European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available on-line at: www.oapub.org/edu

doi: 10.5281/zenodo.1196031 Volume 4 | Issue 3 | 2018

THE ANALYSIS OF THE RELATIONSHIP BETWEEN EDUCATIONAL BELIEFS AND TECHNO-PEDAGOGICAL EDUCATION PROFICIENCY OF CANDIDATE TEACHERS

Sevil Büyükalan Filiz[1,]
Güler Göçen Kabaran[2i,]
Hasret Kabaran[3]
[1]Assist. Prof. Dr., Gazi University, Turkey
[2]Res. Assist., Muğla Sıtkı Koçman University, Turkey
[3]Teacher, Private Marmaris Contemporary Science College, Turkey

Abstract:
The aim of this study was examining the relationship between educational beliefs and techno-pedagogical education proficiency of candidate teachers. In this study, relational screening model was used. The universe of the study was determined as the candidate teachers having been studied in Faculty of Education at Muğla Sıtkı Koçman University in 2017-2018 autumn semester and the sampling consisted of 558 candidate teachers. At the end of the study, it was found that candidate teachers internalized existentialist educational belief at most. It was seen that educational beliefs had significant difference in terms of gender, department and grades. With regard to techno-pedagogical education proficiency, candidate teachers found themselves highly sufficient. Although techno-pedagogical education proficiency of candidate teachers had not mean difference in terms of gender and department, it had a mean difference for grades. It was finally stated that there was a low level of positive correlation between techno-pedagogical education proficiency and educational beliefs of candidate teachers.

Keywords: educational belief, techno-pedagogical education, candidate teacher, philosophy of education.

1. Introduction

1.1 Educational Beliefs

The term of belief can be stated as something that is believed being true and an idea that someone has it. This term can also be defined as a judgment and appreciation that a human conclude about his/her own position, the others and his/her own environment

[i] Correspondence: email gulergocen@mu.edu.tr

(Yero, 2002). The beliefs of people show their own perspectives about actions and phenomenon, and they shaped their attitudes and behaviors. As for educational belief, it can be said that it consists of believed and judged ideas about education. When it is considered that educational beliefs consist of understanding and suggestions about education, it can be said that it is an important factor for teaching-learning processes. It is thought that the educational belief of teachers is a significant element while discussing lots of behaviors in process. In this case, it can be said that the role and responsibilities, the value and moral discipline, planning, applying and assessment abilities and the role of selecting and organizing teaching-learning process and classroom management abilities of teachers can be shaped by their educational beliefs (Alkın-Şahin, Tunca & Ulubey, 2014). The main principle while determining educational belief can be thought as philosophy of education (Yılmaz, Altınkurt & Çokluk, 2011). As a sub-category of philosophy, philosophy of education is defined as a discipline that shapes education and educational aims and organizes educational actions or as a combination of systematic ideas and terms (Fidan & Erden, 2001). Philosophy of education is formed via paradigms that are had towards educational issues. In this sense, it can be said that all of the educators have a philosophy and this can shape their behaviors. In this study, philosophy of education that is the basic term for educational beliefs is taken into consideration under five main titles namely perennialism, essentialism, progressivism, re-constructionism and existentialism:

A. Perennialism

In this philosophy that is based on realism and idealism, the progress of human brain (intellectual education) is important (Demirel, 2012). The main of education is finding out a rational and universal value for students as developing students' mental abilities and moral values. (Ornstein & Hunkins, 2014). Perennialism is thought as the oldest and the most conservative philosophy of education and it a kind of philosophy justifying that students should be trained constant principles. In this philosophy, the idea that organizing teaching programs via universal and constant principles and designing a unique program for all students is dominant.

B. Essentialism

In this philosophy that is based on realism and idealism, the human is thought as social and cultural phenomenon. This philosophy states that if the information and abilities used in the past are introduced to the new generations, people can behave as old generations; therefore, changing and discussions can be prevented and cultural heritage can be saved (Sönmez, 2009). In this philosophy, teacher is seen as a good model and an expert of a determined issue. The main principle of education is based on studying hard.

C. Progressivism

It is based on philosophy of pragmatic and it is accepted that progressivism is an adaptation of this philosophy to the educational studies (Sönmez, 2009). According to this philosophy, the core of education is based on constructing experiences instead of harmony in society, environment and rules for truth (Demirel, 2012). This philosophy justify that the process of education should be active and related with the interests of

learners. The teacher is defined as guidance instead of authority. The characteristics of this philosophy can be seen as encouraging learner-centered, experience-based and group-works in education (Gutek, 2014).

D. Re-constructionism

It is seen as a progressed form of progressivism and it is based on pragmatism (Sönmez, 2009). The advocators of this philosophy attach importance to a society-centered education that satisfies the needs of the society (Ornstein & Hunkins, 2014). According to the main idea in this philosophy, the main aim of education is stated as re-organizing the society and coming true the democracy in a society (Demirel, 2012). The re-constructivists think that the idea stated in progressivism about the learner-centered education is a wrong concept and they justify the society-centered education model that satisfies the needs of the all people in a society (Erden, 2007).

E. Existentialism

In this philosophy, existentialism which is based on the idea that existence comes before spirit is the basic concept. In an existentialist educational environment, first of all, it is thought that freedom is more important than everything. As stating, the significance of subjectivity, self-responsibility and self-efficacy is developing (Gutek, 2014). The idea based on developing responsibilities for learners is stated in this philosophy.

As referring the philosophies mentioned above, it can be said that each one of them has a different perspective in terms of education, student, teacher and program; therefore it can be seen that all of them have different educational beliefs. The studies on educational beliefs which have been shaped via philosophy of education preferred by teachers are thought as important. In this sense, the sub-problems of this study are based on the educational beliefs and the variables which have affected them for teachers.

