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Öğretmen Adaylarının Hizmet Öncesi Eğitimlerine İlişkin Algıları

Prospective Teachers' Perceptions of their Pre-Service Education

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Öz

Türkiye'de öğretmen eğitimi iki ana yolla sağlanmaktadır. İlk yol, üniversitelerin eğitim fakültelerinde sunulan dört yıllık lisans programlarıdır; bu programlardan mezun olan öğrenciler öğretmen adayı olarak tanımlanmaktadır. Diğer yol ise, eğitim fakülteleri dışındaki dört yıllık lisans programlarından (biyoloji, matematik, ilahiyat, edebiyat, fizik vb.) mezun olup Pedagojik Formasyon Eğitimi Sertifika Programını (PFESP) tamamlayan bireyleri kapsamaktadır. Bu araştırma, eğitim fakülteleri öğrencileri ile PFESP katılımcılarının lisans eğitimine yönelik algı düzeylerini belirlemeyi amaçlamaktadır. Araştırmaya eğitim fakültelerinin fen bilimleri, sosyal bilimler ve okul öncesi eğitimi son sınıf öğrencileri ile PFESP'e kayıtlı öğrenciler katılmaktadır. Bu araştırmada "Hizmet Öncesi Eğitim Yeterliliğine İlişkin Öğretmen Algıları Ölçeği" veri toplamak için kullanılmıştır. Çalışma sonuçlarına göre PFESP öğrencileri ile eğitim fakültesi öğrencileri arasında hizmet öncesi eğitim algı düzeyleri arasında anlamlı bir farklılık bulunmamaktadır. Lisans öğrencilerinin tamamı öğretmenlik mesleğine kendilerini iyi hazırlanmış hissetmektedir. Bir diğer önemli bulgu ise PFESP öğrencilerinin algı düzeyleri fen bilgisi ve sosyal bilgiler öğretmen adaylarından daha yüksektir. Bu ilginç bulgular farklı açılardan değerlendirilmiştir.

Anahtar Kelimeler

Hizmet Öncesi Öğretmen Eğitimi
İyileştirilmiş Fikir Birliği Modeli
Pedagojik Formasyon Eğitimi Sertifika Programı
Pedagojik İçerik Bilgisi

Abstract

In Türkiye, teacher education is provided through two main pathways. One of these is the four-year bachelor's programs offered by the education departments of universities, where students who complete these programs are defined as pre-service teachers. Another area of teacher education involves students who have completed four-year undergraduate programs (in biology, mathematics, theology, literature, physics, etc.) outside the education faculties and subsequently complete the Pedagogical Formation Education Certificate Program (PFECP) to become teacher candidates. The aim of this study is to delineate the perception levels of students in education faculties and PFECP regarding their undergraduate education. The study includes final-year students from the education faculties in science education, social studies education, and preschool education, as well as students enrolled in PFECP. The study utilized the Teacher Perceptions Scale for Adequacy of Pre-Service Education (TPSAPE) as its data collection instrument. The research results indicate that there is no substantial difference between the perception levels of pre-service education between PFECP students and education faculty students. All prospective teachers felt well-prepared for the teaching profession. In fact, the perception levels of PFECP students are higher than those of science and social studies teacher candidates. These interesting findings are discussed from different perspectives.

Keywords

Pre-Service Teacher Training
Refine Consensus Pedagogical Formation Education Certificate Program
Model Pedagogical Content Knowledge

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INTRODUCTION

In education policies, core competencies and qualifications have been identified to train a qualified workforce that can meet the needs of the era and ensure international competitiveness (Yıldız & Yıldız, 2018). For example, the Ministry of National Education (2024) in Türkiye has outlined in the Science Education Program that students should acquire competencies and qualifications such as field skills, conceptual skills, trends, social-emotional learning skills, values, literacy skills, interdisciplinary relationships, inter-skills relationships. Effective and successful teachers are essential to cultivate qualified students who possess these competencies and can compete globally. Education policies, universities, and educational institutions must continuously update and enhance their education programs and practices in light of current developments. For instance, the responsibility of teacher training has been assigned to the education faculties in universities. However, graduates from other faculties can also become teachers through different policies. That is, the need for teachers across Türkiye is met from two sources. The first source is graduates from education faculties, and the second is graduates from other four-year faculties who qualify to become teachers by completing the Pedagogical Formation Education Certificate Program (PFECP).

