International Journal of Current Educational Studies

2025, Vol. 4, No. 2, 72-88 ISSN 2822-4914

An Investigation of Pre-service Teachers' Curriculum Expertise in Terms of Pedagogical Knowledge and Educational Beliefs

Özgül Balcı[1], Güngör Yumuşak[2]

Article Info

Article Type

Original Research

Article History

Received:
10 September 2025
Accepted:
25 December 2025
Published online:
26 December 2025

Abstract

This study examined the associations between pre-service teachers' pedagogical knowledge and skills and their educational beliefs within the framework of curriculum expertise. Using a quantitative approach with descriptive and correlational survey models, researchers collected data from 403 pre-service teachers who volunteered through the Educational Beliefs Scale and the Pedagogical Knowledge and Skills Scale. The results were analyzed using Spearman's rho and Kruskal–Wallis H tests. Participants predominantly identified with Existentialist (56.6%) and Progressivist (22.6%) educational beliefs, while Essentialist beliefs were least represented (3.2%). Significant positive correlations ($r = .41–.54$, $p < .001$) were found between pedagogical competencies and Progressivism, Existentialism, Reconstructionism, and Perennialism. Conversely, no significant relationship emerged between Essentialist beliefs and pedagogical competencies. Reconstructionists exhibited the highest scores in pedagogical knowledge and skills, while Essentialists scored the lowest. The findings suggest that contemporary, student-centered beliefs foster curriculum expertise more effectively than traditional orientations. A notable gap remains in curriculum implementation research regarding the interaction between philosophical orientations and pedagogical skills. The study recommends that teacher education programs incorporate reflective activities to align candidates' beliefs with contemporary pedagogical requirements, thereby enhancing their curriculum expertise.

Keywords: Curriculum expertise, Pedagogical knowledge, Educational beliefs, Pre-service teachers.

Citation:

Balcı, Ö., & Yumuşak, G. (2026). An investigation of pre-service teachers' curriculum expertise in terms of pedagogical knowledge and educational beliefs. *International Journal of Current Education Studies (IJCES)*, *4*(2), 72-88. https://doi.org/10.46328/ijces.206

[1] Corresponding Author, Assoc. Prof. Dr., Necmettin Erbakan University (ROR), School of Foreign Languages, Konya, Türkiye. obalci@erbakan.edu.tr, Orcid ID: 0000-0001-5974-4387

[2] Assoc. Prof. Dr., Necmettin Erbakan University (ROR), Ahmet Keleşoğlu Faculty of Education, Konya, Türkiye. gyumusak@erbakan.edu.tr, Orcid ID 0000-0001-5623-463X

Introduction

The achievement of educational objectives is realized through a specific curriculum and the mediation of teachers, who serve as the primary practitioners of this program. In this context, it is of paramount importance that teachers possess sufficient pedagogical knowledge regarding the requirements of the curriculum and the procedures for its implementation. As Gökçek and Yılmaz (2019) state, pedagogical knowledge and skills relate to instructional techniques and strategies that facilitate learning, encouraging teachers to assume the roles of learning facilitators, coaches, models, evaluators, managers, and advocates. As highlighted by Tunca et al. (2015), the educational beliefs held by teachers constitute a fundamental determinant in their effective implementation of curriculum, fulfillment of professional roles and responsibilities, and exhibition of classroom behaviors that foster learning and thinking. In this respect, it is essential that teachers' educational beliefs act as a supportive mechanism in the process of putting curriculum into practice.

Educational beliefs occupy a central role in understanding the teaching-learning process and, particularly within the context of teacher education, encompass implicit and often unquestioned intellectual dispositions that influence how pre-service teachers learn to teach and make sense of this process (Fives & Buehl, 2008). For this reason, beliefs are regarded as personal cognitive structures that provide the foundation for teachers to interpret, evaluate, and formulate judgments regarding their own practices (Santos & Miguel, 2019). The fact that teachers simultaneously hold beliefs across numerous domains highlights the multidimensional nature of this construct. Indeed, teachers maintain an expansive belief system ranging from epistemological beliefs concerning the nature of knowledge to student-related beliefs regarding motivation, achievement, anxiety, cultural characteristics, and abilities; from self-oriented beliefs such as self-efficacy, self-worth, and self-concept to instructional beliefs regarding the content to be taught and pedagogical methods; and even extending to attitudes and beliefs toward social, ethical, and political issues affecting instruction (Levin, 2014). This multi-layered structure demonstrates that teachers' educational beliefs are significant determinants of pedagogical decisions and classroom behaviors. These beliefs often organize into distinct profiles that characterize a teacher’s overall approach.

Recent research on the interaction between curriculum knowledge and pre-service teachers' belief systems emphasizes the role of these elements in teacher education. For instance, an action research study conducted by Kerimoğlu and Altun (2024) demonstrated that the Backward Design approach significantly enhanced preschool pre-service teachers' curriculum knowledge. Similarly, Şahin and Aşkın Tekkol (2023) reported that primary school pre-service teachers exhibited high levels of curriculum literacy and achieved success in curriculum knowledge assessments. Likewise, Avcı and Kutluca (2022) found that preschool pre-service teachers held child-centered pedagogical beliefs and demonstrated high levels of pedagogical content knowledge, with these variables moderately predicting the quality of instructional practices. In a study analyzing science pre-service teachers' reflective journals, Dragnić-Cindrić and Anderson (2024) identified that candidates developed themes related to pedagogical content knowledge dimensions such as science teaching approaches and science curriculum knowledge; however, knowledge regarding the assessment dimension received less emphasis. Furthermore, examining the relationship between knowledge and beliefs, Yang et al. (2020) found that Chinese pre-service mathematics teachers' beliefs showed a stronger association with their self-reported inquiry-oriented instructional

practice than did their mathematical content knowledge and pedagogical content knowledge, with beliefs acting as mediators between knowledge and instructional practice. Similarly, Xiong et al. (2022) revealed that pre-service teachers' epistemic beliefs significantly influenced their perceptions of technological pedagogical content knowledge, with positivist and partial constructivist clusters demonstrating stronger TPACK perceptions than constructivist pre-service teachers. Moreover, Nousheen et al. (2024) demonstrated significant differences in pre-service teachers' self-efficacy, perceived content knowledge, and pedagogical knowledge following a teaching practicum, highlighting the dynamic nature of these constructs during teacher preparation. Finally, Poulton (2025) highlighted in an Australian study that pre-service teachers perceived curriculum not merely as "content to be delivered" but as an actively shaped process; nevertheless, existing field experiences predominantly remained characterized by passive acceptance of curriculum. These findings indicate that pedagogical knowledge and beliefs play a critical role in developing pre-service teachers' curriculum competence.