F. Techno-pedagogical Education Proficiency

In the information era, it is expected from people to catch up with the developments in technology and science, and use them in their daily lives. As a result of the changing and developing needs of technological proficiency, the use of technology in education becomes an inevitable concept and the term technology integration has gained importance. Van Melle, Cimellara and Shulha (2003) define technology integration as the use and extend of ICT-based activities during information and communication for improving learning. Technology integration consists of all of the studies based on the use of technology in an active teaching-learning process appropriately. In these studies, on the other hand, the studies about constructing a basic platform and enhancing sources have gained importance both in our country and in the world. In Portuguese, South Korea and America, there have been some studies based on integrating technology into the learning-teaching process via presenting courses in a digital atmosphere. In our country (Turkey), additionally, there have some studies under the main projects such as “Primary Education Project”, “Education for Intel Future” and “Movement of Enhancing Opportunities and Improving Technology Project (FATIH)” conducted by Ministry of National Education in order to create a platform and use technology in an effective way during education.

Technology integration in education has a multi-dimensional characteristic as consisting not only of using of technological sources but also of using manpower. One of the manpower mentioned in this term is stated as teacher (Yurdakul & Odabaşı, 2013). Teachers have a significant role while developing technology integration. The knowledge and abilities of teachers in this field is an important factor for receiving a recompense for investment's work. Accordingly, the integration of technology into teaching-learning process is seen as a kind of teacher proficiency in modern education systems (Brush & Saye, 2002). When the desired teacher proficiencies are examined, it can be said that having just technological knowledge is not enough for teachers and they should synthesize technological knowledge, pedagogical knowledge and content knowledge. In this case, recently, Technological Pedagogical Content Knowledge Model that is a technology integration model based on teacher proficiency which is defined by Koehler and Mishra (2005) has been commonly used. This model has been mentioned as referring the concept on pedagogical content knowledge developed by Shulman in the articles published in international journals on education and teaching technologies since 2007, and it is named as Technological Pedagogical Content Knowledge (TPACK) (Kaya, Emre & Kaya, 2010). In general, it can be said that this model is based on an idea requiring the synthesis of pedagogical, technological and content knowledge of a teacher. TPACK can be stated as an educational approach which requires using technology for the needs of the modern era and supporting this process via the pedagogical knowledge of teachers (Koehler & Mishra, 2009). The diagram on the model is given in Figure 1:

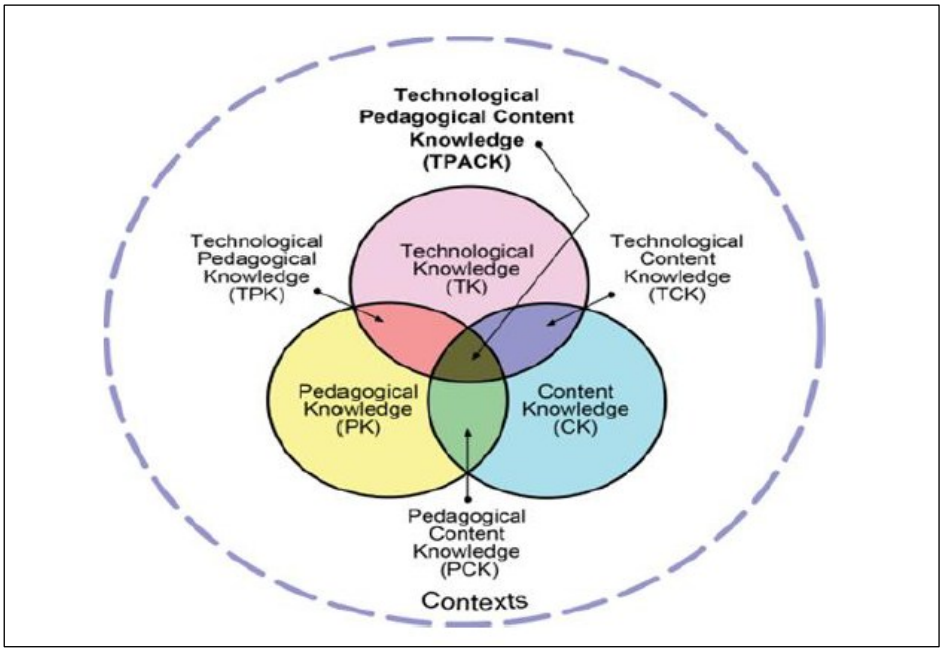

Figure 1: TPACK Model (Koehler & Mishra, 2005)

As it is seen in Figure 1, TPACK consists of interaction between three different knowledge types and the area shaped as a result of this integration. This model points the integration proficiency of three different knowledge types. According to the model,

teachers need to have a technological pedagogical content knowledge that is based on the integration of three main knowledge types. As a requirement of this model, it can be said that teachers and candidate teachers should have techno-pedagogical education proficiency. "Techno-pedagogical Education Proficiency" is developed by Kabakçı, Yurdakul, Odabaşı, Çoklar, Kılıçer, Kurt and Birinci (2011) as referring the analyzed data for a workshop conducted with 24 academicians in 9 different universities. As a result of the workshop, 6 proficiency fields, 20 proficiencies and 120 indicators are created. The proficiency fields are defined as designing the teaching process, sustaining the teaching process, being open-minded for innovations, having moral values, problem solving and experiencing in content. Techno-pedagogical education proficiency is seen as a necessary proficiency in effective technology integration since it is based on the technological pedagogical content knowledge model. It is seen as important that the proficiency of candidate teachers in this field should be determined and it is one of the sub-problems of this study. Additionally, the variables affecting the proficiency level of candidate teachers is one of the questions that will be answered in this study.