To understand this study contextually, it is necessary to explain the content of PFECP by comparing it with the education faculty programs. With a decision made by the Council of Higher Education on 28.01.2010, from the 2010-2011 academic year onwards, pedagogical formation education has been provided through certificate training instead of non-thesis master's education (Eraslan & Çakıcı, 2011). Regardless of the faculty or department, all students who meet the necessary conditions, whether still studying or post-graduation, can receive PFECP (Yıldız & Yıldız, 2018). A student who graduates from a faculty other than the education faculty can become a prospective teacher by taking the PFECP courses shown in Figure 1.

Semester I					Semester II				
Course Name	T	A	C	ECTS	Course Name	T	A	C	ECTS
Introduction to Education	3	0	3	6	Assessment and Evaluation in Education	3	0	3	6
Principles and Methods of Instruction	3	0	3	6	Educational Psychology	3	0	3	6
Classroom Management	2	0	2	4	Guidance and Special Education	3	0	3	6
Special Teaching Methods	3	0	3	6	Instructional Technologies	2	0	2	4
Teaching Practice I	1	6	4	8	Teaching Practice II	1	6	4	8
Total for the Semester	12	6	15	30	Total for the Semester	12	6	15	30

*T = Theoretical, A = Applied, C = Credit, ECTS = European Credit Transfer and Accumulation System
**Figure 1 has been organized according to the data from the Council of Higher Education (CHE, 2021).

Figure 1. Courses required for students participating in PFECP

To gain a clearer comprehension of the present circumstances, the courses of the *Biology Teaching Program* in the education faculty have been summarized in Figure 2 according to the data from the Council of Higher Education (CHE, 2018). According to the CHE (2018) undergraduate program for biology teaching, *subject area education* and *professional knowledge* courses constitute 82% of the curriculum. The remaining 18% of the program consists of general culture courses.

When we compare this data with the courses in the Faculty of Science Biology Department, we can see that biology courses are grouped into general culture, professional knowledge, and subject matter knowledge. Within this course distribution, there are no courses related to the professional knowledge of

teaching. In other words, we can say that 18% of general culture courses in the education faculty overlap with the general culture courses in the biology department. A student who graduates from the Faculty of Science Biology Department and participates in the PFECP, taking the courses listed in Figure 1, becomes a prospective teacher by completing the professional knowledge and general culture courses. However, they do not take courses such as approaches to learning and teaching biology, biology teaching programs, and biology teaching 1 and 2. In addition to these compulsory courses, they will also graduate without taking six elective courses related to subject area education. Supporting my explanations, in a study by Çoban and Erkan (2020), the courses of the history department and the history teaching department were compared using quantitative data (course hours, number, type, credits, ECTS, etc.), revealing differences between the two departments. It is particularly emphasized that the history department lacks professional knowledge of teaching courses and that the subject area education courses are not sufficient for an effective teacher. The prevailing opinion is that it is inadequate to bridge this gap with the PFECP (Çoban & Erkan, 2020).

	Professional Knowledge Courses	General Culture	Subject Area Education
Compulsory Courses	Introduction to Education Philosophy of Education Sociology of Education Educational Psychology Research Methods in Education Principles and Methods of Instruction History of Turkish Education Instructional Technologies Turkish Education System and School Management Assessment and Evaluation in Education Ethics and Morality in Education Classroom Management Teaching Practice 1 and 2 Guidance in Schools Special Education and Inclusion	Atatürk's Principles and History of Reforms 1 and 2 Foreign Language 1 and 2 Turkish Language 1 and 2 Information Technologies Community Service Practices	General Biology 1 and 2 General Biology Lab 1 and 2 General Chemistry General Chemistry Lab Approaches to Learning and Teaching Biology Zoology 1 and 2 Zoology Laboratory 1 and 2 Cytology Organic Chemistry Biology Teaching Programs Biochemistry Microbiology Microbiology Laboratory Biology Teaching 1 and 2 Botany 1 and 2 Botany Laboratory 1 and 2 Human Anatomy and Physiology Molecular Biology Genetics Ecology
Elective Courses	6 elective courses required	4 elective courses required	6 elective courses required

