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Inclusive School Practices and Extracurricular Educational Activities as Predictors of Students' Creativity Levels

Research Article

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ABSTRACT

The purpose of this study is to reveal the relationship between students' creativity and the inclusive school practices exhibited by school staff and the extracurricular educational activities offered in the school. Additionally, it seeked to determine, if such a relationship was existed, the extent to which the frequency of inclusive school practices and extracurricular educational activities predict students' creativity levels. The research was designed as a descriptive-correlational study within the framework of quantitative research methods. The study population consisted of high school principals working in Turkey, while the sample comprised 196 principals. Data were collected using three scales from the PISA 2022 School Questionnaire: one measuring students' creativity levels, one measuring the frequency of inclusive school practices exhibited by school staff, and one measuring the frequency of extracurricular educational activities organized at school. The findings revealed a statistically significant, positive, but low-level relationship between students' creativity levels, the frequency of inclusive school practices, and the frequency of extracurricular educational activities. Regression analysis indicated that the frequency of inclusive school practices and extracurricular educational activities together explained 11.3% of the variance in students' creativity levels. The results demonstrated that increasing the frequency of inclusive school practices and extracurricular educational activities positively influences students' creativity. Therefore, fostering creativity among students requires enhancing the frequency and variety of inclusive school practices and extracurricular educational activities.

Keywords:
School principal, student creativity, school staff, inclusive school practices, extracurricular educational activities

Introduction

The contemporary world, shaped by knowledge and technology, has made it imperative for individuals to possess multiple skills simultaneously. Creativity is one of the essential skills deemed indispensable in modern societies and among individuals. It can be defined as the ability to generate new and original ideas, find unconventional solutions to problems, and develop alternative ways of thinking. Creativity involves

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seeking and discovering the unknown, striving for originality, searching for different solutions to encountered problems, and integrating details into a coherent whole (Brockman, 1993; Kosko, 1994). As one of the most prominent 21st-century skills (Anagün et al., 2016), creativity enables individuals to develop innovative solutions to problems, combine existing knowledge in new ways, and produce original ideas and products. It is also defined as the ability to solve problems encountered through the application of acquired learning experiences, and to present original ideas or products by relating them to prior knowledge (Akbaş & Tümkaya, 2024; Güleryüz, 2001). The focal point of education in the 21st century should be to cultivate students who can generate new ideas and bring them to life (Pangestu, 2021).

Creativity is considered a critical skill in contemporary societies, as it equips individuals to solve complex problems, develop innovative products, and enhance diverse modes of thinking. It involves reversing conventional patterns of thought and generating alternative solutions (Koçak & İçmenoğlu, 2012). Creativity plays a pivotal role in societal advancement and meeting the demands of the era (Gölcük, 2017). One of the fundamental components in achieving diversity and efficiency in production is the creative capacity of human resources (Karakuş & Özbilgin, 2020). Creativity entails breaking away from existing patterns and conventional norms without fear of being different (Özerbaş, 2011; Saban, 2002) and is both a process and the outcome of that process—namely, an original product (Baysal et al., 2013; Dikici, 2006)—as well as a journey of discovery (Craft, 2008). It plays a significant role in societal development and progress (Özerbaş, 2011).

In a world where digitalization is accelerating and socio-economic dynamics are in constant flux, individuals are expected not only to possess knowledge but also to use it in new, original, and functional ways. Simply transmitting information to students is no longer sufficient; education systems must foster creative, innovative, and entrepreneurial individuals (Çiftçi et al., 2021). Progress and advancement depend on creativity (Tok, 2008), making it necessary for educational systems to adopt approaches that place creativity at the center. While creativity is often regarded as an innate trait linked to intelligence, it can be developed through education if the necessary conditions are provided (Dökmen, 2000; Kılınç, 2001; Yargıcı, 2024; Yeloğlu, 2001). With favorable environmental conditions, creativity can flourish, whereas it may stagnate or regress under adverse circumstances (Aytaç, 2020; Yeşilyurt, 2020). In modern education systems, the importance of creativity is increasingly recognized, and its development is considered crucial not only for students' individual achievements but also for their contributions to society. Cultivating creativity in students is one of the most important responsibilities of the education system (Addington, 1997; Topoğlu, 2015). To fulfill this responsibility, educational institutions must provide environments that nurture students' creativity (Akbaş & Tümkaya, 2024). These learning environments should be inclusive and cater to all students. As organizations that prepare students for the future and for society, schools should assess and enhance students' creativity levels. The creative potential inherent in every individual (Karakuş & Özbilgin, 2020) can be developed within educational institutions when appropriate conditions are provided (Erdoğdu, 2006). The primary responsibility for fostering creativity in students lies with schools, which can fulfill this role through a forward-thinking and innovative educational approach (Torrance, 2002). The necessity of equipping students with 21st-century skills and the diversification of their learning needs have transformed education systems, making it essential to adopt more inclusive approaches (Oğlakçı & Amaç, 2024).

In recent years, the concept of inclusion has gained increasing prominence in the educational literature. Inclusive education is an approach that seeks to address the educational needs of students whose abilities and interests differ from one another, taking these differences into account (Soyege, 2020). It is a fundamental right ensuring that everyone has access to education and is not excluded from the learning process (UNESCO, 1994). Inclusive education aims to provide all students—regardless of individual differences such as disability status, socioeconomic background, language, gender, or learning style—with equitable opportunities to learn in a shared and supportive environment (UNESCO, 2009).

Inclusive school practices refer to learning environments in which students' individual differences are viewed not as barriers but as assets; these environments ensure equal participation, fair treatment, and psychological safety (Baykara Özaydınlık, 2019). When school staff adopt democratic, transparent, and equitable practices that address the needs of all students, they can strengthen students' sense of belonging and foster the development of creative thinking. Teachers' demonstration of democratic and humanistic behaviors toward students has been shown to enhance students' creativity (Erdoğdu, 2006). In such a school climate, students are more likely to express their ideas freely, feel unafraid of making mistakes, and generate alternative solutions.

The development of creativity in educational settings is not limited to curricular content. The overall school environment, teacher–student relationships, school leadership, and particularly the climate established by the school principal can be decisive factors in this process. In this regard, inclusive school practices encompass efforts to provide equal opportunities for all students, value diversity, and foster a sense of belonging (Demir Başaran, 2019). Through these practices, students can feel safe, valued, and encouraged to express themselves, thereby becoming more inclined toward creative thinking. Although teachers' behaviors inside and outside the classroom play a significant role in fostering students' creativity (Ulaş et al., 2014), it can also be argued that all school staff members have an influence on students' creativity levels.

From a psychological perspective, the influence of an inclusive school climate on students' creativity can be explained through several interrelated mechanisms. First, inclusive practices enhance students' sense of belonging by communicating that their identities, perspectives, and differences are valued within the school community. A strong sense of belonging increases students' willingness to participate actively in learning processes and to express original ideas without fear of social exclusion. Second, inclusive school climates foster psychological safety, which refers to students' perceptions that they can take interpersonal and intellectual risks without experiencing ridicule or punishment. Psychological safety is a critical condition for creativity, as creative thinking inherently involves uncertainty, trial-and-error, and the possibility of failure. When students feel psychologically safe, they are more likely to experiment with novel ideas and unconventional solutions. Finally, inclusive school practices support autonomy by allowing students to make choices, voice their opinions, and engage in learning activities in self-directed ways. Autonomy strengthens intrinsic motivation, which is a well-established antecedent of creativity. Through the combined effects of belonging, psychological safety, and autonomy, inclusive school climates create conditions that are conducive to the emergence and development of students' creative potential. Figure 1 presents the conceptual framework illustrating how inclusive school practices influence students' creativity through key psychological mechanisms.

Another important factor that can be utilized to foster creativity is extracurricular educational activities. Such activities provide significant opportunities for students to develop their artistic, athletic, and social dimensions. They include learning and development opportunities outside the scope of formal education, such as art, sports, music, theater, social responsibility projects, and science clubs.

In PISA 2022, school principals were asked about the frequency with which various extracurricular educational activities are organized at their schools. These activities include art classes/events (e.g., painting, drawing), creative writing classes/events, music classes/events (e.g., choir, band), debate clubs, drama/theater classes/events, publications (e.g., school newspapers, yearbooks, literary magazines), and science clubs (OECD, 2022). Extracurricular activities are defined as sports, arts, cultural, scientific, and social activities in which students participate voluntarily outside the formal school curriculum (Eccles & Barber, 1999).

Since formal curricula address the development of creativity only indirectly, they are often insufficient for fully fostering students' creativity (Karakuş, 2001). Extracurricular activities can fill this gap by supporting personal development, providing environments in which students can explore their interests, and enabling them to express themselves in diverse ways. Research indicates that extracurricular activities positively

contribute to students' academic outcomes, enhance interpersonal competencies, improve psychological well-being, and promote positive behavioral changes (Fredricks & Eccles, 2006; Larson, 2000; Mahoney et al., 2003). Their voluntary nature also triggers students' intrinsic motivation (Larson, 2000). According to Deci and Ryan's (1985) self-determination theory, intrinsically motivated individuals tend to produce more creative outcomes.

Through extracurricular educational activities, students are exposed to different areas of interest, develop social skills such as teamwork and self-confidence, and thus gain access to environments that support the growth of creativity. Artistic activities, in particular, have been found to enhance students' creativity (Dikici, 2006). Extracurricular activities nurture not only students' cognitive skills but also their social, emotional, and creative capacities. By allowing students to explore various interests beyond exam-focused educational practices, such activities create a space in which creative potential can emerge more freely. Group projects, collaborative work, and artistic productions provide opportunities for students to engage in both cooperative and individual creative endeavors. Creativity levels can be enhanced through diverse methods and techniques (Ulaş et al., 2014), among which extracurricular practices can play an important role. Arts education, in particular, fosters creativity, and when classes are conducted in more relaxed and flexible environments, students' creativity is positively influenced (Dikici, 2006).

Beyond their descriptive presence in school environments, inclusive school practices and extracurricular educational activities can be theoretically understood as structural conditions that activate key psychological and social mechanisms underlying creativity. From the perspective of self-determination theory (Deci & Ryan, 1985), creativity flourishes in contexts that support autonomy, competence, and relatedness. Inclusive school practices-such as equitable treatment, recognition of diversity, and the provision of additional support-contribute to students' sense of psychological safety and belonging, thereby reducing fear of failure and encouraging risk-taking, both of which are essential for creative expression.

Similarly, extracurricular educational activities function as experiential learning environments that extend beyond the constraints of formal curricula. These activities provide students with opportunities for exploration, voluntary participation, and intrinsic motivation, allowing them to engage in creative processes more freely. Artistic, cultural, and scientific extracurricular activities, in particular, promote divergent thinking, experimentation, and collaborative problem-solving. Thus, inclusive school practices and extracurricular educational activities do not merely coexist with creativity; rather, they operate as complementary mechanisms that shape school climates conducive to the development of students' creative potential.

In this context, it is believed that students' creativity levels are shaped not only by their individual characteristics but also by the inclusive behaviors of school staff and the learning experiences offered beyond the classroom. Extracurricular activities—such as sports, arts, music, theater, and science clubs-are structured learning experiences outside formal education, and various studies have shown that they help students acquire multidimensional skills (Fredricks & Eccles, 2006; Mahoney et al., 2003). Additionally, these activities can stimulate students' curiosity and support their capacity to generate new ideas. However, the current literature lacks studies examining the combined effect of these two structural variables-namely, inclusive school practices and extracurricular activities—on students' creativity levels. This gap underscores the need to investigate the impact of educational staff's behavioral approaches and the alternative learning opportunities provided in schools on students' higher-order thinking skills and creativity.

The present study aims to address this gap by adopting a holistic perspective that simultaneously examines the effects of school staff's inclusive practices and the extracurricular activities offered at school on students' creativity levels. The findings are expected to provide guidance for educational administrators, teachers, and policymakers in building student-centered, creative, and inclusive school environments.

Accordingly, this study investigates the relationship between students' creativity levels and both the inclusive practices of school staff and the diversity and frequency of extracurricular activities organized in schools.

Research Aim and Significance

The primary aim of this study is to examine the relationship between students' creativity levels and the inclusive school practices exhibited by school staff, as well as the extracurricular educational activities offered at school. Furthermore, if such a relationship exists, the study seeks to determine the extent to which the frequency of inclusive school practices and the organization of extracurricular educational activities predict students' creativity levels. The findings are expected to be significant in terms of encouraging school staff to reassess their inclusive practices and in creating a school climate that enables students to utilize their potential more effectively. In addition, identifying students' creativity levels, the frequency of inclusive school practices exhibited by school staff, and the frequency of extracurricular educational activities forms a secondary objective of this research.

The study aims to address the following research questions, based on the perceptions of school principals:

1. What is the level of high school students' creativity?
2. What are school principals' perceptions regarding the frequency with which school staff engage in inclusive school practices?
3. What is the frequency of extracurricular educational activities organized in schools?
4. Is there a significant relationship between high school students' creativity levels and the frequency of inclusive school practices?
5. Is there a significant relationship between high school students' creativity levels and the frequency of extracurricular educational activities?
6. Do the frequency of inclusive school practices and the frequency of extracurricular educational activities significantly predict students' creativity levels?

Methodology

This section presents the research design, population and sample, data collection instruments, and data analysis procedures.

Research Design

This study was designed as a quantitative research project employing a descriptive–correlational model. In descriptive research, the aim is to present the existing situation, while in correlational research, the objective is to determine whether a relationship exists between variables and, if so, the degree of that relationship (Büyüköztürk et al., 2014; Karasar, 2002; Kaya et al., 2012). The descriptive aspect of this study involves identifying, from the perspectives of school principals, the frequency with which school staff (teachers, pedagogical support staff, administrative staff, and school leadership personnel) engage in inclusive school practices, the frequency of extracurricular educational activities organized in schools, and students' creativity levels. The correlational aspect investigates the relationship between school principals' perceptions of students' creativity levels, the frequency of inclusive school practices, and the frequency of extracurricular educational activities.

Population and Sample

The study population consisted of high school principals in Turkey, while the sample comprised those principals whose schools participated in the PISA 2022 assessment in Turkey. A total of 196 high schools from

Turkey took part in PISA 2022, and this research was conducted with the principals of these schools. Data were obtained from the publicly available dataset provided by the Organization for Economic Co-operation and Development (OECD), which conducted the PISA 2022 study (OECD, 2022). The measurement tools used in this study can be accessed at: https://www.oecd.org/en/data/datasets/pisa-2022-database.html.

Data Collection Instruments

The data collection instruments were the relevant sections of the school principal questionnaire used in the PISA 2022 study. Three scales from the questionnaire were employed (OECD, 2022). As the study is based on secondary data from PISA 2022, no ethics committee approval was required. The details of these scales are as follows:

Students' Creativity Level Scale: To measure students' creativity levels from the perspective of school principals, the "Students' Creativity Level Scale" (SC208Q) from the PISA 2022 student questionnaire was used. This nine-item scale (SC208Q01JA–SC208Q09JA) employs a 4-point Likert scale ranging from "Strongly disagree (1)" to "Strongly agree (4)." Sample items include: "Most students in my school are creative" and "Most students in my school perform well when given complex problems to solve" (OECD, 2023). Similar items measure creativity levels as perceived by principals. The Cronbach's alpha coefficient of the scale is .907, which within acceptable limits, indicating sufficient internal consistency.

Frequency of Inclusive School Practices Scale: The "Frequency of Inclusive School Practices" scale (SC173Q) from the PISA 2022 school questionnaire was used to assess how often school staff engage in inclusive practices. This six-item scale (SC173Q01JA–SC173Q06JA) uses a 5-point Likert scale ranging from "Never or almost never (1)" to "Every day or almost every day (5)." Higher scores indicate more frequent inclusive practices. Sample items include: "Helped students from different backgrounds recognize the similarities they share" and "Provided additional support to students from disadvantaged backgrounds" (OECD, 2023). The Cronbach'a Alpha is .935. The scale demonstrated acceptable internal consistency based on Cronbach's alpha values.

Frequency of Extracurricular Educational Activities Scale: The "Frequency of Extracurricular Educational Activities" scale (SC207Q) from the PISA 2022 school questionnaire was used to measure the frequency with which extracurricular activities are organized, as perceived by school principals. This eight-item scale (SC207Q01JA–SC207Q08JA) employs a 6-point Likert scale ranging from "Not available at our school (0)" to "Every day or almost every day (5)." Sample items include: "Debate club" and "Drama/theater classes or activities" (OECD, 2023). Higher scores indicate more frequent extracurricular activities. The Cronbach's alpha of the scale is .691.

Data Analysis

Normality was assessed using skewness and kurtosis values, which were found to be within acceptable limits, indicating that the data followed a normal distribution. Consequently, parametric statistical techniques were applied. The licensed SPSS software was used for data analysis. First, descriptive statistics (frequency, mean, and standard deviation) were calculated. Pearson correlation analysis was then conducted to examine relationships among variables. Finally, simple linear regression analysis was used to test whether the independent variables predicted students' creativity levels. All analyses were conducted using data from the 196 participating school principals. It should be noted that students' creativity levels in this study were not measured through direct assessments or student self-reports but were based on school principals' perceptions. Therefore, the creativity variable reflects an aggregated, school-level perception rather than individual-level creative performance.

Research Ethics

This study does not require Ethics Committee Approval since it was conducted using data from the PISA 2022 study.

Findings

This study first conducted descriptive analyses. We examined student creativity levels, the frequency with which school staff implemented inclusive education practices, and the frequency with which extracurricular educational activities were organized at school, as viewed by school principals. Table 1 presents descriptive statistics on student creativity levels.

Table 1. Overall creativity levels of students and creativity scale items' means and standard deviation values

	$\bar{X}$	SD
Overall Creativity Level of High School Students	2.84	.46
Items' Means and Standard Deviations:		
1. Most students in my school are creative.	2.78	.67
2. Most students in my school enjoy engaging in creative projects.	2.77	.63
3. Most students in my school perform well when given the freedom to be creative.	3.00	.57
4. Most students in my school enjoy undertaking challenging tasks.	2.60	.64
5. Most students in my school enjoy learning new things.	2.94	.60
6. Most students in my school perform well when given complex problems to solve.	2.68	.65
7. Most students in my school have artistic inclinations.	2.74	.60
8. Most students in my school have a vivid imagination.	3.01	.57
9. Most students in my school can think of many new ideas.	2.99	.58

As shown in Table 1, high school students' creativity levels were rated at the "Agree" level ($\dot{X}$ = 2,84) on a 4-point Likert scale, indicating relatively high creativity levels. Examination of item means reveals that all items scored at the "Agree" level. School principals generally believe that most students are creative, enjoy engaging in creative projects, and perform well when given opportunities for creativity. They also perceive students as performing well when solving complex problems, possessing artistic qualities, and having strong imaginations.

Table 2 shows school principals' perceptions regarding the frequency with which school staff engage in inclusive school practices.

Table 2. Mean and standard deviation values for the frequency of inclusive school practices

	$\bar{X}$	SD
Overall Frequency of Inclusive Practices	3.31	.95
Items' Means and Standard Deviations:		
1. Helped students from different backgrounds recognize similarities	3.25	1.04
2. Encouraged students from different backgrounds to resolve conflicts by finding common ground.	3.27	1.01
3. Supported activities or organizations encouraging students to express diverse identities	2.90	1.21
4. Taught students how to respond to any form of discrimination.	3.37	1.09
5. Taught students to be welcoming toward people from different backgrounds.	3.60	1.10
6. Provided additional support to students from disadvantaged backgrounds.	3.49	1.12

As seen in Table 2, the frequency of inclusive school practices was rated close to "Once or twice a week" ($\dot{X}$ = 3,31) on a 5-point Likert scale, suggesting relatively high frequency. The most frequently implemented practices were "Taught students to be welcoming toward people from different backgrounds" and "Provided additional support to students from disadvantaged backgrounds." The least frequently implemented practice was "Supported activities or organizations encouraging students to express diverse identities," which was

rated at about "Once or twice a month." Table 3 displays school principals' perceptions regarding the frequency of extracurricular educational activities in their schools.

Table 3. Mean and standard deviation values for the frequency of extracurricular educational activities

	$\bar{X}$	SD
Overall Frequency of Extracurricular Activities	2.30	.74
Item Means and Standard Deviations:		
1. Art classes/events (e.g., painting, drawing)	2.84	1.49
2. Creative writing classes/events	2.48	1.27
3. Music classes/events (e.g., choir, band)	2.83	1.50
4. Debate club	1.98	1.17
5. Drama/theater classes/events	2.29	1.28
6. Publications (e.g., school newspaper, yearbook, literary magazine)	1.69	1.03
7. Science club	1.84	1.26
8. Computer programming classes/events	2.48	1.58

As shown in Table 3, the frequency of extracurricular activities was rated at the "Once or twice a year" level ($\dot{X}$ = 2,30) on a 6-point Likert scale, indicating a relatively low frequency. While no activity category was reported as "Not available," principals generally considered the frequency of such activities to be insufficient. Art and music classes/events were the most frequently organized, with averages close to "Once or twice a month." Publications and science clubs had the lowest frequency ratings. Science club and debate club are among the extracurricular educational activities with the lowest averages, but are held at an average frequency of once or twice a month. According to school principals, the frequency of extracurricular educational activities is quite inadequate.

The study also examined the relationship between students' creativity levels and the frequency with which school staff demonstrate inclusive school practices and organize extracurricular educational activities. Table 4 contains information on this relationship.

Table 4. Correlations among students' creativity levels, frequency of inclusive school practices, and frequency of extracurricular educational activities

	1	2	3
1. Inclusive School Practices	1		
2. Extracurricular Educational Activities	.268**	1	
3. Students' Creativity Levels	.272**	.262**	1
**p < .001			

As shown in Table 4, there is a statistically significant, positive, and low-level correlation between students' creativity levels and the frequency of inclusive school practices ($r = .272$, $p < .01$). This indicates that as the frequency of inclusive school practices increases, students' creativity levels also tend to rise. Similarly, a statistically significant, positive, and low-level correlation was found between students' creativity levels and the frequency of extracurricular educational activities ($r = .262$, $p < .01$). In other words, schools that organize extracurricular educational activities more frequently tend to have students with higher creativity levels. Furthermore, a positive and low-level correlation was found between the frequency of inclusive school practices and the frequency of extracurricular activities ($r = .268$, $p < .01$).

Finally, the study aimed to determine whether the frequency with which school personnel demonstrate inclusive school practices and the frequency with which extracurricular educational activities are organized predict high school students' creativity, and if so, to what extent. Table 5 presents the findings related to this objective.

Table 5. Predictive power of inclusive school practices and extracurricular educational activities on students' creativity levels

Predictor	R	R^2	F Variance P	B	SE	β	t	p
Constant				19.641	1.214		16.184	.000*
Inclusive School Practices	.336	.113	.000*	.160	.052	.217	3.090	.002*
Extracurricular Educational Activities					.144	.050	.204	2.895

p < .05; Dependent variable: Students' Creativity Levels

As indicated in Table 5, both the frequency of inclusive school practices (β = 0.217; t = 3.090; p < .05) and the frequency of extracurricular educational activities (β = 0.204; t = 2.895; p < .05) significantly predict students' creativity levels. Together, these two variables explain 11.3% of the variance in students' creativity levels. In other words, 11.3% of the creativity levels of high school students stem from the frequency with which school staff demonstrate inclusive school practices and the frequency with which extracurricular educational activities are organized. This finding highlights the importance of both increasing the frequency of inclusive school practices and organizing extracurricular educational activities to enhance students' creativity.

Discussion and Conclusion

In this study, a descriptive analysis was first conducted regarding students' creativity levels, the frequency with which school staff engage in inclusive school practices, and the frequency of organizing extracurricular educational activities within schools. The findings should be interpreted within the context of the measurement approach used in the study. Since students' creativity levels were derived from principals' perceptions, the observed relationships reflect how inclusive school practices and extracurricular activities are associated with school-level perceptions of creativity, rather than direct student creativity outcomes. However, unlike studies focusing on classroom-level instructional practices or individual student characteristics, the present study highlights the role of school-wide inclusive practices and extracurricular structures, thereby extending the literature to a more institutional level. Future research could benefit from triangulating these findings with student self-reports, performance-based creativity measures, or classroom-level observations to obtain a more comprehensive understanding of creativity development. The findings revealed that students demonstrated a notably high level of creativity. In contrast, Kılıç and Tezel (2012) concluded in their study that students' scientific creativity was at a moderate level. Educating students to become creative, innovative, and entrepreneurial individuals is imperative in the 21st century (Çiftçi et al., 2021). Similarly, preservice teachers consider creativity to be among the essential characteristics of 21st-century learners (Günüç et al., 2013).

It was also found that school personnel implement inclusive school practices at a frequency close to once or twice per week, indicating a relatively high engagement in such practices. However, the frequency of organizing extracurricular educational activities was found to be once or twice per year, suggesting that these activities are infrequently held.

The study also examined the relationship between the frequency of inclusive school practices and extracurricular educational activities, and high school students' levels of creativity. Moreover, it investigated whether these two variables significantly predict the variance in students' creativity. The results indicated a statistically significant, positive, but weak correlation between students' creativity levels and both the frequency of inclusive school practices and the organization of extracurricular educational activities. Additionally, it was determined that these two variables together explained 11.3% of the variance in students' creativity levels. In other words, 11.3% of the variance in creativity levels can be attributed to these factors. The findings revealed statistically significant but low-level positive relationships between these variables, and both predictors together explained a modest proportion of variance in creativity. The findings revealed

statistically significant but low-level positive relationships between students' creativity and both inclusive school practices and extracurricular educational activities. Furthermore, these two school-level variables together explained a modest proportion of variance in students' creativity levels. Although the effect sizes were relatively small, the results provide meaningful insights into the role of school-wide practices in fostering creativity within secondary education settings. The environment plays a critical role in fostering student creativity (Yeşilyurt, 2020). The findings suggest that inclusive practices implemented by school staff and the organization of extracurricular educational activities contribute positively to enhancing students' creativity. In other words, both inclusive practices and extracurricular activities are significant predictors of student creativity. These findings are consistent with previous studies indicating that supportive school climates and enriched learning environments contribute to students' creative development (Craft, 2008; Torrance, 2002). School-based extracurricular activities positively influence creative thinking by increasing intrinsic motivation, curiosity, and risk-taking tendencies (Li et al., 2025). According to Orhan et al. (2024), students believe that extracurricular activities are moderately beneficial. Furthermore, it has been stated that extracurricular activities are beneficial for their social, academic, physical, emotional, personality development, and well-being. Participation in extracurricular high school clubs fosters critical thinking, activism-related knowledge and skills, and a justice-focused approach to local and global issues, contributing to the development of global citizenship (Bartlett & Yemini, 2025).