Teachers' educational beliefs directly shape their classroom practices and the way they implement the curriculum. It can be argued that the attitudes and behaviors teachers exhibit, the roles they assume, their responsibilities, and their teaching competencies are largely forged in line with their educational beliefs. This is because teachers' educational beliefs are determined and guided by the educational philosophy they adopt (Tuncer & Yılmaz, 2024). Accordingly, the study by Berkant and Özaslan (2019) revealed that Progressivism scores were significantly higher among those adopting a student-centered approach, whereas Essentialism scores were higher among those favoring a teacher-centered approach. Furthermore, both types of beliefs were found to differ in favor of those who deem subject-oriented instruction appropriate. Similarly, the study by Baş and Şentürk (2019) indicates that teachers' educational beliefs are a primary factor determining curricular orientations. While teachers with traditional beliefs tend to adopt a subject-centered approach, those with contemporary beliefs exhibit orientations that place the student and the problem at the center. There are also studies indicating that educational beliefs affect instructional environments not only at the level of pedagogical preferences but also in broader dimensions such as democratic attitudes. For instance, Sönmez Ektem (2019) demonstrated that as pre-service teachers' existentialist educational philosophy beliefs increase, their democratic attitudes rise; conversely, as essentialist beliefs strengthen, democratic attitude scores decrease. These results show that educational beliefs are a critical variable determining the democratic quality of learning environments beyond classroom practices. In this context, the work of Oğuz et al. (2014) points to another facet of how educational beliefs format instructional settings, showing significant relationships between teachers' educational beliefs and behaviors that support learner autonomy.

Teachers' established beliefs regarding the concepts of learning, teaching, and studentship directly format their classroom decisions and pedagogical approaches. Therefore, it is insufficient for planned educational innovations to be carried out only at the level of the curriculum, instructional materials, or assessment systems. According to Pajares (1992), a large portion of educational research measures teacher behavior but often overlooks the cognitive foundations—specifically belief systems—underlying these behaviors. However, it is belief rather than knowledge that guides teacher behavior; knowledge becomes operational in ways sanctioned by the belief system. In this respect, educational reform efforts cannot be permanent unless a transformation occurs at the level of beliefs. Pajares (1992) emphasizes that contemporary approaches such as student-centered learning are possible

not merely through the renewal of instructional materials, but through a shift in teachers' beliefs regarding the nature of learning. Consequently, identifying the educational beliefs of teachers and pre-service teachers is of great importance for understanding and explaining their behaviors (Yılmaz et al., 2011; Yılmaz & Tosun, 2013).

Building upon this interaction between belief and behavior, teacher competence is best understood as a multidimensional concept encompassing subject matter knowledge, pedagogical content knowledge, and general pedagogical knowledge, as well as skills in perception, interpretation, and decision-making (König et al., 2015). To fully comprehend the nature of this competence, it is essential to examine the interplay between knowledge and belief. Although Pajares (1992) identifies these as distinct yet mutually influencing constructs, Ennis (1994) provides a critical distinction: he defines knowledge as factual structures grounded in the consensus of experts within a discipline, while characterizing beliefs as personal and experiential elements that dictate how specific knowledge is utilized.

Ennis (1994) argues that while pre-service teacher preparation often prioritizes declarative (what) and procedural (how) knowledge, beliefs—functioning as conditional knowledge—are equally vital for the acquisition, organization, and application of knowledge within the instructional process. Unifying these elements, Ennis (1994) proposes the concept of "curriculum expertise," which he defines as "the ability to select and transmit content appropriate for the learner within a specific contextual setting and situation" (p. 164). According to Ennis (1994), this expertise does not stem from knowledge alone but emerges from the synthesis of educational beliefs and pedagogical knowledge. Ultimately, this blending fosters a commitment to student learning and guides critical curricular decisions regarding content selection, instruction, and assessment.

This theoretical framework of curriculum expertise gains particular relevance in dynamic educational contexts. With the frequent renewal of curriculum in Türkiye, which increasingly prioritize student-centered frameworks, teachers continuously encounter new pedagogical approaches and practices. While the frequency and scope of curriculum renewals are separate subjects of investigation, it is anticipated that misalignments between teachers' established educational beliefs and the constructivist nature of these programs may influence the implementation process. In this context, determining teachers' levels of curriculum expertise will facilitate an understanding of their reactions to renewed curriculum and implementation processes.

Given this theoretical and contextual background, the aim of this study is to examine the relationship between the pedagogical knowledge and skill levels of pre-service teachers and their educational beliefs, to reveal variations in pedagogical knowledge and skills based on different educational belief profiles, and to evaluate these two constructs within the framework of curriculum expertise.

To this end, the study sought to answer the following research questions:

1. What are the profiles of pre-service teachers' dominant educational beliefs and their levels of pedagogical knowledge and skills?
2. Is there a significant relationship between pre-service teachers' educational belief scores and their pedagogical knowledge and skill scores?

3. Do pre-service teachers' pedagogical knowledge and skill levels differ significantly according to their dominant educational belief groups?

Method

Research Design

This study was designed using a descriptive and correlational survey model within the framework of a quantitative research approach to examine the relationships between pre-service teachers' pedagogical knowledge and skill levels and their educational beliefs. The research model aims to reveal the current state and examine the students' curriculum expertise by statistically testing the relationships between educational beliefs and pedagogical knowledge and skill scores.

Participants and Procedure

The study group consisted of 403 pre-service teachers enrolled at the Faculty of Education of a state university in Turkey. Participants were recruited using convenience sampling, which was selected due to accessibility and the exploratory nature of the study. The primary inclusion criterion was active enrollment in an undergraduate teacher education program, ensuring that all participants were undergoing formal pedagogical training.

The sample demonstrated diversity across several demographic and academic characteristics. In terms of gender distribution, 56.1% of the participants were female (n = 226) and 43.9% were male (n = 177). The age of participants ranged from 18 to 31 years, with a mean age of 19.85 years (SD = 2.93). Regarding academic standing, the distribution across year levels was as follows: second-year students comprised 47.4% (n = 191), third-year students 19.9% (n = 80), and fourth-year students 32.8% (n = 132), indicating a higher concentration of second and fourth-year students who possessed more extensive pedagogical coursework and field experience.

Participants represented multiple teacher education programs within the faculty. The distribution by program was: Elementary Education 28.5% (n = 115), Early Childhood Education 19.6% (n = 79), Science Education 14.4% (n = 58), Social Studies Education 12.2% (n = 49), Mathematics Education 10.9% (n = 44), Turkish Language Education 8.7% (n = 35), and English Language Education 5.7% (n = 23). This diverse program representation enhanced the breadth of pedagogical perspectives captured in the study.

A substantial proportion of participants (92%, n = 371) had completed at least one course in educational philosophy or curriculum development, providing them with foundational knowledge of educational belief systems and curriculum theory. This background was considered essential for meaningful engagement with the research instruments, particularly the Educational Beliefs Scale.