1.2 Educational Beliefs and Techno-pedagogical Education Proficiency

Since educational beliefs consist of perspectives towards educational issues, it is thought that this term can be related to techno-pedagogical education proficiency. In this study, the educational beliefs of the candidate teachers were determined and which kinds of beliefs that mostly affect techno-pedagogical education proficiency were analyzed. The analysis in this field is seen as important because it describes the perspectives of teachers on integrating technological developments into education. In the related literature, there is not any kind of study searching on the relationship between educational beliefs and techno-pedagogical education proficiency of candidate teachers. Therefore, it is thought that this study can contribute to the related literature.

The general aim of the study was to examine the relationship between the educational beliefs and techno-pedagogical education proficiency of candidate teachers. Within the scope of this study, the research questions given below are answered:

1. What are the educational beliefs of the candidate teachers?
2. Is there any mean difference between the educational beliefs and the variables of gender, department and grade of the candidate teachers?
3. What is the techno-pedagogical education proficiency level of the candidate teachers?
4. Is there any mean difference between the techno-pedagogical education proficiency level and the variables of gender, department and grade of the candidate teachers?
5. Is there any mean relationship between the educational beliefs and techno-pedagogical education proficiency of the candidate teachers?

2. Material and Methods

2.1 Research Model

In this study, relational screening model was used. The screening model is a research model that aims to describe an issue as referring the present and past situations (Karasar, 2006). The relational screening model, on the other hand, is a research model that aims to reveal the relationship between two or more variables and the kind of this relationship (Fraenkel & Wallen, 2006). Since the general aim of the study was to examine the relationship between the educational beliefs and techno-pedagogical education proficiency of candidate teachers, this model was preferred by the researcher.

2.2 Universe and Sampling

The universe of the study was determined as students in Faculty of Education at Muğla Sıtkı Koçman University in 2017-2018 autumn semester. The sampling of the study was selected randomly and there were totally 558 volunteer candidate teachers who have participated in the study as sampling. The range of the sampling in terms of demographic variables is given in Table 1.

Table 1: The Range of the Sampling as Demographic Variables

Variables	**Groups**	**f**	**%**
Gender	Female	372	66.7
	Male	186	33.3
Department	Science Teaching	93	16.7
	Preschool Education Teaching	97	17.4
	Primary School Teaching	70	12.5
	Social Sciences Teaching	125	22.4
	Turkish Language Teaching	90	16.1
	Mathematics Teaching	83	14.9
Grade	First Grade	217	38.9
	Second Grade	173	31.0
	Third Grade	168	30.1
	Total	558	100.0

When Table 1 was examined, it was seen that female participants were more than male participants; the number of participants in Social Sciences Teaching Department was more than the other departments; and there were mostly first grade candidate teachers who have been selected for the study.

2.3 Data Collection Instruments

In this study, the scale namely "Educational Beliefs Scale" designed by Yılmaz, Altınyurt and Çokluk (2011), the scale namely "Techno-pedagogical Education Proficiency Scale (TPACK) designed by Kabakçı, Yurdakul, Odabaşı, Kılıçer, Çoklar, Birinci and Kurt (2012), and "Personal Information Form" designed by the researchers were used as the data collection instruments.

Educational Beliefs Scale (EİÖ) was a scale that consisted of 40 items about the educational beliefs of candidate teachers and the items were designed as typical five point rating Likert scale. It also consisted of 5 sub-dimensions namely perennialism, essentialism, progressivism, re-constructionism and existentialism. The items were calculated in the range of 1-I totally don't agree and 5- I totally agree. Total score of the scale was not meaningful, but the score of the sub-dimension stated the highly preferred educational beliefs by candidate teachers. The rate of internal consistency was calculated for five sub-dimensions by the researchers. It was found as .91 for progressivism, .89 for existentialism, .81 for re-constructivism, .70 for perennialism and .70 for essentialism. For this study, on the other hand, the rate of the internal consistency was found as .88 for progressivism, .88 for existentialism, .81 for re-constructivism, .75 for perennialism and .83 for essentialism.

TPACK was a scale that consisted of 33 items and formed of typical five point rating Likert scale. There were four sub-dimensions in the scale as design exertion, ethics and proficiency. The items were in the form namely (5) completely competent, (4) fairly competent, (3) somewhat competent, (2) slightly competent, and (1) incompetent. For all dimensions, the internal consistency rate was calculated by the researchers. The results showed that in the scale, the internal consistency was .92 for design, .91 for exertion, .86 for ethics and .85 for proficiency; for the whole scale it was found was .95 (Kabakçı Yurdakul, Odabaşı, Kılıçer, Çoklar, Birinci ve Kurt, 2012). For this study, the internal consistency was .90 for design, .90 for exertion, .84 for ethics and .84 for proficiency; for the whole scale it was found was .96.

The Personal Information Form was designed by the researchers and it was used to collect data about the demographical characteristics of the participants. The information on gender, department and grade was collected via this form.

2.4 Data Analysis

The data was analyzed with the help of SPSS.21 program. In the descriptive analysis, educational beliefs scale, TPACK and their sub-dimensions were analyzed via arithmetic mean, standard deviation, maximum and minimum values. In order to determine the normality, Kolmogorov-Smirnov test was used. It was stated in the literature that if the number of participants were higher than 50, the normality of the group was calculated via Kolmogorov-Smirnov test (Büyüköztürk, 2012). Since the number of participants (558) was higher than 50, in this study, Kolmogorov-Smirnov test was used. Additionally, the homogeneity of the range was calculated via Levene's Test for Equality of Variances. With regard to this test, the value for coefficient of skewness and kurtosis was analyzed. Since the data did not have normality rates, non-parametric tests were preferred by the researchers and in the analysis, Mann Whitney U test, Kruskall Wallis test and Spearmen correlational analysis were used.

3. Findings

3.1 Findings for the First Sub-Problem

In order to answer the first researcher question "What are educational beliefs of the candidate teachers?", descriptive analysis of the scores was calculated and the results were given in Table 2.