Although the proportion of explained variance in students' creativity levels (R^2 = 11.3%) may appear relatively modest, this finding should be interpreted in light of the complex and multidimensional nature of creativity. Creativity is influenced by a wide range of individual, contextual, psychological, and environmental factors, including personal traits, motivation, cognitive styles, classroom practices, family background, and broader socio-cultural conditions. Consequently, models focusing on institutional or school-level variables are expected to explain only a limited portion of the variance in creativity-related outcomes. From this perspective, the explained variance observed in the present study can be considered meaningful, as it reflects the contribution of inclusive school practices and extracurricular educational activities within a broader constellation of influencing factors.

The findings of this study suggest that inclusive school practices contribute to students' creativity not merely as structural or organizational features, but through specific psychological mechanisms. One possible explanation is that inclusive practices enhance students' sense of belonging by signaling that diversity is valued and that all students are accepted members of the school community. This sense of belonging may increase students' engagement and willingness to share original ideas.

Additionally, inclusive school climates are likely to foster psychological safety, enabling students to take intellectual risks without fear of negative evaluation. Creative thinking inherently involves uncertainty and experimentation; therefore, environments that reduce fear of failure are particularly conducive to creativity. Furthermore, inclusive practices that allow students to express their opinions and participate in decision-making processes may support autonomy, which strengthens intrinsic motivation. In line with self-determination theory, intrinsically motivated students are more likely to engage in creative exploration. Together, these mechanisms help explain why inclusive school practices emerged as a significant predictor of students' creativity levels in this study.

Furthermore, the study highlights that supporting students' creative potential requires not only in-classroom interventions but also out-of-class learning environments and the attitudes of school personnel. The existing literature supports these findings. Curricula designed to foster creativity contribute significantly to students' creative development (Yeşilyurt, 2020). Students who receive arts education are generally more creative than those who do not (Dikici, 2006). Experiential activities such as experiments, theatre, educational videos, and observations have a positive impact on students' scientific creativity (İnel-Ekici & Tanır, 2020).

The use of alternative instructional methods such as storytelling can also enhance students' creative thinking skills (Yiğit & Erdoğan, 2008). Extracurricular activities offer students opportunities to engage in new experiences beyond academic learning, allowing them to develop diverse perspectives and produce original work (Fredricks & Eccles, 2006; Mahoney et al., 2003). Moreover, teachers' democratic and humane behaviors toward students play a supportive role in fostering creativity (Erdoğdu, 2006).

Although the findings are consistent with previous research, the relatively low magnitude of the observed relationships suggests that students' creativity is influenced by a broad set of factors beyond school-level practices. In highly centralized and exam-oriented education systems, such as the Turkish education system, instructional priorities are often focused on academic achievement and standardized testing, which may limit the extent to which creative thinking is explicitly encouraged and rewarded. As a result, the impact of inclusive school practices and extracurricular activities on creativity may remain modest when compared to other external influences.

The relatively low strength of the relationships can be explained by the multifaceted nature of creativity. Creativity is not solely shaped by school practices but emerges from the interaction of individual traits, family environment, cultural capital, and broader socio-educational structures. In exam-oriented education systems, instructional priorities may limit the visibility and impact of creativity-oriented practices, thereby constraining the effect sizes observed at the school level. Students' creativity is also shaped by various out-of-school factors, including family environment, parental support, socioeconomic background, access to cultural resources, and informal learning opportunities. These factors, which were beyond the scope of the present study, may exert a stronger influence on creativity development than school-based variables, thereby attenuating the observed relationships. Moreover, individual characteristics such as intrinsic motivation, creative self-efficacy, personality traits, and cognitive styles are known to play a substantial role in creativity. Since these individual-level variables were not included in the regression model, the explained variance remains limited, despite the statistical significance of the school-level predictors. Another issue that should be considered is the potential influence of social desirability bias in principals' responses. As the data were based on school principals' self-reports, it is possible that inclusive practices and students' creativity levels were rated more positively than their actual implementation or manifestation. This bias may have contributed to the low-to-moderate strength of the observed relationships.

Furthermore, as students' creativity was assessed through principals' perceptions, the findings should be interpreted as reflecting school-level tendencies rather than direct measures of individual creativity. While principals are well positioned to observe general patterns, their responses may be influenced by social desirability or institutional self-presentation, which may have attenuated the observed relationships.

Despite these limitations, the study makes an important contribution by demonstrating that inclusive school practices and extracurricular activities-often treated as peripheral-are systematically related to students' creativity at the school level. From a practical perspective, the findings suggest that fostering creativity requires not only curricular reforms but also inclusive leadership practices and enriched extracurricular opportunities. The findings underscore the importance of inclusive school practices and extracurricular educational activities as meaningful contributors to creativity at the school level. Inclusive practices that promote equity, respect for diversity, and a sense of belonging may create psychologically safe environments in which students feel encouraged to express novel ideas and take intellectual risks. Similarly, extracurricular activities provide flexible, student-centered learning contexts that support exploration, collaboration, and creative expression beyond the constraints of formal curricula. Taken together, these findings suggest that fostering creativity requires a holistic approach that goes beyond curricular reforms and includes inclusive leadership practices and enriched extracurricular opportunities.

In summary, the results of this research demonstrate that inclusive school practices by school staff and extracurricular activities in school positively affect students' creativity. Yeşilyurt (2020) also emphasizes that creativity can be nurtured through education. Notably, environments where students' differences are respected and their ideas are valued foster stronger expressions of creative thinking. This underscores the indirect yet powerful influence of inclusive attitudes among school personnel on student outcomes. The significant association between extracurricular activities and students' creativity also reveals that schools must provide opportunities for not only academic but also cultural and social development. Formal curricula alone may not be sufficient to enhance students' creativity (Karakuş, 2001). Activities tailored to diverse student interests can support the development of original thinking.

From a practical perspective, the results highlight the role of school principals and educational leaders in cultivating creative school environments. Enhancing the frequency and diversity of inclusive practices and extracurricular activities may contribute to more creativity-supportive school climates. However, to achieve more substantial effects, such initiatives should be complemented by broader systemic changes, including assessment practices that value creativity and instructional approaches that integrate creative thinking into everyday learning.

Future research could build on these findings by employing multi-source and multi-level designs that combine student self-reports, performance-based creativity measures, classroom observations, and qualitative data. Incorporating individual, family, and classroom-level variables into more comprehensive models may provide a deeper understanding of how creativity develops across different educational contexts. Such approaches would allow researchers to disentangle the relative contributions of school-level practices and external factors, thereby advancing both theory and practice in creativity research. Based on the findings of this study, inclusive behaviors from school staff and the provision of extracurricular educational activities are crucial in enhancing students' creativity.

Implications for Practice

The findings of the present study should be interpreted at the school level, as both inclusive school practices and students' creativity were assessed based on school principals' perceptions. Therefore, the implications derived from the results primarily concern school leadership and institutional practices rather than individual student behaviors or teacher-level instructional strategies.

From this perspective, the results suggest that school principals play a key role in creating school environments that are perceived as supportive of students' creativity. Inclusive school practices that promote participation, equity, and respect for diversity may contribute to school climates in which creativity is more visible and encouraged. Accordingly, school leaders may consider strengthening inclusive policies, decision-making processes, and school-wide initiatives that foster a sense of belonging and psychological safety.

In addition, the positive association between extracurricular educational activities and students' creativity highlights the importance of providing diverse and accessible extracurricular opportunities at the school level. School administrations may support creativity by facilitating student participation in arts, sports, cultural, and project-based activities that allow for exploration and self-expression beyond the formal curriculum.

However, given that the data are based on principals' perceptions, these implications should be regarded as indicative rather than prescriptive. The findings do not warrant direct recommendations regarding individual student outcomes or specific classroom practices. Instead, they point to the potential role of school leadership in shaping institutional conditions that are perceived as conducive to creativity.

Recommendations for Policymakers and Educational Administrators:

1. Time and resources should be allocated to extracurricular activities in schools, and the sustainability of these programs should be promoted.

2. Artistic, cultural, and sports activities should be regularly organized in schools; these should be diversified and scheduled more frequently, with active student participation encouraged.

Recommendations for Future Research:

1. Future studies could include different age groups and private schools to enable comparative analysis.

2. Future research could incorporate qualitative data to explore students' experiences in more depth.

Limitations

The study is limited to data from the PISA 2022 study. Although this study theoretically emphasizes psychological mechanisms such as sense of belonging, psychological safety, and autonomy, these variables were not directly measured due to the secondary nature of the PISA 2022 dataset. Future studies may incorporate direct measures of these mechanisms to test their potential mediating roles more explicitly.

The other of the main limitations of this study is that students' creativity levels were assessed indirectly through school principals' perceptions rather than through direct measurements or student self-reports. While principals are in a position to observe general patterns and school-wide student behaviors, their perceptions may not fully capture individual differences in creativity or students' subjective creative experiences. Consequently, the findings should be interpreted as reflecting school-level tendencies rather than precise individual creativity levels.

The relatively low explained variance also highlights the need for future studies to incorporate additional individual- and classroom-level variables, such as students' intrinsic motivation, creative self-efficacy, teaching styles, and family-related factors, in order to develop more comprehensive models of creativity.

Statements of Publication Ethics

The submitted article is original, and citations and references have been prepared accurately and in accordance with ethical principles. Author names have not been disclosed during any submission process. The work has not been submitted to any other journal. The author declares to comply with the referees' requests for additional information or data should they request it.

Conflict of Interest

There is no conflict of interest in this study.

Research Ethics

This study does not require Ethics Committee Approval since it was conducted using data from the PISA 2022 study.

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Prospective Teachers' Views on the Representation of Teachers in Social Media

Research Article

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ABSTRACT

Rapid advancements in information and communication technology have deeply transformed the pedagogical and structural aspects of education and training systems. Most particularly, the inclusion of social media platforms (Facebook, Instagram, TikTok, WhatsApp, etc.) in the classroom environment has produced dramatic effects on the role of teachers, resulting in the appearance of education influencers, namely edu-influencers, or teacher influencers. Edu-influencers are the individuals who actively create educational content, materials, or philosophies by leveraging these social media platforms. Within this context, investigating prospective teachers' views on the edu-influencers has come into prominence in order to reveal the current situation of the teacher profession in the digital era. Therefore, this paper aimed to examine the representation of teachers in social media from the perspectives of prospective teachers. The research was configured in accordance with phenomenology, one of the qualitative research methods, and semi-structured interviews were conducted with 40 prospective teachers studying in 9 different departments at a state university during the 2025-2026 academic year. The data obtained from the prospective teachers were analyzed in line with the descriptive analysis method and organized into meaningful categories, sub-categories, and codes. The findings indicate that teacher influencers enhance educational practices by creating enjoyable, inspiring, and collaborative teaching and learning environments; however, they also constitute risks, particularly in self-interested purposes, reputational harms, and ethical boundary violations.

Keywords:
Education influencer, prospective teacher, representation, social media, teacher influencer

Introduction

In recent years, the contemporary world has undergone a process of transformation thanks to the rapid advancements offered by information and communication technologies (Timotheou et al., 2023). Particularly, social networks [digital platforms, social media applications (Facebook, Instagram, TikTok, WhatsApp, X,

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etc.)], one of the most notable aspects of this transformation, have deeply transformed the roles of teachers characterized as touchstones for qualified teaching and learning processes (Carstens, Mallon, Bataineh, & Al-Bataineh, 2021). In other words, social media, designed to facilitate human life, has created an alteration on the pedagogical functions of teachers, shifting from knowledge transmission to facilitator of learning (Carpenter & Staudt Willet, 2021; Greenhow, Staudt Willet, & Galvin, 2021; Trust, Krutka, & Carpenter, 2016; Yıldız & Şeker, 2025).

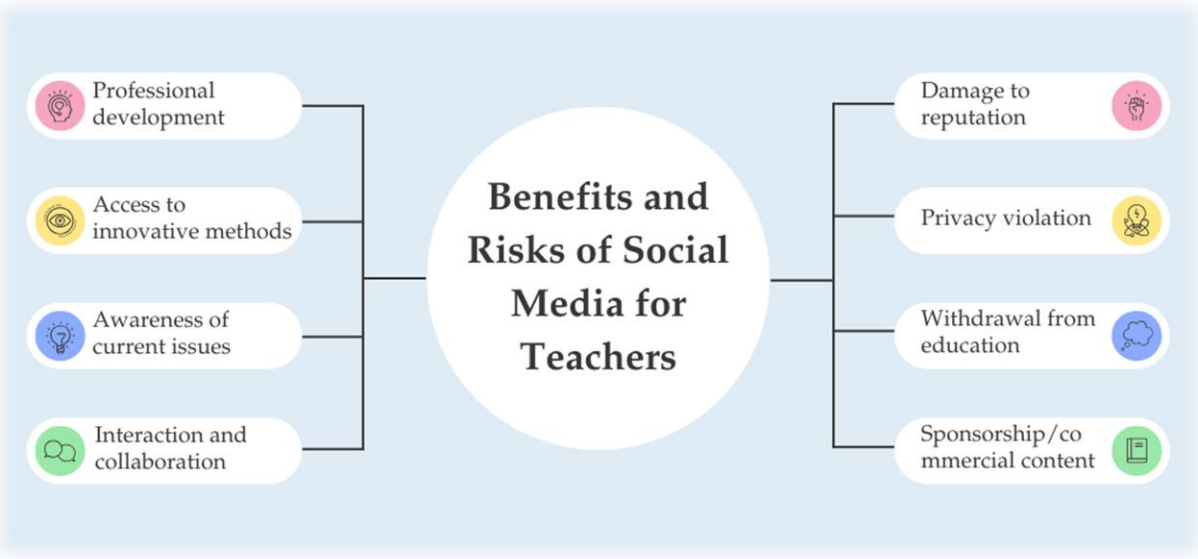

Figure 1. Benefits and risks of social media for teachers

The integration of social media into teachers' professional practices has generated double-edged impacts, which amount to its utilization not only providing advantages (Haque et al., 2023; Kızıltaş & Kutluboğa, 2025) but also causing disadvantages in the classroom environment (Güney, 2023). In Figure 1, the effects of social media on teachers are comparatively presented, indicating that benefits such as professional development, access to innovative methods, awareness of current issues, and improvement of interaction and collaboration, yet also risks such as damage to reputation, violation of privacy, withdrawal from education, and sponsorship or commercial content. Similarly, Kızıltaş and Kutluboğa (2025) emphasize the dual nature of teachers' use of social media platforms, necessitating careful and responsible adoption. In other words, social media has potential risks alongside its aforementioned benefits, resulting in non-consensual or uncontrolled distribution of content (Küçükali & Serçemeli, 2019).

Kızıltaş (2023) emphasized that social media has enabled teachers to share their pedagogical methods, instructional practices, and personal experiences with a wide audience. Staudt Willet (2024) suggests that teachers can keep abreast of modern developments relevant to their areas of expertise with the help of social media platforms. Menteşe (2013) underlines the importance of teachers' positive, judicious, and constructive use of these platforms for younger generations. On the contrary, Shelton, Schroeder, and Curcio (2020) indicate that the purpose of teachers who take advantage of social media is to seek commercial gain. Similarly, Serin (2019) observes that some teachers regard social media as an opportunity to become popular, which indicates that as visibility (i.e., follower counts) grows, teachers increasingly earn money (Carpenter, Shelton, & Schroeder, 2023).

Benefiting from the social media platforms, certain teachers have evolved into teacher influencers or education influencers (also known as edu-influencers), appealing to a larger population on social media platforms (Sun, Zhou, Li, Cheung, & Lin, 2025). In this context, edu-influencers' engagement in such platforms is characterized by constant posting of content related to the teaching and learning environment. Certain edu-influencers informally share instructional materials (e.g., lesson plans, slides, and educational videos) (Davis

& Yi, 2022), whereas some showcase student-teacher interaction, their own personal life, and educational philosophy (Yıldız & Şeker, 2025). Although edu-influencers provide benefits in terms of resource-sharing, professional visibility, and teacher-to-teacher inspiration, they pose risks such as blurring of ethical boundaries, prominence of commercial considerations, and disengagement from education (Yıldız & Karagöl, 2025). In light of the aforementioned pros and cons, the positioning of edu-influencers among other social-media-using educators emerges as a critical issue to clearly conceptualize the nature of this concept (Carpenter et al., 2023).

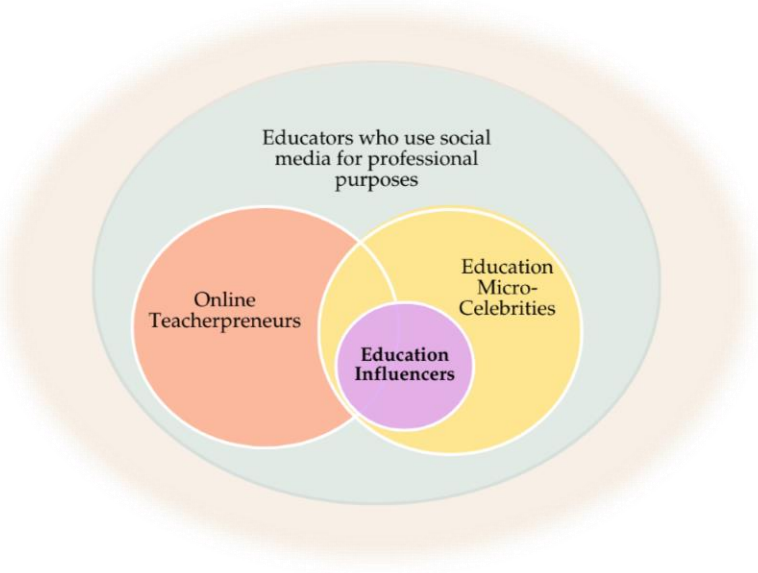

Figure 2. Place of edu-influencers among teachers using social media (Carpenter et al., 2023)

As illustrated in Figure 1, the outermost circle represents teachers who utilize social media in order to establish communication and relationships with their colleagues, defined as the educators who use social media for professional purposes (Rosenberg et al., 2020). These educators consider social media platforms as a means of discussing, exchanging, and sharing educational ideas (Van Bommel, Randahl, Liljekvist, & Ruthven, 2020). The concept of online teacherpreneurs points out the teachers who sell instructional resources through online educational marketplaces (Shelton & Archambault, 2018), whereas education micro-celebrities, closely associated with the edu-influencer term, are defined as actors who build an audience by regularly creating educational content, such as pedagogical practices, experiences, and teaching materials. Situated at the intersection of online teacherpreneurs and education micro-celebrities, education influencers function as the main catalysts for the reshaping of the teachers' professional voice.

Taken together, edu-influencers, who diffuse swiftly across social media platforms and reach a wide audience (Carpenter et al., 2023), shape prospective teachers' teaching philosophy and professional identity; therefore, investigating prospective teachers' perspectives on edu-influencers has become more of an issue for both determining teacher training policies and current education practices. From this point of view, this study aims to examine the perspectives of the prospective teachers on the representation of teachers in social media.

Methodology

This section outlines the study's systematic structure by providing a detailed explanation of the research model, sample group, data collection tools, and data analysis.

Research Model

This study adopted a qualitative research method involving the observation of individuals' perceptions and experiences of a particular phenomenon or event in a natural setting (Merriam, 2015). Building on this

qualitative model, a phenomenological design was employed to explore phenomena embedded in daily life, yet not fully comprehended (Yıldırım & Şimşek, 2021).

Sample Group

In this study, the study group was constituted through maximum variation sampling, which seeks to present a wide range of perspectives in terms of gender, grade level, and departments in order to achieve more comparable and generalizable results. In line with this sampling frame, the study group comprised 40 prospective teachers enrolled in the Faculty of Education during the fall semester of the 2025-2026 academic year. The socio-demographic profile of the prospective teachers is presented in detail in Table 1.

Table 1. The prospective teachers' socio-demographic characteristics

Socio-Demographic Characteristics		*N*
Gender	Female	20
	Male	20
Grade Level	1st grade	10
	2nd grade	10
	3rd grade	10
	4th grade	10
Department	Guidance and psychological counseling	6
	Fine arts education	6
	Science education	4
	Mathematics education	4
	Pre-school education	4
	Classroom teaching	4
	Turkish language teaching	4
	Social studies education	4
	Foreign language education	4
Total		40

Table 1 indicates the composition of the sample group (N=40), equally divided by gender (N=20) and by grade level (N=10). In terms of departments, Guidance and Psychological Counseling and Fine Arts Education are the most represented (N=6), whereas each of the other programs contributes (N=4) participants, leading to a proportionally structured sample.

Data Collection Tools

This study was commenced after obtaining ethics committee approval from the Social and Human Sciences Scientific Research and Publication Ethics Committee, with the decision number 2025/18 from meeting number 9, on August 7, 2025. To determine the prospective teachers' views on the representation of teachers in social media, semi-structured interview forms were developed by researchers. Following this phase, the forms were submitted for expert opinions to evaluate the interview questions in terms of suitability, clarity, and relevance. Considering the reviewers' feedback, two questions were restructured to strengthen intelligibility by reducing the ambiguity of expressions. The interviews with 40 prospective teachers from different departments were carried out on a volunteer basis.

The aforementioned form consists of two sections; the initial section includes the demographic features of prospective teachers, such as gender, grade level, and department, while the second section encompasses three main questions, each supported by follow-up questions. To exemplify, sample follow-up interview questions are specified below:

1. Do you think that teacher influencers have an impact on the teaching profession?

1.1. How do they positively influence the teaching profession?

1.2. How do they negatively influence the teaching profession?

Data Analysis

Descriptive analysis was applied to examine the interview data; in line with Merriam's (2015) guidance, the data were sequentially organized into main themes, subthemes, and codes. Following the analysis procedure, reliability was enhanced by integrating direct quotations from prospective teachers and providing comprehensive explanations. Having ensured reliability, validity was addressed through independent double-coding, thus supporting unbiased and impartial interpretation. In addition, prospective teachers' views were anonymously coded to avoid the inclusion of personal information by ensuring the principle of confidentiality. These codes were structured to include information about prospective teachers' department, grade level, and gender (e.g., FAE-4M: Fine Arts Education, 4th grade, and male).

Findings and Interpretation

This section presents the findings and interpretations obtained from the interviews conducted to reveal prospective teachers' views on the representation of teachers in social media.

The Prospective Teachers' Views on 'Edu-Influencers' or 'Teachers as Content Creators'

Prospective teachers' views on the representation of teachers in social media, namely 'edu-influencers' or 'teachers as content creators', are organized into 2 categories, 4 subcategories, and 12 codes. Table 2 depicts the data obtained from the prospective teachers' perspectives.

Table 2. The prospective teachers' views on 'edu-influencers' or 'teachers as content creators'

Category	*Subcategory*	*Code*	*f*
Conceptual Framework	Forms of Definition	Popularity	15
		Accessibility	10
		Content creators	6
	Connotations	Neutral connotations	15
		Positive connotations	10
		Negative connotations	3
Pedagogical and Professional Quality	Pedagogical Contributions	Giving inspiration	9
		Enjoyable learning	7
		Cooperative teaching/learning	5
	Pedagogical Limitations and Risks	Professional identity	13
		Ethical issues	8
		Commercial/financial gain	3
Total			104

According to Table 2, the perspectives of prospective teachers on edu-influencers are delineated into 2 different categories: "conceptual framework" and "pedagogical and professional quality".

Within the conceptual framework category, two subcategories, "forms of definition" and "connotations", are identified. The forms of definition subcategory encompasses "content creators", "popularity", and "accessibility", whereas the connotations subcategory covers "positive connotations", "neutral connotations", and "negative connotations". The following section presents the direct excerpts from prospective teachers pertaining to the "conceptual framework" category:

FAE-4M *"...I believe that the term 'influencer teacher' does not always carry a negative connotation, but it must be used with caution. This is because teaching is not essentially a performance, but a profession of influence and guidance. If* ***content creators*** *truly contribute to education and encourage students to think and learn, this is very valuable."*

GPC-2F *"The concept of the "influencer teacher" implies that teaching takes a back seat and* ***popularity*** *comes to the fore. I believe that this devalues the teaching profession by presenting it as a secondary occupation."*

GPC-3F *"Frankly, this concept has both* ***positive and negative aspects****. The positive aspect is that these teachers make education more* ***accessible****."*

CT-1M *"I think that teacher influencers are* ***popular*** *and helpful people who share their lesson content."*

SSE-2M *"I find this concept positive. 'Content creator teachers' make learning more* ***enjoyable*** *by bringing knowledge to students in a digital environment."*

The pedagogical and professional quality category is organized into the subcategories "pedagogical contributions" and "pedagogical limitations and risks"; the former includes "giving inspiration", "cooperative teaching/learning", and "enjoyable learning", while the latter consists of "commercial/financial gain", "ethical issues", and "professional identity". Below are the quotes from prospective teachers for the "pedagogical and professional quality" category:

SSE-3M *"Content creator teachers make learning more* ***enjoyable*** *by bringing knowledge to students in a digital environment."*

SSE-4F *"My thoughts on the concepts are positive because the lesson content, materials, and all activities they produce are* ***a source of inspiration for other teachers and prospective teachers****."*

PSE-4F *"I believe these concepts can lead to a departure from the essence of the* ***teaching profession****. The desire to stand out on social media can overshadow the knowledge and guidance aspects of teaching."*

FLE-2F *"First and foremost, there are extremely dangerous situations such as the sharing of students' faces,* ***violations of ethical principles****, and the disclosure of children's private lives."*

TLE-2F *"Despite having no connection to teaching, some people have unfortunately already taken their places under this identity in order to gain* ***popularity*** *and* ***financial gain****."*

The Prospective Teachers' Views on the Types of Content Frequently Shared by Edu-Influencers on Social Media Platforms

Prospective teachers' views on the types of content shared by edu-influencers on social media platforms are delineated into 4 categories, 4 subcategories, and 12 codes and presented in Table 3.

Table 3. The prospective teachers' views on the types of content frequently shared by edu-influencers on social media platforms

Category	*Subcategory*	*Code*	*f*
Instructional Content	Lesson Materials	Topic explanations, mini lessons, projects	24
		Sample activities	20
		Exam preparation tips	7
		Resource suggestions	2
Classroom Life and Culture	Daily Routines	Personal development	16
		Personal experiences	12
		Special days and celebrations	4
Commercializing	Advertising and Sponsorship	Humor-based posts	7
		Engagement-chasing posts	5
		Sponsored posts	2
Ethical Violations	Privacy Issues	Student data exposure	4

	Non-consensual images or videos	3
Total		106

As shown in Table 3, the prospective teachers' perspectives on the types of content frequently shared by edu-influencers are organized into 4 different categories: "instructional content", "classroom life and culture", "commercializing", and "ethical violations".