Data were collected by the researchers during regularly scheduled course hours. Prior to data collection, participants were provided with detailed information about the study's purpose, procedures, and their rights as research participants. Informed consent forms were distributed, and participation was entirely voluntary. All

participants who agreed to participate signed consent forms, confirming their understanding that participation could be withdrawn at any time without consequence. No personal identification information was requested or collected to ensure anonymity. Participants then completed the Educational Beliefs Scale and the Pedagogical Knowledge and Skills Scale, respectively, in a single session. The entire data collection process was conducted in accordance with ethical principles and institutional review board guidelines. The distribution of pre-service teachers' dominant educational beliefs is presented in Table 1.

Data Collection Instruments

Educational Beliefs Scale

The Educational Beliefs Scale, developed by Yılmaz et al. (2011), was used to determine the pre-service teachers' beliefs regarding educational philosophies. The scale consists of 40 items rated on a 5-point Likert type and comprises five sub-dimensions: Progressivism, Existentialism, Reconstructionism, Perennialism, and Essentialism. In the original development study, construct validity was demonstrated through exploratory and confirmatory factor analyses; it was reported that factor loadings ranged from .42 to .74, and Cronbach's alpha coefficients for the sub-dimensions ranged from .70 to .91. The scale does not yield a total score. A high score obtained from a sub-scale indicates that the participant adopts and believes in the educational philosophy represented by that sub-scale, whereas a low score indicates a low level of belief in the respective philosophy. In this study, sub-dimension scores were calculated by dividing the sum of the relevant items by the number of items, and these mean scores, ranging from 1 to 5, were used in the analysis. In the current study, the internal consistency of the Educational Beliefs Scale was examined using Cronbach's alpha coefficients. The analysis yielded reliability coefficients of .88 for Progressivism, .89 for Existentialism, .84 for Reconstructionism, .78 for Perennialism, and .82 for Essentialism. The overall Cronbach's alpha coefficient was calculated as .93, indicating excellent internal consistency. Since all sub-dimension coefficients exceeded the commonly accepted threshold of .70, the scale was deemed reliable for the present sample.

Pedagogical Knowledge and Skills Scale

To evaluate pre-service teachers' pedagogical knowledge and skill levels regarding instructional processes, the Pedagogical Knowledge and Skills Scale was applied. Developed by Wong et al. (2012) and adapted into Turkish with validity and reliability studies conducted by Gökçek and Yılmaz (2019), the scale consists of 37 items across six sub-dimensions: student learning, lesson planning, instructional support, accommodating diversity, classroom management, and care and concern. The items are rated on a 5-point Likert-type scale. The possible scores obtainable from the scale range from a minimum of 37 to a maximum of 185. The factor loadings of the items in the scale range between .39 and .81. The Cronbach's Alpha coefficient was found to be .94 for the overall scale, while the reliability values for the sub-dimensions ranged from .70 to .88. In this study, mean scores were calculated for each sub-dimension, and the total score derived from all items represented the pre-service teachers' general pedagogical knowledge and skill level. For the current study, the internal consistency of the Pedagogical Knowledge and Skills Scale was assessed using Cronbach's alpha coefficients. The reliability values were

calculated as .90 for Student Learning, .92 for Lesson Planning, .89 for Instructional Support, .93 for Accommodating Diversity, .83 for Classroom Management, and .86 for Care and Concern. The scale demonstrated excellent internal consistency with an overall Cronbach's alpha of .94. These results indicate that the scale and its sub-dimensions yielded highly reliable scores for assessing the pre-service teachers in this sample.

Data Analysis

Data analysis was performed using IBM SPSS Statistics 28.0. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were calculated for continuous variables. The distribution characteristics of the data were evaluated via Shapiro–Wilk and Kolmogorov–Smirnov tests, along with skewness and kurtosis coefficients; it was determined that the normality assumption was not met. Consequently, non-parametric statistical methods were employed. Spearman's rho correlation coefficient was calculated to determine the relationships between educational beliefs and total/sub-dimension scores of pedagogical knowledge and skills, with 95% confidence intervals provided for each correlation. The Kruskal–Wallis H test was utilized to determine whether pedagogical knowledge and skill scores significantly differed by dominant educational belief groups; in cases of significant differences, post-hoc analyses were conducted using Bonferroni-corrected multiple comparisons. Effect sizes for correlation analyses were interpreted according to Cohen's (1988) criteria (.10 small, .30 medium, .50 large). The eta-squared ($\eta 2$) effect size for the Kruskal–Wallis test was interpreted based on Tomczak and Tomczak's (2014) thresholds (.01 small, .06 medium, .14 large). The significance level for all analyses was set at $p < .05$.

Results

Upon examining the dominant educational beliefs of the participants, it was observed that 56.6% held existentialist beliefs, followed by Progressivism at 22.6%, Reconstructionism at 11.4%, Perennialism at 6.2%, and Essentialism at 3.2%. These distributions regarding the participants' dominant educational orientations are detailed in Table 1.

Table 1. Frequency and Percentage Distribution of Participants by Educational Beliefs

Educational Belief	n	%
Progressivism	91	22.6%
Existentialism	228	56.6%
Reconstructionism	46	11.4%
Perennialism	25	6.2%
Essentialism	13	3.2%
Total	403	100%

The Spearman's rho correlation coefficients between the participants' educational belief scores and their total and sub-dimension scores for pedagogical knowledge and skills, along with the lower and upper limits of the 95% confidence intervals, are presented in Table 2.

Significant positive correlations were found between the participants' Progressivism educational belief scores and

their total pedagogical knowledge and skills scores (r = .54, p < .001, ES = Large). Similarly, Progressivism scores were positively correlated with student learning (r = .52, p < .001, ES = Large), lesson planning (r = .55, p < .001, ES = Large), instructional support (r = .45, p < 0.001, ES = Medium), accommodating diversity (r = .46, p < .001, ES = Medium), classroom management (r = .47, p < .001, ES = Medium), and care and concern scores (r = .42, p < .001, ES = Medium).

Furthermore, Existentialism educational belief scores showed significant positive correlations with total pedagogical knowledge and skills scores (r = .48, p < .001, ES = Medium). Existentialism scores were also positively associated with student learning (r = 0.45, p < .001, ES = Medium), lesson planning (r = .48, p < .001, ES = Medium), instructional support (r = .39, p < .001, ES = Medium), accommodating diversity (r = .44, p < .001, ES = Medium), classroom management (r = .39, p < .001, ES = Medium), and care and concern scores (r = .34, p < .001, ES = Medium).