Figure 2. Courses of the biology teaching program in the education faculty

Courses like biology teaching 1 and 2 are designed to impart the knowledge and skills necessary for subject and concept-focused teaching. In these courses, pre-service teachers select the concepts they will teach, decide on the methods and techniques for instruction, determine the assessment processes to use, and experience planning, teaching, and reflecting on their teaching practices. Let's try to explain this topic using the Refined Consensus Model (RCM) edited by Carlson and Daehler (2019), the latest and most current model, used in science teacher education. By comparing the education faculty courses with the PFECP courses using the Refined Consensus Model, we can better understand that students in the formation program are becoming prospective teachers without sufficient preparation.

According to the RCM, multiple areas of knowledge and skills surround each other in concentric circles. The outermost circle encompasses pedagogical knowledge, knowledge of students, curriculum knowledge, assessment knowledge, and content knowledge. Students in the faculty of education acquire this knowledge through *professional knowledge courses* in Figure 2. PFECP students, on the other hand, gain this knowledge by taking the courses listed in Figure 1. However, the knowledge and skills necessary

for successful teaching are developed through enacted pedagogical content knowledge (PCK), which forms the innermost ring of the RCM. PCK that a science teacher should possess and the components contributing to the development of this knowledge are identified. PCK, in the broadest sense, refers to the knowledge that teachers use when explaining a subject or concept to students. It involves planning and organizing specific subjects and concepts to be taught based on the interests and abilities of a particular group of learners (Magnusson et al., 1999). According to the RCM, PCK is considered as enacted PCK (ePCK). This ePCK refers to the distinct knowledge and skills employed by a teacher in a specific context, with a particular learner or group of learners, aiming for those learners to grasp a specific concept, set of concepts, or an aspect of the discipline (Carlson & Daehler, 2019). The ePCK here encompasses the planning, teaching, and pedagogical reasoning obtained from teaching a subject in a teacher's classroom. In other words, ePCK is the most active component in classroom instruction. This raises the question: Can teacher candidates acquire the ePCK components at a sufficient level during their undergraduate education? When we look at the undergraduate program in Figure 2, *biology teaching 1 and 2, biology teaching programs, biology learning and teaching approaches* courses, along with the 6 elective courses to be taken, are direct sources that develop ePCK because these are the courses where subject and concept-focused teaching practices are conducted. The only shortcoming of these courses is that teacher candidates may not fully experience student knowledge, a component of PCK, owing to the absence of a real classroom environment. Teaching practice 1 and 2 courses are expected to compensate for this deficiency. Contribution to ePCK occurs in this way for education faculty students, but unfortunately, graduates from other faculties who become prospective teachers through PFECP cannot take courses that support ePCK. While the professional and subject matter knowledge gained throughout undergraduate education supports a strong foundation, research by Abell (2007) and Özcan (2011) suggests it alone is not a sufficient indicator for effective teaching. The ePCK component also needs to be strong. PFECP students can only develop ePCK through Teaching Practice 1 and 2 courses and contribute to their general pedagogy with the courses they take in Figure 1. So, PFECP students can possess subject matter knowledge, general pedagogy, student knowledge, and assessment knowledge, which is the outermost circle in the RCM. It does not seem possible to reach the ePCK, which is the innermost circle where actual teaching takes place, through undergraduate education and PFECP.

The theoretical framework above, the teaching competency of education faculty, and the PFECP students have been analyzed within the scope of their courses. Based on this comparison, the following hypothesis can be formulated:

Education faculty students have more knowledge and skills than students participating in PFECP to be able to teach.