Category instructional content consists of the subcategory of "lesson materials", which includes "topic explanations, mini lessons, project", "sample activities", "exam preparation tips", and "resource suggestions". Direct quotations from prospective teachers related to this category are presented below:

SE-3F *"Most teachers share **lesson explanations**, **exam tips**, **resource recommendations**, or motivational posts."*

ME-1F *"As a social media user, I can say that the answer to this question varies depending on the teacher's department and the age group of the students they work with. For example, primary school teachers generally share **classroom activities** and content related to child development."*

SSE-3M *"**Educational content**, **lesson videos**, **activities**, and games, material design, and content aimed at increasing motivation are shared."*

TLE-4M *"They frequently share content such as **lesson explanations**, **Q&A activities**, or guidance, helping many students."*

The category classroom life and culture is composed of a single subcategory, "daily routines"; it comprises "personal development", "personal experiences", and "special days and celebrations".

CT-2M *"Some also share **motivational content** or recount their own **personal development journey**s."*

FAE-1F *"Some teachers share **motivational quotes**, images of activities carried out with their students, **personal development** content, and their **professional experiences**."*

Within the category "commercializing", a single subcategory -"advertising and sponsorship" is identified, including "sponsored posts", "humor-based posts", and "engagement-chasing posts".

SE-2M *"... or they share **funny memories** about the gifts their students bought for them, the things they said to them, and the friendships between their students."*

ME-4F *"Among the posts frequently seen in Türkiye these days, videos of teachers explaining lessons and activity videos they have recorded while using **trending songs** or **humorous posts** in their lessons are also becoming widespread."*

CT-4M *"However, some posts may turn into a means of attracting personal attention and **gathering likes** rather than reflecting the meaning of teaching."*

The category "ethical violations" is organized around the subcategory "privacy issues", including "student data exposure" and "non-consensual images or videos".

PSE-1M *"There are also those who share **students' images without permission**, those who delve too deeply into personal or political issues, and those who produce content solely to garner likes."*

The Prospective Teachers' Views on the Impacts of Edu-Influencers on the Teaching Profession

Perspectives of prospective teachers' views on the impacts of edu-influencers on the teaching profession are categorized as a single category, 2 subcategories, and 7 codes, as shown in Table 4.

Table 4. The prospective teachers' views on the impacts of edu-influencers on the teaching profession

Category	*Subcategory*	*Code*	*f*
Professional Identity and Public Image	Elevating professional prestige	Professional visibility	10
		Collegiality	10
		Modernization and innovation	9
		Teacher accessibility	4
	Eroding teaching standing	Commercialization and performativity	19
		Reputational harm	16
		Boundary and privacy violations	6
Total			74

As can be seen in Table 4 above, the prospective teachers' views on the aforementioned impacts are addressed within a single category, "professional identity and public image".

Within this category, two different subcategories are identified: "elevating professional image" and "eroding teaching profession". The former encompasses "professional visibility", "modernization and innovation", "collegiality", and "teacher accessibility". Below are the direct quotes from prospective teachers related to the "elevating professional prestige" category:

TLE-1M *"Teachers strengthen **collegial solidarity** by sharing their experiences, methods, and materials. They also show students and parents that teaching is **not limited to the classroom** and that learning is possible anywhere. As a result, teaching becomes more **dynamic**, relevant to the language of the times, and inspiring."*

FLE-4M *"I believe that teachers who are active on social media bring a breath of fresh air to the profession. A '**modern**, up-to-date' teacher profile is emerging, and this generally strengthens the image of teaching. Furthermore, teachers inspire each other and **exchange ideas**."*

"Eroding teacher standing" subcategory includes "commercialization and performativity", "boundary and privacy violations", and "reputational harm". Below, direct quotations from prospective teachers pertaining to the mentioned codes are reported.

GPC-4F *"Some posts can also take on an overly **performative** tone, diminishing the credibility of the profession. Furthermore, misunderstandings, collective shaming, or unnecessary debates can damage **teachers' reputation**."*

FAE-2F *"Teachers who focus solely on the financial aspect of their work can also contribute to the discrediting of the profession by giving incorrect advice and guidance due to **commercial** concerns and sponsorship agreements."*

SE-4M *"As a prospective teacher, I believe that social media is a powerful tool for professional development, but that its correct use and maintaining **ethical boundaries** are very important."*

ME-3M *"In some cases, there is a risk that teaching may become a '**show**'. Therefore, posts should be conscious, **ethical**, and in line with the objectives of education."*

PSE-2F *"Sharing solely for the sake of popularity can trivialize **professional identity**. In short, the purpose of sharing should be to teach and inspire, not to become an 'influencer'."*

Discussion and Conclusion

The current study aimed to investigate prospective teachers' perspectives on the representation of teachers in social media. On the whole, it is concluded that edu-influencers who use social media platforms in order to gain followers and convert that visibility into monetization (Carpenter et al., 2023) had both positive and negative impressions on prospective teachers' views. According to the prospective teachers, edu-influencers were interpreted positively in terms of giving inspiration, creating an enjoyable learning and teaching atmosphere, and fostering collaboration among teachers. Similarly, Richter, Carpenter, Meyer, and Richter (2022) emphasize that the posts shared by edu-influencers on social media platforms provide

advantages for educators in many aspects. Greenhalgh and Koehler (2017) also state that edu-influencers present information to their colleagues, contributing to collaborative learning environments.

On the other hand, teacher influencers were evaluated negatively with respect to professional identity, ethical issues, and commercial/financial gain. The current research findings show parallelism with Warnick, Bitters, Falk, and Kim (2016), who refer to the importance of avoiding public release of the students' personal information. Kızıltaş and Kutluboğa (2025) also underline that disclosure of students' location, photos, or videos increases the risk of trespassing the ethical boundaries. In addition to these, prospective teachers suggested that social media content can damage teachers' occupational identity, overshadowing the core mission of education. This finding shares similarity with Gillespie and Thompson's (2021) research, which indicates that edu-influencers may cause misperceptions among prospective teachers regarding the nature of the teaching profession. On the contrary, Reinstein (2018) observes that edu-influencers frequently interoperate to boost one another's followers or to leave positive comments on each other's posts; this interaction clearly indicates that teaching achieves its primary purpose (Carpenter et al., 2023).

The perspectives of prospective teachers' views on the contents shared by teacher influencers in social media were categorized as instructional content, classroom life and culture, commercializing, and ethical violations. A clear majority of prospective teachers built consensus on the view that frequently shared contents were related to teaching materials (topic explanations, sample activities, resource suggestions, etc.). Similarly, Sun et al. (2025) state that half of the edu-influencers share instructional resources such as books, slides, or technological tools on their social media profiles. This finding diverges from Shelton, Curcio, Carpenter, and Schroeder's (2022) research, which identifies the content of edu-influencers' posts as social justice and political consciousness. Besides all these, prospective teachers expressed that most of the teacher influencers created content related to their personal experiences, special days or celebrations, and motivation-enhancing posts, which aligns with other research suggesting edu-influencers share their personal narratives to increase students' engagement in lessons (Carpenter et al., 2023; Sun et al., 2025)

The prospective teachers' views on the impact of edu-influencers on the teaching profession were evaluated as elevating professional prestige and eroding teaching standing. Kızıltaş and Kutluboğa (2025) state that teacher influencers contradict the teaching profession norms due to their monetization aims, fame-seeking behaviors, and sponsorship attempts. Willis et al. (2023) suggest that teachers' engagement with social media is paired with some pitfalls, including reputational challenges and authentic threats. Contrary to this, Zozaya Tellez (2024) argues that edu-influencers' posts can boost teachers' self-efficacy, and Richter et al. (2022) find that teacher influencers can decrease professional isolation among teachers.

Based on the findings of this study, the following recommendations are proposed to contribute to education stakeholders, educational practices, and future researchers:

- Education stakeholders (students, teachers, administrators, and parents, etc.) should be raised consciousness about the protection of privacy by organizing application-based awareness initiatives.
- Teacher training programs should include courses related to social media pedagogy in curricula to acquaint the prospective teachers with the deliberate and purposeful use of social media.
- Future research may be conducted to identify the perspectives of students or parents on teacher influencers.

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The Relationship Between Prospective Teachers' Levels of Technopedagogical Content Knowledge and Their Commitment to The Curriculum

Research Article

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ABSTRACT

The purpose of this study is to examine the relationship between the levels of Technological Pedagogical Content Knowledge (TPCK) of final – year students studying in education faculties and their commitment to the curriculum, in terms of variables such as gender, department, university, duration of technology use, and technology use skills. A correlational survey model, one of the quantitative research designs, was employed in the study. The study population consisted of final-year students enrolled in the faculties of education at Siirt University, Muş Alparslan University, and İnönü Universities located in the Eastern and Southeastern Anatolia regions of Türkiye. Data were collected using the 51-item, 5-point Likert-type Technological Pedagogical Content Knowledge Scale developed by Horzun, Akgün and Öztürk (2014) and the 20-item, 5-point Likert-type Curriculum Commitment Scale developed by Yaşaroğlu and Manav (2015). To reach students studying at different universities, data were gathered both online and face-to-face methods. Online data were gathered via Google Forms without requesting any personal identifying information, while face-to-face data collection was conducted by the researcher in accessible settings. The collected data were analyzed using independent samples t-tests, one-way ANOVA, and Pearson product–moment correlation analysis. The findings indicated that female students demonstrated significantly higher levels of subject knowledge and curriculum commitment compared to male students. Significant differences were also observed across departments in the dimensions of subject knowledge, technological subject knowledge, pedagogical subject, and curriculum commitment. In terms of the university variable, students from Muş Alparslan University exhibited significantly higher mean scores in several TPCK dimensions. Furthermore, sudents with higher tendencies toward technology use demonstrated more positive attitudes toward the curriculum. A significant and positive correlation was found between TPCK and curriculum commitment across all sub-dimensions. Based on these findings, several recommendations were proposed for final-year students in faculties of

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education. Future studies are recommended to include multiple departments and diverse sample groups to enhance the generalizability of the results.

Keywords:
Technological pedagogical content knowledge, curriculum, curriculum, commitment, prospective teacher

Introduction

Technological developments have fundamentally transformed education systems, leading to significant changes in both teaching - learning processes and the competencies expected of teachers. In contemporary education, technology has evolved beyond merely serving as a supportive instructional tool; it has become an integral component that facilitates access to information, deepens learning, and enriches instructional environments. Accordingly, the ability of teachers and prospective teachers to integrate technology pedagogically and in alignment with subject-matter content is considered one of the fundamental requirements of modern educational paradigms (Demirel, 2017).

One of the most influential theoretical frameworks explaining the effective integration of technology into education is the Technological Pedagogical Content Knowledge (TPCK) model. Developed by Mishra and Koehler (2006), the TPCK framework conceptualizes effective technology integration as the dynamic interaction of teachers' content knowledge, pedagogical knowledge, and technological knowledge within a holistic structure. This model is based on the use of technology in teaching not only as a technical tool but also in a way that is consistent with pedagogical goals and subject content. Empirical studies indicate that teachers and prospective teachers with high levels of TPCK are more capable of designing effective, innovative, and student-centered learning environments (Birhanlı and Gündüz, 2021). Another core concept addressed in the present study is curriculum commitment. Curriculum commitment refers to teachers' adherence to the objectives, content, instructional strategies, and assessment principles prescribed in the curriculum during the teaching–learning process. Curriculum adherence plays a critical role in ensuring instructional consistency, achieving intended learning outcomes, and enhancing overall instructional quality. By using the curriculum as a guiding framework, teachers can conduct instructional processes in a more systematic, planned, and goal-oriented manner.

A growing body of research demonstrates that technology integration in education increases both teacher and student motivation, positively influences attitudes toward learning, and supports the development of technology-related skills (Balkan, Baytekin, Horzum, İşman, & Kıyıcı, 2022; İlkay, 2017). According to Alkan (2019), while education primarily concerns learning processes, educational technology encompasses systematic approaches that facilitate and enhance learning. When technology is integrated into teaching through appropriate pedagogical strategies and instructional methods, instructional content becomes more comprehensible and supports meaningful and long-term learning. However, the unplanned or pedagogically unsupported use of technology may lead to deviations from curriculum objectives. Therefore, technology integration should function as a mechanism that reinforces curriculum adherence rather than undermining it.

A review of the relevant literature indicates a growing increase in studies focusing on Technological Pedagogical Content Knowledge (TPCK) in recent years. Most of these studies have examined TPCK in relation to variables such as self-efficacy beliefs, gender, subject area, attitudes toward technology, and similar individual factors. For instance, Gökçe (2025) investigated prospective mathematics teachers' TPCK self-efficacy beliefs regarding probability and reported that these beliefs were at a moderate level. Similarly, Yıldırım (2024) examined the relationship between science teacher candidates' TPCK self-efficacy beliefs and

professional anxiety levels, finding moderate self-efficacy perceptions alongside relatively high levels of professional anxiety. Additionally, previous research has examined TPCK across various teaching fields, including social studies, classroom teaching, preschool education, mathematics, and science (Bal and Karademir, 2013). Despite this growing interest, curriculum commitment has largely been examined independently from TPCK, and only a limited number of studies have directly explored the relationship between these two constructs. The global transition to distance education during the COVID-19 pandemic in 2020 further highlighted the necessity for teachers to integrate technology in alignment with curriculum requirements. This unprecedented shift made the relationship between teachers' technological competencies and curriculum adherence more visible; however, this relationship remains underexplored, particularly in the context of prospective teachers.

Examining the relationship between TPCK and curriculum commitment is therefore crucial within the framework of teacher education. It is assumed that prospective teachers with higher levels of TPCK will be more capable of implementing curricula in a conscious, flexible, and effective manner while integrating technology without deviating from instructional objectives. Clarifying this relationship is expected to contribute to the improvement of teacher education programs, the effective implementation of curricula, and the development of evidence-based strategies for technology integration in education.

Methodology

Research Model

This study was conducted during the 2024–2025 academic year and employed a correlational survey design, which is one of the quantitative research methods. The correlational survey model enables researchers to examine the direction and strength of relationships between variables without manipulating them. Through this model, it is possible to identify whether and to what extent changes in one variable are associated with changes in another variable.

Study Group

The population of the study consisted of final-year students enrolled in the faculties of education at Siirt University, Muş Alparslan University, and İnönü University, located in the Eastern and Southeastern Anatolia regions of Türkiye during the 2024–2025 academic year. The sample comprised a total of 525 final-year students selected using the convenience sampling method, which is classified as a non-probability sampling technique. Attention was paid to ensuring that the departments in which the prospective teachers were enrolled adequately represented the study population.

Data Collection Process

Data were collected using three instruments: a Personal Information Form, the Technological Pedagogical Content Knowledge Scale, and the Curriculum Commitment Scale. The Personal Information Form was designed to collect demographic information such as gender, department, university, duration of technology use, and technology use skill level. The Technological Pedagogical Content Knowledge Scale, developed by Horzum, Akgün, and Öztürk (2014), consists of 51 items across seven sub-dimensions and is structured on a 5-point Likert scale. The Curriculum Commitment Scale, developed by Yaşaroğlu and Manav (2015), consists of 20 items and is also based on a 5-point Likert-type response format. Data collection was carried out through both online and face-to-face methods to ensure access to students from different universities. Online data were collected via Google Forms without requesting any personally identifiable information, while face-to-face data were gathered by the researcher in settings where direct access was feasible.

Validity and Reliability

Prior to the data analysis, the validity and reliability of the measurement tools were examined.

Table 1. Reliability test results

	KMO	Bartlett's Sphericity Value		Cronbach Alpha
Technological Pedagogical Content Knowledge Scale	.868	43420.772	p= 0.001	.891
Curriculum Commitment Scale	0.913	11202.735	p= 0.001	.910

As presented in Table 1, both scales demonstrated high internal consistency.The Cronbach's alpha coefficient was calculated as .891 for the Technological Pedagogical Content Knowledge Scale and .910 for the Curriculum Commitment Scale, indicating high reliability. Additionally, the Kaiser–Meyer–Olkin (KMO) values (.868 for TPCK and .913 for Curriculum Commitment) and the significance of Bartlett's Test of Sphericity ($p < .05$) confirmed that the data were suitable for factor analysis and further statistical procedures.

Data Collection Tools

Two data collection tools were used to gather data related to the topic in order to answer the problem identified in the study. The data collection tool created consists of three parts: Personal Information Form, TPCK Scale, and Curriculum Commitment Scale.

Personal Information Form: A form created to determine the gender, department, university, technology usage time, and technology usage level of the students participating in the research.

Technological Pedagogical Content Knowledge Scale (TPCK): In this study, the scale developed by Horzum, Akgün, and Öztürk (2014), consisting of 7 sub-dimensions and 51 items on a 5-point Likert scale, was used with the necessary permissions. Each item on the scale is rated as follows: "I strongly disagree (1)", "I slightly disagree (2)", "I somewhat disagree (3)", "I somewhat agree (4)", "I strongly agree (5)". Some of the items in the scale are as follows: "I follow new technologies," "I follow developments related to my Subject," "I ensure that my students use technologies related to my Subject," "I know how the technologies and teaching approaches I will use will affect each other," "I can use technology to create richer learning environments," "I have the necessary technological knowledge and skills to improve my knowledge in my Subject," "I have the technological knowledge necessary to access information." The scale consists of 7 sub-dimensions, which are named as follows: technology knowledge, pedagogical knowledge, subject knowledge, technological subject knowledge, pedagogical subject knowledge, technological pedagogical knowledge, and technological pedagogical subject knowledge.

The scale developed by Horzum, Akgün, and Öztürk (2014) was administered to a total of 724 teacher candidates, including 433 women and 291 men. The scale, which was prepared with 122 items by reviewing previous studies, was then revised based on expert opinions, resulting in 71 items being removed and the final version consisting of 51 items. The scale scores were obtained by summing the item scores for each factor. Therefore, there is no total score on the scale. Confirmatory Factor Analysis (CFA) was used for validity. It was stated that there were no reverse questions in the scale and that the Cronbach alpha internal consistency coefficient of the scale was .95, while the Cronbach alpha values for the subscales ranged between .84 and .89 (Horzum, Akgün, & Öztürk, 2014).

Curriculum Commitment Scale: The 20-item, 5-point Likert-type scale developed by Yaşaroğlu and Manav (2015) was used in the study after obtaining the necessary permissions. Each item in the scale is rated on a scale ranging from "Strongly disagree. (1)", "I agree very little. (2)", "I agree moderately. (3)", "I agree mostly. (4)", "I definitely agree. (5)". Some of the items included in the scale are as follows: "I design lesson activities according to learning outcomes." "I do not consider the skills that the curriculum aims to impart to

students." "I am aware of the role that the curriculum assigns to teachers." "I know what the symbols in the curriculum mean." "I use the activity examples in the curriculum when planning lesson activities." It was noted that this developed scale was applied to 167 teachers and that this 20- item scale included 16 positive and 4 negative items. It was stated that reverse scoring was used for the negative items. Content validity was ensured through expert opinions. Exploratory Factor Analysis (EFA) was used. The validity and reliability of the developed scales were calculated, and the Cronbach alpha internal consistency coefficient of the scale was calculated as .892. Based on the coefficient found, it was stated that the reliability of the scale was high (Yaşaroğlu and Manav, 2015).

Data Analysis

The data collection instruments were administered to a total of 650 students. After excluding incomplete and carelessly completed questionnaires, data from 525 participants were included in the analysis. Statistical analyses were conducted using the SPSS software package, and the significance level was set at $p < .05$. Before conducting inferential analyses, assumptions of normality were examined. When the reliability coefficients of both scales were examined, it was seen that the reliability coefficient (KMO) of the TPCK scale was 0.868 and the reliability coefficient of the Curriculum Commitment Scale was 0.913. Based on these values, it was seen that both scales provided reliable data. Before proceeding to the analysis of the data, a normality test was performed to determine whether the hypothetical criteria were met. Z-scores were analyzed to identify outliers, and values outside the range of −3 to +3 were excluded from the dataset (Büyüköztürk, 2014). After deleting the outliers, the data from 525 students were examined Skewness and kurtosis values were examined, and since all values fell between −1 and +1, the data were considered to be normally distributed, allowing for the use of parametric statistical tests (Field, 2009) and that parametric tests could be applied.

Table 2. Normality test results

Sub-Dimensions	Skewness	Std. Error	Kurtosis	Std. Error
Technology Knowledge	-.368	.107	-.192	.213
Pedagogical Knowledge	-.721	.107	.349	.213
Subject Knowledge	-.673	.107	-.044	.213
Technological Subject Knowledge	-.214	.107	-.234	.213
Pedagogical Subject Knowledge	-.552	.107	-.178	.213
Technological Pedagogical Knowledge	-.309	.107	-.301	.213
Technological Pedagogical Subject Knowledge	-.427	.107	-.391	.213
TPCK Total	-.566	.107	.179	.213
Curriculum Commitment	-.244	.107	-.597	.213

Independent samples t-tests were used when comparisons involved two groups, while one-way ANOVA was applied for comparisons involving more than two groups. Levene's test was conducted to examine the homogeneity of variances, and Bonferroni or Dunnett's C post-hoc tests were applied depending on variance homogeneity. Pearson product–moment correlation analysis was employed to examine the relationship between TPCK and curriculum commitment. Effect sizes were interpreted using Cohen's d values, where 0.20–0.49 indicated a small effect, 0.50–0.79 a medium effect, and 0.80 and above a large effect size (Öztürk Gübeş, 2021, 746). The analysis showed that participants' responses were two-option for their level of mobile phone use and computer use, while responses for their level of web 2.0 tool use and smart board use were three-option. Statistical tests were performed accordingly.

Ethicals Considerations

Ethical approval for the study was obtained from the Ethics Committee of İnönü University. The approval was granted on November 27, 2024, with decision number 22. All data collection procedures were conducted in accordance with ethical standards, and participation was voluntary.

Findings

1. Differences in TPCK levels and curriculum commitment by gender

To address the first research question-whether final-year students' TPCK levels and curriculum commitment differ by gender-independent samples t-tests were conducted. The results of the independent samples t-tests are presented in table 3.

Table 3. Results of the independent groups t-test in terms of gender

Sub-Dimensions	Gender	N	$\bar{x}$	SS	t	p	Cohen's d
Technology Knowledge	Male	248	22.38	6.83	4.264	.000	.373
	Women	277	20.25	4.49			
Pedagogical Knowledge	Male	248	25.12	6.95	-1.327	.185	-116
	Women	277	25.84	5.58			
Subject Knowledge	Male	248	29.00	8.49	-2.059	.040	-.180
	Women	277	30.35	6.42			
Technological Subject Knowledge	Male	248	21.37	6.08	1.051	.294	092
	Women	277	20.87	4.99			
Pedagogical Subject Knowledge	Male	248	28.87	7.99	-.976	.329	-.085
	Women	277	29.51	6.96			
Technological Pedagogical Knowledge	Male	248	28.52	8.03	.783	.434	0.068
	Women	277	28.01	6.86			
Technological Pedagogical Subject Knowledge	Male	248	28.21	7.57	-.759	.448	-.066
	Women	277	28.70	7.20			
TPCK Total	Male	248	183.50	49.82	-.013	.989	-.001
	Women	277	183.55	38.15			
Curriculum Commitment	Male	248	74.85	15.34	-3.063	.002	-0.268
	Women	277	78.72	13.57			

Df = 523

As shown in Table 3, statistically significant gender-based differences were found in the sub-dimensions of technology knowledge, subject knowledge, and curriculum commitment ($p < .05$). In the technology knowledge sub-dimension, male students obtained significantly higher mean scores than female students ($\bar{x}_{male} = 22.38$, $\bar{x}_{female} = 20.25$; $t = 4.264$, $p < .05$). The effect size indicated a moderate effect (Cohen's $d = 0.373$ As shown in Table 3, statistically significant gender-based differences were found in the sub-dimensions of technology knowledge, subject knowledge, and curriculum commitment ($p < .05$). In the technology knowledge sub-dimension, male students obtained significantly higher mean scores than female students ($\bar{x}_{male} = 22.38$, $\bar{x}_{female} = 20.25$; $t = 4.264$, $p < .05$). The effect size indicated a moderate effect (Cohen's $d = 0.373$). This can be interpreted as female students having higher subject knowledge than male students. Similarly, a significant gender-based difference was observed in curriculum commitment, with female students demonstrating higher levels of commitment than male students ($\bar{\mathbf{x}}_{\text{female commitment}}=78.72$; $\bar{\mathbf{x}}_{\text{male commitment}}=74.85$; $t=-3.063$; $p<0.05$). The magnitude of this difference was small (Cohen's $d=-0.268$). No statistically significant gender differences were found in the remaining TPCK sub-dimensions or in the overall TPCK score ($p > .05$).

2. Differences in TPCK levels and curriculum commitment by department

To examine whether final-year students' TPCK levels and curriculum commitment differed according to their department, one-way ANOVA analyses were conducted.