Table 2: The Descriptive Analysis of Educational Beliefs

Dimensions	N	Min.	Max.	$\overline{X}$	Ss.
Progressivism	558	1.15	5.00	4.40	.56
Existentialism	558	1.00	5.00	4.56	.60
Re-constructivism	558	1.00	5.00	4.14	.66
Perennialism	558	1.00	5.00	4.06	.64
Essentialism	558	1.00	5.00	2.81	1.06

In Table 2, the rate of educational beliefs preferred by candidate teachers were given in a sequence from the highest to the lowest one and the score was found as existentialism ($\overline{X}$=4.56), progressivism ($\overline{X}$=4.40), re-constructivism ($\overline{X}$=4.14), perenniaslism ($\overline{X}$=4.06) and essentialism ($\overline{X}$=2.81).

3.2 Findings for the Second Sub-Problem

In order to answer the second researcher question "Is there any mean difference between the educational beliefs and the variables of gender, department and grade of the candidate teachers?", normality and homogeneity analysis was calculated and the results were given in Table 3.

Table 3: The Results of the Normality and Homogeneity Tests of Educational Beliefs

Dimensions	Kolmogorov Smirnov Test p	Levene Test p	Skewness	Kurtosis
Progressivism	.000	.001	-2.069	7.038
Existentialism	.000	.000	-2.217	6.629
Re-constructivism	.000	.301	-.944	1.701
Perennialism	.000	.509	-.899	1.861
Essentialism	.023	.611	.278	-.662

In Table 3, it was seen that there was not normality for the sub-dimensions of educational belief scale. For this reason, in order to determine the analysis of gender differences, Mann Whitney U test that was a non-parametric test was used; for the other variables namely department and grade, Kruskall Wallis test was used. The related results were given below in Table 4, Table 5 and Table 6.

Table 4: The Results of the Mann Whitney U Test in Terms of Gender

Dimensions	Gender	N	Average Rank	Total Rank	U	p
Progressivism	Female	372	293.93	109340.50	29229.500	.003
	Male	186	250.65	46620.50		
Existentialism	Female	372	303.60	112939.00	25631.000	.000
	Male	186	231.30	43022.00		
Re-constructivism	Female	372	288.11	107177.50	31392.500	.073
	Male	186	262.28	48783.50		
Perennialism	Female	372	280.44	104325.00	34245.000	.845
	Male	186	277.61	51636.00		
Essentialism	Female	372	251.25	93466.00	24088.000	.000
	Male	186	335.99	62495.00		

In Table 4, it was seen that there was a mean difference between the gender and the preference of progressivism, existentialism and essentialism. In the average rank, it was seen that the difference was on behalf of female participants in terms of progressivism and existentialism; and it was on behalf of male participants in terms of essentialism.

Table 5: The Results of Kruscall Wallis Test in Terms of Departments

Dimensions	Department	N	Average Rank	Sd	x^2	p	Mean Difference
Progressivism	Science Teaching Department	93	252.22	5	16.065	.007	1-2;1-5;2-3;2-4;3-5;4-5;5-6
	Preschool Education Teaching	97	314.35				
	Primary School Education Teaching	70	251.94				
	Social Sciences Teaching	125	264.36				
	Turkish Language Teaching	90	319.31				
	Mathematics Teaching	83	272.22				
Existentialism	Science Teaching Department	93	248.10	5	12.681	.027	1-2;1-5;2-4;4-5;
	Preschool Education Teaching	97	306.35				
	Primary School Education Teaching	70	284.19				
	Social Sciences Teaching	125	253.72				
	Turkish Language Teaching	90	304.41				
	Mathematics Teaching	83	291.17				
Re-constructivism	Science Teaching Department	93	269.99	5	10.849	.054	
	Preschool Education Teaching	97	310.28				
	Primary School	70	266.81				

	Education Teaching						
	Social Sciences Teaching	125	253.01				
	Turkish Language Teaching	90	308.82				
	Mathematics Teaching	83	272.99				
Perennialism	Science Teaching Department	93	260.73	5	30.491	.000	1-5;2-3;2-5;3-5;4-5;5-6
	Preschool Education Teaching	97	283.54				
	Primary School Education Teaching	70	229.39				
	Social Sciences Teaching	125	271.04				
	Turkish Language Teaching	90	357.96				
	Mathematics Teaching	83	265.75				
Essentialism	Science Teaching Department	93	314.02	5	22.480	.000	1-3;1-6;2-3;3-4;3-5;4-6;5-6
	Preschool Education Teaching	97	279.67				
	Primary School Education Teaching	70	217.48				
	Social Sciences Teaching	125	302.41				
	Turkish Language Teaching	90	294.58				
	Mathematics Teaching	83	242.08				

In Table 5, it was seen that there was mean difference between departments and sub-dimensions namely progressivism, existentialism, perennialism and essentialism. According to average rank, candidate teachers in Turkish Language Teaching Department had higher scores than the others in terms of progressivism and perennialism; candidate teachers in Preschool Education Teaching Department had higher scores than the others in terms of existentialism; candidate teachers in Science Teaching Department had higher scores than the others in terms of essentialism.

Table 6: The Results of Kruscall Wallis Test in Terms of Grades

Dimensions	**Grade**	**N**	**Average Rank**	**Sd**	x^2	**p**	**Mean Difference**
Progressivism	First Grade	217	289.44	2	1.917	.384	-
	Second Grade	173	266.75				
	Third Grade	168	279.79				
Existentialism	First Grade	217	298.99	2	5.568	.062	-
	Second Grade	173	264.31				
	Third Grade	168	269.97				

Re-constructivism	First Grade	217	299.83	2	6.474	.039	1-3
	Second Grade	173	274.19				
	Third Grade	168	258.71				
Perennialism	First Grade	217	302.65	2	15.519	.000	1-3;2-3
	Second Grade	173	289.30				
	Third Grade	168	239.51				
Essentialism	First Grade	217	300.06	2	23.952	.000	1-3;2-3
	Second Grade	173	303.02				
	Third Grade	168	228.73				

In Table 6, it was seen that there was mean difference between grades and sub-dimensions namely re-constructivism, perennialism and essentialism. According to average rank, candidate teachers in the first grade had higher scores than the others in terms of re-constructivism and perennialism; candidate teachers in second grade had higher scores than the others in terms of essentialism.