When the literature is examined, many scholars address the dissimilarities in quality between education faculty students and PFECP students: (1) Candidates enrolled in this certification program lack sufficient professional teaching qualifications and skills (Azar, 2011; Köse, 2017; Yılmaz, 2015). (2) Acquiring the desired qualifications within a short timeframe, such as one year, is unattainable (Kiraz & Dursun, 2015; Köse, 2017; Tanrıkulu, 2017). (3) The PFECP falls short in adequately supporting the affective domain of candidates, including professional attitudes, values, motivation, and a passion for teaching (Elkatmış et al., 2013; Köse, 2017). (4) Participants in the PFECP view the program as a mere formality (Köse, 2017). (5) This program is lacking when it comes to practical application, as it primarily focuses on theoretical knowledge (Kiraz & Dursun, 2015). In summary, both researchers and experts hold unfavourable opinions regarding the PFECP, and even candidates have raised concerns and provided negative evaluations of the program (Gurol et al., 2018).

Considering the criticisms mentioned above, there is a necessity for research aimed at uncovering data concerning the effectiveness of the PFECP (Gurol et al., 2018; Kiraz & Dursun, 2015; Yenice & Alpak Tunç, 2017). Existing literature primarily focuses on topics such as the attitudes of students participating in PFECP toward the teaching profession (Kartal & Afacan, 2012; Polat, 2013), their metaphorical perceptions of PFECP (Yapıcı & Yapıcı, 2013), their views on the effectiveness of PFECP (Sağlam, 2015),

their opinions regarding the teaching practice course within PFECP (Tepeli & Caner, 2014), their perspectives on critical pedagogy (Aslan & Kozikoğlu, 2015), and the examination of digital literacy levels (Çetin, 2016). However, there is a lack of studies in the literature comparing the professional competencies of education faculty students with those of pedagogical formation students. This study, by comparing teacher candidates' perceptions of pre-service education, aims to serve as a starting point for such comparative research and holds the potential to pave the way for future studies. In this respect, the study is considered to have an original value.

Purpose, Problems, and Hypothesis

While considering the criticisms mentioned above, it is also necessary to examine the perceived adequacy of training from the perspective of PFECP students. The aim of this research is to uncover the perceived adequacy levels of pre-service training among education faculty and PFECP students. This will allow the training received to be evaluated from the perspective of prospective teachers.

In this context, three main research questions will be investigated to test the following hypothesis: Education faculty students have more knowledge and skills than students participating in PFECP to be able to teach.

1. What are the perception levels of prospective teachers regarding the pre-service training they have received?

2. Is there a difference in the perception levels of pre-service training between education faculty students and PFECP students?

3. Is there a difference in the perception levels of pre-service training among students based on their departments (science education [SE], social studies education [SSE], preschool education [PE], and PFECP)?

METHOD

Since this research seeks to explore the views of prospective teachers on the pre-service education they have received, it has a descriptive survey research design. Survey research involves describing the current situation in line with the research purpose by gathering views from large groups (Büyüköztürk et al., 2023). In other words, it involves collecting data from a selected sample at a single point in time (a cross-sectional survey) (Fraenkel et al., 2012).

The Participants of this Study

The participants of this research involves senior prospective teachers enrolled in the education faculties of three state universities located in the Eastern Anatolia Region (Science Education [81], Social Studies Education [48], Preschool Education [65]), as well as senior undergraduate students participating in the PFECP (144). Convenience sampling was employed to select the participants for this study. The purpose of choosing this method was to facilitate easy access to the sample while minimizing time and labor loss (Büyüköztürk et al., 2023; Fraenkel et al., 2012).

After this study was designed, an application was made to the XXX University Scientific Research and Publication Ethics Committee Board for the necessary ethical approvals, and it was confirmed that the study did not pose any ethical issues with the approval dated 12/04/2023 and numbered 2023-44.

The Data Collection Tool

This research utilized a single measurement tool: the Teacher Perceptions Scale for the Adequacy of Pre-Service Education (TPSAPE) developed by Kozikoğlu and Senemoğlu (2018) with 329 first-year teachers. The measurement tool consists of 25 items and is structured into two factors. The researchers determined the reliability of the five-point Likert scale using the Cronbach Alpha value, which was found to be 0.94 for the first factor and 0.89 for the second. The overall reliability of the scale was 0.94.