Table 4. Descriptive results according to the departments

Sub-Dimensions		N	$\bar{x}$	SS	Dunnett's C
Technology Knowledge	English Teacher (1)	108	20.87	6.23	
	Classroom Teacher (2)	124	20.70	5.88	
	Mathematic Teacher (3)	112	22.34	4.88	
	Turkish Teacher (4)	73	21.13	7.00	
	Preschool Teacher (5)	36	21.63	5.64	
	Social Studies Teacher (6)	39	21.17	4.29	
	Counseling and Guidance (7)	33	20.90	5.78	
	Total	525	21.26	5.80	
Pedagogical Knowledge	English Teacher (1)	108	25.44	7.07	
	Classroom Teacher (2)	124	24.55	6.48	
	Mathematic Teacher (3)	112	26.37	4.60	
	Turkish Teacher (4)	73	25.09	7.81	
	Preschool Teacher (5)	36	25.75	5.78	
	Social Studies Teacher (6)	39	27.07	4.28	
	Counseling and Guidance (7)	33	25.09	6.04	
	Total	525	25.50	6.27	
Subject Knowledge	English Teacher (1)	108	28.59	8.19	2<3
	Classroom Teacher (2)	124	27.95	7.96	2<5
	Mathematic Teacher (3)	112	31.09	6.23	2<6
	Turkish Teacher (4)	73	29.21	9.23	2<7
	Preschool Teacher (5)	36	32.13	5.81	
	Social Studies Teacher (6)	39	31.89	5.16	
	Counseling and Guidance (7)	33	31.21	4.32	
	Total	525	29.71	7.49	
Technological Subject Knowledge	English Teacher (1)	108	21.16	5.75	2<3
	Classroom Teacher (2)	124	19.69	5.49	
	Mathematic Teacher (3)	112	21.89	4.93	
	Turkish Teacher (4)	73	21.65	6.42	
	Preschool Teacher (5)	36	21.75	4.78	
	Social Studies Teacher (6)	39	22.20	5.42	
	Counseling and Guidance (7)	33	20.39	5.01	
	Total	525	21.11	5.53	
Pedagogical Subject Knowledge	English Teacher (1)	108	28.81	8.96	2<6
	Classroom Teacher (2)	124	28.26	7.39	
	Mathematic Teacher (3)	112	30.67	5.81	
	Turkish Teacher (4)	73	27.89	9.78	
	Preschool Teacher (5)	36	29.69	5.48	
	Social Studies Teacher (6)	39	31.51	4.71	
	Counseling and Guidance (7)	33	28.75	4.46	
	Total	525	29.21	7.46	
Technological Pedagogical Knowledge	English Teacher (1)	108	27.83	8.37	
	Classroom Teacher (2)	124	27.73	7.26	
	Mathematic Teacher (3)	112	28.79	6.12	
	Turkish Teacher (4)	73	27.82	9.53	

	Preschool Teacher (5)	36	28.63	6.24	
	Social Studies Teacher (6)	39	30.35	5.95	
	Counseling and Guidance (7)	33	27.75	6.32	
	Total	525	28.25	7.43	
Technological Pedagogical Subject Knowledge	English Teacher (1)	108	28.74	8.43	
	Classroom Teacher (2)	124	27.91	7.39	
	Mathematic Teacher (3)	112	28.98	6.07	
	Turkish Teacher (4)	73	27.47	9.08	
	Preschool Teacher (5)	36	29.11	6.20	
	Social Studies Teacher (6)	39	30.23	5.52	
	Counseling and Guidance (7)	33	27.45	6.45	
	Total	525	28.47	7.37	
TPCK Total	English Teacher (1)	108	181.46	50.42	
	Classroom Teacher (2)	124	176.83	45.01	
	Mathematic Teacher (3)	112	190.16	34.17	
	Turkish Teacher (4)	73	180.30	57.13	
	Preschool Teacher (5)	36	188.72	35.88	
	Social Studies Teacher (6)	39	194.46	29.74	
	Counseling and Guidance (7)	33	181.57	32.00	
	Total	525	183.53	44.01	
Curriculum Commitment	English Teacher (1)	108	76.72	13.65	Bonferroni
	Classroom Teacher (2)	124	72.47	15.01	2<3
	Mathematic Teacher (3)	112	80.36	13.73	
	Turkish Teacher (4)	73	77.75	16.62	
	Preschool Teacher (5)	36	80.13	12.96	
	Social Studies Teacher (6)	39	76.46	12.06	
	Counseling and Guidance (7)	33	77.36	14.67	
	Total	525	76.89	14.55	

As seen in the table, there are differences in the mean scores of all sub-dimensions between the TPCK levels of students in their final year of education faculty and their commitment to the curriculum in terms of the department they are studying in. The results of the ANOVA test conducted to determine whether these differences are significant are given in the table 5.

According to the results of the ANOVA test, the TPCK scale's subject knowledge ($F_{\text{subject knowledge}}$ =3.734; $p<0.05$), technological subject knowledge ($F_{\text{technological subject knowledge}}$ =2.305; $p<0.05$), pedagogical subject knowledge ($F_{\text{pedagogical subject knowledge}}$= 2.174; $p<0.05$) dimensions, and commitment to the curriculum ($F_{\text{curriculum commitment}}$= 3.412; $p<0.05$) subdimensions of the TPCK scale were found to be significant ($p<0.05$). To determine which departments showed differences in the subject knowledge sub-dimension, the Levene test was performed ($\text{Levene}_{\text{subject knowledge}}$ =10.045; p=.000) the Dunnett's test was applied, and the results showed that elementary education department students had a significantly lower average score than mathematics education, early childhood education, social studies education, and counseling and guidance department students. In the technological Subject knowledge sub-dimension, according to the Levene test ($\text{Levene}_{\text{technological subject knowledge}}$=17.439; p=.033), the Dunnett's test result showed that elementary education department students had a significantly lower mean score than mathematics education department students.

Table 5. ANOVA test results according to the department

Sub-dimensions		Sum of Squares	Sd	Mean of Squares	F	p
Technology Knowledge	Between Groups	197.166	6	32.861	.973	.443
	Within Groups	17488.560	518	33.762		
	Total	17685.726	524			
Pedagogical Knowledge	Between Groups	313.141	6	52.190	1.330	.242
	Within Groups	20328.097	518	39.243		
	Total	20641.238	524			
Subject Knowledge	Between Groups	1221.582	6	203.597	3.734	.001*
	Within Groups	28242.696	518	54.523		
	Total	29464.278	524			
Technological Subject Knowledge	Between Groups	418.097	6	69.683	2.305	.033*
	Within Groups	15661.495	518	30.235		
	Total	16079.592	524			
Pedagogical Subject Knowledge	Between Groups	718.022	6	119.670	2.174	.044*
	Within Groups	28517.509	518	55.053		
	Total	29235.531	524			
Technological Pedagogical Knowledge	Between Groups	285.291	6	47.549	.858	.526
	Within Groups	28709.520	518	55.424		
	Total	28994.811	524			
Technological Pedagogical Subject Knowledge	Between Groups	317.344	6	52.891	.972	.444
	Within Groups	28197.609	518	54.436		
	Total	28514.952	524			
TPCK Total	Between Groups	17482.181	6	2.913.697	1.513	.172
	Within Groups	997490.417	518	1925.657		
	Total	1014972.598	524			
Curriculum Commitment	Between Groups	4221.457	6	703.576	3.412	.003*
	Within Groups	106819.781	518	206.216		
	Total	111041.238	524			

*p<0.05

In the pedagogical Subject knowledge sub-dimension, the Levene test result ($Levene_{pedagogical\ subject\ knowledge}$=9.687; p=.000) and the Dunnett's test applied showed that elementary education students had a significantly lower mean score than social studies education students. According to the result of the Levene test in the curriculum commitment sub-dimension ($Levene_{curriculum\ commitment}$=1.812; p=.095), the Bonferroni test was applied, and it was concluded that classroom teaching students had a significantly lower mean score than mathematics department students.

3. Differences in TPCK levels and curriculum commitment by daily technology usage time

To examine whether final-year students' TPCK levels and curriculum commitment differed according to their average daily technology usage time, one-way ANOVA analyses were conducted. Descriptive statistics are presented in table 6, and the ANOVA results are summarized in table 7.

Table 6. Descriptive results regarding the daily average technology usage time

Sub-dimensions		N	$\bar{x}$	SS	Dunnett's
Technology	1 hour	16	22.81	7.14	7>2
	2 hours	33	19.72	5.64	7>3
	3 hours	54	19.90	3.71	7>4
	4 hours	116	20.83	3.38	7>5

Knowledge	5 hours	77	20.70	5.40	7>6
	6 hours	95	17.8	5.49	6<4
	7 hours and over	134	25.14	6.35	6<5
	Total	525	21.26	5.80	
Pedagogical Knowledge	1 hour	16	26.81	7.94	7>2
	2 hours	33	23.60	6.37	7>4
	3 hours	54	26.33	4.58	7>5
	4 hours	116	25.31	3.87	7>6
	5 hours	77	25.09	6.18	6<3
	6 hours	95	22.51	6.67	6<4
	7 hours and over	134	28	7.03	
	Total	525	25.50	6.27	
Subject Knowledge	1 hour	16	35.68	6.69	1>2
	2 hours	33	27.54	7.59	1>4
	3 hours	54	31.20	5.40	1>5
	4 hours	116	29.33	4.98	1>6
	5 hours	77	29.23	7.21	
	6 hours	95	26.98	8.09	
	7 hours and over	134	31.48	8.84	
	Total	525	29.71	7.49	
Technological Subject Knowledge	1 hour	16	22.37	6.72	7>2
	2 hours	33	18.72	5.13	7>3
	3 hours	54	20.83	3.14	7>4
	4 hours	116	20.35	3.85	7>6
	5 hours	77	21.06	5.43	
	6 hours	95	19.34	4.95	
	7 hours and over	134	23.58	6.92	
	Total	525	21.11	5.53	
Pedagogical Subject Knowledge	1 hour	16	34.68	7.45	6<1
	2 hours	33	27.51	7.64	6<3
	3 hours	54	30.07	5.42	6<4
	4 hours	116	28.84	4.67	6<7
	5 hours	77	28.02	6.49	7>2
	6 hours	95	24.89	8.33	7>4
	7 hours and over	134	32.68	8.03	7>5
	Total	525	29.21	7.46	
Technological Pedagogical Knowledge	1 hour	16	32.62	6.57	6<1
	2 hours	33	25.27	6.81	6<3
	3 hours	54	28.31	4.81	6<4
	4 hours	116	28.34	5.21	6<7
	5 hours	77	27.02	6.94	7>2
	6 hours	95	24.67	8.14	7>3
	7 hours and over	134	31.59	8.30	7>4
	Total	525	28.25	7.43	
Technological Pedagogical Content Knowledge	1 hour	16	29.37	5.53	7>2
	2 hours	33	26.63	7.46	7>3
	3 hours	54	28.07	4.85	7>4
	4 hours	116	29.05	5.26	7>5
	5 hours	77	27.20	7.11	6<3
	6 hours	95	24.77	7.91	6<4

	7 hours and over	134	31.83	8.21	
	Total	525	28.47	7.37	
TPCK Total	1 hour	16	204.37	46.62	7>2
	2 hours	33	169.03	44.57	7>3
	3 hours	54	184.74	27.19	7>4
	4 hours	116	182.08	27.89	7>5
	5 hours	77	178.35	41.14	7>6
	6 hours	95	161	45.65	6<1
	7 hours and over	134	204.34	50.78	6<3
	Total	525	183.53	44.01	6<4
Curriculum Commitment	1 hour	16	85.81	17.39	3>2
	2 hours	33	65.57	13.72	3>4
	3 hours	54	83.22	12.93	3>5
	4 hours	116	71.12	9.59	3>6
	5 hours	77	73.38	15.91	7>2
	6 hours	95	73.84	14.29	7>4
	7 hours and over	134	85.24	12.21	7>5
	Total	525	76.89	14.55	7>6

As shown in Table 6, differences were observed in the mean scores of all subdimensions in terms of TPCK levels and commitment to the curriculum among final-year education faculty students regarding their average daily technology usage time. The results of the ANOVA test conducted to determine whether the differences were significant are shown in the table below.

Table 7. ANOVA test results for the daily average technology usage time (*p<0.05)

Sub-Dimensions		**Sum of Squares**	**Sd**	**Mean of Squares**	**F**	**p**
Technology Knowledge	Between Groups	3423.973	6	570.662	20.727	.000*
	Within Groups	14261.753	518	27.532		
	Total	17685.726	524			
Pedagogical Knowledge	Between Groups	1883.634	6	313.939	8.670	.000*
	Within Groups	18757.605	518	36.212		
	Total	20641.238	524			
Subject Knowledge	Between Groups	2005.760	6	334.293	6.306	.000*
	Within Groups	27458.518	518	53.009		
	Total	29464.278	524			
Technological Subject Knowledge	Between Groups	1402.651	6	233.775	8.251	.000*
	Within Groups	14676.942	518	28.334		
	Total	16079.592	524			
Pedagogical Subject Knowledge	Between Groups	4127.210	6	687.868	14.191	.000*
	Within Groups	25108.322	518	48.472		
	Total	29235.531	524			
Technological Pedagogical Knowledge	Between Groups	3431.590	6	571.932	11.589	.000*
	Within Groups	25563.222	518	49.350		
	Total	28994.811	524			
Technological Pedagogical Subject Knowledge	Between Groups	3106.751	6	517.792	10.556	.000*
	Within Groups	25408.201	518	49.051		
	Total	28514.952	524			
TPCK Total	Between Groups	122546.629	6	20424.438	11.855	.000*
	Within Groups	892425.969	518	1722.830		
	Total	1014972.59	524			

Curriculum Commitment	Between Groups	22707.280	6	3784.547	22.193	.000*
	Within Groups	88333.958	518	170.529		
	Total	111041.238	524			

As shown in table 7, statistically significant differences were observed across all TPCK sub-dimensions and curriculum commitment according to daily technology usage time ($p < .05$). Technology knowledge ($F_{technology\ knowledge} = 20.727$; $p<0.05$), pedagogy knowledge ($F_{pedagogical\ knowledge} =8.670$; $p<0.05$), subject knowledge ($F_{subject\ knowledge} =6.306$; $p<0.05$), technological subject knowledge ($F_{technological\ subject\ knowledge} =8.251$; $p<0.05$), pedagogical subject knowledge ($F_{pedagogical\ subject\ knowledge} =14.191$; $p<0.05$), technological pedagogical subject knowledge ($F_{technological\ pedagogical\ knowledge}=11.589$; $p<0.05$), technological pedagogical subject knowledge ($F_{technological\ pedagogical\ subject\ knowledge}=10.556$; $p<0.05$), TPAB total ($F_{TPAB\ total}=11.855$; $p<0.05$), and curriculum commitment ($F_{curriculum\ commitment} =22.193$; $p<0.05$) subdimensions. According to the results of the Levene test conducted to determine between which groups the difference in the technology knowledge sub- dimension occurred (Levene $_{technology\ knowledge}=8.105$; $p=.000$), Dunnett's test was applied, and it was seen that students who used technology for 7 hours or more were higher than students who used it for 2, 3, 4, 5, and 6 hours. It was also concluded that those who used technology for 6 hours had significantly lower scores than those who used it for 4 and 5 hours. In the pedagogy knowledge sub-dimension, according to the Levene test result ($Levene_{pedagogical\ knowledge}=6.384$; $p=.000$) and according to the Dunnett's tests, students who used technology for an average of 7 hours or more per day scored higher than those who used it for 2, 4, 5, and 6 hours. It was concluded that those who used technology for 6 hours had significantly lower scores than those who used it for 3 and 4 hours. According to the Levene test result ($Levene_{subject\ knowledge}=3.440$; $p=.000$) and Dunnett's tests conducted to determine the hours between which the difference in the subject knowledge sub-dimension occurred, students who used technology for 1 hour were found to be higher than those who used it for 2, 4, 5, and 6 hours. To determine the difference in the technological Subject knowledge sub-dimension between which hours, the Levene test ($Levene_{technological\ Subject\ knowledge}=4.863$; $p=.000$) and Dunnett's test were applied, and it was seen that students who used technology for 7 hours and above scored higher than those who used it for 2, 3, 4, and 6 hours. To determine the difference in the pedagogical domain knowledge sub-dimension between which hours, Levene's test ($Levene_{pedagogical\ subject\ knowledge}=10.372$; $p=.000$) and Dunnett's test were applied to determine the hours between which the difference in the pedagogical domain knowledge sub- dimension occurred. It was observed that those who used it for 6 hours had significantly lower scores than those who used it for 1, 3, and 4 hours, while those who used it for 7 hours or more had higher scores than those who used it for 2, 4, and 5 hours. To determine the hours between which the difference in the technological pedagogical content knowledge sub-dimension occurred, Levene ($Levene_{technological\ pedagogical\ knowledge}=5.358$; $p=.000$) and Dunnett's tests were applied to determine the difference in the sub- dimension of technological pedagogical domain knowledge. It was found that those who used it for 7 hours or more were higher than those who used it for 2, 3, 4, and 5 hours, and those who used it for 6 hours were significantly lower than those who used it for 3 and 4 hours. To determine the hours between which the difference in the total TPAB subscale occurred, Levene ($Levene_{TPCK\ total}= 4.608$; $p = .000$) and Dunnett's tests to determine the hours between which the difference in the TPAB total subscale occurred. It was determined that those who used it for 7 hours or more had higher scores than those who used it for 2, 3, 4, 5, and 6 hours, and those who used it for 6 hours had significantly lower scores than those who used it for 1, 3, and 4 hours. To determine the specific hours within which the difference in the curriculum commitment sub-dimension occurred, the Levene ($Levene_{curriculum\ commitment}= 4.675$; $p = .000$) and Dunnett's tests to determine the hours between which the difference in the instructional program commitment sub-dimension occurred, it was found that those who used technology for an average of 7 hours or more per day scored higher than those who used it for 2, 4, 5, and 6 hours, and those who used it for 3 hours scored higher than those who used it for 2, 4, 5, and 6 hours.

4. Differences in TPCK levels and curriculum commitment by university

To determine whether final-year students' TPCK levels and curriculum commitment differed according to the university they attended, one-way ANOVA analyses were performed. Descriptive statistics for each university are presented in table 8, and the ANOVA results are provided in table 9.

As shown in Table 9, statistically significant differences were identified across universities in several TPCK sub-dimensions ($p < .05$). Pedagogical knowledge ($F_{\text{pedagogical knowledge}} = 8.164$; $p<0.05$), subject knowledge ($F_{\text{subject knowledge}} = 11.369$; $p<0.05$), pedagogical subject knowledge ($F_{\text{pedagogical subject knowledge}} = 10.185$; $p<0.05$), technological pedagogical knowledge ($F_{\text{technological pedagogical knowledge}} = 5.283$; $p<0.05$), technological pedagogical subject knowledge ($F_{\text{technological pedagogical content knowledge}} = 11.268$; $p<0.05$), and TPCK total ($F_{\text{TPCK total}} = 6.746$; $p<0.05$) subdimensions are significant ($p<0.05$). Pedagogical knowledge (Levene $_{\text{pedagogical knowledge}} = 8.164$; $p=.000$), (Levene $_{\text{subject knowledge}} = 11.369$; $p=.000$), (Levene$_{\text{pedagogical subject knowledge}} = 10.185$; $p=.000$), (Levene$_{\text{technological pedagogical knowledge}} = 5.283$; $p=.005$), (Levene$_{\text{technological pedagogical subject knowledge}} = 11.268$; $p=.000$), (Levene $_{\text{TPCKtotal}} = 6.746$; $p=.001$) Dunnett's test was applied, and it was observed that Muş Alparslan University was higher than Siirt and İnönü Universities. No statistically significant differences were found across universities in the technology knowledge or technological subject knowledge sub-dimensions ($p> .05$). Regarding curriculum commitment, the ANOVA results did not reveal a statistically significant difference among universities ($F = 2.771$, $p > .05$)

Table 8. Descriptive results in terms of the university attended

Sub-Dimensions		**N**	$\bar{x}$	**SS**	**Dunnett c**
Technology Knowledge	Siirt (1)	156	21.22	6.52	
	Muş Alparslan (2)	208	21.28	4.64	
	İnönü (3)	161	21.26	6.43	
	Total	525	21.26	5.80	
Pedagogical Knowledge	Siirt (1)	156	24.54	6.92	2>1
	Muş Alparslan (2)	208	26.85	4.92	2>3
	İnönü (3)	161	24.69	6.86	
	Total	525	25.50	6.27	
Subject Knowledge	Siirt (1)	156	28.39	8.46	2>1
	Muş Alparslan (2)	208	31.60	5.28	2>3
	İnönü (3)	161	28.56	8.41	
	Total	525	29.71	7.49	
Technological Subject Knowledge	Siirt (1)	156	20.78	6.03	
	Muş Alparslan (2)	208	21.53	4.74	
	İnönü (3)	161	20.88	5.96	
	Total	525	21.11	5.53	
Pedagogical Subject Knowledge	Siirt (1)	156	27.96	8.37	2>1
	Muş Alparslan (2)	208	30.99	5.46	2>3
	İnönü (3)	161	28.11	8.31	
	Total	525	29.21	7.46	
Technological Pedagogical Knowledge	Siirt (1)	156	27.37	8.14	2>1
	Muş Alparslan (2)	208	29.54	6.11	2>3
	İnönü (3)	161	27.43	8.05	
	Total	525	28.25	7.43	
Technological Pedagogical Subject Knowledge	Siirt (1)	156	27.23	7.94	2>1
	Muş Alparslan (2)	208	30.32	6.11	2>3
	İnönü (3)	161	27.28	7.83	
	Total	525	28.47	7.37	
TPCK Total	Siirt (1)	156	177.51	50.21	2>1

	Muş Alparslan (2)	208	192.14	31.44	2>3
	İnönü (3)	161	178.24	49.62	
	Total	525	183.53	44.01	
Curriculum Commitment	Siirt (1)	156	75.67	15.65	
	Muş Alparslan (2)	208	78.73	12.52	
	İnönü (3)	161	75.69	15.69	
	Total	525	76.89	14.55	

Table 9. ANOVA test results based on the university attended

Sub-dimensions		**Sum of Squares**	**Sd**	**Mean Square**	**F**	**p**
Technology Knowledge	Between Groups	.370	2	.185	.005	.995
	Within Groups	17685.355	522	33.880		
	Total	17685.726	524			
Pedagogical Knowledge	Between Groups	626.085	2	313.043	8.164	.000*
	Within Groups	20015.153	522	38.343		
	Total	20641.238	524			
Subject Knowledge	Between Groups	1229.892	2	614.946	11.369	.000*
	Within Groups	28234.386	522	54.089		
	Total	29464.278	524			
Technological Subject Knowledge	Between Groups	62480	2	31.240	1.018	.362
	Within Groups	16017.112	522	30.684		
	Total	16079.592	524			
Pedagogical Subject Knowledge	Between Groups	1098.009	2	549.005	10.185	.000*
	Within Groups	28137.522	522	53.903		
	Total	29235.531	524			
Technological Pedagogical Knowledge	Between Groups	575.200	2	287.600	5.283	.005*
	Within Groups	28419.612	522	54.444		
	Total	28994.811	524			
Technological Pedagogical Subject Knowledge	Between Groups	1180.102	2	590.051	11.268	.000*
	Within Groups	27334.851	522	52.366		
	Total	28514.952	524			
TPCK Total	Between Groups	25573.889	2	12.786.944	6.746	.001*
	Within Groups	989398.710	522	1.895.400		
	Total	1014972.598	524			
Curriculum Commitment	Between Groups	1166720	2	583.360	2.771	.063
	Within Groups	109874.518	522	210.488		
	Total	111041.238	524			

*p<0.0

5. Differences in TPCK levels and curriculum commitment by technology skill levels

5.1. Differences by Computer Usage Skill Level

To examine whether final-year students' TPCK levels and curriculum commitment differed according to their computer usage skill level, independent samples t-tests were conducted. The results of the independent samples t-tests are presented in table 10.

An independent samples t-test was applied to determine whether the differences observed in the mean scores in the table above were statistically significant. According to the results obtained, the differences in the TPCK level subdimensions of technology knowledge, subject knowledge, technological subject knowledge, technological pedagogy knowledge, TPCK total, and curriculum commitment were found to be significant

($p<0.05$). Regarding the technology knowledge sub-dimension, the mean scores of students who stated that they used computers effectively were significantly higher than those of students who stated that they could use technology at an intermediate level ($\bar{x}_{effectively}=23.5793$; $\bar{x}_{intermediate}=18.7913$; $t=-10.348$; $p<0.05$). The effect size of this difference is high (Cohen's $d=-0.904$).

Table 10. Results of the independent groups t-test regarding the computer usage levels

Sub-Dimensions	Computer	N	$\bar{x}$	S	t	p	Cohen's d
Technology Knowledge	I can use it at an intermediate level.	254	18.79	4.80	-10,348	,000	-.904
	I can use it effectively.	271	23.57	5.72			
Pedagogical Knowledge	I can use it at an intermediate level.	254	24.33	5.98	-4.186	.072	
	I can use it effectively.	271	26.59	6.35			
Subject Knowledge	I can use it at an intermediate level.	254	28.69	6.80	-3.057	.001	-0.267
	I can use it effectively.	271	30.67	7.98			
Technological Subject Knowledge	I can use it at an intermediate level.	254	19.39	4.53	-7.182	,000	-.627
	I can use it effectively.	271	22.71	5.9			
Pedagogical Subject Knowledge	I can use it at an intermediate level.	254	27.55	7.10	-5.019	.576	
	I can use it effectively.	271	30.76	7.47			
Technological Pedagogical Knowledge	I can use it at an intermediate level.	254	25.98	6.72	-7.070	.029	-0.617
	I can use it effectively.	271	30.37	7.45			
Technological Pedagogical Subject Knowledge	I can use it at an intermediate level.	254	26.75	7.01	-5.305	.983	-.463
	I can use it effectively.	271	30.08	7.35			
TPCK Total	I can use it at an intermediate level.	254	171.51	38.46	-6.274	.002	-.548
	I can use it effectively.	271	194.79	45.93			
Curriculum Commitment	I can use it at an intermediate level.	254	72.59	15.20	-6.840	.004	-.597
	I can use it effectively.	271	80.92	12.68			

Regarding the sub-dimension of subject knowledge, the mean scores of students who stated that they could use the computer effectively were significantly higher than those of students who stated that they could use the computer at an intermediate level ($\bar{x}_{effectively}=30.6790$; $\bar{x}_{intermediate}=28.6929$; $t=-3.057$; $p<0.05$). When examining the effect size of this difference, it is seen to have a low effect power (Cohen's $d=-,267$). Regarding the technological Subject knowledge sub- dimension, the mean score of students who stated that they used the computer effectively was significantly higher than that of students who stated that they could use technology at an intermediate level ($\bar{x}_{effectively}=22.7159$; $\bar{x}_{intermediate}=19.3976$; $t=-7.182$; $p<0.05$). This difference is seen to have a moderate effect size when looking at the effect size (Cohen's $d=-.627$). The mean score of students who stated that they used the computer effectively in relation to the total subscale of TPCK was significantly higher than that of students who stated that they used the computer at an intermediate level ($\bar{x}_{effectively}=194.7970$; $\bar{x}_{intermediate}= 171.5197$; $t = -6.274$; $p < 0.05$). When looking at the effect size of this difference, it is seen to have a moderate effect size (Cohen's $d = -0.548$). The average of students who stated that they used the computer effectively in relation to the curriculum commitment sub-dimension was significantly higher than that of students who stated that they used the computer at an intermediate level ($\bar{x}_{effectively}=80.9299$; $\bar{x}_{intermediate}=72.5906$; $t = -6.840$; $p < 0.05$). When examining the effect size of this difference, it is seen to have a moderate effect size (Cohen's $d = -0.597$).

5.2. Differences by phone usage skill level

Independent samples t-tests were conducted to examine differences in TPCK levels and curriculum commitment according to students' phone usage skill levels, are summarized in the table below.