Table 2. Correlations between Educational Belief Sub-dimensions and Pedagogical Knowledge and Skill Scores (n=403)

	Progressivism	Existentialism	Reconstructionism	Perennialism	Essentialism
	r_s (95% CI) [a,b]	r_s (95% CI)	r_s (95% CI)	r_s (95% CI)	r_s (95% CI)
Total	.54** (.47 – .61)	.48** (.40 – .55)	.51** (.44 – .58)	.41** (.32 – .49)	-.06 (-.16 – .04)
Student Learning	.52** (.44 – .59)	.45** (.36 – .52)	.47** (.38 – .54)	.43** (.34 – .50)	-.04 (-.14 – .09)
Lesson Planning	.55** (.48 – .62)	.48** (.40 – .56)	.47** (.39 – .55)	.38** (.29 – .46)	-.09 (-.19 – .01)
Instructional Support	.45** (.37 – .53)	.39** (.31 – .48)	.41** (.32 – .49)	.29** (.19 – .38)	-.06 (-.16 – .04)
Accommodating Diversity	.46** (.37 – .53)	.44** (.36 –.52)	.45** (.37 – .53)	.32** (.22 – 0.40)	-.11* (-.21 – -.01)
Classroom Management	.47** (.38 – .54)	.39** (.30 – .47)	.48** (.40 – .56)	.34** (.25 – .43)	-.01 (-.10 – .10)
Care and Concern	.42** (.33 – .50)	.34** (.25 – .43)	.37** (.28 – .45)	.33** (.23 – .41)	-.05 (-.15 – .05)

*p<.05, ** p<.001, r_s = Spearman's rho Correlation Coefficient, (95% CI)= 95% confidence interval generates a lower and upper limit for the correlation coefficient. [a]Estimation was based on Fisher's r-to-z transformation, [b]Estimation of standard error was based on the formula proposed by Fieller, Hartley, and Pearson.

Significant positive correlations were identified between the participants' Reconstructionism educational belief scores and their total pedagogical knowledge and skills scores (r = .51, p < .001, ES = Large). Specifically, Reconstructionism scores were positively associated with student learning (r = .47, p < .001, ES = Medium), lesson planning (r = .47, p < .001, ES = Medium), instructional support (r = .41, p < .001, ES = Medium), accommodating diversity (r = .45, p < .001, ES = Medium), classroom management (r = .48, p < .001, ES = Medium), and care and concern (r = .37, p < .001, ES = Medium).

Furthermore, Perennialism educational belief scores showed significant positive correlations with total pedagogical knowledge and skills scores (r = .41, p < .001, ES = Medium). Positive correlations were also observed between Perennialism and student learning (r = .43, p < .001, ES = Medium), lesson planning (r = .38, p < .001, ES = Medium), instructional support (r = 0.29, p < .001, ES = Medium), accommodating diversity (r = .32, p <.001, ES = Medium), classroom management (r = .34, p < .001, ES = Medium), and care and concern

scores (r = .33, p < .001, ES = Medium).

In contrast, while a significant negative correlation was found between Essentialism educational belief scores and accommodating diversity (r = -.11, p = .031, ES = Small), no significant relationships were identified between Essentialism and any other sub-dimensions of the pedagogical knowledge and skills scale (p > .05).

The mean total score for the participants' pedagogical knowledge and skills scale was calculated as 167.1±19.2. Kruskal-Wallis test results revealed that participants' total pedagogical knowledge and skill scores differed significantly based on their dominant educational beliefs (H(4) = 25.98, p < .001, η^2 = .06, medium effect). Pairwise comparisons conducted with Bonferroni correction for multiple tests demonstrated that total scores differed significantly between participants holding the following dominant belief pairs: Essentialism–Existentialist education (98.28, p = .031), Essentialism–Reconstructionism (164.84, p < .001), Progressivism–Reconstructionism (-82.38, p = .001), and Existentialist education–Reconstructionism (-66.55, p = .004) (Figure 1).

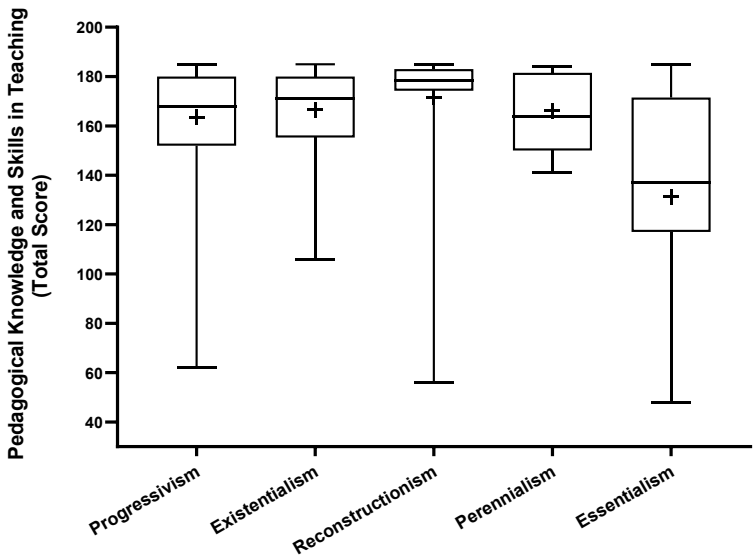

Figure 1. Participants' total pedagogical knowledge and skill scores according to their dominant educational beliefs

The participants' scores in the student learning sub-dimension of pedagogical knowledge and skills differed significantly according to their educational beliefs (H(4) = 21.34, p < .001, η^2 = .04, small effect). Pairwise comparisons with Bonferroni correction for multiple tests revealed that student learning scores varied between participants holding Essentialism-Reconstructionism (149.35, p < .001), Progressivism-Reconstructionism (-71.541, p = .006), and Existentialist education-Reconstructionism (-60.10, p = .012) beliefs (Figure 2A).

Furthermore, participants' scores in the lesson planning sub-dimension showed significant variation based on their educational beliefs (H(4) = 29.38, p < .001, η^2 = .06, medium effect). Post-hoc analysis indicated that lesson planning scores differed significantly across the following belief groups: Essentialism-Existentialist education (101.82, p = .018), Essentialism-Perennialism (119.88, p = 0.022), Essentialism-Reconstructionism (161.07, p <

.001), Progressivism-Reconstructionism (-89.37, p < 0.001), and Existentialism-Reconstructionism (-59.26, p = .014) (Figure 2B).