3.3 Findings for the Third Sub-Problem

In order to answer the third researcher question "What is the techno-pedagogical education proficiency level of the candidate teachers?", descriptive analysis of the scores was calculated and the results were given in Table 7.

Table 7: The Descriptive Analysis of Techno-Pedagogical Education

Dimension	**N**	**Min.**	**Max.**	$\bar{X}$	**Ss.**
Design	558	1.00	5.00	3.83	.66
Exertion	558	1.00	5.00	3.84	.63
Ethics	558	1.00	5.00	3.68	.70
Proficiency	558	1.00	5.00	3.96	.71
General	558	1.00	5.00	3.83	.60

In Table 7, it was seen that the techno-pedagogical education proficiency of the candidate teachers was in a high level. In the average scores, it was realized that the proficiency level of the participants was higher than the other dimensions and the sub-dimension namely; ethics was scored as the lowest level.

3.4 Findings for the Fourth Sub-Problem

In order to answer the fourth researcher question "Is there any mean difference between the techno-pedagogical education proficiency level and the variables of gender, department and grade of the candidate teachers?", normality and homogeneity of the scores was calculated and the results were given in Table 8.

Table 8: The Normality and Homogeneity Test Results of Techno-Pedagogical Education Proficiency

Dimension	Kolmogorov Smirnov Test p	Levene Test p	Skewness	Kurtosis
Design	.000	.026	-.551	.781
Exertion	.000	.114	-.736	2.049
Ethics	.000	.036	-.408	.736
Proficiency	.000	.058	-.928	1.808
General	.000	.102	-.648	1.814

In Table 8, it was seen that there was not normality for the sub-dimensions of techno-pedagogical education proficiency scale. For this reason, in order to determine the analysis of gender differences, Mann Whitney U test that was a non-parametric test was used; for the other variables namely department and grade, as a non-parametric test, Kruskall Wallis test was used. The related results were given Below In Table 9, Table 10 and Table 11.

Table 9: The Results of Mann Whitney U Test in Terms of Gender

Dimensions	Gender	N	Average Rank	Total Rank	U	p
Design	Female	372	279.13	103835.00	34457.000	.938
	Male	186	280.25	52126.00		
Exertion	Female	372	280.33	104281.00	34289.000	.864
	Male	186	277.85	51680.00		
Ethics	Female	372	270.72	100708.00	31330.000	.068
	Male	186	297.06	55253.00		
Proficiency	Female	372	285.85	106338.00	32232.000	.184
	Male	186	266.79	49623.00		
General	Female	372	278.98	103780.50	34402.500	.914
	Male	186	280.54	52180.50		

In Table 9, it was seen that there was not a mean difference between gender and the sub-dimensions of techno-pedagogical education proficiency level of the candidate teachers.

Table 10: The Results of Kruscall Wallis Test in Terms of Departments

Dimension	Department	N	Average Rank	Sd	x^2	p
Design	Science Teaching Department	93	279.02	5	4.790	.442
	Preschool Education Teaching	97	277.22			
	Primary School Education Teaching	70	259.76			
	Social Sciences Teaching	125	278.22			
	Turkish Language Teaching	90	310.24			
	Mathematics Teaching	83	267.95			
Exertion	Science Teaching Department	93	280.02	5	6.832	.233
	Preschool Education Teaching	97	277.19			
	Primary School Education Teaching	70	248.68			
	Social Sciences Teaching	125	283.79			

	Turkish Language Teaching	90	311.69			
	Mathematics Teaching	83	266.25			
Ethics	Science Teaching Department	93	283.33	5	10.781	.056
	Preschool Education Teaching	97	286.11			
	Primary School Education Teaching	70	253.57			
	Social Sciences Teaching	125	267.56			
	Turkish Language Teaching	90	323.58			
	Mathematics Teaching	83	259.53			
Proficiency	Science Teaching Department	93	276.86	5	3.676	.597
	Preschool Education Teaching	97	281.96			
	Primary School Education Teaching	70	283.09			
	Social Sciences Teaching	125	277.64			
	Turkish Language Teaching	90	301.52			
	Mathematics Teaching	83	255.48			
General	Science Teaching Department	93	280.47	5	7.456	.189
	Preschool Education Teaching	97	278.35			
	Primary School Education Teaching	70	254.56			
	Social Sciences Teaching	125	278.87			
	Turkish Language Teaching	90	316.52			
	Mathematics Teaching	83	261.60			

In Table 10, it was seen that there was not a mean difference between departments and the sub-dimensions of techno-pedagogical education proficiency level of the candidate teachers.

Table 11: The Results of Kruscall Wallis Test in terms of Grades

Dimensions	**Grade**	**N**	**Average Rank**	**Sd**	x^2	**p**	**Mean Difference**
Design	First Grade	217	257.33	2	11.474	.003	1-3;2-3
	Second Grade	173	274.90				
	Third Grade	168	312.87				
Exertion	First Grade	217	266.25	2	6.330	.042	1-3;2-3
	Second Grade	173	270.90				
	Third Grade	168	305.47				
Ethics	First Grade	217	271.34	2	1.914	.384	-
	Second Grade	173	276.12				
	Third Grade	168	293.52				
Proficiency	First Grade	217	279.08	2	1.687	.430	-
	Second Grade	173	268.68				
	Third Grade	168	291.18				
General	First Grade	217	263.54	2	7.227	.027	1-3;2-3
	Second Grade	173	273.01				
	Third Grade	168	306.80				

In Table 11, it was seen that there was a mean difference between grades and the sub-dimensions of techno-pedagogical education proficiency level namely design and exertion. In the average rank, candidate students in the third grade had higher scores in terms of design and exertion dimensions than the candidate teachers in other grades.