Looking at the factors of the scale, the first factor is planning and implementing instruction, and the second factor is relationships with learners, teachers, managers, parents, and community. Table 1 shows sample items for each dimension of the scale.

Considering the validity and reliability metrics of the scale and its items, it was concluded that this measurement tool is suitable for use consistent with the study's objective.

Table 1. Sample Items from the Data Collection Tool

Factors of the Scale	Sample Items
Planning and Implementing Instruction	Ability to plan instruction in a way that captures students' interest
	Ability to organize the learning environment according to students' interests and needs
	Ability to conduct lessons using effective teaching-learning materials
Relationships With Learners, Teachers, Managers, Parents, and Community	Ability to communicate effectively with school administrators
	Ability to organize extracurricular socio-cultural activities at school

Data Analysis

Pre-service teachers are the participants in this research, and the original scale used in the study was developed with novice teachers (one year of teaching experience). Therefore, the validity and reliability of the data tool were checked using Confirmatory Factor Analysis (CFA). CFA is considered to evaluate the validity and reliability of a measurement tool and to confirm a predetermined structure (Çokluk et al., 2023). Additionally, CFA is employed when the factor structure of a known scale is tested again with a different sample (Basilevsky, 1994). One advantage of CFA is that it provides various types of fit indices to evaluate the fit of a theoretically defined model with the data (Şekercioğlu et al., 2014), and using these fit indices together allows for a more accurate decision regarding the construct validity of the measurement tool (Sümer, 2000).

Based on the CFA results, the fit indices for the scale were found to be AGFI: .82, GFI: .85; NFI: .96, NNFI: .96; CFI: .97; RMR: .046; SRMR: .054, RMSEA: .079; $\chi 2/df$: 3.67. The $\chi 2/df$ ratio being less than 5 indicates a moderate fit (Sümer, 2000), and the CFI, NNFI, and NFI values being higher than .95 indicate an excellent fit. The GFI and AGFI values are below the threshold for a good fit. An RMSEA value below .08 represents an acceptable fit (Abell et al., 2009). The GFI and AGFI values showed weak fit as they fell below the specified threshold (Çokluk et al., 2023). Since each fit statistic reflects a specific aspect of the model, a weak fit in one statistic does not imply that the model is invalid. This is because goodness-of-fit values are critical indicators of how well the model as a whole is supported by the data (Erkorkmaz et al., 2013). Therefore, other fit indices (NFI, NNFI, CFI, RMR, SRMR, RMSEA) confirm that the structure in this study demonstrates adequate fit. Specifically, the excellent fit indicated by the NFI, NNFI, and CFI values (>.95) and the acceptable fit indicated by the RMSEA value (<.08) support the validity of the scale. Additionally, all scale items have factor loadings greater than .30, which suggests that the factorial validity of the scale is achieved (Demir & Yurdagül, 2014). In the literature, it has been emphasized that even when certain fit indices approach or fall below critical thresholds, a reliable evaluation of the scale's validity can be made if other fit indices show strong results (e.g., Sümer, 2000). Therefore, in this study, the overall validity of the scale is considered adequate in light of the CFA results.

In summary, the findings from the CFA show that this structure has adequate fit indices. When checking the scale's reliability, the Cronbach's Alpha (α) internal consistency coefficient was found to be .91 for the first factor, .89 for the second factor, and .94 for the overall scale. These values indicate high internal consistency for the scale items by dimensions.

Different statistical methods were used to answer each research question. Descriptive parameters (n, $\bar{x}$, and sd) were reported to identify the participants' perceptions of their pre-service education. To compare the scores of the PFECP and the education faculty students, a t-test was used, and to compare the perceptions of each department, a one-way ANOVA with post hoc Scheffé test was employed.

FINDINGS

The goal of this research is to uncover the perception levels of pre-service education among teacher candidates. Each research question is reported under a separate heading to report the research questions.

First Research Question

The first research question was, "What are the perception levels of pre-service education among teacher candidates?" Descriptive statistical data were used to answer this question.

The 5-point Likert scale (1=inadequate, 2=low level, 3=medium level, 4=good level, and 5=very good level) used in the study consists of 25 items, allowing participants to score a maximum of 125 and a minimum of 25 points. According to the data in Table 2, preschool teacher candidates scored the highest. The PFECP students have a higher perception level than the science and social studies teacher candidates.

