Özsoy, G. (2007). The effect of metacognitive instruction on problem solving achievement of fifth grade primary school students. (Unpublished PhD Thesis), Ankara Gazi University, Institute of Educational Sciences, Ankara.
- Perkins D. N. (1999). The many faces of constructivism. *Educational Leadership*, 6-11.
- Phillips, D. C. (2003). Theories of teaching and learning. In R. Curren (Ed.), *A companion to the philosophy of education* (pp. 232-245). London: Blackwell Publishing.
- Rikers, R. M. J. P., Tamara van Gog, T. V. & Paas, F. (2008). The effects of constructivist learning environments: a commentary. *Instructional Science* 36(5), 463-467. <https://doi.org/10.1007/s11251-008-9067-4>
- Senemoğlu, N. (2018). Gelişim öğrenme ve öğretim (25. Baskı). Pegem A yayınları.
- Sönmez Ektem, I. (2019). The relationship between preservice teachers' beliefs of educational philosophy and their democratic attitudes. *Kastamonu Education Journal*, 27(6), 2391-2402. <https://doi.org/10.24106/kefdergi.3142>
- Sönmez, V. (2020). *Eğitim felsefesi* [Philosophy of education]. (16th Ed.). Anı yayıncılık.
- Şahan, H. H. & Terzi, A.R. (2015). Analyzing the relationship between prospective teachers' educational philosophies and their teaching-learning approaches. *Educational Research and Reviews*, 10(8), 1267-1275. <https://doi.org/10.5897/ERR2015.2166>
- Şentürk, C., & Gülçin, Z. (2019). Teaching-learning conceptions and pedagogical competence perceptions of teachers: a correlational research. *Research in Pedagogy* 9(1), 65-80. <https://doi.org/10.17810/2015.92>
- Tobin, K. & Tippins, D. (1993). Constructivism as a referent for teaching and learning, In K. Tobin (Ed.) *The practise of constructivism in science education* (pp. 3-38). Lawrence Erlbaum Associates.
- Tunca, N., Alkın Şahin, S. & Aydın, Ö. (2015). Life-long learning tendencies of pre-service teachers. *Mersin University Journal of the Faculty of Education*, 11(2), 432-446.
- Türkeli, A. (2011). Attitudes of physical education teachers related to the education philosophy and technology. (Unpublished Master's Thesis). Gazi University Institute of Educational Sciences, Ankara
- Yalçın-İncik, E. (2018). The Relationship between teachers' educational beliefs and teaching-learning conceptions: A Mixed Method Study. *Journal of Education and Future*, 14, 149-167. <https://doi.org/10.30786/jef.414487>

- Yaralı, D. (2020). Investigation of educational beliefs of teacher candidates in terms of various variables (Kafkas University Example). *Journal of Bayburt Faculty of Education*, 15(29), 160-185. <https://doi.org/10.35675/befdergi.440393>
- Yener, D. & Yılmaz M. (2017). Teacher candidates' conceptions about teaching and learning and their science teaching self-efficacy beliefs. *Abant İzzet Baysal University Journal of the Faculty of Education*, 17(2), 1016-1038. <https://doi.org/10.17240/aibuefd.2017.17.30227-326612>
- Yeşilyurt, E. (2013a). Study on scale development metacognition about constructivist learning theory: revision of a scale. *Education Sciences*, 8(2), 285-307. <https://doi.org/10.12739/NWSA.2013.8.2.1C0588>
- Yeşilyurt, E. (2013b). Assessment of learning environments of pre-service teachers in terms of constructivist approach (an education faculty sample). *Journal of Gazi Education Faculty*, 33 (1), 1-29.
- Yıldız, E., Akpınar, E., Tatar, N., & Ergin, Ö. (2009). Exploratory and confirmatory factor analysis of the metacognition scale for primary school students. *Educational Sciences: Theory & Practice*, 9(3), 1573-1604.
- Yılmaz, K., & Tosun, M.F. (2013). Relationship between teachers' educational belief and their views about teacher-student relationships. *Journal of Research in Education and Teaching*, 2(4), 205-218.
- Yurdakul, B. (2004). Yapılandırmacılık [Constructivism]. In Ö. Demirel (Ed.). *Eğitimde Yeni Yönelimler* [New Trends in Education] (pp. 39-61). Pegem Yayıncılık.
- Yücel, C., Karaman, M. K., Batur, Z., Başer, A., & Karataş, A. (2006, Eylül). *Yeni ilköğretim programına ilişkin öğretmen görüşleri ve programın değerlendirilmesi* (Teachers' views on the new primary education program and the evaluation of the program). XV. Paper presented at the National Educational Sciences Congress, Muğla University, Muğla- Turkey.
- Zeidan, A. (2015). Constructivist learning environment among Palestinian science students. *International Journal of Science and Mathematics Education*, 13(5), 947-964. <https://doi.org/10.1007/s10763-014-9527-z>