Table 11. Results of the independent groups t-test regarding the phone usage levels

Sub-Dimensions	Phone	N	$\bar{x}$	S	t	p	Cohen's d
Technology Knowledge	I can use it at an intermediate level	70	18.92	4.27	-3.653	.000	.795
	I can use it effectively.	455	21.62	5.93			
Pedagogical Knowledge	I can use it at an intermediate level	70	25.28	6.10	-.313	.369	
	I can use it effectively.	455	25.53	6.30			
Subject Knowledge	I can use it at an intermediate level	70	29.41	5.64	-.364	.004	-.047
	I can use it effectively.	455	29.76	7.74			
Technological Subject Knowledge	I can use it at an intermediate level	70	19.41	4.28	-2.769	.000	-.356
	I can use it effectively.	455	21.37	5.66			
Pedagogical Subject Knowledge	I can use it at an intermediate level	70	28.61	5.24	-.718	.000	-.092
	I can use it effectively.	455	29.30	7.75			
Technological Pedagogical Knowledge	I can use it at an intermediate level	70	28.04	5.40	-.252	.000	-.032
	I can use it effectively.	455	28.28	7.7			
Technological Pedagogical Subject Knowledge	I can use it at an intermediate level	70	27.27	5.94	-1.469	.011	-0.189
	I can use it effectively.	455	28.66	7.56			
TPCK Total	I can use it at an intermediate level	70	176.97	33.21	-1.341	.000	-.172
	I can use it effectively.	455	184.54	45.39			
Curriculum Commitment	I can use it at an intermediate level	70	74.15	14.27	-1.693	.795	
	I can use it effectively.	455	77.31	14.56			

As presented in table 11, statistically significant differences were found in the sub-dimensions of technology knowledge, technological subject knowledge, technological pedagogical content knowledge, and overall TPCK score ($p < .05$). The mean score of students who stated that they used the phone effectively in relation to the technology knowledge subdimension was significantly higher than that of students who stated that they used the phone at an intermediate level ($\bar{x}_{effectively}$=21.6220; $\bar{x}_{intermediate}$=18.9286; t=-3.653; p<0.05). Looking at the effect size of this difference, it is seen to have a high effect power (Cohen's d=.795). The mean score of students who stated that they used the phone effectively in terms of the Subject knowledge sub-dimension was significantly higher than that of students who stated that they used the phone at an intermediate level ($\bar{x}_{effectively}$=29.7648; $\bar{x}_{intermediate}$= 18.9286; t = - 0.364; p < 0.05). When looking at the effect size of this difference, it is seen to have a moderate effect size (Cohen's d = -0.047). The mean score of students who stated that they used the phone effectively in relation to the technological Subject knowledge sub-dimension was significantly higher than that of students who stated that they could use the phone at an intermediate level ($\bar{x}_{effectively}$=21.3714; $\bar{x}_{intermediate}$=19.4143; t=-2.769; p<0.05). Looking at the effect size of this difference, it is seen to have a moderate effect size (Cohen's d=-.356). The mean score of students who stated that they used the phone effectively in relation to the pedagogical content knowledge sub-dimension was significantly higher than that of students who stated that they could use the phone at an intermediate level ($\bar{x}_{effectively}$=29.3033; $\bar{x}_{intermediate}$=28.6143; t=-,718; p<0.05). When examining the effect size of this difference, it is seen to have a low effect size (Cohen's d=-.092). The mean score of students who stated that they used the phone effectively in relation to the technological pedagogy knowledge sub-dimension was significantly higher than that of students who stated that they could use the phone at an intermediate level ($\bar{x}_{effectively}$=28.2835; $\bar{x}_{intermediate}$= 28.0429; t = -1.469; p < 0.05). When looking at the effect size of this difference, it is seen to have a low effect size (Cohen's d = -0.032). The mean score of students who stated that they used the phone effectively in relation to the technological pedagogical content knowledge sub-dimension was significantly higher than that of students who stated that they could use the phone at an intermediate level ($\bar{x}_{effectively}$=28.6615; $\bar{x}_{intermediate}$= 27.2714; t = -0.252; p < 0.05). When looking at the effect size of this difference, it is seen to have a low effect size (Cohen's d =

-0.189). The mean score of students who stated that they used the phone effectively in relation to the total subscale of TPCK was significantly higher than that of students who stated that they could use the phone at an intermediate level ($\bar{x}_{effectively}$=77.3165; $\bar{x}_{intermediate}$=74.1571; t=-1.693; p<0.05). Looking at the effect size of this difference, it is seen to have a low effect power (Cohen's d=-.217).

5.3. Differences by smart board usage skill level

To examine differences based on smart board usage skill levels, one-way ANOVA analyses were conducted, are summarized in the table below.

Table 12. Descriptive results regarding the smart board usage level

Sub-Dimensions		N	$\bar{x}$	S	Dunnett's
Technology Knowledge	I have difficulty using it. (1)	56	16.98	4.19	3>1
	I use it moderately. (2)	304	19.98	5.10	3>2
	I use it effectively. (3)	165	25.07	5.46	2>1
	Total	525	21.26	5.80	
Pedagogical Knowledge	I have difficulty using it. (1)	56	22.89	5.44	3>1
	I use it moderately. (2)	304	24.52	6.03	3>2
	I use it effectively. (3)	165	28.20	6.09	
	Total	525	25.50	6.27	
Subject Knowledge	I have difficulty using it. (1)	56	27.76	5.44	3>1
	I use it moderately. (2)	304	28.66	7.60	3>2
	I use it effectively. (3)	165	32.32	7.26	
	Total	525	29.71	7.49	
Technological Subject Knowledge	I have difficulty using it. (1)	56	18.10	4.21	3>1
	I use it moderately. (2)	304	19.84	4.92	3>2
	I use it effectively. (3)	165	24.46	5.47	2>1
	Total	525	21.11	5.53	
Pedagogical Subject Knowledge	I have difficulty using it. (1)	56	27.55	6.58	3>1
	I use it moderately. (2)	304	27.91	7.53	3>2
	I use it effectively. (3)	165	32.16	6.78	2>1
	Total	525	29.21	7.46	
Technological Pedagogical Knowledge	I have difficulty using it. (1)	56	25.00	5.5	3>1
	I use it moderately. (2)	304	26.66	7.05	3>2
	I use it effectively. (3)	165	32.28	7.07	
	Total	525	28.25	7.43	
Technological Pedagogical Subject Knowledge	I have difficulty using it. (1)	56	26.44	5.69	3>1
	I use it moderately. (2)	304	26.83	6.95	3>2
	I use it effectively. (3)	165	32.18	7.30	
	Total	525	28.47	7.37	
TPCK Total	I have difficulty using it. (1)	56	164.75	32.30	3>1
	I use it moderately. (2)	304	174.42	41.06	3>2
	I use it effectively. (3)	165	206.69	43.69	
	Total	525	183.53	44.01	
Curriculum Commitment	I have difficulty using it. (1)	56	69.28	12.38	3>1
	I use it moderately. (2)	304	74.27	15.05	3>2
	I use it effectively. (3)	165	84.30	10.91	2>1
	Total	525	76.89	14.55	

When the table above is examined, differences are observed in the mean scores of the sub-dimensions of the TPCK and curriculum commitment scales in terms of the smart board usage level of the final- year students of the Faculty of Education. The results of the ANOVA test conducted to determine whether these differences are significant are given in the table below.

Table 13. ANOVA test results regarding the level of smart board usage

Sub-Dimensions		Sum of Squares	Sd	Mean of Squares	F	p
Technology Knowledge	Between Groups	3928.886	2	1964.443	74.540	.000*
	Within Groups	13756.839	522	26.354		
	Total	17685.726	524			
Pedagogical Knowledge	Between Groups	1873,642	2	936.821	26.057	.000*
	Within Groups	18767.596	522	35.953		
	Total	20641.238	524			
Subject Knowledge	Between Groups	1668,544	2	834.272	15.668	.000*
	Within Groups	27795.734	522	53.249		
	Total	29464.278	524			
Technological Subject Knowledge	Between Groups	2843508	2	1421.754	56.071	.000*
	Within Groups	13,236.085	522	25.356		
	Total	16079592	524			
Pedagogical Subject Knowledge	Between Groups	2111842	2	1055.921	20.321	.000*
	Within Groups	27123.690	522	51.961		
	Total	29235,531	524			
Technological Pedagogy Knowledge	Between Groups	4045.097	2	2022.549	42.316	.000*
	Within Groups	24949.714	522	47.796		
	Total	28994.811	524			
Technological Pedagogical Subject Knowledge	Between Groups	3311.466	2	1655.733	34.293	.000*
	Within Groups	25203.487	522	48.283		
	Total	28514.952	524			
TPCK Total	Between Groups	133512.990	2	66756.495	39.533	.000*
	Within Groups	881459.608	522	1688.620		
	Total	1014972.598	524			
Curriculum Commitment	Between Groups	14382.172	2	7191.086	38.835	.000*
	Within Groups	96659.067	522	185.171		
	Total	111041.238	524			

*p<0.05

According to the results of the ANOVA test, all data included in all subscales of the TPCK level show significant differences (p<0.05). To determine the levels between which the difference in the technology knowledge subscale lies, the results of the Levene test ($Levene_{technology\ knowledge}$=5.439; p=.005) the Dunnett's test was applied, and the mean score of students who stated that they used the smart board effectively was significantly higher than the mean of students who stated that they had difficulty using it and used it at an intermediate level. The mean score of students who stated that they used the smart board effectively was significantly higher than the mean of students who stated that they had difficulty using it and used it at an intermediate level. The mean score of students who stated that they used the smart board effectively was significantly higher than the mean of students who stated that they had difficulty using it and used it at an intermediate (levene $_{Subject\ knowledge}$ =5.214; p=.006), ($Levene_{technological\ subject\ knowledge}$ =3.705; p=.025), ($Levene_{pedagogical\ subject\ knowledge}$=7.209; p=.001), ($Levene_{technological\ pedagogical\ knowledge}$=4.248; p=.015), ($Levene_{technological\ pedagogical\ knowledge}$=4.248; p=.015), ($Levene_{TPCK\ total}$=3.414; p=.034), ($Levene_{curriculum\ commitment}$ =5.817; p=.003) and Dunnett's test were applied, and the average score of students who stated that they used the smart board effectively was

significantly higher than the average of students who stated that they had difficulty using it and used it at an intermediate level.

5.4. Differences by Web 2.0 tool usage skill level

One-way ANOVA analyses were conducted to determine whether students' TPCK levels and curriculum commitment differed according to their Web 2.0 tool usage skill levels.

Table 14. Descriptive results in terms of Web 2.0 usage levels

Sub-Dimensions		N	$\bar{x}$	SS	Dunnett's C
Technology Knowledge	I have difficulty using it. (1)	60	17.98	5.82	3>1
	I use it moderately. (2)	289	20.55	5.24	3>2
	I use it effectively. (3)	176	23.54	5.88	2>1
	Total	525	21.26	5.80	
Pedagogical Knowledge	I have difficulty using it. (1)	60	23.55	7.69	
	I use it moderately. (2)	289	25.10	5.47	3>1
	I use it effectively. (3)	176	26.82	6.73	3>2
	Total	525	25.50	6.27	
Subject Knowledge	I have difficulty using it. (1)	60	29.20	8.57	
	I use it moderately. (2)	289	29.22	6.88	
	I use it effectively. (3)	176	30.69	8.00	
	Total	525	29.71	7.49	
Technological Subject Knowledge	I have difficulty using it. (1)	60	19.18	6.38	3>1
	I use it moderately. (2)	289	20.41	4.69	3>2
	I use it effectively. (3)	176	22.90	6.03	2>1
	Total	525	21.11	5.53	
Pedagogical Subject Knowledge	I have difficulty using it. (1)	60	27.38	8.23	3>1
	I use it moderately. (2)	289	28.59	7.03	3>2
	I use it effectively. (3)	176	30.85	7.62	
	Total	525	29.21	7.46	
Technological Pedagogical Knowledge	I have difficulty using it. (1)	60	26.00	7.98	3>1
	I use it moderately. (2)	289	27.13	6.54	3>2
	I use it effectively. (3)	176	30.84	7.94	
	Total	525	28.25	7.43	
Technological Pedagogical Subject Knowledge	I have difficulty using it. (1)	60	26.33	8.51	3>1
	I use it moderately. (2)	289	27.75	6.44	3>2
	I use it effectively. (3)	176	30.39	7.99	
	Total	525	28.47	7.37	
TPCK Total	I have difficulty using it. (1)	60	169.63	49.35	3>1
	I use it moderately. (2)	289	178.78	37.72	3>2
	I use it effectively. (3)	176	196.07	48.72	
	Total	525	183.53	44.01	
Curriculum Commitment	I have difficulty using it. (1)	60	73.28	18.72	3>1
	I use it moderately. (2)	289	73.92	13.07	3>2
	I use it effectively. (3)	176	83.00	13.36	
	Total	525	76.89	14.55	

When the table above is examined, differences are observed in the mean scores of the sub-dimensions of the TPCK and curriculum commitment scales in terms of web 2.0 usage level of the final- year students of the Faculty of Education. The results of the ANOVA test conducted to determine whether these differences are significant are given in the table below.

Table 15. ANOVA test results for the level of Web 2.0 usage

Sub-dimensions		Sum of Squares	Sd	Mean of Squares	F	p
Technology Knowledge	Between Groups	1707.687	2	853.844	27.895	.000
	Within Groups	15978.038	522	30.609		
	Total	17685.726	524			
Pedagogical Knowledge	Between Groups	584.616	2	292.308	7.608	.001
	Within Groups	20056.622	522	38.423		
	Total	20641.238	524			
Subject Knowledge	Between Groups	254711	2	127.355	2.276	.104
	Within Groups	29209.567	522	55.957		
	Total	29464.278	524			
Technological Subject Knowledge	Between Groups	926912	2	463.456	15.966	.000
	Within Groups	15152.680	522	29.028		
	Total	16079.592	524			
Pedagogical Subject Knowledge	Between Groups	785369	2	392.684	7.205	.001
	Within Groups	28450.162	522	54.502		
	Total	29235.531	524			
Technological Pedagogy Knowledge	Between Groups	1847,490	2	923.745	17.762	.000
	Within Groups	27147.322	522	52.006		
	Total	28994.811	524			
Technological Pedagogical Subject Knowledge	Between Groups	1077.398	2	538.699	10.249	.000
	Within Groups	27437.555	522	52.562		
	Total	28514.952	524			
TPCK Total	Between Groups	45785.926	2	22892.963	12.330	.000
	Within Groups	969186.672	522	1856.679		
	Total	1014972.598	524			
Curriculum Commitment	Between Groups	9905.735	2	4952.868	25.564	.000
	Within Groups	101135.503	522	193.746		
	Total	111041.238	524			

According to the results of the ANOVA test, all mean differences in all sub-dimensions except for the Subject knowledge dimension (p=.104) were found to be significant (p<0.05). To determine which groups showed differences in the subdimensions of technological knowledge, pedagogical knowledge, technological Subject, pedagogical Subject, technological pedagogy, technological pedagogical Subject, TPCK total, and curriculum commitment, Levene ($Levene_{technology\ knowledge}$ =7.444; p=.001), ($Levene_{pedagogical\ knowledge}$ =13.461; p=.000), ($Levene_{technological\ subject\ knowledge}$ =14.532; p=.000), $Levene_{pedagogical\ subject\ knowledge}$ =3.204; p=.041), ($Levene_{technological\ pedagogical\ knowledge}$=9.402; p=.000), ($Levene_{technological\ pedagogical\ Subject\ knowledge}$=12.470; p=.000), ($Levene_{TPCK\ total}$=13.831; p=.000) and ($Levene_{curriculum\ commitment}$ =14.566; p=.000) and Dunnett's tests, the mean for "I can use Web 2.0 effectively" was significantly higher than the means for "I have difficulty using it" and "I use it at an intermediate level."

5.5. Levels of artificial intelligence usage

The results of the ANOVA test conducted to answer the ninth sub-problem of the study" is there a significant difference in the TPCK levels and the level of use of artificial intelligence in their commitment to the curriculum among students in their final year of education faculty?" are summarized in the table below.

Table 16. Descriptive results according to level of artificial intelligence use

Sub-Dimensions		N	$\bar{x}$	S	Difference
Technology Knowledge	I find it difficult to use.	55	20.83	5.98	Bonferroni
	I use it at a moderate level.	288	19.65	5.32	3>1
	I use it effectively.	182	23.92	5.55	3>2
	Total	525	21.26	5.80	
Pedagogical Knowledge	I find it difficult to use.	55	24.70	6.26	Bonferroni
	I use it at a moderate level.	288	24.56	5.89	3>1
	I use it effectively.	182	27.23	6.53	3>2
	Total	525	25.50	6.27	
Subject Knowledge	I find it difficult to use.	55	28.56	7.68	Dunnett C
	I use it at a moderate level.	288	28.60	6.86	3>1
	I use it effectively.	182	31.83	7.96	3>2
	Total	525	29.71	7.49	
Technological Subject Knowledge	I find it difficult to use.	55	18.29	5.94	Dunnett C
	I use it at a moderate level.	288	20.09	4.63	3>1
	I use it effectively.	182	23.56	5.83	3>2
	Total	525	21.11	5.53	
Pedagogical Subject Knowledge	I find it difficult to use.	55	28.83	5.99	Dunnett C
	I use it at a moderate level.	288	27.76	7.23	3>1
	I use it effectively.	182	31.61	7.64	3>2
	Total	525	29.21	7.46	
Technological Pedagogical Knowledge	I find it difficult to use.	55	26.36	6.21	Dunnett C
	I use it at a moderate level.	288	26.51	6.84	3>1
	I use it effectively.	182	31.57	7.57	3>2
	Total	525	28.25	7.43	
Technological Pedagogical Subject Knowledge	I find it difficult to use.	55	28.12	6.34	Dunnett C
	I use it at a moderate level.	288	27.09	7.01	3>1
	I use it effectively.	182	30.77	7.68	3>2
	Total	525	28.47	7.37	
TPCK Total	I find it difficult to use.	55	175.72	37.09	Dunnett C
	I use it at a moderate level.	288	174.28	39.70	3>1
	I use it effectively.	182	200.52	47.45	3>2
	Total	525	183.53	44.01	
Curriculum Commitment	I find it difficult to use.	55	76.81	14.87	Bonferroni
	I use it at a moderate level.	288	73.59	14.52	3>1
	I use it effectively.	182	82.13	12.95	3>2
	Total	525	76.89	14.55	

When the table above is examined, differences are observed in the mean scores of the sub-dimensions of the TPCK and curriculum commitment scales in terms of use of artificial intelligence at the final- year students of the Faculty of Education. The results of the ANOVA test conducted to determine whether these differences are significant are given in the table below.

Table 17. ANOVA test results for the level of artificial intelligence use

Sub-dimensions		Squares Sum	Sd	Mean of Squares	F	p
Technology Knowledge	Between Groups	2043.474	2	1021.737	34.097	.000
	Within Groups	15642.251	522	29.966		
	Total	17685.726	524			
Pedagogical	Between Groups	830838	2	415.419	10.946	.000

Knowledge	Within Groups	19810,400	522	37.951		
	Total	20641,238	524			
Subject Knowledge	Between Groups	1248,616	2	624.308	11.550	.000
	Within Groups	28215.662	522	54.053		
	Total	29464.278	524			
Technological Subject Knowledge	Between Groups	1830,260	2	915.130	33.524	.000
	Within Groups	14249.332	522	27.298		
	Total	16079,592	524			
Pedagogical Subject Knowledge	Between Groups	1662.983	2	831.491	15.742	.000
	Within Groups	27572.549	522	52.821		
	Total	29235.531	524			
Technological Pedagogy Knowledge	Between Groups	3081.692	2	1540.846	31.039	.000
	Within Groups	25913.119	522	49.642		
	Total	28994.811	524			
Technological Pedagogical Subject Knowledge	Between Groups	1521.427	2	760.713	14.711	.000
	Within Groups	26993.526	522	51.712		
	Total	28514.952	524			
TPCK Total	Between Groups	80529.247	2	40264.623	22.493	.000
	Within Groups	934443.352	522	1790.121		
	Total	1014972.598	524			
Curriculum Commitment	Between Groups	8134.213	2	406.710	20.631	.000
	Within Groups	102907.026	522	197.140		
	Total	111041.238	524			

Table 17 shows that the relationship between the TPCK levels of final-year education faculty students and their commitment to the curriculum was examined in terms of artificial intelligence usage levels across all sub-dimensions. According to the results of the ANOVA test, all data in all sub-dimensions of the TPCK level showed significant differences ($p<0.05$). To determine between which groups the difference occurred, Levene tests were performed ($Levene_{technology\ knowledge}$ =.845; p=.430), ($Levene_{pedagogical\ knowledge}$ =2.583; p=.077), ($Levene_{Subject\ knowledge}$= 3.185; p= .042), ($Levene_{technological\ Subject\ knowledge}$= 7.841; p = .000), $Levene_{pedagogical\ subject\ knowledge}$= 5.316; p = .005), ($Levene_{technological\ pedagogical\ knowledge}$ =4.305; p=.014), ($Levene_{technological\ pedagogical\ subject\ knowledge}$ =3.429; p=.033), ($Levene_{TPCK\ total}$=6.171; p=.043) and ($Levene_{curriculum\ commitment}$=.240; p=.787) were applied using Dunnett's and Bonferroni tests, and it was found that the average of students who stated that they "used artificial intelligence effectively" was significantly higher than those who stated that they "used it at a moderate level."

6. The relationship between the technological pedagogical content knowledge of final-year education faculty students and their commitment to the curriculum

The following table was obtained by calculating the Pearson correlation coefficient to examine the relationship between the technological pedagogical content knowledge and program commitment of final-year education faculty students.

Table 18. Correlation between the technological pedagogical content knowledge and program commitment

Sub-Dimensions		**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Technology Knowledge (1)	r	.802**	.740**	.794**	.710**	.792**	.753**	.853**	.552**
	p	.000	.000	.000	.000	.000	.000	.000	.000
	N	525	525	525	525	525	525	525	525
Pedagogical Knowledge (2)	r	1	.906**	.856**	.858**	.831**	.840**	.937**	.633**
	p		.000	.000	.000	.000	.000	.000	.000
Subject Knowledge (3)	r		1	.886**	.847**	.849**	.812**	.932**	.639**

	p	.000	.000	.000	.000	.000	.000
Technological Subject Knowledge (4)	r	1	.807**	.889**	.841**	.932**	.579**
	p		.000	.000	.000	.000	.000
Pedagogical Subject Knowledge (5)	r		1	.889**	.901**	.933**	.651**
	p			.000	.000	.000	.000
Technological Pedagogical Knowledge (6)	r			1	.931**	.956**	.635**
	p				.000	.000	.000
Technological Pedagogical Subject Knowledge (7)	r				1	.941**	.565**
	p					.000	.000
TPCK Total (8)	r					1	657**
	p						.000
Program Commitment (9)							

Table 18 shows that the relationship between various sub-dimensions was investigated. It was determined that the technology knowledge sub-dimension differed significantly from other sub- dimensions. Technology knowledge was found to have a positive correlation level of 0.55 to 0.80 compared to other sub-dimensions.

Results and Discussion

1. Results and Discussion Regarding TPCK and Commitment to the Curriculum in Terms of Gender

The evaluations revealed that, in terms of gender, the TPCK level was more significant for male students in the technology knowledge dimension, while the Subject knowledge and curriculum commitment averages were more significant for female students. These results are consistent with the findings of Bıçak (2023) and Bal and Karademir (2013) regarding the gender variable of TPCK, but they do not correspond with the results of Oğuz (2022), Balçın and Ergün (2018), Kaşçı and Selçuk (2021), and Kaymak (2024). Furthermore, it is stated that male teacher candidates have higher TPCK levels than female teacher candidates. In terms of commitment to the curriculum, the results are consistent with the study conducted by Sakallıoğlu and Özüdoğru (2022). This difference is thought to stem from the sample of the study, the demographic characteristics of the participants, or their cultures.

2. Results and Discussion Regarding TPCK and Commitment to the Curriculum in Terms of The Department

The analyses revealed that, when evaluated according to the department they studied in, students studying in the "social studies teaching" department had higher averages than students studying in other departments in the sub-dimensions of subject knowledge, technological knowledge, and pedagogical knowledge. In the sub-dimension of commitment to the curriculum, students studying in the "mathematics and preschool teaching" departments had higher averages than students studying in other departments. When the sub-dimensions were examined individually, it was found that the average of students studying in the classroom teaching department was lower than the average of students studying in other departments. It is possible to say that this is due to the more comprehensive course content of classroom teaching students. These results are consistent with the studies conducted by Ünal (2015), Bal and Karademir (2013), Gönç (2023), Doğan (2019), and Kaymak (2024) on the department variable of TPCK, showing that there are significant differences between students studying in different departments. However, in terms of adherence to the curriculum, it does not correspond with the study conducted by Sakallıoğlu and Özüdoğru (2022). This difference may stem from students in different departments being more familiar with their own curriculums. For TPCK, it can be said that this is due to the proximity of the students' departments to technology and, therefore, the increased use of TPCK in teaching environments.

3. Results and Discussion Regarding TPCK and Commitment to the Curriculum in Terms of the Daily Average Technology Usage Times

When examining students' TPCK levels and their commitment to the curriculum in terms of average daily technology usage time, significant differences were found in all sub-dimensions and in commitment to the curriculum. In the technology knowledge sub-dimension, it was concluded that those who used technology for 7 hours or more had higher scores, while those who used technology for 6 hours had significantly lower scores than those who used it for 4 and 5 hours. In the pedagogy knowledge sub-dimension, those who used technology for 7 hours or more again scored higher than those who used it for 2-4-5-6 hours, while those who used it for 6 hours scored significantly lower than those who used it for 3 and 4 hours. The same situation applies to other sub-dimensions except for adherence to the curriculum. In terms of adherence to the curriculum, those who used technology for an average of 7 hours or more per day scored higher than those who used it for 2-4-5-6 hours; those who used it for 3 hours scored higher than those who used it for 2-4-5-6 hours. These results show that, according to the variable of average daily technology usage time in the TPCK, Horzum's (2013) study found that an increase in technology usage time and spending more time with technology had a positive correlation with TPCK levels, and that TPCK scores were also high, which is consistent with the results of this study. Therefore, regardless of the sample of the study, the average daily technology usage time positively affects students' TPCK.

4. Results and Discussion Regarding TPCK and Commitment to the Curriculum in Terms of attended University

When examining students' TPCK levels and commitment to the curriculum in terms of the university they attend, it was found that the average of Muş Alparslan University was higher than that of Siirt University and İnönü University in all sub-dimensions. The reasons for this situation may be that Muş Alparslan University students are more interested in the course, the course content is different, the technological infrastructure is greater than at other universities, and the approaches of the teaching staff and their knowledge transfer are more effective and efficient. It should also be noted that the teaching staff themselves provided the scales to be filled out by this group of students.