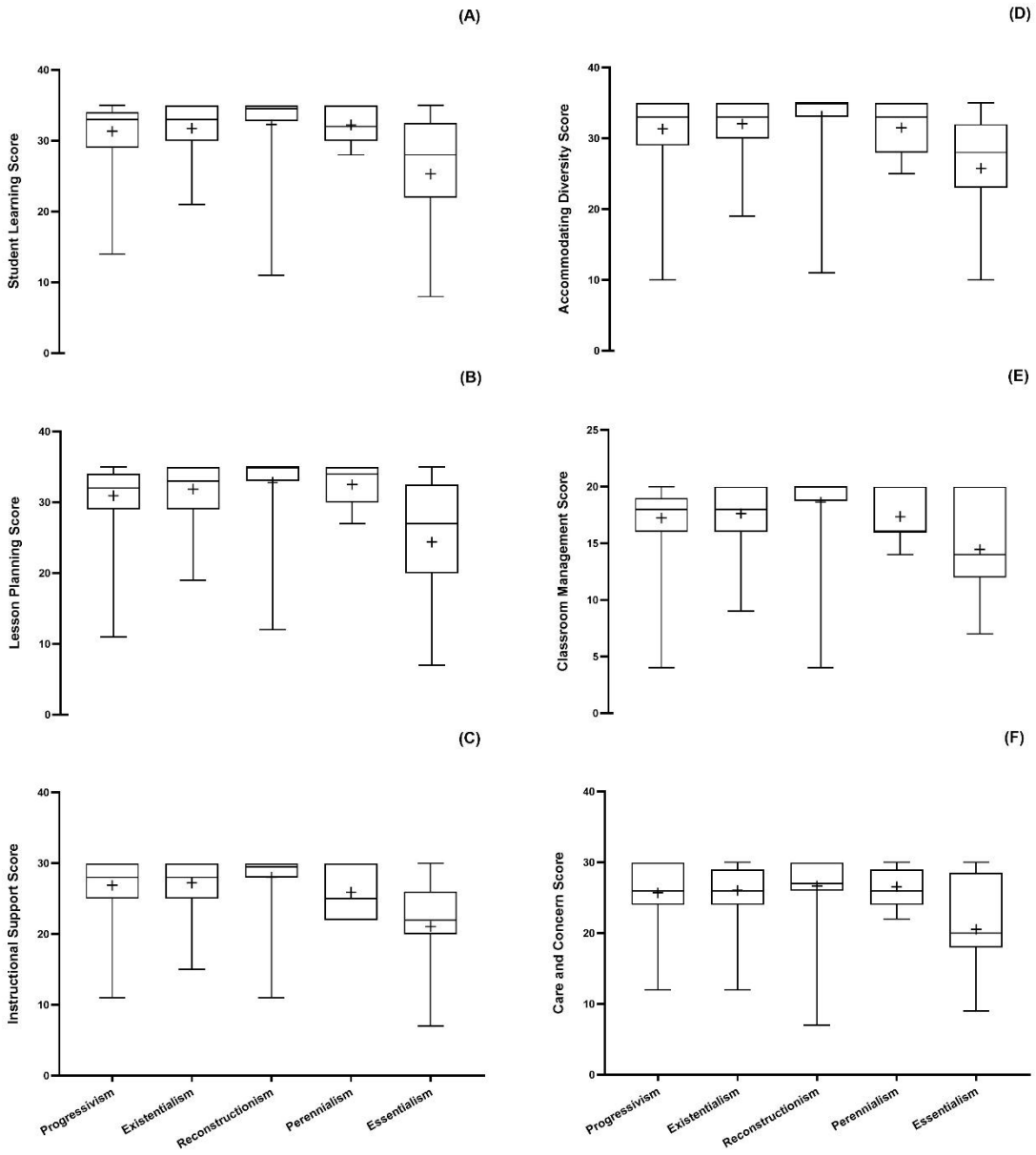

Figure 2. Pedagogical knowledge and skill sub-dimension scores according to participants' educational beliefs. (A) Student learning scores by educational beliefs, (B) Lesson planning scores by educational beliefs, (C) Instructional support scores by educational beliefs, (D) Accommodating diversity scores by educational beliefs, (E) Classroom management scores by educational beliefs, (F) Care and concern scores by educational beliefs.

The participants' instructional support scores differed significantly according to their educational beliefs (H(4) = 26.75, p < .001, η^2 = .06, medium effect). Pairwise comparisons indicated that instructional support scores varied significantly between those holding Essentialism–Progressivism (109.63, p = .011), Essentialism–Existentialist education (121.42, p = .002), Essentialism–Reconstructionism (168.54, p < .001), Perennialism–Reconstructionism (89.687, p = .015), and Progressivism–Reconstructionism (-58.91, p = .042) beliefs (Figure 2C).

Similarly, scores for accommodating diversity showed significant variation based on educational beliefs (H(4) =

25.22, $p < .001$, $\eta^2 = .05$, small effect). Significant differences in accommodating diversity scores were observed between the following belief pairs: Essentialism–Progressivism (94.52, $p = .046$), Essentialism–Existentialist education (105.44, $p = .010$), Essentialism–Reconstructionism (164.01, $p < .001$), and Progressivism–Reconstructionism (-69.49, $p = .006$; -58.57, $p = .013$) (Figure 2D).

Classroom management scores also varied significantly according to educational beliefs ($H(4) = 28.663$, $p < .001$, $\eta 2 = .06$, medium effect). Specifically, significant differences were identified between participants with Essentialism–Reconstructionism (151.60, $p < .001$), Perennialism–Reconstructionism (98.36, $p = .005$), Progressivism–Reconstructionism (-91.22, $p < .001$), and Existentialist education–Reconstructionism (-78.75, $p < .001$) orientations (Figure 2E).

Finally, scores for the care and concern sub-dimension differed significantly based on educational beliefs ($H(4) = 12.34$, $p = .015$, $\eta^2 = .02$, small effect). Post-hoc comparisons revealed that care and concern scores differed significantly only between the Essentialism and Reconstructionism groups (124.97, $p = .006$) (Figure 2F).

Discussion

In this study, which examined pre-service teachers' curriculum expertise within the framework of pedagogical knowledge and educational beliefs, the findings reveal that the predominant educational belief among participants is Existentialism (56.6%), followed by Progressivism (22.6%), while Essentialism (3.2%) constitutes the least adopted orientation. The prevalence of Existentialism among prospective teachers suggests a notable inclination toward student-centered and contemporary pedagogical paradigms. This finding aligns with the work of Avcı and Kutluca (2022), who reported a similar tendency toward student-centered belief systems. Furthermore, the existing literature consistently demonstrates that a vast majority of teachers and pre-service teachers identify with contemporary philosophies such as Existentialism and Progressivism, while showing a minimal preference for traditional, teacher-centered Essentialism (Altınkurt et al., 2012; Balcı & Küçükoğlu, 2019; Berkant & Özaslan, 2019; Çelik & Orçan, 2020; Dağ & Çalık, 2020; Deryakulu & Atal-Köysüren, 2018; Döğer & Akman, 2025; Eğmir & Çelik, 2019; Engin et al., 2016; Yaralı, 2020).

The widespread adoption of student-centered beliefs may be attributed to the long-term impact of constructivist approach implemented in the Turkish education system since 2005. Moreover, these beliefs demonstrate a timely alignment with the recently introduced The Century of Türkiye Education Model, which further consolidates student-centered frameworks within teacher education. The overwhelming preference among pre-service teachers for student-centered orientations—notably Existentialism and Progressivism—signifies a philosophical readiness for the pedagogical transformation envisioned by this new curriculum. This suggests that the current profile of pre-service teachers exhibits a significant level of philosophical readiness for the pedagogical transformation envisioned by the new curriculum. Furthermore, in a longitudinal study, Doğanay and Sarı (2018) further supports this by illustrating a decline in Perennialism and Idealism scores alongside an increase in Existentialism during undergraduate education, suggesting that teacher education effectively shifts philosophical preferences toward contemporary orientations. However, divergent findings are also observed in the literature; for instance, Taşkın

(2020) reported that physics, chemistry, and biology teachers prioritized Progressivism while ranking Existentialism last. Similarly, Luprandado et al. (2025) found that pre-service physical education teachers exhibited a multifaceted and flexible orientation by highly endorsing a broad spectrum of educational beliefs, including Perennialism, Existentialism, Progressivism, and Essentialism.