Based on the 5-point Likert average of the scale, the science, social studies, and PFECP students fall within the good level range. Only the preschool students scored above an average of 4, indicating they have a very good perception of the education they received.

Table 2. Perception Levels of Teacher Candidates by Department

Department	n	$\bar{x}$	sd
Science Education	81	91.97 *	13.46
		3.69 **	0.56
Social Studies Education	48	89.52	12.24
		3.58	0.48
Preschool Education	65	101.61	12.85
		4.06	0.51
PFECP Students	144	95.89	16.13
		3.83	0.64

*The average of total scores is between 25 and 125
**The average scores are between 1 and 5

When examining the levels of perception among prospective teachers within the factors of the scale, Table 3 summarizes the results.

Table 3. Perception Levels of Teacher Candidates According to the Factors of the Scale

Department		1st factor		2nd factor	
	n	$\bar{x}$	sd	$\bar{x}$	sd
Science Education	81	3.61	0.57	3.85	0.65
Social Studies Education	48	3.53	0.56	3.67	0.65
Preschool Education	65	4.01	0.51	4.16	0.58
PFECP Students	144	3.77	0.64	3.93	0.76

Note: The range values for the scale are defined as follows: 1-1.79 insufficient, 1.80-2.59 low, 2.60-3.39 moderate, 3.40-4.19 good, 4.20-5.00 very good.

When analysing the first factor of the scale, it is observed that science, social studies, and PFECP students have scores between 3.5 and 4.0, which is considered good. Preschool education students scored the highest, with an average above 4.0, indicating a good perception of their training. A similar distribution is seen in the second factor, with teacher candidates perceiving their training there to be more adequate. Interestingly, a comparison of the two factors reveals that teacher candidates perceive their training in the second factor (relations with students, colleagues, etc.) to be more adequate than in the first (planning and implementing instruction).

Second Research Question

The second research question was defined as "Is there a difference in the perception levels of pre-service training between education faculty and PFECP students?" To address this question, a parametric test, the t-test, was conducted. Firstly, the normal distribution and homogeneity of variance criterion required for the test were analyzed, and it was found that the scores of both groups followed a normal distribution and that the scores of both groups were homogeneously distributed. After ensuring the necessary assumptions for the t-test, the t-test was carried out, and the outcomes are summarized in Table 4.

Table 4. Independent Sample T-Test Results among Scores of the Education Faculty and PFECP Students

	n	$\bar{x}$	sd	t	p
Education faculty students	272	94.11	13.55	-1.199	.231
PFECP Students	144	95.90	16.13		

An independent-sample t-test was performed to compare the scores of education faculty students and PFECP students. The results showed no significant difference in the scores of education faculty students." (M= 94.11, SD = 13.55) and PFECP students (M=95.90, SD = 16.13; t(416) = -1.199, p= .231, two-tailed).

Third Research Question

The third research question was "Is there a difference in the perception levels of pre-service training among students from different departments (SE, SSE, PE, and the PFECP group)?" A one-way ANOVA was utilized to uncover the third research question. Table 5 presents the ANOVA results across the groups.

Table 5. One-Way ANOVA Results among Departments

	Sum of squares	df	Mean square	F	Sig.
Between groups	4942.561	3	1647.520	7.862	.000
Within Groups	70410.750	336	209.556		
Total	75353.310	336			

The ANOVA results indicate a significant difference between the groups. The effect size was calculated using Eta Squared and a moderate effect size of .07 was found. A Scheffe post-hoc multiple comparison test was conducted to examine this difference in more detail, and the results are shown in Table 6.

Table 6. Post-Hoc "Scheffe" Results for Departments.

Departments	Science Education	Social Studies Education	Preschool Education	PFECP Students
Science Education		.760	.002	.380
Social Studies Education	.760		.000	.075
Preschool Education	.002	.000		.073
PFECP Students	.380	.075	.073	

Comparisons between groups were made based on a p-value significance level of .05.