5. Results and Discussion Regarding the Technology Usage Skill Levels and the Commitment to TPCK and the Curriculum

Students' TPCK levels, when examined in terms of their technology use skills, show that students who use computers effectively score significantly higher than those who use them at other levels across all sub-dimensions. The same situation was observed for "telephone," where differences were significant in the subdimensions of technology knowledge, subject knowledge, technological subject knowledge, pedagogical domain, technological pedagogical knowledge, technological pedagogical domain knowledge, and TPCK total commitment, but were not a determining factor in other dimensions. In the analysis conducted for "smart board," those who used smart boards effectively scored significantly higher than other users in all sub-dimensions. According to the results in the "Web 2.0" sub-dimension, those who used Web 2.0 effectively scored significantly higher than other users. Finally, when looking at the differences in terms of "artificial intelligence" usage levels, it was concluded that those who used artificial intelligence effectively scored significantly higher than those who used it at other levels.

Overall, when computer use is associated with technology, it is thought that the students participating in the study exhibit positive attitudes in terms of technological knowledge, subject knowledge, and pedagogical knowledge. According to the research results, it can be said that the level of computer use is an important factor in TPCK. In the study conducted by Gönç (2023) and Kaymak (2024), it was found that there was a significant difference between TPCK and the level of computer use, that this result was consistent with

the research results, and that those who used it at a good level were higher than those who used it at an intermediate level. It was found that students' technology use skill levels positively affected TPCK and smart board usage levels. In this sense, studies conducted by Bilici and Güler (2016) and Akyüz et al. (2014) indicated that there were significant differences. This is also consistent with the results of this study. Participants with good smart board usage levels will also be positively affected in terms of their TPCK levels because the use of smart boards in lessons demonstrates that they have both technological and pedagogical knowledge.

6. The Relationship Between the Technological Pedagogical Content Knowledge of Students and Their Commitment to the Curriculum

The analysis conducted to examine the relationship between the technological pedagogical content knowledge and program commitment of final-year education faculty students revealed that the technology knowledge sub-dimension was significantly related to all other sub-dimensions, with a positive correlation ranging from 0.55 to 0.80 with the other sub-dimensions. As the TPCK level increased or decreased, the program commitment of students also increased or decreased simultaneously. We can say that there is no clear study on " " in the literature, but there are studies examining TPCK with other variables. This also emphasizes the originality of the study.

Recommendations

1. Using technology more appropriately in educational settings, or in other words, becoming technologically literate, will benefit both teachers and students in creating effective, efficient, and rich learning environments and in terms of time management. Therefore, practices should be implemented to ensure that technological literacy is incorporated into all areas of daily life.

2. Students participating in the study are generally interested in TPCK, but they need to devote more time to developing their knowledge and skills in pedagogical technology.

3. Students' commitment to the curriculum during instruction, adapted to TPCK, will increase their chances of benefiting from today's technologies.

4. Using TPCK and technological tools adapted to curriculums can create more effective learning environments.

5. TPCK, which has a positive effect on final-year education faculty students, can also have a positive impact on students in lower grades. Therefore, it may be beneficial for students in lower grades to be introduced to TPCK and learn about it.

6. Based on the results obtained, activities should be organized to increase teachers' adherence to the curriculum and improve their TPCK levels. These activities can be in-service training events or courses and seminars.

7. When organizing teacher training programs, addressing adherence to the curriculum and TPCK together can equip teacher candidates with the digital age skills needed to use technology in education.

8. Technological knowledge and its use should be encouraged by minimizing opportunity and technological equipment inequalities in educational environments.

9. Content that increases TPCK levels can be produced in education faculties. Technology-focused content for subject-specific education can be produced and incorporated into curriculums.

10. Studies that attract the interest of teacher candidates who are not committed to the curriculum or show low commitment can be conducted to increase their commitment.

Author Contribution Rates

All authors have taken equal responsibility for all stages of the article. All authors have read and approved the final version of the paper.

Ethics Committee Approval

This research has been approved by the İnonü University Social and Human Sciences Ethics Committee with decision no. 22, taken at the meeting dated 11.27.2024.

Declaration of Conflict of Interest

The authors declare that they do not have a conflict of interest with any organizations or persons within the scope of the study.

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Teachers' Views on Decision Fatigue

Research Article

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ABSTRACT

In this study, which aimed to determine the views of teachers working in public schools regarding decision fatigue, the phenomenological design, one of the qualitative research methods, was employed. Within the scope of the research, the views of 40 teachers working at different educational levels in four central districts of Diyarbakır during the 2024–2025 academic year were collected through semi-structured interview forms, and the results were analyzed using descriptive analysis. The findings revealed that most teachers experience decision fatigue both at school and in the classroom, and that fatigue and stress affect their decisions. It was also found that teachers particularly struggle with making decisions related to emotional and economic factors besides individual differences. Teachers stated that they have difficulty making decisions on their own, need support from colleagues and administrators, and experience burnout as a result of decision fatigue.

Keywords:
Decision fatigue, decision making, teacher

Introduction

Decision-making is one of the most fundamental cognitive processes of human behavior (Wang & Ruhe, 2007; Polman & Vohs, 2016). It involves selecting a specific option from a broader set of alternatives and considering the possible consequences of that choice, including both its immediate and future effects (Broche-Perez, Herrera, & Omar-Martinez, 2016). Individual characteristics, values, beliefs, attitudes, personality types, high levels of anxiety, sense of responsibility, social values, cognitive fatigue, time pressure, and the timely and accurate communication of decisions are among the major factors that influence the decision-making process (Radwin, 1998; Hagbaghery et al., 2004; Hedberg & Larsson, 2004; Tekin, 2009; Can, 1992). The complexity of decision-making stems from its dependence on various factors such as previous experiences, values, beliefs, age, and gender (Sanz de Acedo Lizárraga et al., 2007).

Throughout their lives, individuals make numerous decisions and consequently encounter positive or negative outcomes. Therefore, they determine various alternatives and seek to choose the best and most accurate option among them (Schall, 2005). Even in situations that appear simple, the excessive repetition

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involved in decision-making may lead to complexity. In such cases, the decision-making process becomes more challenging (Pignatiello et al., 2020). Today, the constant exposure to multiple options may result in a psychological phenomenon known as decision fatigue. This condition manifests as a decline in the quality of decisions made after prolonged decision-making processes. The abundance of choices—ranging from what to wear in the morning to complex financial decisions—can overwhelm individuals, leading to procrastination, poor decisions, and burnout (Hoffman & Bazerman, 2007).

Decision fatigue refers to a state in which individuals experience a decline in decision-making quality following repeated acts of decision-making, as cognitive and self-regulatory resources become depleted, leading to less optimal outcomes (Pignatiello et al., 2020; Hunt et al., 2021). Each decision we make consumes mental energy, and as this energy diminishes, so does our ability to make sound judgments. Research indicates that individuals experiencing decision fatigue are more inclined to choose default options or act impulsively rather than carefully evaluating their alternatives. This phenomenon is particularly common in environments that require frequent decision-making, such as workplaces, educational institutions, and even home settings (Dos Santos et al., 2019).

The concept of decision fatigue was first introduced in a study conducted by Baumeister et al. (1998). According to this research, decision fatigue is defined as the decline in decision quality resulting from the depletion of an individual's mental resources during a sequence of consecutive decisions. The concept of decision fatigue can be examined within the framework of Baumeister's "ego depletion" theory. Ego depletion refers to a state of fatigue that reduces self-control and leads to poor decision-making (Hickman et al., 2018). According to this theory, mental processes such as self-regulation and decision-making are supported by a limited pool of cognitive energy; this energy diminishes with each act of decision-making (Baumeister & Tierney, 2011; Persson et al., 2019). Decisions made early in the day tend to be relatively healthier, whereas decision quality may decline later in the day due to the depletion of mental resources. For example, in their study examining judges' decisions, Danziger et al. (2011) observed that judges granted fewer parole approvals in the afternoon compared to the morning hours. Decision-making can also be influenced by individuals' biases (Gilovich et al., 2002), and one of the sources of these biases is decision fatigue. This occurs when the limited endurance capacity required for consistent decision-making becomes exhausted, leading to weakened self-control (Vohs et al., 2008). As a result, individuals tend to choose the most convenient or default option, which is a clear indicator of decision fatigue (Vonasch et al., 2015).

In today's competitive world, the decision-making process—which may involve potential negative outcomes such as failure, loss of reputation, or decreased motivation—can result in a condition defined as decision fatigue (Hickman et al., 2018). In professional settings, leaders who are required to make continuous decisions may experience burnout, which can in turn reduce productivity and creativity. In personal life, individuals may struggle even with the simplest choices, leading to frustration and dissatisfaction. Therefore, finding ways to cope with decision fatigue is essential for enhancing personal well-being and improving overall productivity (Bolis et al., 2017).

Decision-making is a complex process involving multiple stages, such as gathering information, generating ideas, and evaluating outcomes (Swartz, 2008). Classroom environments are dynamic, and unexpected situations often require teachers to make hundreds of important decisions every day. For this reason, teaching has been described as a complex endeavor that sometimes requires countless spontaneous decisions (Trevisan et al., 2021). This is because teachers' decision-making processes take place within social environments characterized by constant and complex human interactions (Blackley et al., 2021). Moreover, decision-making is a central component of teacher cognition (Borko & Shavelson, 1990) and a fundamental instructional skill for teachers (Shavelson, 1973). Rather than making decisions in isolation, teachers must integrate interconnected and interdependent decisions to formulate a coherent strategy. This is essential for

learning and continuously improving their professional instructional practices (Bolster, 1983). In this context, understanding the nature of teachers' decision-making processes is crucial for understanding their practices (Watson, 2019). The quality of teachers' decision-making skills affects the educational process and the ability to ensure equal and fair learning opportunities for all students (Bonvin, 2003; Eurydice, 2011).

Teaching is a highly complex activity that involves a decision-making process beginning the moment teachers start planning and evaluating their lessons and continuing throughout the communication that occurs during their moment-to-moment interactions with students (Bishop, 1976). For a long time, researchers have argued that decision-making plays a vital role in the instructional context (Bishop, 1976; Bolster, 1983; Lloyd, 2019; Yinger, 1980). Decision-making is a reasoning process in which teachers must use their pedagogical knowledge while considering students' abilities and motivations (Lloyd, 2019). Teachers make constant decisions to improve the teaching and learning process both while planning lessons and interacting with students in the classroom (Unciti & Palau, 2023; Kourti & Potari, 2024). Lesson planning involves decisions regarding learning objectives, lesson beginnings, and allocating appropriate time segments for different activities. Teaching a lesson, however, is far more complex than planning one and requires a high degree of cognitive flexibility as well as the ability to adapt lesson plans to the ongoing situation. According to Yinger (1980), this includes making decisions under pressure for action, evaluating these decisions in a context-specific manner, and shifting course if necessary by choosing an alternative decision. Leinhardt and Greeno (1986) refer to this process as "rapid, interconnected decision-making." This means that even while implementing a lesson plan, teachers always possess a certain degree of decision-making freedom and autonomy within the classroom setting.

It is important for teachers to possess a high level of awareness regarding the decisions they must make in the classroom (Blackley et al., 2021), as students' cognitive and emotional engagement with the lesson occurs through these decisions (Clough et al., 2009). Teachers' decision-making processes can be influenced by school-related factors or by the interplay between teachers' beliefs and values (Priestley et al., 2013). Some studies show that teachers view the classroom as an emotional environment and make decisions based on students' emotional responses (Sheppard & Levy, 2019); moreover, emotions linked to positive and negative events can influence their decisions (Young, 2020). Other research indicates that teachers often make largely involuntary decisions and tend to overlook the extent to which the resulting behaviors affect educational experiences (Olson et al., 2004). From a cognitive psychology perspective, teachers' decision-making processes are defined either as unconscious and intuitive or as conscious and rational (Borko & Shavelson, 1990; Clough et al., 2009; Evans & Stanovich, 2013). However, some studies propose an algorithmic process approach, arguing that decision-making is shaped not only by social and cultural knowledge but also by learning and practical knowledge (Stanovich et al., 2011; Marschall et al.,2024).

Teachers, the cornerstone of educational systems, are not merely individuals who transmit knowledge but professionals responsible for making numerous pedagogical, administrative, and social decisions throughout the day. These decisions range from classroom management to assessing student performance, from parent communication to addressing individual student needs. Furthermore, large class sizes, new expectations for teacher roles, new methodologies, student-centered approaches, and classroom practices involving digital technologies require continuous evaluation of students' daily work, making decision-making processes even more challenging. These repeated and cognitively demanding decision-making episodes throughout the day can lead to a form of cognitive exhaustion known as "decision fatigue" among teachers (Ortiz et al., 2022; Arnaiz-Sánchez & Martínez-Rodríguez, 2018).

Various factors such as the working environment, heavy workload, the number, nature, importance, and timing of decisions can lead to the development of decision fatigue (Natal & Saltzman, 2022). This type of fatigue arises as a result of "a person making decisions consecutively" (Baumeister & Tierney, 2011). This

mental exhaustion experienced by the individual causes even greater cognitive fatigue when dealing with difficult decisions (Akdemir, 2020), and as a result, decision fatigue emerges due to the depletion of mental resources. Research demonstrates that even factors such as the time of day when a decision is made, blood glucose levels, sleep deprivation, fatigue, hunger, and thirst can influence decision-making (Sievertsen et al., 2016; Kouchaki & Smith, 2014; Kemper, 2014; Gailliot & Baumeister, 2007; Danziger et al., 2011; Harrison & Horne, 2000; Baldwin & Daugherty, 2004; Scott et al., 2014). This is because it is assumed that the careful cognitive processing and mental resources required for self-control are limited (Pignatiello et al., 2020).

Decision fatigue in teachers emerges in situations where they must make rapid decisions or struggle to make decisions, and it develops as their ability to cope with this situation decreases. This condition affects a teacher's ability to plan and implement a decision. When decision-making in the classroom is viewed as a process, the onset of decision fatigue at any stage of this process can negatively impact decision-making overall. Therefore, it is essential to consider the potential effects of decision fatigue both before and after the decision-making process in the classroom. As a result of repeated decision-making episodes in the classroom, teachers may experience decision fatigue, which can lead to poor choices. In educational settings, decision fatigue reflects a situation in which the outcomes of teachers' continuous decisions become insufficiently effective and consistent as their limited cognitive resources become depleted. Given the extent to which teachers' decisions influence students and the learning environment, it is crucial to acknowledge the cost of difficulties encountered during this process and the negative consequences arising from poor decisions.

The multiple tasks and the necessity to make swift decisions in educational environments create a process that continuously depletes teachers' mental resources. In this context, the concept of decision fatigue emerges as a significant psychological condition that directly affects teachers' professional performance and decision quality (Vohs et al., 2008). Teachers must make sequential decisions in many areas throughout the day, including classroom management, student assessment, pedagogical planning, parent communication, and administrative duties. This creates both a cognitive and emotional burden, potentially reducing decision quality (Sarıakçalı & Kırpık, 2022). Exposure to decision fatigue affects not only teachers' individual levels of burnout or stress but also the quality of pedagogical practices, teacher–student relationships, and overall educational quality. Teaching, being among the most stressful professions (García et al., 2016), is particularly vulnerable to decision fatigue, which decreases teachers' job satisfaction and increases feelings of burnout. Thus, decision fatigue is a critical variable that must be considered in relation to teachers' psychological well-being and professional effectiveness.

Considering that teachers must make numerous micro- and macro-level decisions throughout the day, it is suggested that the resulting exhaustion may negatively affect both the quality of instruction and the teacher–student interaction (Vohs et al., 2008). In Türkiye, the teaching profession is shaped by various pressures, including centralized exam systems, high student numbers, administrative responsibilities, and societal expectations. In this context, understanding how teachers are affected by the decision-making burden they face is valuable for both their job satisfaction and educational quality. This study aims to address teachers' views on decision fatigue, thereby contributing to filling the gap in the literature and providing a basis for potential solutions. To determine teachers' perspectives on decision fatigue, the following research questions were posed:

1. Are teachers able to make quick and effective decisions at school or in the classroom?
2. Which methods do teachers use when making decisions?
3. Do teachers feel confident about making effective decisions?
4. What are the main reasons teachers struggle with decision-making?

5. Do fatigue, stress, or mood influence teachers' decisions?

Methodology

Research Design

In this study, which aims to examine teachers' views on decision fatigue, the phenomenology design one of the qualitative research methods was employed. Phenomenology is defined as a design that seeks to explore the meaning of individuals' experiences regarding a particular phenomenon (Creswell, 2007). This study focused on how participants make sense of a phenomenon they have experienced and how this meaning reaches the level of consciousness (Patton, 2014). The study aimed to reveal participants' lived experiences and meanings by identifying their in-depth thoughts and perceptions (Yıldırım & Şimşek, 2021).

Although the study was informed by a phenomenological perspective in terms of focusing on teachers' lived experiences, the data were analyzed using descriptive analysis in line with the research questions, prioritizing systematic categorization and transparent reporting over phenomenological essence building.

Study Group

A purposive sampling strategy was employed in this study. Teachers were selected based on the criteria of actively working in public schools and having direct classroom experience involving frequent decision-making processes. Maximum variation was sought by including teachers from different grade levels, subject areas, and years of professional experience in order to capture diverse perspectives on decision fatigue. Data collection continued until thematic saturation was reached, that is, when no new codes or perspectives emerged from subsequent interviews.

The study group consisted of teachers from various subject areas working in public schools at different grade levels located in the four central districts of Diyarbakır (Bağlar, Kayapınar, Sur, Yenişehir). The group included a total of 40 teachers, 20 of whom were women, with teaching experience ranging from 3 to 35 years. Each participant was assigned a code. Detailed participant information is provided in Appendix 1.

Data Collection

A semi-structured interview method was used in this study. The interview method is utilized to gather information on individuals' views, feelings, and experiences and to develop alternative explanations (Glesne, 2015). The data were obtained through a semi-structured interview form. Teachers' personal information was collected through a demographic information form. After reviewing the relevant literature, interview questions aligned with the purpose of the research were prepared. In addition to the five primary interview questions, supplementary questions were prepared to be used depending on the flow of the interview to elicit richer responses. To ensure the appropriateness of the interview questions, the opinions of two experts in the field of education were consulted. Since participation was voluntary, interviews were conducted at the time and location suggested by the teachers. Informed consent was obtained from the participants prior to the interviews using a consent form.

The interviews were conducted during the 2024–2025 academic year, between October and December 2024. All interviews were conducted face-to-face in locations suggested by the participants. Each interview lasted approximately 25–40 minutes. With participants' consent, the interviews were audio-recorded and transcribed verbatim by the researcher. A semi-structured interview protocol was followed to ensure consistency across interviews, while allowing flexibility to probe emerging issues.

Ethical Approval

In order to collect data from teachers working in public schools located in the four central districts of Diyarbakır (Bağlar, Kayapınar, Sur, Yenişehir), ethical approval was first obtained from the Dicle University

Ethics Committee, followed by research permission from the Diyarbakır Provincial Directorate of National Education.

Data Analysis

A descriptive analysis method was used in this study. In this method, the data are analyzed according to predetermined themes (Yıldırım & Şimşek, 2005). During the analysis process, five categories were formed based on the conceptual framework of the study and the research questions. Under each category, the data were organized in a meaningful and logical way, and findings were explained, associated, and interpreted.

During the descriptive analysis process, the interview transcripts were read repeatedly to obtain a comprehensive understanding of the data. Meaningful expressions related to teachers' decision-making experiences were identified and coded. These codes were generated inductively from participants' statements rather than being predetermined. Similar codes were then grouped based on conceptual similarities, and broader categories were constructed in accordance with the research questions. Through this process, five main categories were formed. Each category represents a set of related codes reflecting teachers' experiences and perceptions regarding decision fatigue.

Validity and Reliability

To enhance the trustworthiness of the study, several strategies were employed in line with qualitative research criteria. Credibility was supported through data triangulation by including teachers from different school levels, subject areas, and years of experience. In addition, member checking was conducted by sharing concise summaries of the preliminary findings with a subset of participants after the initial analysis. Participants were asked to confirm whether the interpretations reflected their views accurately, and minor clarifications were incorporated into the final analysis based on their feedback.

Dependability and confirmability were ensured through a systematic coding process. An audit trail was maintained by documenting coding decisions and category development throughout the analysis. Expert feedback was obtained during both the development of the interview questions and the analysis process to enhance analytical rigor. Transferability was supported by providing detailed descriptions of the study context, participants, and data collection procedures, enabling readers to assess the applicability of the findings to similar settings.

Findings

The categories used in the findings were structured in accordance with the research questions and do not represent themes in the phenomenological sense. Rather, they function as analytic categories under which related codes were grouped and interpreted. In the descriptive analysis process, teachers' interview responses were examined in relation to the research questions, recurring patterns were identified, and meaningful statements were coded. These codes were then grouped into broader categories based on conceptual similarity. As a result of this analytic process, five main categories and their associated codes were identified. An overview of the categories and sample codes derived from the data is presented in Table 1.

Table 1. Categories and Sample Codes Derived from the Analysis

Category	Sample Codes
Ability to make quick and effective decisions	maintaining lesson flow, classroom management, time pressure, experience-based judgment
Decision-making methods	reliance on experience, use of research findings, consulting colleagues, democratic decision-making
Confidence in decision-making	professional autonomy, self-trust, responsibility, need for guidance
Difficulties in decision-making	emotional sensitivity, economic limitations, individual differences, parental pressure
Effects of fatigue and stress on decisions	mental exhaustion, impatience, superficial decisions, decreased attention

The findings are presented under headings aligned with the research questions.

1. Are you able to make quick and effective decisions at school and in the classroom?

Under this category, teachers' views regarding their ability to make quick and effective decisions at school and in the classroom are presented based on the analysis of interview data. Of the 40 participants in the study, 35 stated that they were able to make quick and effective decisions at school and in the classroom, while four reported that this ability varied depending on the situation. Among the teachers who stated that they could make quick and effective decisions, 13 attributed this ability to the requirements of the classroom environment and the instructional process, whereas 11 teachers linked it to their professional experience.

Participants who explained their ability to make quick and effective decisions based on the demands of the classroom environment and the flow of the lesson emphasized reasons such as maintaining the continuity of the lesson, ensuring classroom order, responding promptly to student needs, managing unexpected situations, saving time, and preventing loss of attention. For instance, participant K10 stated: "Yes, I can make quick and effective decisions especially in the classroom because it is important to intervene immediately in situations that arise during the lesson, to capture students' attention, and to maintain the flow of instruction."

The 11 teachers who attributed their quick and effective decision-making ability to their experience mentioned their competence in problem-solving and crisis management. Participant K22 expressed this view as follows: "Yes, because my 20 years of professional experience allows me to view events from a broader perspective. The various situations I have encountered throughout this process have provided me with a strong foundation in problem-solving and prioritization."

Four participants stated that taking quick and effective decisions is not always possible due to the characteristics of the classroom. For example, participant K30 explained: "Sometimes I can, sometimes I cannot. When the class size is small, I am able to make decisions quickly. But when the class is crowded, sometimes the decisions I make may not be effective."

2. Which methods do you use when making decisions?

This category presents teachers' views on the methods they employ during decision-making processes, as derived from the analysis of their interview responses. Teachers' views regarding their decision-making methods were examined. Nine teachers stated that they relied solely on their experience when making decisions, while eleven reported that they based their decisions on both experience and research findings. Seven teachers indicated that they relied on their experience, research findings, and colleagues' opinions, whereas two teachers mentioned that they made decisions based on their experience and colleagues' perspectives. Some participants also noted that, in addition to drawing on their experience and research findings, they asked for their students' opinions and reached decisions using a democratic approach. It is clear that the majority of teachers benefit from their experience during the decision-making process.

Participant K6, who stated that they relied solely on experience, expressed this view as follows: "I have been a teacher for 10 years. When I first started teaching, I preferred to research more or consult with my colleagues to avoid making wrong decisions. Over the years, I have gained mastery of student psychology and classroom management. For this reason, I now rely mainly on my experience when making decisions. Even though I made mistakes in past situations, experience has helped me overcome new situations more effectively."

Teachers who stated that they based their decisions on both experience and research findings emphasized that the scientific basis of research enabled them to achieve more effective results. Participant K12 highlighted this point: "I mostly make my decisions based on my experience. Similar situations I encountered in previous years guide me. However, I also follow current research findings and new methods in the field of

education. Experience allows me to respond quickly to momentary situations in the classroom, while research findings and new methods help me make more effective and scientifically grounded decisions."

Teachers also noted that they benefit from colleagues' perspectives in addition to experience and research findings, believing that decisions made using multiple sources are more effective. Participant K4 emphasized this: "I make decisions based on the knowledge I gained while studying for KPSS education courses, the books I read on education, the experiences shared by more experienced teachers, or the knowledge I gained through my own practice. Because if you rely on only one source, sometimes those decisions may not be effective or may fail to provide a solution."

Participant K15, who mentioned that the mental fatigue caused by continuous decision-making led them to seek multiple sources, explained: "I have been a teacher for 13 years and have gained many experiences during this time. There can be a huge difference between what you do one year and the next. I always think, 'I wish I had done it this way; it would have been more effective for the children.' Since we constantly have to make decisions about the lesson, our minds eventually get tired. Being aware of this, I am always open to innovations, research findings, and my colleagues' ideas."

Some teachers stated that, in addition to experience and research findings, they also consulted their students and reached decisions democratically. Participant K35 explained: "Usually I rely on experience, but in some cases even experience is not enough, and research findings come into play. Some decisions are also based on my students' ideas and opinions. My little friends' views often, even most of the time, influence my decisions—they are important to me."

3. Do you trust yourself in making effective decisions, or do you prefer others to make decisions on your behalf?

Under this category, teachers' views regarding their confidence in making effective decisions and their preferences for individual or shared decision-making are presented. The vast majority of participating teachers (f = 37) stated that they trusted themselves in making effective decisions. It is understood that teachers consider themselves competent in decision-making based on their professional experience. For example, participant K14 expressed: "I trust myself especially when it comes to making effective decisions in classroom management, because the teacher is the first person responsible for maintaining order, discipline, and the flow of the lesson. Therefore, I believe I can make the most effective decisions in the classroom. I do not find it appropriate for someone else to make decisions for me, nor do I accept it, as this would restrict my autonomy both professionally and personally."

Similarly, participant K36 emphasized the sense of responsibility involved in decision-making: "Yes, I do trust myself. I do not prefer others to make decisions on my behalf because I actively use the processes that require logical reasoning during decision-making. Taking responsibility for decisions based on my own analyses and evaluations leads to more accurate outcomes and contributes to my personal and professional development."

Three teachers expressed differing opinions regarding their confidence in making effective decisions. Participant K4 pointed to a lack of experience: "Based on the knowledge and experience I have gained, I cannot fully say that I trust myself in making effective decisions because I am in my third year of teaching, and there will certainly be situations I have never encountered or considered possible."

Participant K23 highlighted personal characteristics: "I feel more comfortable when others make decisions for me because I tend to be indecisive, and making decisions that affect others makes me uneasy and decreases my self-confidence. I feel more at ease when the people who make decisions on my behalf take student-centered and beneficial actions."