One of the notable findings of the research is that Progressivism, Existentialism, Reconstructionism, and Perennialism are positively associated with pedagogical knowledge and skills at moderate to high levels (r = .41–.54), whereas no significant relationship was observed for Essentialism. These correlations suggest that educational beliefs are not merely theoretical preferences but serve as a fundamental cognitive resource shaping pedagogical practice. Specifically, the link between contemporary philosophies and higher pedagogical scores appears to indicate that student-centered frameworks naturally facilitate the development of instructional competencies. Consequently, pre-service teachers who embrace student-centered and flexible philosophies are better equipped in terms of pedagogical competencies—such as instructional planning, understanding student learning, and classroom management—suggesting that such beliefs naturally underpin their teaching skills. As emphasized by Northcote (2009), teachers' educational beliefs serve as the theoretical underpinning for the specific instructional strategies they employ, thereby guiding their pedagogical practices. This finding aligns with Pajares's (1992) assertion that beliefs constitute the single most potent indicator in the processes of perceiving information and guiding decision-making. Conversely, the absence of a significant relationship between pedagogical knowledge and Essentialism—a rigid, teacher-centered philosophy—may suggest that teacher-centered paradigms are incompatible with contemporary pedagogical competencies. It is also noteworthy that while both are traditional, Perennialism showed a positive correlation unlike Essentialism. This may be because Perennialism prioritizes intellectual cultivation and reasoning, which aligns with the cognitive demands of pedagogical knowledge, whereas Essentialism's focus on rote compliance may hinder the development of flexible instructional skills. Indeed, as emphasized by Richardson (1996), the profound connection between educational beliefs and teaching-learning practices implies that a pre-service teacher will exhibit a high propensity to cultivate pedagogical skills in this direction only if they subscribe to a student-centered philosophy. Moreover, the high-quality pedagogical implementation skills defined by Gökçek and Yılmaz (2019) fundamentally necessitate a philosophical belief that is student-centered and supportive of development. Consistent with the findings of the present study, research conducted by Büyükalan Filiz et al. (2018) concluded that there is a positive relationship between pre-service teachers' educational beliefs and their techno-pedagogical competencies.

Another notable finding of the study is that pre-service teachers' total scores for pedagogical knowledge and skills varied significantly depending on the educational beliefs they adopted. This superiority of the Reconstructionist group can be attributed to the philosophy's focus on social structures and systemic change. While Existentialism—the most common belief—prioritizes the individual, Reconstructionism positions the teacher as an active agent of social transformation. Since pedagogical domains such as 'Classroom Management' and 'Lesson Planning' inherently involve managing complex social structures and organizational processes, it is consistent that candidates with a Reconstructionist orientation demonstrate higher competence in these areas. While Existentialism focuses on the individual's internal world, Reconstructionism demands an active engagement with external realities to reshape them. This inherent action-orientation of Reconstructionism may naturally predispose

these candidates to develop stronger practical competencies compared to purely introspective philosophies. Supporting this, Kagan (1992) emphasizes that the educational beliefs held by teachers directly shape their practical applications in the field of teaching and learning. The fact that pre-service teachers holding Reconstructionist beliefs demonstrated higher proficiency in domains such as student learning, planning, instructional support, and classroom management may indicate a strong alignment between this belief system and contemporary pedagogy. Conversely, the lower pedagogical scores observed among pre-service teachers adhering to Essentialism can be considered an indication that the rigid and teacher-centered structure of this philosophy is misaligned with the skills targeted by modern teacher education programs. Indeed, the literature underscores that contemporary educational philosophy orientations directly bolster teaching-learning competencies (Şahan, 2020), whereas traditional beliefs constrain modern pedagogical proficiencies (Büyükalan Filiz et al., 2018). Similarly, Avcı and Kutluca (2022) stated that student-centered beliefs, when combined with pedagogical content knowledge, strongly predict the quality of instructional practices. Furthermore, the finding that pedagogical knowledge varies significantly based on educational beliefs corroborates the positive relationship between high levels of pedagogical knowledge and contemporary educational philosophies such as Progressivism, Existentialism, and Reconstructionism. This can be interpreted as an indication of the need to further develop contemporary pedagogical approaches within teacher education programs. When evaluated in conjunction, these two findings align with the extant literature emphasizing the robust link between educational beliefs and pedagogical knowledge and practices (Kagan, 1992; Northcote, 2009; Pajares, 1992; Richardson, 1996). Consequently, the results underscore the necessity of reinforcing diversity-sensitive, democratic, and student-centered contemporary approaches within teacher education.

Although the results of this study offer valuable insights into understanding the pedagogical competencies of pre-service teachers, they are subject to certain limitations. One primary limitation is that the data were collected using quantitative measurement tools and relied on pre-service teachers' self-reports, which precludes the direct observation of their practical skills in actual classroom settings. In future research, employing mixed methods that corroborate quantitative data with qualitative observations and interviews could facilitate a more in-depth examination of the link between beliefs and practices. In addition to the reliance on self-reported data, the sample structure being limited to a single faculty of education constrains the generalizability of the findings. Furthermore, the cross-sectional nature of the study did not permit the observation of changes in beliefs and pedagogical competencies over time. Consequently, it is recommended that future studies involve larger sample groups from various universities and utilize longitudinal designs to investigate the long-term effects of the education process on beliefs. Finally, the fact that other potential variables influencing candidates' pedagogical scores, including the quality of courses taken, academic achievement, demographic characteristics, and socio-economic status, were not controlled for may be considered a limitation. Therefore, it is suggested that future research conduct comprehensive analyses evaluating demographic and extraneous variables (e.g., academic achievement, socio-economic status, type of high school graduated from, and parental education levels) that may affect pre-service teachers' pedagogical knowledge and skill levels. Regarding practical implications, the lower pedagogical scores of pre-service teachers holding traditional beliefs, such as Essentialism, indicate a need for teacher education programs to incorporate more experiences designed to transform these belief systems in line with modern and student-centered approaches. Accordingly, it is recommended to integrate reflective thinking activities into course

content, not only to enable candidates to critically question their existing educational beliefs but also to cultivate the 'reflective practitioner' identity conceptualized by Schön (1983).