A one-way ANOVA was performed to investigate whether there were differences in the perception levels of pre-service training among students from different departments (SE, SSE, PE, and the PFECP group) as measured by the TPSAPE. Participants were categorized into four groups based on their departments. A significant statistical distinction was observed at the $p < .05$ level in scale scores for the four departments: F (3, 336)=7.86 $p < .05$. Besides achieving statistical significance, the observed difference in average scores between the groups was moderate. The effect size, calculated using eta squared, was .07. Post-hoc comparisons using the Scheffe test indicated that the mean score for Preschool Education (M = 101.61, SD = 12.85) was significantly different from Science Education (M = 91.97, SD = 13.49). Preschool Education (M = 101.61, SD = 12.85) significantly differed from Social Studies Education (M=89.52, SD=12.24). However, PFECP Students (M=95.89, SD=16.13) did not differ significantly from other groups (Science Education, Social Studies Education, and Preschool Education).

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

This research aims to determine and compare the perceived adequacy of pre-service training among students from education faculties (science, preschool, and social studies) and those enrolled in the PFECP program. Research data was obtained by using the TPSAPE. This scale consists of two sub-dimensions: "planning and implementing instruction" and "relations with students, colleagues, administrators, parents, and the community".

The first research question was formulated as "What are the perceived adequacy levels of pre-service training among teacher candidates?" According to the findings, preschool education students had the highest perception levels, indicating "good" in both sub-dimensions of the scale. Other teacher candidates also reported good levels of perceived adequacy. When comparing these results with other research findings, four relevant studies emerge from the literature. Kozikoğlu (2016) collected data from first-year teachers, reporting average scores of 3.79 and 3.80 for the first and second factors of the scale, respectively. Gül and Köse (2021), working with a similar group, found averages of 4.10 and 4.20 for the first and second factors. Yıldız (2020) conducted a study with teacher candidates and reported an overall average of 3.91 on the scale. Lastly, Sağın and Karabulut (2020) conducted a study with physical education teachers, finding average scores of 2.98 and 3.37 for the first and second factors, respectively. These findings indicate that participants generally scored lower in the first factor of the scale, which focuses on planning and implementing instruction, and higher in the second factor. Similarly, the data obtained in this study show parallel results with other studies, as teacher candidates rated their pre-service training at a good level. Consistent with other research, all teacher candidates scored higher in the second factor than in the first. This suggests that teacher candidates perceive their social communication skills to be stronger than their competencies in planning and implementing instruction.

The second research question was formulated as "Is there a difference in the perceived adequacy levels of pre-service training between education faculty students and PFECP students?" Contrary to the hypothesis, the findings revealed no significant difference between the two groups. The theoretical hypothesis suggested that education faculty students should have higher perceived adequacy levels of

training compared to PFECP students. However, the results indicated that PFECP students had slightly higher scores.

PFECP students feeling better about their undergraduate education for the teaching profession compared to education faculty students can be explained by various reasons. Firstly, PFECP students might perceive the processes of planning, implementing, and evaluating any course in their field to be simpler because they do not fully understand the teaching profession. Specifically, PFECP students might have a traditional view of teaching, shaped by their own experiences as students and the presentation styles of university lecturers. At this point, they may believe that only theoretical knowledge (content knowledge) is sufficient for teaching. However, when examining the literature, it is evident that having strong content knowledge does not make one an effective and successful teacher (Abell, 2007; Özcan, 2011). In a study by Demirtaş and Kırbaç (2016), when PFECP students were asked to list the most important courses they took as part of their pedagogical training, they emphasized courses like guidance, educational psychology, and introduction to educational sciences as very important. Among these courses, there are no courses such as Teaching Practice or Special Teaching Methods that develop teacher candidates' PCK (Pedagogical Content Knowledge). When this group of PFECP students was asked, "Can teaching be done without receiving PFECP?" 43% of the participants argued that the pedagogical certification program is not necessary (Demirtaş & Kırbaç, 2016). In summary, PFECP students lack sufficient knowledge about teaching practice, so they have low expectations about teaching or the certification program (Dursun & Kiraz, 2017). Additionally, PFECP students might think that the certification program will not significantly contribute to their professional development as teachers. In a study conducted by Ulubey et al. (2018) with 301 PFECP students, the students' perceptions of their professional identity were determined. When examining the data collected before and after the certification program, particularly the sub-dimension of seeing oneself as a teacher, the average score in the first measurement was 3.98, while in the final measurement, it was 3.90. The overall results showed that PFECP students perceived their teacher identity as moderate to high at the onset of the pedagogical training. This suggests that teacher candidates exhibit a stronger sense of teacher identity at the start of the PFECP. These values show that the training provided in PFESP does not affect the teacher identity perceptions of teacher candidates.