Of the 40 teachers, 20 stated that they consulted colleagues when making decisions. These teachers emphasized that although they trusted themselves, they valued seeking colleagues' opinions to reach a common understanding or gain a different perspective when necessary. As participant K6 explained: "Of course, I trust myself in making effective decisions. Rather than having others decide for me, I prefer to consult others' opinions. Everyone has a different perspective. There may be details I overlook, or due to my mood at the moment, I might make the wrong decision. That's why I benefit from the experiences of other teachers."

Meanwhile, 18 teachers stated that they made decisions at school or in the classroom without consulting others. These teachers primarily relied on their experience. Participant K24 reflected: "Of course, I trust myself when it comes to making decisions. When you first begin teaching, you feel idealistic and think you can handle everything, but sometimes when you feel exhausted, you inevitably need supervision or guidance. However, after working in the field and gaining multiple experiences, you no longer feel the need to rely on others when making decisions."

4. For what reasons do you have the most difficulty when making decisions?

This category presents teachers' views on the factors that make decision-making difficult, based on recurring patterns identified in the interview data. Teachers were asked about the factors that make decision-making difficult for them. Although they mentioned a variety of reasons, several themes emerged more prominently. These included emotional situations, economic constraints, individual differences among students, communication with parents, decisions that may significantly affect students' lives, stakeholder influence, ambiguous or conflicting situations, instructional decisions, and situations requiring rewards or sanctions. It is understood that teachers primarily struggle with decision-making due to external factors.

Eight of the 40 participants stated that they struggled with decision-making in emotionally sensitive situations involving students. Participant K21 explained: "I have difficulty making emotional decisions. I hesitate in matters concerning children's feelings, their relationships with their parents, and their personal interactions, as I tend to act emotionally. I try not to make impulsive decisions and instead aim for long-term ones."

Seven participants mentioned that economic issues made decision-making difficult, emphasizing limited financial resources and lack of materials. Participant K33 stated: "If the decision I need to make has an economic dimension, I may struggle. At school, financial resources may not always be sufficient to solve a problem or make a decision."

Six teachers indicated that individual differences among students complicated the decision-making process. They referred both to students' special needs and the challenge of maintaining harmony among students with different personalities. Participant K32 explained: "The most difficult decisions for me are the ones where I need to balance students' individual needs with the general needs of the class. For example, trying to accommodate a student's special interest or learning difficulty while keeping the class pace consistent can be challenging. In such cases, making the right decision may require more information and evaluation time."

Six teachers also identified communication with parents as a major challenge. Participant K12 expressed: "Another challenging situation for me is when the decision concerns parents. Some parents cannot objectively evaluate their children's behavioral problems or academic underachievement. In such cases, trying to convince them and finding a solution that prioritizes the student's well-being becomes difficult."

Five participants stated that decisions affecting a student's life posed significant difficulty. Participant K4 expressed: "One of the most difficult situations for me is when the decision will affect a student's life. For

example, if a student commits a disciplinary offense and a decision must be made, that decision could seriously affect the student's educational life. In such cases, making a decision becomes very difficult…"

Another factor making decision-making difficult for teachers was stakeholder influence. Four teachers specifically mentioned school administration. Participant K10 summarized this challenge: "The situations where I have the most difficulty are when the expectations of different stakeholders—students, parents, and school administration—conflict with each other. In such cases, finding a fair solution becomes more challenging…"

Four participants stated that they had difficulty making decisions in situations involving ambiguity or conflicting options. Participant K7 explained: "Sometimes I have difficulty finding a balance between uncertainty and multiple options. Especially when making a decision about students, it's necessary to consider that each student has different needs, personalities, and learning styles. For example, there may be several possible approaches to solving a student's problem, and choosing the right one can be difficult. When there are many options, predicting which decision will lead to the best outcome is not easy."

Four teachers expressed that instructional decisions were the most challenging for them, often due to their perceived inadequacies. Participant K15 explained: "There are times when I struggle to choose activities suitable for the ages and levels of my students so that I can effectively teach the topics in my yearly plan. Sometimes it becomes difficult to find activities that will appeal to them."

In addition to these, teachers also mentioned difficulties such as managing students' behavioral problems, deciding on appropriate rewards and sanctions, conducting assessments without overlooking students' special circumstances, obtaining stakeholder support for social activities, and making decisions during the adaptation period at a new school.

5. Do fatigue, stress, or mood affect your decisions?

Under this category, teachers' views on the effects of fatigue, stress, and emotional states on their decision-making processes are presented. When teachers were asked whether fatigue, stress, or their emotional state affected their decisions, 34 out of 40 participants stated that their decisions were indeed influenced by these factors. Teachers emphasized that physical and mental fatigue made them more impatient and less attentive toward students, leading them to make more careless, hasty, and stress-driven decisions. Participants frequently highlighted that tiredness and workload sometimes forced them to make quick and superficial decisions.

Participant K40 expressed this as follows: "Working for long hours causes physical and mental fatigue. This sometimes lowers my attention level and makes the decision-making process more challenging. When I am tired, I inevitably make more superficial decisions. At the end of the day, when I encounter a problem in the classroom, I tend to look for a standard solution because I am less patient."

Similarly, participant K37 summarized the situation as: "Especially after a busy day, fatigue reduces my ability to concentrate. This may slow down my decision-making process or push me toward quicker and more superficial choices. For example, while preparing an exam or creating individualized plans for students, fatigue makes it more likely for me to overlook important details. In such cases, the quality of my decisions may decline."

Another example supporting the findings on decision fatigue comes from participant K2: "Especially toward the end of the day, when I am physically and mentally tired, I notice that I am less patient in my interactions with students. For instance, I may think more thoroughly about a student's problem in the morning, while in the afternoon, I tend to produce a quick but superficial solution to the same issue."

Six participants stated that fatigue, stress, or mood did not affect their decisions. These teachers explained that although they experienced physical and mental exhaustion, they made deliberate efforts to ensure that such states did not influence their decisions. Participant K30 stated: "Since the individuals we work with are children, I never allow my external fatigue, stress, or emotional state to influence my decisions. When making decisions, I always choose what is most appropriate and effective for the children at that moment."

One of the most striking responses came from participant K21: "Last week I even considered resigning due to stress, fatigue, and some problems. After all, we are human, and sometimes we can make impulsive decisions. But when I thought rationally, I remembered the children who needed me. I love my job, my students, and my colleagues, and I truly want to do something meaningful. I have been doing this for 27 years, worked in many places, and the truth is that every student needs you…"

Discussion and Conclusion

This study contributes to the literature by providing qualitative insight into how primary school teachers experience decision fatigue in their daily professional practices. While much of the existing literature conceptualizes decision fatigue primarily as an individual cognitive limitation associated with self-regulatory resource depletion (Baumeister et al., 1998; Vohs et al., 2008; Pignatiello et al., 2020), the findings of this study draw attention to its relational, emotional, and organizational dimensions in educational settings.

This study aimed to examne the fatigue experienced by teachers during their professional decision-making processes and the emotional, cognitive, and occupational reflections of this condition. According to the findings, teachers believe that they are able to make quick and effective decisions at school or in the classroom and that they trust themselves in making these decisions. Teachers generally attributed their ability to make quick and effective decisions to their professional experience, and they reported that they relied primarily on their experience when making decisions. In addition to experience, teachers stated that they also consulted research findings, colleagues' opinions, and their students' views during the decision-making process. On the other hand, some teachers reported lacking confidence in making effective decisions, attributing this to limited experience or personal characteristics, and therefore expressed that they preferred consulting their colleagues when making decisions.

Teachers identified various factors that made decision-making difficult. Among these, emotional situations involving students, economic constraints, and individual differences were the most frequently mentioned. Additional difficulties included communication with parents, decisions that may significantly affect students' lives, stakeholder influence, ambiguous and contradictory situations, instructional issues, the need to administer rewards and sanctions, behavioral problems, assessment processes, social activities, and adapting to a new school environment.

The majority of teachers stated that their decisions were influenced by fatigue, stress, and emotional state. Teachers emphasized that due to physical and mental fatigue, they became more impatient and less attentive toward students, made more careless, hasty, and superficial decisions, and experienced higher stress. The findings particularly highlight the negative impact of mental fatigue and workload—stemming from the demanding nature of teaching—on the quality of teachers' decisions.

Decision-making requires varying levels of cognitive processing depending on the complexity of the problem and the individual's prior experiences with similar situations. The influence of teacher decisions on the teaching–learning process has led many researchers to examine the factors that support effective teacher decision-making (Lloyd, 2019; Loughran, 2019). Research shows that teachers perceive the classroom as an emotional space, make decisions based on students' emotional reactions, and that emotions associated with positive or negative events influence their decisions (Sheppard & Levy, 2019; Young, 2020). Emotions are

known to exert widespread, predictable, and sometimes detrimental, sometimes functional effects on decision-making (Wang, 2021). Sheppard & Levy (2019) demonstrated the influence of emotion on teachers' decisions, while studies have also examined the role of personal beliefs, motivations, and dilemmas in shaping teachers' decisions. For instance, Aikenhead (1984) found that science teachers' decisions during lesson planning often stem from a conflict between the teacher's goals and their perceptions of students.

From a cognitive psychology perspective, teachers' decision-making processes are defined as either unconscious and intuitive or conscious and rational (Borko & Shavelson, 1990; Clough et al., 2009; Evans & Stanovich, 2013). For example, Olson et al. (2004) found that teachers often make largely involuntary decisions and tend to overlook how these resulting behaviors influence educational experiences. Repetitive and cognitively demanding decision-making processes throughout the day can lead to a form of cognitive exhaustion known as "decision fatigue" (Ortiz, Castellano, Rodríguez & Agreda, 2022; Arnaiz-Sánchez & Martínez-Rodríguez, 2018). Factors such as workload, the number and nature of decisions, their importance, and timing contribute to the development of decision fatigue (Natal & Saltzman, 2022). A study by Oto (2012) found that the more difficult and complex a decision is, the more decision fatigue a person is likely to experience. This fatigue emerges when individuals make decisions consecutively (Baumeister & Tierney, 2011).

During the decision-making process, working memory becomes overloaded, reducing the cognitive space reserved for other tasks. This can influence the individual's emotional state; when a person cannot make even simple decisions quickly or fails to reach the desired outcome, they may experience frustration (Tyng et al., 2017). Research has shown that even external factors such as the time of day a decision is made, blood glucose levels, sleep deprivation, fatigue, hunger, and thirst can affect decision-making (Sievertsen et al., 2016; Kouchaki & Smith, 2014; Kemper, 2014; Gailliot & Baumeister, 2007; Danziger et al., 2011; Harrison & Horne, 2000; Baldwin & Daugherty, 2004; Scott et al., 2014). This is because the careful cognitive processing and mental resources needed for self-control are assumed to be limited (Pignatiello et al., 2020).

Studies conducted with judges (Danziger, 2011) and librarians (Natal & Saltzman, 2022) have shown that decision fatigue poses significant risks in these professions. Teaching, one of the most stressful professions (García, Iglesias, Saleta & Romay, 2016), is particularly susceptible to decision fatigue, which reduces teachers' job satisfaction and increases feelings of burnout. Decision fatigue has emerged as an important psychological condition that directly affects teachers' professional performance and the quality of their decisions (Vohs et al., 2008). Therefore, decision fatigue is a critical variable that must be considered with regard to both teachers' psychological well-being and their professional productivity. It is essential to consider the possible effects of decision fatigue before and after decision-making processes (Pignatiello et al., 2020). Developing teachers as conscious decision-makers enables them to maximize learning opportunities in the classroom.

The findings of the study indicate that teachers' continuous exposure to intensive decision-making processes creates notable decision fatigue, leading to reduced decision quality, emotional exhaustion, decreased motivation, and lower instructional effectiveness. Participant responses showed that decisions made under these conditions tend to be more superficial, routine, or postponed. These results suggest that decision fatigue in the teaching profession is closely related to cognitive limitations and the depletion of self-regulatory resources.

In conclusion, decision fatigue among teachers is a multidimensional phenomenon directly related not only to individual effort and professional commitment but also to organizational structure, leadership approach, and working conditions. While unclear role definitions and excessive bureaucratic processes increase decision load, administrative autonomy, supportive communication, and balanced workload provided by school leadership can reduce decision fatigue. To sustain teachers' capacity for healthy decision-making, it is recommended that schools simplify decision-making processes, adopt supportive management

models, and promote professional development programs that strengthen emotional resilience. Additionally, the absence of research on decision fatigue among teachers in the national context highlights the importance and necessity of conducting further studies using different methods and samples.

This study differs from much of the existing literature by conceptualizing decision fatigue not merely as an individual cognitive limitation, but as a phenomenon shaped by relational, emotional, and organizational conditions within school contexts. The findings demonstrate that teachers' decision fatigue emerges through continuous interactions with students, parents, colleagues, and school administrators, as well as through emotionally demanding and context-dependent decision-making processes. By focusing on teachers' lived experiences in a specific educational setting, this study highlights decision fatigue as a situated and relational experience rather than a solely intrapersonal cognitive state.

Despite its contributions, this study has several limitations. The findings are based on teachers working in public schools in a single province, which may limit transferability to other educational contexts. In addition, data were collected through self-reported interviews, which may be influenced by participants' subjective perceptions. Future research could employ mixed-method designs, include different educational levels or regions, and focus on intervention-based studies aimed at reducing decision fatigue among teachers.

Ethical Commitment Statement

In this study, scientific ethical values and academic standards were adhered to; all sources were cited correctly. It is declared that, in the event of any contrary finding, full responsibility belongs to the corresponding author, and that this study has not been submitted for evaluation to any academic publication outlet.

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This research was conducted with the approval of the Ethics Committee of Dicle University, dated December 30, 2024, and numbered 33117789/824.01/190144.

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Curriculum and Instruction Graduate Programs in Türkiye: A Document Analysis

Research Article

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ABSTRACT

The aim of this research is to analyze various aspects of master's and PhD in Curriculum and Instruction at state universities in Türkiye. Qualitative research methods were employed and document review was used as data collection. The relevant institute websites of the universities and the 2025-2026 graduate fall semester recruitment announcement were used as data sources. The data were analyzed through content analysis. In Türkiye, there are 72 universities actively providing master's programs and 35 universities providing PhD. The universities' ALES, foreign language exam, preparatory class, number of courses, and their names, publication for graduation, and minimum number of courses requirements were examined. As a result, it was determined while 55 for ALES is required for master's programs most, there are 56 universities that don't require a foreign language exam. While 43 universities don't offer preparatory courses, 59 universities offer up to eight required courses. While the names of required courses vary, the publication requirements for graduation also vary across universities. For 51 universities, the minimum number of courses for graduation varies between 6 and 14. For PhD, 55 to 75 ALES is required, while foreign language exam are between 55 and 60. Fifteen universities offer preparatory courses, while 27 universities offer 1 to 8 courses. While the names of courses and the publication requirements for graduation vary, the minimum number of courses required ranges from seven to ten. This study aims to provide a holistic perspective on Curriculum and Instruction graduate programs in Türkiye and contribute to the literature.

Keywords:
Curriculum and instruction, master, Phd

Introduction

Universities are influential institutions in the social, economic, and cultural transformation of society. Graduate education at universities facilitates scientific research and conducts high-quality studies. While a

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master's degree deepens knowledge, a PhD offers unique contributions to the field. Therefore, they are crucial for social progress.

Universities undertake a critical mission by providing society with a qualified workforce trained in accordance with established criteria (Yazar & Averbek, 2018). In line with this mission, universities offer associate, undergraduate, and graduate programs. Individuals can continue their graduate education after completing eight semesters of undergraduate education. Graduate education is defined by the Turkish Language Association as "higher education provided after completing undergraduate education" (URL-1, 2025). Sevinç (2001) defined graduate education as "higher education provided after completing undergraduate education" to train qualified individuals, such as scientists and academics, needed in the country and to find solutions to the country's problems.

Graduate education consists of master's, PhD, and art proficiency programs. Master's programs are offered in two forms: thesis-based master's and non-thesis-based master's programs. A non-thesis master's program consists of a minimum of two and a maximum of three semesters, while a thesis-based master's program consists of four semesters. A thesis-based master's program equips students with the skills to access, collect, analyze, and evaluate data through scientific research methods. A doctoral program, on the other hand, consists of a minimum of eight and a maximum of twelve semesters (URL-2, 2016). Graduate education plays a primary role in training a qualified workforce beneficial to society and in keeping up with scientific and technological innovations (Bozan, 2012). Individuals are expected to exist in an information society, develop professionally, and adapt to current conditions. The aim is for individuals to develop academic knowledge related to the field they wish to pursue after undergraduate education and to acquire the necessary knowledge and skills. Graduate programs are important for this purpose (Yazar, 2020).

Universities offer a variety of fields offering postgraduate education, leading to master's and PhD degrees. "Curriculum and Instruction" is one of these fields. At universities, "Curriculum and Instruction" exists under the Institute of Educational Sciences or the Institute of Social Sciences (Gömleksiz & Bozpolat, 2013). Historically, educational programs in Türkiye have been in a constant state of change and development. During this period of change and development, the "Curriculum and Instruction" field plays a significant role in universities, aiming to conduct curricular development studies on a more scientific basis (Gökmenoğlu & Eret, 2011).

The field of "Curriculum and Instruction" began in 1964 with the establishment of the Faculty of Education at Ankara University. Since then, it offered undergraduate and graduate programs under various names and structures. Its content was altered by the Council of Higher Education (YÖK) law in 1982. Undergraduate Curriculum and Instruction was abolished in 1997, and only graduate education continues (URL-3, 2025). The Curriculum and Instruction program, which has been providing graduate education and instruction focused on developing teaching skills since 1997, fulfills an important function in the renewal and development of educational programs that need constant renewal within a broad framework, from social characteristics to the individual lives of students (Gömleksiz & Bozpolat, 2013). Curriculum and Instruction graduate programs aim to equip students with the necessary knowledge, skills, methods, and strategies, along with the fundamental concepts related to the subject area, and to train expert researchers and scientists with a scientific perspective.

It can be argued that graduate education in the field of Curriculum and Instruction makes significant contributions to both the professional development and the cognitive and affective development of teachers in terms of their field knowledge and pedagogical competencies (Baldan & Güven, 2018). Individuals who successfully complete a master's program in Curriculum and Instruction receive the title of scientific specialist, while those who successfully complete a PhD program receive the title of doctor. The objectives of the

Curriculum and Instruction master's and PhD programs specified by Ankara University are as follows (URL-4, 2025):

- To develop knowledge, skills, methods, and perspectives for Curriculum and Instruction,
- To train researchers and scientists for curriculum and instruction,
- To train program development specialists to serve in the education-related units of public institutions, non-governmental organizations, and private institutions and organizations, particularly the Ministry of National Education,
- To develop the knowledge, skills, and competencies of teachers working in institutions affiliated with the Ministry of National Education and private institutions for curriculum development and instruction,
- To contribute to professional development by developing knowledge and skills,
- To conduct scientific research on curriculum at the formal and non-formal education levels and to improve the quality of curriculum.

When literature in Türkiye was analyzed; in the field of Curriculum and Instruction, it was seen that as articles, graduate research trends were examined (Ozan & Köse, 2014; Selçuk, et al., 2016; Yeşilpınar-Uyar, 2017); the profiles of the teaching staff were examined (Erişti, 2013); graduate education was analyzed (Demirhan-İşcan & Hazır-Bıkmaz, 2012); graduate thesis were examined (Gömleksiz & Bozpolat, 2013; Hazır-Bıkmaz et al., 2013; Kozikoğlu & Senemoğlu, 2015; Özkal, 2020); opinions about graduate programs were examined (Baldan & Güven, 2018; Uyar & Karanfil, 2023); graduate education programs of universities were examined (Atik-Kara, et al., 2020); a program proposal for graduate education is proposed (Duruhan & Çapuk, 2015) and program evaluation studies are examined (Özdemir, 2009) and there is a master's thesis conducted by Yaşar (2024) in which the Curriculum and Instruction programs of two state universities were comparatively examined. In addition, when the studies conducted abroad were examined; it was seen that the unification of Curriculum and Instruction as a field was examined (Zhao & Fan, 2023); integrated with technology (Gunaratne & Lee, 1996); international factors in graduate education were examined (David, 2024); the master's program wass evaluated (Alghamdi & Alangari, 2022); the extent to which artificial intelligence and Curriculum and Instruction were used together (Han, 2021); the relationship with other fields was presented (Flake, 2017); it was applied to private individuals (Tomlinson, 2005); There were studies comparing programs from different countries (Creese et al., 2016) and examining their relationship with measurement (Achtenhagen, 2012). It is understood that there are a limited number of studies evaluating Curriculum and Instruction graduate programs in Türkiye from a holistic perspective. It is believed that a more comprehensive study on the Curriculum and Instruction field in Türkiye could contribute to the literature.

This study analyzed the active Curriculum and Instruction graduate programs in Türkiye as of the 2025-2026 academic year. This study aims to provide a holistic perspective on Curriculum and Instruction graduate programs in Türkiye, considering their historical context, and to conduct a comparative analysis of Curriculum and Instruction programs across universities. Comparing the universities, it is believed to have a deeper understading of the universities conditions about these departments. Besides, it is analyzed the differences between master thesis and PhD programs. It is hoped that this research will contribute to those interested in working in this field and pursuing higher education in this field.

Purpose of the Study

The purpose of this study is to examine various aspects of the Curriculum and Instruction master's and phd programs at state universities in Türkiye. To this general purpose, the following questions were addressed:

1. For universities' Curriculum and Instruction master's programs:

-What is the required ALES score for student admission?

-What is the required foreign language score for student admission?

-What are the requirements for the preparatory program?

-What are the publication requirements for graduation?

-What are the minimum number of courses for graduation?

2. For universities' Curriculum and Instruction PhD programs:

-What is the required ALES score for student admission?

-What is the required foreign language score for student admission?

-What are the requirements for the preparatory program?

-What are the publication requirements for graduation?

-What are the minimum number of courses for graduation?

Method

This study utilized qualitative research methods. Qualitative research attempts to explain the data sensitive to people and places throughout the research process by establishing patterns and themes through inductive or deductive methods (Cresswell & Cresswell, 2023). It focuses on how individuals experience the social world and how they interact with it. In qualitative research, the researcher plays a key role in the data collection and analysis processes. An inductive approach is followed throughout the process, and data is collected to generate a hypothesis or theory (Merriam & Tisdell, 2016). In this respect, qualitative research is a type of research that focuses on information gathering methods such as observation, interview, and document analysis, presenting perceptions and events within their own context with a realistic and general approach (Yıldırım & Şimşek, 2021).

In this study, document analysis, a qualitative research data collection method, was used. Document analysis is defined as the analysis of written documents that provide information about facts and events related to the research topic and provide the researcher with information (Wach & Ward, 2013) and the extraction of data from these documents as a result of the analysis (Karasar, 2021; Karataş, 2015). Written documents are rich data sources and encompass the processes of finding, researching, and analyzing documents (Patton, 2015). Document analysis aims to convey the topic of research to the reader systematically and sequentially (Yıldırım & Şimşek, 2021).

The process outlined by Yıldırım & Şimşek (2021) for document analysis is as follows:

- Obtaining documents,
- Checking the originality of documents,
- Understanding and analyzing the obtained documents,
- Analyzing documents according to the scope of the research,
- Using the obtained data appropriately for its intended purpose.

Data Collection

For this study, the websites of relevant institutes at state universities in Türkiye were examined to determine whether they had master's and PhD programs in Curriculum and Instruction.

A document analysis was conducted for data collection, and the official websites of the universities were selected as documents. The websites of the relevant institutes were considered as data sources for the study. Additionally, the institutes' graduate recruitment announcements were also considered as data sources for the ALES and Foreign Language Score requirements for student admission. As of September 2025, it was determined that 72 universities in Türkiye had active Curriculum and Instruction master's programs. For the PhD program, the relevant institute websites of Turkish universities were examined to identify active PhD programs. The research determined that Curriculum and Instruction PhD programs existed at 35 universities as of September 2025. Based on the obtained data, Table 1 lists universities in Türkiye offering master's and PhD programme.

Table 1. Universities with Curriculum and Instruction Master's and PhD programs

Universities with Curriculum and Instruction Master's Programs	**Universities with Curriculum and Instruction Phd Programs**
Abant İzzet Baysal University	Abant İzzet Baysal University
Afyon Kocatepe University	Afyon Kocatepe University
Akdeniz University	Akdeniz University
Anadolu University	Anadolu University
Ankara University	Ankara University
Atatürk University	Atatürk University
Aydın Adnan Menderes University	Aydın Adnan Menderes University
Balıkesir University	Balıkesir University
Bartın University	Bartın University
Burdur Mehmet Akif Ersoy University	Burdur Mehmet Akif Ersoy University
Çanakkale 18 Mart University	Çanakkale 18 Mart University
Çukurova University	Çukurova University
Dicle University	Dicle University
Dokuz Eylül University	Dokuz Eylül University
Düzce University	Düzce University
Ege University	Ege University
Erciyes University	Erciyes University
Eskişehir Osman Gazi University	Eskişehir Osman Gazi University
Fırat University	Fırat University
Gazi University	Gazi University
Gaziantep University	Gaziantep University
Hacettepe University	Hacettepe University
İnönü University	İnönü University
İzmir Demokrasi University	İzmir Demokrasi University
Kırşehir Ahi Evran University	Kırşehir Ahi Evran University
Marmara University	Marmara University
Mersin University	Mersin University
Muğla Sıtkı Koçman University	Muğla Sıtkı Koçman University
Necmettin Erbakan University	Necmettin Erbakan University
ODTÜ	ODTÜ
Sakarya University	Sakarya University
Sivas Cumhuriyet University	Sivas Cumhuriyet University
Tokat Gaziosmanpaşa University	Tokat Gaziosmanpaşa University
Yıldız Teknik University	Yıldız Teknik University
Yozgat Bozok University	Yozgat Bozok University
Adıyaman University	
Ağrı İbrahim Çeçen University	
Aksaray University	
Alanya Alaattin Keykubat University	
Amasya University	
Boğaziçi University	
Bursa Uludağ University	
Erzincan Binali Yıldırım University	

Hakkâri University
Hatay Mustafa Kemal University
İstanbul University -Cerrahpaşa
Kahramanmaraş Sütçü İmam University
Karamanoğlu Mehmet Bey University
Kars Kafkas University
Kastamonu University
Kırıkkale University
Kırklareli University
Kilis 7 Aralık University
Kocaeli University
Kütahya Dumlupınar University
Manisa Celal Bayar University
Mardin Artuklu University
Nevşehir Hacı Bektaş University
Niğde Ömer HalisDemir University
Ordu University
Pamukkale University
Sakarya University
Samsun 19 Mayıs University
Siirt University
Sinop University
Süleyman Demirel University
Şırnak University
Trabzon University
Trakya University
Uşak University
Van 100. Yıl University
Zonguldak Bülent Ecevit University

When Table 1 analyzed, there are 72 universities in total. The first 35 universities offer both masters and PhD programs. While the number of state universities in Türkiye offering Curriculum and Instruction master's programs is 72, the number of state universities offering Curriculum and Instruction PhD programs is 35. The first 35 universities line offer both programs and the next ones offer only master's programs.