3.5 Findings for the Fifth Sub-Problem

In order to answer the fifth researcher question "Is there any mean relationship between the educational beliefs and techno-pedagogical education proficiency of the candidate teachers?", Spearman coefficient of correlation scores was calculated and the results were given in Table 12.

Table 12: The Relationship between Educational Beliefs and Techno-Pedagogical Education Proficiency

	1	2	3	4	5	6
1.Progressivisim	1					
2.Existansialism	.667**	1				
3.Re-constructivism	.605**	.561**	1			
4.Perennialism	.457**	.442**	.600**	1		
5.Essentialism	-.130**	-.209	.089*	.229**	1	
6.Techno-pedagogical Education	.303**	.312**	.304**	.283**	-.010	1

p<.05; **: p<.01

In Table 12, it was seen that there was a relationship between the sub-dimensions of educational beliefs namely progressivism, existentialism, re-constructivism and perennialism and the techno-pedagogical education proficiency level of the candidate teachers. According to the coefficient of correlation, this relationship was positive and it was in a low level.

4. Discussion

In this study that aims to reveal the relationship between educational beliefs and techno-pedagogical education proficiency of candidate teachers, first of all, the educational beliefs and techno-pedagogical education level of the candidate teachers were examined separately.

According to the results of the data, it was determined that candidate teachers preferred mostly existentialist education belief and they preferred essentialism at least. This result indicates that candidate teachers prefer modern philosophy of education to traditional philosophy of education. The candidate teachers thought that subjectivity was important for learners and education could be helpful for freedom. In the related literature, there have been a number of studies showing that candidate teachers mainly prefer existentialism as an educational belief (Alkın-Şahin, Tunca & Ulubey, 2014; Altınkurt, Yılmaz & Oğuz, 2012; Ilgaz, Bülbül & Çuhadar, 2013; Koçak, Ulusoy & Önen, 2012; Yazıcı, 2017; Yılmaz & Tosun, 2013). The result of the study on the preferences of candidate teachers has been an expected result for the modern era. It can be easier to use modern education programs and train learners with expected features in this modern era for the teachers who have been thought as in this way.

It was determined that there was a meaningful difference between a few sub-dimensions of educational beliefs and gender of the candidate teachers. It was found that the difference was on behalf of female participants in terms of progressivism and

existentialism; and it was on behalf of male participants in terms of essentialism. As referring this result, it can be said that male candidate teachers preferred using more philosophy of traditional education than female candidate teachers. Male candidate teachers believe the importance of working hard, discipline and teacher-centered education more than female candidate teachers. This result was not parallel to the education system that was used in this era, and training both female and male teachers via philosophy of modern education was seen as a necessity. This result of the study was parallel to data given in a study conducted by Alkın-Şahin, Tunca and Ulubey (2014).

It was realized that there was a mean difference between the departments and some of the sub-dimensions of educational beliefs namely progressivism, existentialism, perennialism and essentialism. This result can be derived from courses on education, graduate degree and attitudes of academicians. In the related literature, there have been some studies on the differences between educational beliefs and departments of the candidate teachers (Alkın-Şahin, Tunca & Ulubey, 2014; Beytekin & Kadı, 2015; Çetin, İlhan & Arslan, 2012; Ekiz, 2007).

It was realized that there was a mean difference between the grades and some of the sub-dimensions of educational beliefs namely re-constructivism, perennialism and essentialism. According to the results, the score of the first grade candidate teachers was higher than the other grades in terms of re-constructivism and perennialism; however the score of the second grade candidate teachers was higher than the other grades in terms of essentialism. As referring this result, it can be said that candidate teachers were highly preferred perennialism and essentialism during their first and second grades. This result can be derived from pedagogic formation courses that were heavily given in the first and second grades and having much more courses in practice after the third grade. In the related literature, there have been some studies based on the idea that the first and the second grade candidate teachers have preferred perennialism and essentialism (Alkın-Şahin, Tunca & Ulubey, 2014; Beytekin & Kadı, 2015; Biçer, Er & Özel, 2013).

The results of the study indicated that candidate teachers' techno-pedagogical education proficiency level was in a high level. This finding stated that candidate teachers believed they had enough information about the use of techno-pedagogical knowledge and abilities in teaching-learning process. The candidate teachers thought that they could integrate technology, content and pedagogy for the use of technology in education. In the related literature, there have been some studies that have the parallel results to this study (Çuhadar, Bülbül & Ilgaz, 2013; Nathan, 2009; Şimşek, Demir, Bağçeci & Kinay, 2013; Ünal, 2013; Yurdakul, 2011). In this study, it was found that the candidate teachers' score in proficiency was higher than the other dimensions and they had the lowest score in ethic dimension. This result showed that the candidate teachers were inadequate for the ethic on the use of technology. The information about rights on having technology, reliability and validity of the technological knowledge, the security of the technological information and teaching technology should be introduced for the candidate teachers.

According to the results of the study, it was found that there was not a mean difference between the gender and techno-pedagogical education proficiency of the candidate teachers. As referring this result, it can be said that gender was not effective for techno-pedagogical education proficiency and there have been some parallel studies in the related literature (Çuhadar, Bülbül & Ilgaz, 2013; Jamieson, Finger & Albion, 2010; Ünal, 2013).

According to the results of the study, it was found that there was not a mean difference between the departments and techno-pedagogical education proficiency of the candidate teachers. As referring this result, it can be said for the sampling group that department was not effective for techno-pedagogical education proficiency. On the contrary, Ünal (2013) stated that there was a low level of difference between the department and the sub-dimension of techno-pedagogical education proficiency namely ethics dimension for the candidate teachers.