Conclusion and Recommendations

In conclusion, the findings regarding the general trend of pre-service teachers' educational beliefs towards a modern orientation, their high levels of pedagogical knowledge and skills, the positive relationship between modern beliefs and pedagogical proficiency, and the significant differentiation in pedagogical knowledge based on educational beliefs, when evaluated in conjunction with the relevant literature, can be considered an indication of the pre-service teachers' high level of curriculum expertise. The high level of curriculum expertise among pre-service teachers may serve as a significant indicator that they have internalized the 'reflective practitioner' identity conceptualized by Schön (1983) during their professional development processes. This suggests that the candidates not only possess theoretical knowledge but are also capable of transforming this knowledge into practical competence by filtering it through a student-centered lens. In this context, the robust link between modern educational beliefs and pedagogical competence demonstrates that pre-service teachers are being cultivated as competent educators who reflect on their actions and ground their practices on a theoretical foundation. When viewed through the perspective of the 'belief-practice nexus' described by Northcote (2009, p. 69), it can be asserted that the pre-service teachers hold a high potential for implementing student-centered strategies in their professional lives. Ultimately, these findings confirm that the synthesis of contemporary educational beliefs and pedagogical knowledge is the key driver of curriculum expertise, as conceptualized by Ennis (1994).

Author(s)' Statements on Ethics and Conflict of Interest

***Ethics Statement*:** In this study, all rules stated to be followed within the scope of the "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed. None of the actions stated under the title "Actions Against Scientific Research and Publication Ethics", which is the second part of the directive, was not taken.

Ethical review board name: Necmettin Erbakan University Social and Human Sciences Scientific Research Ethics Committee (Date of ethics review decision: 09/07/2021, Ethics assessment document issue number: 2021/403).

***Statement of Interest*:** We have no conflict of interest to declare.

Data Availability Statement: Data are available on reasonable request from the authors.

Author Contributions: All authors contributed to the study's conception and design. **Özgül Balcı** was responsible for data collection, formal analysis, and drafting the manuscript. **Güngör Yumuşak** contributed to the methodology, interpretation of results, and critical revision of the manuscript. All authors read and approved the final manuscript.

***Funding*:** None

***Acknowledgments*:** None

References

Altınkurt, Y., Yılmaz, K., & Oğuz, A. (2012). İlköğretim ve ortaöğretim okulu öğretmenlerinin eğitim inançları. *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi*, *31*(2), 1-19. https://dergipark.org.tr/tr/download/article-file/187975

Avcı, A. & Kutluca, A. Y. (2022). Okul öncesi öğretmen adaylarının pedagojik inançları ve pedagojik alan bilgilerinin öğretim uygulamaları üzerindeki etkisi. *TEBD*, *20*(2), 394-428. https://doi.org/10.37217/tebd.1065083

Balcı, A. & Küçükoğlu, A. (2019). Okul öncesi öğretmen ve öğretmen adaylarının eğitim inançları ve özyeterlik inançları üzerine bir inceleme. *Kastamonu Eğitim Dergisi*, *27*(3), 1123-1140. https://doi.org/10.24106/kefdergi.2712

Baş, G., & Şentürk, C. (2019). Teachers' educational beliefs and curriculum orientations: A relational research. *Teachers and Curriculum*, *19*(1), 45-53. http://dx.doi.org/10.15663/tandc.v19i1.336

Berkant, H. H., & Özaslan, D. (2019). Öğretmen adaylarının eğitim inançlarının çeşitli değişkenler açısından incelenmesi. *Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi*, *20*, 923-940. https://doi.org/10.17494/ogusbd.555081

Büyükalan Filiz, S., Göçen Kabaran, G., & Kabaran, H. (2018). The analysis of the relationship between educational beliefs and techno-pedagogical education proficiency of candidate teachers. *European Journal of Education Studies*, *4*(3), 137-156. https://doi.org/10.5281/zenodo.1196031

Çelik, R., & Orçan, F. (2020). Pedagojik formasyon eğitimi sertifika programı ve eğitim fakültesi öğrencilerinin eğitim inançlarının karşılaştırılması. *Uluslararası Türkçe Edebiyat Kültür Eğitim Dergisi*, *9*(2), 872-883. http://dx.doi.org/10.7884/teke.4697

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Routledge.

Dağ, S., & Çalık, T. (2020). Anadolu lisesi öğretmenlerinin felsefi yaklaşımlarının çeşitli değişkenlere göre incelenmesi. *Çağdaş Yönetim Bilimleri Dergisi*, *7*(1), 51-64. https://dergipark.org.tr/en/download/article-file/1074628

Deryakulu, D., & Atal-Köysüren, D. (2018). The relationship between Turkish pre-service ICT teachers' educational philosophies and occupational anxieties. *Educational Research for Policy and Practice*, *17*, 33-52. https://doi.org/10.1007/s10671-017-9214-2

Doğanay, A., & Sarı, M. (2018). Effect of undergraduate education on the educational philosophies of prospective teachers: A longitudinal study. *Uluslararası Eğitim Programları ve Öğretim Çalışmaları Dergisi*, *8*(1), 1-22. https://files.eric.ed.gov/fulltext/EJ1329327.pdf

Döğer, M. F., & Akman, S. (2025). The interplay between educational beliefs and 21st Century competencies. *Bartın University Journal of Faculty of Education*, *14*(4), 1018-1034. https://doi.org/10.14686/buefad.1687407

Dragnić-Cindrić, D., & Anderson, J. L. (2025). Developing pre-service teachers' pedagogical content knowledge: Lessons from a science methods Class. *Education Sciences*, *15*(7), 860. https://doi.org/10.3390/educsci15070860

Eğmir, E. & Çelik, S. (2019). The educational beliefs of pre-service teachers as an important predictor of teacher identity. *International Journal of Contemporary Educational Research*, *6*(2),438-451.

https://doi.org/10.33200/ijcer.621717

Engin, A. O., Aksakal, İ., Umurbek, M. M., Seven, M. A., & Gürbüz, M. (2016). Öğretmen adaylarının eğitim inançları açısından görüşlerinin incelenmesi. *TURAN-SAM Uluslararası Bilimsel Hakemli Dergisi*, *8*(32), 177-186. https://ub5.ba6.myftpupload.com/wp-content/uploads/2020/08/TURAN-SAM_32.pdf

Ennis, C. D. (1994). knowledge and beliefs underlying curricular expertise. *Quest, 46*(2), 164-175. https://doi.org/10.1080/00336297.1994.10484118

Fives, H., & Buehl, M. M. (2008). What do teachers believe? Developing a framework for examining beliefs about teachers' knowledge and ability. *Contemporary Educational Psychology*, *33*, 134-176. https://doi.org/10.1016/j.cedpsych.2008.01.001

Gökçek, T., & Yılmaz, A. (2019). The adaptation of the pedagogical knowledge and skills survey into Turkish: Validity and reliability study, *Turkish Journal of Education*. *8*(1), 52-70. https://dx.doi.org/10.19128/turje.459678

Kagan, D. M. (1992). Implications of research on teacher belief. *Educational Psychologist*, *27*(1), 65-90. https://doi.org/10.1207/s15326985ep2701_6