On the other hand, education faculty students, having experienced the nature of the teaching profession, understand that classroom learning is far from easy. They know well that planning, implementing, and evaluating a lesson requires significant effort and dedication. Particularly, managing student interactions in a classroom setting demands a distinct pedagogy. Education faculty students, who are adept in this process, might feel somewhat anxious when it comes to teaching and learning. Dadandı et al. (2016) studied the anxiety levels of education faculty and PFECP students and found that the anxiety levels of education faculty students were significantly higher than those of the other group.

The third research question asked, "Is there a difference in the perception levels of pre-service education among students from different departments (SE, SSE, PE, and PFECP)?" The findings showed that the PFESP group did not have a significant difference compared to any of the other departments. However, there was a significant difference between preschool education students and those from science education and social studies education.

It was unexpected in this study that the perception levels of pre-service education among science and social studies teacher candidates were lower than those of PFECP students. We attempted to explain this discrepancy in the first part of the discussion and conclusion section. No noteworthy distinction was found between students in preschool education and PFECP. When comparing these findings with self-efficacy studies in the literature, different results emerge. For instance, Yaşar Ekici (2017) examined the self-efficacy of preschool education and PFECP students regarding the teaching profession, finding that PFECP students had significantly different self-efficacy levels. In this study, preschool education teacher candidates had higher pre-service perception levels. The self-efficacy beliefs of teacher candidates towards the teaching profession vary across different departments (Bakaç & Özen, 2017). For example,

teacher candidates studying social studies have been found to possess higher levels of effective teaching-learning self-efficacy beliefs compared to those studying science-mathematics and foreign languages (Tabancalı & Çelik, 2013). However, in this study, social studies teacher candidates had the lowest scores.

Another factor is the difference between the perceptions of preschool education teacher candidates and those of science and social studies teacher candidates. This could be attributed to the entrance exam scores for preschool education programs (average 394), which are higher than those for other departments (science education=308, social studies education=344). Preschool education teacher candidates who achieve a certain level of success in high school education may feel more equipped. Additionally, the content of the preschool education undergraduate program, which is activity and play-based and caters to the age group of 4-6 years, may not be perceived as challenging for teacher candidates. Another factor could be the intensive course content for science and social studies teacher candidates at the undergraduate level, along with the expectation of planning and implementing lessons at the middle school level, which may make them, feel inadequate in their undergraduate education.

In conclusion, this study investigated the perceptions of pre-service education among final-year undergraduate students enrolled in education faculties and PFECP programs. The hypothesis formulated before the study was that "the perception scores of education faculty students regarding pre-service education will be higher than those of PFECP students." However, the results of the study did not support this hypothesis. Possible discussions regarding why this was not the case have been attempted to be explained in the preceding paragraphs. This study was conducted using a quantitative survey design with the "pre-service education perception scale" and had certain limitations. Based on these data, the reasons why the perceptions of PFECP students were higher than those of education faculty students could be explained to a certain extent. Further research is needed for more detailed insights. For example, qualitative studies could compare the school experiences and courses of PFECP students with those of education faculty students. During this process, the teaching performance of PFECP students could be examined in real classroom settings to determine the extent to which these students can effectively and successfully teach based on their undergraduate and PFECP education.

ETHICS COMMITTEE APPROVAL

An application was made to the XXX University Scientific Research and Publication Ethics Committee Board for the necessary ethical approvals, and it was confirmed that the study did not pose any ethical issues with the approval dated 12/04/2023 and numbered 2023-44.

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