According to the results of the study, it was found that there was a mean difference between the grades and techno-pedagogical education proficiency of the candidate teachers and it was on behalf of the third grade candidate teachers. It was thought that the reason of this result could be related to the courses that students got in their education. The courses given after the third grade consisted of more information about pedagogic formation and their proficiency level was higher than the other grades. This result may indicate that there is an educational system that can develop the proficiency for techno-pedagogical education. In the study conducted by Ünal (2013), similarly, it was stated that there was a mean difference between the grades and techno-pedagogical education proficiency of the candidate teachers and students in the higher grades had more proficiency level than the others.

In the direction of the main aim of the study, the relationship between educational beliefs and techno-pedagogical education proficiency level of the candidate teachers was examined. As a result of the data collected for the study, it was found that there was a positive relationship between educational beliefs known as progressivism, existentialism, re-constructivism and perennialism and techno-pedagogical education proficiency of the candidate teachers. According to this result, it can be said that educational beliefs of the candidate teachers can be effective for their proficiency level of techno-pedagogical education. In the study about the relationship between the educational beliefs and techno-pedagogical education proficiency level of research assistant, on the other hand, Doğan, Burmabıyık and Kurt (2017) stated that there was a positive relationship between the sub-dimensions of the educational beliefs known as progressivism and existentialism and techno-pedagogical education proficiency level of the participants.

5. Recommendations

- In this study, it was found that male candidate teachers mostly preferred traditional education. The reasons of this finding can be searched and some kind of studies which aim to find solutions for this problem can be conducted.

- The other variables that can affect the educational beliefs can be determined.
- Candidate teachers' proficiency level on techno-pedagogical education was found as in a high level. This finding can be analyzed deeply via interview, observation and other kinds of data collection instruments.
- It was found that there was a relationship between the educational beliefs and techno-pedagogical education proficiency of the candidate teachers the variables that can affect this finding can be examined.
- The study can be conducted at different universities and the results can be compared
- Qualitative research studies can be conducted on the field of educational beliefs and techno-pedagogical education proficiency level of candidate teachers.

References

1. Alkın-Şahin, S., Tunca, N. and Ulubey, Ö. 2014. "Öğretmen Adaylarının Eğitim İnançları ile Eleştirel Düşünme Eğilimleri Arasındaki İlişki". *İlköğretim Online*, 13 (4): 1473-1492. doi: 10.17051/io.2014.56482
2. Altınkurt, Y., Yılmaz, K. and Oğuz, A. 2012. "İlköğretim ve Ortaöğretim Okulu Öğretmenlerinin Eğitim İnançları". *On Dokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi*, 31 (2): 1-19. doi: 10.7822/egt174
3. Beytekin, O. F. and Kadı, A. 2015. "Öğretmen Adaylarının Eğitim İnançları ve Değerleri Üzerine Bir Çalışma". *The Journal of Academic Social Science Studies*, 31: 327-341. doi: 10.9761/JASSS2658
4. Biçer, B., Er, H. and Özel, A. 2013. "Öğretmen Adaylarının Epistemolojik İnançları ve Benimsedikleri Eğitim Felsefeleri Arasındaki İlişki". *Eğitimde Kuram ve Uygulama*, 9(3): 229- 242. Retrieved from https://docs.google.com/viewerng/viewer?url=http://eku.comu.edu.tr/article/viewFile/1044000193/1044000240
5. Brush, T. and Saye, J. 2002. "A Summary of Research Exploring Hard and Soft Scaffolding for Teachers and Students Using a Multimedia Supported Learning Environment". *The Journal of Interactive Online Learning*, 1(2): 1-12. Retrieved from http://www.ncolr.org/jiol/issues/pdf/1.2.3.pdf
6. Büyüköztürk, Ş. 2012. *Sosyal Bilimler İçin Veri Analizi El Kitabı*. (17. Basım). Ankara: Pegem Akademi Yayınları.
7. Çetin, B., İlhan, M. and Arslan, S. 2012. "Öğretmen Adaylarının Benimsedikleri Eğitim Felsefelerinin Çeşitli Değişkenler Açısından İncelenmesi". *The Journal of Academic Social Science Studies*, 5 (5): 149-170. doi: 10.9761/JASSS_134
8. Çuhadar, C., Bülbül, T. and Ilgaz, G. 2013. "Öğretmen Adaylarının Bireysel Yenilikçilik Özellikleri ile Teknopedagojik Eğitim Yeterlikleri Arasındaki İlişkinin İncelenmesi". *İlköğretim Online*, 12 (3): 797-807. Retrieved from http://dergipark.ulakbim.gov.tr/ilkonline/article/view/5000037768/5000036626