Kerimoğlu, E. & Altun, S. (2024). Backward design in pre-service teacher education to enhance curriculum knowledge. *Journal of Teaching and Learning, 18*(2), 128–149. https://doi.org/10.22329/jtl.v18i2.8625

König, J., Blömeke, S., & Kaiser, G. (2015). Early career mathematics teachers' general pedagogical knowledge and skills: Do teacher education, teaching experience, and working conditions make a difference? *International Journal of Science and Mathematics Education*, *13*, 331-350. https://doi.org/10.1007/s10763-015-9618-5

Levin, B. (2014). The development of teachers' beliefs. In H. Fives & M. G. Gill (Eds.), *International handbook of research on teachers' beliefs* (1st ed.). Routledge. https://doi.org/10.4324/9780203108437

Luprandado, R. J., M., Sazon, P. J. C., Pagcu, J. A., Rodriguez, M. M. Y., Alfaro, A. C., & Tolentino, J. C. G. (2025). The educational philosophies of Filipino pre-service physical educators: A sequential explanatory analysis. *Dibon Journal of Education*, *1*(3), 239-276. https://doi.org/10.64169/dje.114

Northcote, M. (2009). Educational beliefs of higher education teachers and students: Implications for teacher education. *Australian Journal of Teacher Education*, *34*(3), 68-81. http://dx.doi.org/10.14221/ajte.2009v34n3.3

Nousheen, A., Zia, M. A., & Waseem, M. (2024). Exploring pre-service teachers' self-efficacy, content knowledge, and pedagogical knowledge concerning education for sustainable development. *Environmental Education Research, 30*(3), 321–333. https://doi.org/10.1080/13504622.2022.2128055

Oğuz, A., Altınkurt, Y., Yılmaz, K., & Hatipoğlu, S. (2014). Öğretmenlerin eğitim inançları ile öğrenen özerkliğini destekleme davranışları arasındaki ilişki. *Turkish Journal of Educational Studies*, *1*(1), 37-78. https://dergipark.org.tr/en/download/article-file/402877

Pajares, M. F. (1992). Teachers' beliefs and educational research: cleaning up a messy construct. *Review of Educational Research*, *62*(3), 307-332. https://doi.org/10.3102/00346543062003307

Poulton, P. (2025). Preservice teachers as curriculum deliverers or curriculum-makers? Exploring curriculum-making conceptions and opportunities in professional experiences. *Aust. Educ. Res., 52*, 2201–2227. https://doi.org/10.1007/s13384-025-00808-6

Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In J. Sikula (Ed.), *Handbook of*

research on teacher education (2nd ed., pp. 102-119). Macmillan.

Şahan, H. H. (2021). The relationship of prospective teachers' educational philosophy and life-long learning tendencies to their teaching-learning process competencies. *Pegem Journal of Education and Instruction*, *10*(4), 1325-1367. https://doi.org/10.14527/pegegog.2020.040

Şahin, A. İ., & Aşkın Tekkol, İ. (2023). Sınıf öğretmeni adaylarının eğitim programı okuryazarlığı düzeylerinin incelenmesi. *International Anatolia Academic Online Journal Social Sciences Journal*, *9*(1), 1-12.

Santos, D., & Miguel, L. (2019). The relationship between teachers' beliefs, teachers' behaviors, and teachers' professional development: A literature review. *International Journal of Education and Practice*, *7*(1), 10-18. https://doi.org/10.18488/journal.61.2019.71.10.18

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

Sönmez Ektem, I. (2019). Öğretmen adaylarının eğitim felsefesi inançları ve demokratik tutumları arasındaki ilişki. *Kastamonu Education Journal*, *27*(6), 2391-2402. https://doi.org/10.24106/kefdergi.3142

Taşkın, T. (2020). Fizik, kimya ve biyoloji öğretmenlerinin eğitim felsefesi tercihlerinin ve bilimsel epistemolojik inançlarının çeşitli değişkenler açısından incelenmesi. *Eğitimde Kuram ve Uygulama*, *16*(1), 1-19. https://doi.org/10.17244/eku.648820

Tomczak, A., & Tomczak, E. (2014). The need to report effect size estimates revisited. An overview of some recommended measures of effect size. *Trends in Sport Sciences*, *1*, 19-25. https://tss.awf.poznan.pl/pdf-188960-110189?filename=The-need-to-report-effect.pdf

Tunca, N., Alkın-Şahin, S., & Oğuz, A. (2015). Öğretmenlerin eğitim inançları ile meslekî değerleri arasındaki ilişki. *Kalem Eğitim ve İnsan Bilimleri Dergisi*, *5*(1), 11-47. https://doi.org/10.23863/kalem.2017.43

Tuncer, M., Yılmaz, Ö. (2024). Öğretmen adaylarının eğitim inançları. *Elektronik Eğitim Bilimleri Dergisi*, *13*(26), 221-239. https://doi.org/10.55605/ejedus.1481456

Wong, A.F.L., Chong, S., Choy, D., Lim, K.M. (2012). Investigating changes in pedagogical knowledge and skills from pre-service to the initial year of teaching. *Educational Research for Policy and Practice*, *11*, 105–117. https://doi.org/10.1007/s10671-011-9108-7

Xiong, X. B., Ching Sing, C., Tsai, C. C., & Liang, J. C. (2022). Exploring the relationship between Chinese pre-service teachers' epistemic beliefs and their perceptions of technological pedagogical content knowledge (TPACK). *Educational Studies*, *48*(6), 750–771. https://doi.org/10.1080/03055698.2020.1814698

Yang, X., Kaiser, G., König, J. et al. (2020). Relationship between pre-service mathematics teachers' knowledge, beliefs and instructional practices in China. *ZDM Mathematics Education*, *52*, 281–294. https://doi.org/10.1007/s11858-020-01145-x

Yaralı, D. (2020). Öğretmen adaylarının eğitim inançlarının çeşitli değişkenler açısından incelenmesi (Kafkas Üniversitesi örneği). *Bayburt Eğitim Fakültesi Dergisi*, *15*(29), 160-185. https://doi.org/10.35675/befdergi.440393

Yilmaz, K., & Tosun, M.F. (2013). Öğretmenlerin eğitim inançları ile öğretmen öğrenci ilişkilerine yönelik görüşleri arasındaki ilişki. *Journal of Research in Education and Teaching*, *2*(4), 205-218. http://www.jret.org/FileUpload/ks281142/File/23.yilmaz.pdf

Yılmaz, K., Altınkurt, Y., & Çokluk, Ö. (2011). Eğitim İnançları Ölçeği'nin geliştirilmesi: Geçerlik ve güvenirlik çalışması. *Kuram ve Uygulamada Eğitim Bilimleri*, *11*(1), 335-350. https://toad.halileksi.net/wp-content/uploads/2022/07/egitim-inanclari-olcegi-toad.pdf