9. Demirel, Ö. 2012. *Eğitimde Program Geliştirme Kuramdan Uygulamaya.* Ankara: Pegem Akademi Yayıncılık.
10. Doğan, E., Burmabıyık, A. and Kurt, A. A. 2017. "Eğitim İnançları ile TPİB Yeterliliği Arasındaki İlişki." Paper presented at the 11th International Symposium on Computer and Instructional Technologies, İnönü University, May 24-26.
11. Ekiz, D. 2007. "Öğretmen Adaylarının Eğitim Felsefesi Akımları Hakkında Görüşlerinin Farklı Programlar Açısından İncelenmesi". *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi,* 24*:* 1-12. Retrieved from https://www.pegem.net/dosyalar/dokuman/124551-20110819115452-1-12.pdf
12. Erden, M. 2007. *Eğitim Bilimlerine Giriş.* Ankara: Arkadaş.
13. Fidan, N. and Erden, M. 2001. *Eğitime Giriş.* İstanbul: Alkım Yayınları.
14. Gutek, G. L. 2014. *Eğitime Felsefi ve İdeolojik Yaklaşımlar.* Translated by Nesrin Kale. Ankara: Ütopya Yayınevi.
15. Ilgaz G., Bülbül T. and Çuhadar, C. 2013. "Öğretmen Adaylarının Eğitim İnançları ile Öz-Yeterlik Algıları Arasındaki İlişkinin İncelenmesi". *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi,* 13 (1): 50-65. Retrieved from http://dergipark.ulakbim.gov.tr/aibuefd/article/view/5000091467/5000084839
16. Jamieson, R. Finger, G. and Albion, P. 2010. "Auditng the TK and TPACK Confidence of Pre-Service Teachers: Are They Ready Fort He Proffession?". *Australian Educational Computing*, 25 (1): 8-17. Retrieved from https://research-repository.griffith.edu.au/bitstream/handle/10072/34918/65030_1.pdf?sequence=1
17. Kabakçı Yurdakul, I. and Odabaşı, H. F. 2013. "Teknopedagojik Eğitim Modeli". In *Teknopedagojik Eğitime Dayalı Öğretim Teknolojileri ve Materyal Tasarımı*, edited by Işıl Kabakçı Yurdakul, 40-67, Ankara: Anı Yayıncılık.
18. Kabakçı Yurdakul, I., Odabaşı, H. F., Çoklar, A. N., Kılıçer, K., Kurt, A.A., Birinci, G. 2011. "The Professional Competencies and Indicators of Techno-Pedagogical Education for Teachers". Paper presented at the 11th International Educational Technology Conference, Istanbul University, May 25-27.
19. Kaya, Z., Emre, İ. and Kaya, O. N. 2010. "Sınıf Öğretmeni Adaylarının Teknolojik Pedagojik Alan Bilgisi Açısından Öz-Güven Seviyelerinin Belirlenmesi". Paper presented at the 9 th Class Teacher Training Symposium, *Fırat University,* May 20-22.
20. Koçak, C., Ulusoy, F.M. and Önen, A.S. 2012. "Öğretmen Adaylarının Kimlik İşlevlerinin ve Eğitim İnançlarının İncelenmesi". Paper presented at the X. National Science and Mathematics Education Congress, Niğde University, June 27-30.
21. Koehler, M. J. and Mishra, P. 2005. "What Happens When Teachers Design Educational Technology? The Development of Technological Pedagogical Content Knowledge". *Journal of Educational Computing Research,* 32 (2): 131-152. doi: 10.2190/0EW7-01WB-BKHL-QDYV
22. Koehler, M. J. and Mishra, P. 2009. "What is Technological Pedagogical Content Knowledge?". *Contemporary Issues in Technology and Teacher Education,* 9 (1): 60–

70. Retrieved from http://www.citejournal.org/volume-9/issue-1-09/general/what-is-technological-pedagogicalcontent-knowledge/
23. Nathan, E. J. 2009. "An Examination of the Relationship Between Preservice Teachers' Level of Technology Integration Self-Efficacy (TISE) and Level of Technological Pedagogical Content Knowledge (TPACK)". PhD diss., University of Houston.
24. Ornstein, A. C. and Hunkins, F. P. 2014. *Eğitim Programı, Temeller, İlkeler ve Sorunlar*. Translated by Asım Arı. Konya: Eğitim Yayınevi.
25. Sönmez, V. 2009. *Eğitim Felsefesi*. Ankara: Anı Yayıncılık.
26. Şimşek, Ö., Demir, S., Bağçeci, B. And Kinay, İ. 2013. "Öğretim Elemanlarının Teknopedagojik Eğitim Yeterliliklerinin Çeşitli Değişkenler Açısından İncelenmesi". *Ege Eğitim Dergisi,* 14 (1): 1-23. Retrieved from http://dergipark.ulakbim.gov.tr/egeefd/article/view/5000003945/5000004461
27. Ünal, E. 2013. "Öğretmen Adaylarının Teknoloji Entegrasyonu Öz-Yeterlik Algıları ve Teknolojik Pedagojik İçerik Bilgisi Yeterlikleri Arasındaki İlişkinin İncelenmesi". Master diss., University of Ankara.
28. Van Melle, E. V., Cimellaro, L. and Shulha, L. 2003. "A Dynamic Framework to Guide the Implementation and Evaluation of Educational Technologies". *Education and Information Technologies*, 8 (3): 267-285. doi: 10.1023/A:102631211
29. Yazıcı, T. 2017. "Müzik Öğretmeni Adaylarının Eğitim Felsefesi İnançları". *Kastamonu Eğitim Dergisi,* 25 (2): 1-16.
30. Yero, J. L. 2002. *Teaching in Mind: How Teacher Thinking Shapes Education.* Hamilton, MT: MindFlight Publishing.
31. Yılmaz, K., and Tosun, M. F. 2013. "Öğretmenlerin Eğitim İnançları ile Öğretmen Öğrenci İlişkilerine Yönelik Görüşleri Arasındaki İlişki". *Journal of Education and Instruction Research*, 2 (4): 205-218. Retrieved from http://www.jret.org/FileUpload/ks281142/File/23.yilmaz.pdf
32. Yılmaz, K., Altınkurt, Y. and Çokluk, Ö. 2011. "Eğitim İnançları Ölçeği'nin Geliştirilmesi: Geçerlik Ve Güvenirlik Çalışması". *Kuram ve Uygulamada Eğitim Bilimleri*, 11 (1): 335-350. Retrieved from http://www.kuyeb.com/pdf/tr/18a64003ea78af29e6b2e2b1550b9c03azTAM.pdf
33. Yurdakul, I. K. 2011. "Öğretmen Adaylarının Teknopedagojik Eğitim Yeterliklerinin Bilgi ve İletişim Teknolojilerini Kullanımları Açısından İncelenmesi". *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi,* 40: 397-408. Retrieved from http://dergipark.gov.tr/download/article-file/87379