After reviewing the literature, draft questions were prepared in line with the purpose of the study. Expert opinions were sought for the draft questions and the questions were prepared during the document review process based on the corrections and suggestions received. To ensure the reliability of the data obtained, the document review process was conducted systematically. Data were obtained from the official website of the Council of Higher Education (YÖK), the most current graduate education and training regulations of the universities, graduate announcements and program information pages. This enabled data validation. The coding process was conducted in accordance with the sub-objectives for both master's and PhD programs.

Data Analysis

Information on active Curriculum and Instruction Master's and PhD programs at state universities in Türkiye was collected using document analysis. Data obtained from the universities' official websites was analyzed using content analysis. Content analysis involves categorizing and explaining data collected through observation, interviews, and document review into themes and details for better understanding by the reader. Content analysis requires discipline, knowledge, practicality, creativity, and diligent work (Patton, 2014). The data were meticulously analyzed by the researchers, then verified and presented. This ensured the reliability of the research.

In this study, the document selection process, data collection steps, and analysis stages were reported in detail to ensure data auditability. Decisions made during the coding process, changes made, and the method of creating themes were systematically recorded. Each question was considered a natural theme and structured accordingly. The document list, coding notes, and thematic diagrams used were archived for re-analysis of the findings. Furthermore, the Council of Higher Education (YÖK) documents were double-checked to ensure data verification.

The document review process outlined by Yıldırım & Şimşek (2021) was conducted in this research as follows:

• Obtaining documents: Official university websites, institute websites, and graduate recruitment announcements were used to obtain the documents. The pages were reviewed, and the documents were downloaded to a computer and filed.

• Checking the originality of the documents: During the document authenticity check process, the documents were downloaded to a computer and data verification was conducted.

• Understanding and analyzing the obtained documents: Documents were obtained, understood, and analyzed based on the questions identified after consulting experts.

• Analyzing the documents according to the scope of the research: A systematic process was followed to analyze the obtained documents in line with the research objectives.

• Using the obtained data appropriately: The obtained data were examined and grouped according to the designated thematic areas. It was carefully taken to ensure consensus during grouping, ensuring their use in accordance with the research objective.

Ethics Committee Approval Information

This study doesn't require an ethics committee approval because it is a review article.

Findings

The findings obtained as a result of the content analysis were discussed separately under the headings of master's and PhD within the scope of the research questions.

Findings Regarding the ALES Score Required for Admission to Curriculum and Instruction Master's Programs

Table 2 lists the ALES entry requirements, the number of universities, and the names of universities for Curriculum and Instruction Master's programs.

Table 2. Curriculum and Instruction Master's ALES Entry Requirements

Ales Entry Requirement	f	University
50 points requirement from ALES	1	Erzincan Binali Yıldırım*.
55 points requirement from ALES	50	Adıyaman, Afyon Kocatepe*, Ağrı İbrahim Çeçen*, Akdeniz*, Aksaray, Alanya Alaattin Keykubat*, Amasya, Anadolu*, Atatürk*, Aydın Adnan Menderes*, Bartın*, Boğaziçi, Burdur Mehmet Akif Ersoy*, Bursa Uludağ*, Çanakkale 18 Mart*, Çukurova*, Dicle*, Dokuz Eylül*, Ege*, Erciyes*, Eskişehir Osman Gazi*, Fırat*, Hakkâri*, İnönü*, Kahramanmaraş Sütçü İmam*, Karamanoğlu Mehmet Bey, Kars Kafkas*, Kırıkkale*, Kırşehir Ahi Evran*, Kilis 7 Aralık*, Kocaeli, Manisa Celal Bayar*, Mardin Artuklu, Marmara*, Niğde Ömer HalisDemir*, ODTÜ*, Ordu*, Pamukkale*, Samsun 19 Mayıs*, Siirt*, Sinop*, Sivas Cumhuriyet*, Süleyman Demirel*, Tokat Gaziosmanpaşa*, Trabzon*, Trakya*, Uşak*, Van 100. Yıl*, Yozgat Bozok*, Zonguldak Bülent Ecevit*.
60 points requirement from ALES	12	Balıkesir*, Bolu Abant İzzet Baysal*, Hacettepe, İstanbul Üniversitesi-Cerrahpaşa*, İzmir Demokrasi*, Kastamonu*, Kırklareli, Kütahya

		Dumlupınar, Muğla Sıtkı Koçman*, Necmettin Erbakan*, Nevşehir Hacı Bektaş*, Sakarya*.
65 points requirement from ALES	2	Düzce*, Yıldız Teknik*.
70 points requirement from ALES	5	Ankara*, Gazi*, Gaziantep*, Mersin*, Şırnak*.

*Based on the 2025/2026 graduate student recruitment announcements of universities.
** Information could not be found for universities not listed here.

An analysis of Table 2 reveals that one university requires an ALES score of 50, while 50 universities require an ALES score of 55. Twelve universities require an ALES score of 60, two universities require an ALES score of 65, and five universities require an ALES score of 70. The findings indicate that the highest number of universities are in the ALES requirement group, with 50 universities and a requirement of 55.

Findings Regarding the Foreign Language Score Required for Admission to Curriculum and Instruction Master's Programs

Table 3 shows the foreign language entry requirements, number of universities and names of universities for Curriculum and Instruction Master's programs.

Table 3. Curriculum and Instruction Master's Foreign Language Entry Requirements

Language Entry Requirement	f	University
Those who do not require a language exam	56	Adıyaman, Afyon Kocatepe*, Ağrı İbrahim Çeçen*, Aksaray, Amasya, Anadolu*, Atatürk*, Aydın Adnan Menderes*, Balıkesir*, Bartın*, Burdur Mehmet Akif Ersoy*, Bursa Uludağ*, Çanakkale 18 Mart*, Çukurova*, Dokuz Eylül*, Düzce*, Erciyes*, Erzincan Binali Yıldırım, Fırat*, Gazi, Gaziantep*, Hakkâri*, İnönü*, İstanbul Üniversitesi-Cerrahpaşa*, İzmir Demokrasi*, Kahramanmaraş Sütçü İmam*, Karamanoğlu Mehmet Bey, Kars Kafkas*, Kastamonu*, Kırıkkale*, Kırklareli, Kırşehir Ahi Evran*, Kilis 7 Aralık*, Kocaeli, Kütahya Dumlupınar, Mardin Artuklu, Mersin*, Muğla Sıtkı Koçman*, Necmettin Erbakan*, Nevşehir Hacı Bektaş*, Niğde Ömer HalisDemir*, Ordu*, Pamukkale*, Sakarya*, Samsun 19 Mayıs*, Siirt*, Sinop*, Sivas Cumhuriyet*, Süleyman Demirel*, Şırnak*, Tokat Gaziosmanpaşa*, Trabzon*, Trakya*, Van 100. Yıl*, Yozgat Bozok*, Zonguldak Bülent Ecevit*.
Foreign language exam 40 points requirement	4	Eskişehir Osman Gazi*, Manisa Celal Bayar*, Marmara*, Uşak*.
Foreign language exam 50 points requirement	5	Alanya Alaattin Keykubat*, Bolu Abant İzzet Baysal*, Ege*, Nevşehir Hacı Bektaş*, Yıldız Teknik*.
Foreign language exam 60 points requirement	2	Ankara*, Hacettepe.
TOEFL and METU İYS 65 points requirement	1	ODTÜ*.
BUEPT (Boğaziçi University English Language Proficiency Exam) Minimum "C" Score Type or TOEFL overall 69 points	1	Boğaziçi.
YDS or equivalent foreign language exam requirement	1	Akdeniz*.
There is no score requirement but it will be taken into consideration if it is received.	1	Dicle*.

*Based on the 2025/2026 graduate student recruitment announcements of universities.

** Information could not be found for universities not listed here.

When Table 3 analyzed, the number of universities that do not require a language exam is 56. While 13 universities require a language exam, one university requires the YDS or an equivalent foreign language exam accepted by YÖK, and one university stated that it does not require a score but it will be considered if it is accepted.

Findings Regarding the Requirement of the Curriculum and Instruction Master's Preparatory Program

The findings regarding the preparation status of the Curriculum and Instruction master's programs offered at a total of 72 universities in Türkiye, the number of universities, and the name of the university are presented in Table 4.

Table 4. Curriculum and Instruction Master's Preparation Status

Preparation Status	f	University
Offering preparation	2	Boğaziçi, Dicle.
Offering preparation in case of coming out of the area	6	Ağrı İbrahim Çeçen, Anadolu, Ege, Erzincan Binali Yıldırım, Kafkas, Nevşehir Hacı Bektaş Veli.
Not offering preparation	43	Aksaray, Alanya Alaattin Keykubat, Amasya, Ankara, Aydın Adnan Menderes, Atatürk, Bartın, Bolu Abant İzzet Baysal, Burdur Mehmet Akif Ersoy, Bursa Uludağ, Çanakkale 18 Mart, Düzce, Erciyes, Eskişehir Osman Gazi, Gazi, Hakkâri, İnönü, Kahramanmaraş Sütçü İmam, Karamanoğlu Mehmet Bey, Kastamonu, Kırıkkale, Kırklareli, Kilis 7 Aralık, Marmara, Mersin, Muğla Sıtkı Koçman, Nevşehir Hacı Bektaş, Niğde Ömer Halisdemir Pamukkale, Sakarya, Samsun 19 Mayıs, Siirt, Sinop, Sivas Cumhuriyet, Şırnak, Tokat Gaziosmanpaşa, Trabzon, Trakya, Uşak, Van 100. Yıl, Yozgat Bozok, Yıldız Teknik, Zonguldak Bülent Ecevit.

* Information could not be found for universities not listed here.

An analysis of Table 4 reveals that the number of universities that do not offer preparatory courses in their Curriculum and Instruction Master's program is 43. Information was obtained from six universities that offer preparatory courses for students from outside the field, while information was obtained from two universities that offer preparatory courses.

Findings Regarding Publication Requirements for Curriculum and Instruction Master's Graduation

This section presents findings regarding the publication requirement in the Curriculum and Instruction Master's program. Table 5 shows the publication requirement status, number of universities, and university name.

Table 5. Curriculum and Instruction Master's Degree Publication Requirements

Publication Requirements	f	University
A publication requirement related to the field before the thesis defense	1	Adıyaman.
A publication related to the field or thesis before the thesis defense	1	Sivas Cumhuriyet.
A publication related to thesis topic along with the thesis submission	1	Ege.
A publication related to thesis topic before the thesis defense	3	Çanakkale 18 Mart, Kırıkkale, Zonguldak Bülent Ecevit.
A publication before the thesis defense	9	Afyon Kocatepe, Burdur Mehmet Akif Ersoy, Dicle, Erzincan Binali Yıldırım, Fırat, Gazi, İzmir Demokrasi, Kırşehir Ahi Evran, Kocaeli.
Those without publication requirements	52	Ağrı İbrahim Çeçen, Akdeniz, Aksaray, Alanya Alaattin Keykubat, Amasya, Anadolu, Ankara, Atatürk, Aydın Adnan Menderes, Balıkesir, Bartın, Boğaziçi, Bursa Uludağ, Dokuz Eylül, Düzce, Erciyes, Eskişehir Osman Gazi, Gaziantep, Hacettepe, İnönü, İstanbul Üniversitesi- Cerrahpaşa, Kahramanmaraş Sütçü İmam, Karamanoğlu Mehmet Bey, Kars Kafkas, Kastamonu, Kırklareli, Kilis 7 Aralık, Kütahya Dumlupınar, Manisa Celal Bayar, Mardin Artuklu, Marmara, Mersin, Muğla Sıtkı Koçman, Necmettin Erbakan, Nevşehir Hacı Bektaş Veli, Niğde Ömer Halisdemir,

	ODTÜ, Ordu, Pamukkale, Sakarya, Samsun 19 Mayıs, Siirt, Sinop, Süleyman Demirel, Şırnak, Tokat Gaziosmanpaşa, Trabzon, Trakya, Uşak, Van 100. Yıl, Yıldız Teknik, Yozgat Bozok.

* Information could not be found for universities not listed here.

An analysis of Table 5 reveals that, of the 72 universities with master's programs, 1 university requires a publication related to the field before the thesis defense, while 1 university requires a publication related to its field or thesis before the thesis defense. Three universities require a publication related to the thesis topic before the thesis defense, 9 universities require a publication before the thesis defense, and 1 university requires a publication related to the thesis topic along with the thesis submission. Fifty-two universities do not have a publication requirement for master's graduation.

Findings Regarding the Minimum Number of Courses Determined for Graduation in Curriculum and Instruction Master's Program

In this section, the minimum number of courses required to graduate from the Curriculum and Instruction master's program, the minimum number of courses required, the number of universities, and the university name are listed in Table 6.

Table 6. Minimum Number of Courses Required for Graduation from the Curriculum and Instruction Master's Program

Minimum number of courses determined	f	University
At least 6 courses	1	Aydın Adnan Menderes.
At least 7 courses	33	Abant İzzet Baysal, Adıyaman, Akdeniz, Amasya, Anadolu, Ankara, Bartın, Boğaziçi, Çanakkale 18 Mart, Çukurova, Gaziantep, Hakkâri, İstanbul Üniversitesi- Cerrahpaşa, İzmir Demokrasi, Kastamonu, Kırşehir Ahi Evran, Kilis 7 Aralık, Kocaeli, Manisa Celal Bayar, Mardin Artuklu, Muğla Sıtkı Koçman, Niğde, Ordu, Samsun 19 Mayıs, Siirt, Sivas Cumhuriyet, Süleyman Demirel, Trabzon, Van 100. Yıl, Yıldız Teknik, Yozgat Bozok, Zonguldak Bülent Ecevit.
At least 8 courses	10	Alanya Alaattin Keykubat, Balıkesir, Erzincan Binali Yıldırım, Hacettepe, Kırıkkale, Necmettin Erbakan, Nevşehir Hacı Bektaş, ODTÜ, Pamukkale, Sinop.
At least 9 courses	3	Ege, Eskişehir Osman Gazi, Kütahya Dumlupınar.
At least 10 courses	3	Dokuz Eylül, Uşak, Trakya.
At least 11 courses	1	İnönü.

* Information could not be found for universities not listed here.

An analysis of Table 6 points out that information was available for 51 of the 72 universities. One university has a minimum of 6 courses required for graduation, while 10 universities have a minimum of 8. Three universities each have a minimum of 9 and 10 courses, while one university has a minimum of 14 courses. 33 universities have a minimum of 7 courses, accounting for the largest percentage. Information on the number of courses required for universities not listed in Table 6 was not available.

Findings Regarding the ALES Score Required for Curriculum and Instruction Phd Student Admission

Table 7 shows the ALES entrance requirement, number of universities and names of universities for Curriculum and Instruction Phd programs at state universities.

Table 7. Curriculum and Instruction PhD ALES Entry Requirements

Ales Requirement	f	University
55 points requirement from Ales	14	Adnan Menderes*, Afyon Kocatepe*, Atatürk*, Bartın*, Burdur Mehmet Akif Ersoy*, Çanakkale 18 Mart*, Çukurova*, Ege*, Erciyes*, Eskişehir Osman Gazi*, Fırat*, Kırşehir Ahi Evran*, ODTÜ*, Yozgat Bozok*.
60 points requirement from Ales	7	Akdeniz*, Dicle*, Dokuz Eylül*, İnönü*, Marmara*, Sivas Cumhuriyet*, Tokat Gaziosmanpaşa*.
65 points requirement from Ales	4	Balıkesir*, Gazi, Hacettepe, Muğla Sıtkı Koçman*.

70 points requirement from Ales	8	Abant İzzet Baysal*, Anadolu*, Gaziantep, İzmir Demokrasi*, Mersin*, Necmettin Erbakan*, Sakarya, Yıldız Teknik*.
75 points requirement from Ales	2	Ankara*, Düzce*.

*Based on the 2025/2026 graduate student recruitment announcements of universities.

When Table 7 is analyzed, 14 universities require an ALES score of 55, while 7 require an ALES score of 60. Four universities require an ALES score of 65, while eight universities require a score of 70. Only two universities require an ALES score of 75. ALES score requirements range from 55 to 75.

Findings Regarding the Foreign Language Score Required for Admission to Curriculum and Instruction Phd Programs

Table 8 shows the foreign language entry requirements, number of universities and names of universities for Curriculum and Instruction Phd programs.

Table 8. Curriculum and Instruction Phd Entry Requirements

Language entry requirement	f	University
Foreign Language exam 55 points requirement	31	Afyon Kocatepe*, Akdeniz*, Anadolu*, Ankara*, Adnan Menderes*, Abant İzzet Baysal*, Atatürk*, Balıkesir*, Bartın*, Burdur Mehmet Akif Ersoy*, Çanakkale 18 Mart*, Çukurova*, Dicle*, Dokuz Eylül*, Düzce*, Ege*, Erciyes*, Fırat*, Gazi, Gaziantep, İnönü*, Kırşehir Ahi Evran*, Marmara*, Mersin*, Muğla Sıtkı Koçman*, Necmettin Erbakan*, Sakarya, Sivas Cumhuriyet*, Tokat Gaziosmanpaşa*, Yıldız Teknik*, Yozgat Bozok*.
Foreign Language exam 60 points requirement	3	Eskişehir Osman Gazi*, Hacettepe, İzmir Demokrasi*.
TOEFL and METU İYS requirement	1	ODTÜ*.

*Based on the 2025/2026 graduate student recruitment announcements of universities.

Table 8 lists the language entrance requirements for admission to the departments of 35 universities offering Curriculum and Instruction PhD programs. Thirty-one universities require a language exam score of 55, while three universities require a score of 60. One university requires only a TOEFL or its own English Proficiency exam.

Findings Regarding the Requirement of the Curriculum and Instruction Phd Preparatory Program

The preparation status of the universities, the number of universities and the names of the universities are presented in Table 9.

Table 9. Curriculum and Instruction Phd Preparation Status

Preparation Status	f	University
Not offering preparatory	15	Adnan Menderes, Afyon Kocatepe, Akdeniz, Anadolu, Ankara, Bartın, Çukurova, Dicle, Düzce, Eskişehir Osman Gazi, Gaziantep, İnönü, Mersin, Sivas Cumhuriyet, Tokat Gaziosmanpaşa.
Offering preparation in case of coming out of the area	13	Abant İzzet Baysal, Balıkesir, Burdur Mehmet Akif Ersoy, Çanakkale 18 Mart, Gazi, Hacettepe, İzmir Demokrasi, Kırşehir Ahi Evran, Marmara, Muğla Sıtkı Koçman, ODTÜ, Sakarya, Yozgat Bozok.
Preparation when necessary	1	Ege.

* Information could not be found for universities not listed here.

Table 9 shows the findings regarding the preparation status of 35 universities with doctoral programs. Fifteen universities do not offer preparation programs, while 12 offer preparation programs for students from outside the field. One university also provides preparation programs when necessary.

Findings Regarding Publication Requirements for Curriculum and Instruction Phd Graduation

Table 10 shows the publication requirement status of universities, the number of universities and the name of the university.

Table 10. Curriculum and Instruction Phd Publication Requirements

Publication requirement	f	University
Publication during the qualification process	1	Çukurova.
Before the thesis defense	12	Adnan Menderes, Afyon Kocatepe, Akdeniz, Atatürk, Çanakkale 18 Mart, Dicle, Eskişehir Osman Gazi, Fırat, Kırşehir Ahi Evran, Muğla Sıtkı Koçman, Sivas Cumhuriyet, Tokat Gaziosmanpaşa.
Before the thesis proposal	1	Ankara.
Publication about thesis before thesis defense	4	Balıkesir, Gazi, Hacettepe, Marmara.
Publication related to the thesis or field of study	1	Abant İzzet Baysal.
Publication about thesis and with advisor	1	Yıldız Teknik.
Publication before thesis defense jury is established	1	Burdur Mehmet Akif Ersoy.
Publication before thesis submission	2	Anadolu, Gaziantep.
Publication regarding thesis during thesis submission	1	İzmir Demokrasi
Publication along with thesis submission	2	Ege, Necmettin Erbakan.
Until the completion of phd	2	Dokuz Eylül, Sakarya.
Before thesis defense exam, a publication mentioning the name of the university and related to the thesis	1	Yozgat Bozok.
2 publications before graduation	1	Düzce.

* Information could not be found for universities not listed here.

Table 10 reveals that 12 of the 35 universities with Curriculum and Instruction PhD programs require a publication prior to the thesis defense. It was determined that one university required each of the following requirements: publication during the qualification process, one publication related to the thesis or field of study before the thesis proposal, one publication related to the thesis and with the advisor, one publication before the thesis defense jury was formed, one publication mentioning the university's name before the thesis defense before the thesis defense exam. Four universities required a publication related to the thesis before the thesis defense, while two universities required a publication prior to the thesis submission. Two universities required a publication with the thesis submission, while two universities specified the term "until the doctoral program is completed." No information was available regarding the publication requirements for five universities.

Findings Regarding the Minimum Number of Courses Determined for Graduation in Curriculum and Instruction Phd Program

Table 11 shows the minimum number of courses required for graduation, the number of universities, and the name of the university.

Table 11. Minimum Number of Courses Required for Graduation from the Curriculum and Instruction Phd Program

Minimum number of courses determined	f	University
At least 7 courses	12	Akdeniz, Anadolu, Ankara, Çanakkale 18 Mart, Dokuz Eylül, Ege, Fırat, Hacettepe, İnönü, Sivas Cumhuriyet, Yıldız Teknik, Yozgat Bozok.
At least 8 courses	7	Afyon Kocatepe, Balıkesir, Çukurova, Dicle, Muğla Sıtkı Koçman, ODTÜ, Sakarya.
At least 9 courses	2	Abant İzzet Baysal, İzmir Demokrasi.
At least 10 courses	2	Eskişehir Osman Gazi, Marmara.

* Information could not be found for universities not listed here.

When Table 11 is analyzed, it can be seen that 12 universities require at least 7 courses, while 7 universities require at least 8. Two universities require at least 9 courses, while 2 universities require at least 10 courses.

Discussion and Conclusion

This study aims to examine the Curriculum and Instruction graduate education programs of state universities.

When the ALES scores required for admission to Curriculum and Instruction graduate programs are examined, one university requires an ALES score of 50, while the remaining 70 universities require an ALES score of 55 or higher. The Regulation on Graduate Education and Training published by the Council of Higher Education (YÖK) states, "Applicants for graduate programs must have a score determined by the Senate, not less than 55, depending on the type of program they are applying for." (URL-1) However, one university appears to have a score requirement that differs from the regulations published by YÖK. There are different exams for graduate education worldwide. In our country, the ALES exam is distinctive exam and is accepted for graduate education (Alan & Yalçın, 2025). Universities, which carry out their mission of training scientists and researchers through graduate education, expect incoming students to be qualified to ensure a more efficient process. In this context, the ALES, created as an effort to provide a higher quality education, is important as an admission requirement (Çıkrıkçı-Demirtaşlı, 2002). Therefore, it can be said that the ALES admission requirement score range between 55 and 70 is considered a distinguishing criterion in selecting qualified students for graduate programs.

While examining the language entrance requirements of universities offering master's programs, it is seen that 56 universities do not have a language entrance requirement. A language entrance score is required at 13 universities. Language exams, which are applied by individuals seeking graduate education, are extremely important exams and offer various advantages (Polat, 2020). However, while the ALES score requirements for EPÖ master's programs are above a certain standard, the language exam requirements are observed to be lower (Arapgirlioğlu, et al., 2014). Based on the findings, the majority of universities are in line with the YÖK regulations. The Regulation on Graduate Education and Training published by YÖK does not include a language requirement at the master's level (URL-1). Based on this result, it can be said that one reason for not requiring a language requirement is the idea of increasing and expanding access to graduate education.

How the preparation requirements for EPÖ master's programs are determined by universities were checked. While there are two university programs that include preparation in the EPÖ master's program; There are 43 university programs that do not offer preparatory programs. Preparatory programs provide individuals with the opportunity for personal development and to contribute to their field (Şen-Ersoy & Kürüm-Yapıcıoğlu, 2015). However, the YÖK Graduate Education and Training Regulation does not specify whether a scientific preparatory program is required (URL-1). This absence suggests that universities have varying levels of preparatory information and have made different decisions in their regulations.

An examination of how publication requirements are determined for master program at universities revealed that 52 universities do not require publication for graduation, while 15 universities do. The Council of Higher Education's Regulation on Graduate Education and Training includes the phrase "other necessary conditions may apply" for graduation, as determined by the senate (URL-1). Publication requirements vary depending on university senate decisions. Consequently, it can be argued that expectations regarding publication production in graduate education policies are interpreted differently at each university level. While some universities do not impose publication requirements, it can be explained by the belief that the master's degree is structured around core academic achievements rather than research competence, universities that impose publication requirements adopt an approach that supports students' early involvement in scientific production. Indeed, in a study conducted by Sezgin et al. (2011), graduate students expressed their opinions about the publication requirement and emphasized the importance of receiving support in producing a product. This study suggests that universities that impose publication requirements support graduate students in producing a product.

When examining the minimum number of courses required for graduation in master programs, 33 universities require a minimum of seven courses, while other universities require a minimum of six to fourteen. Indeed, the Council of Higher Education (YÖK) Graduate Education and Training Regulations state, "A thesis-based master's program consists of at least seven courses, one seminar course, and a thesis, totaling no less than twenty-one credits. The seminar course and thesis are non-credit and are graded as either pass or fail." (URL-1). The minimum number of courses determined by universities aligns with YÖK's seven-course minimum regulation. One university specifies six minimum courses under YÖK's regulation. In practice, the fact that some universities require more courses than this minimum standard can be explained by institutional priorities. This difference can be considered both an advantage and a point to consider for students to maximize program benefit. Özmen & Güç (2013) stated that while more required courses can increase students' depth of knowledge, they can also create a course load problem. In addition to this statement, this diversity among universities can be explained by the fact that graduate programs are not standardized and differences are adopted in line with institutional preferences.

When searched PhD, ALES score requirements, which are determined, reveals that the scores of 35 universities with varying between 55 and 75. Indeed, the Regulation on Graduate Education and Training published by the Council of Higher Education (YÖK) states, "To apply for phd program, applicants must have a master's degree with a thesis and an ALES score determined by the relevant senate decision, provided that it is not less than 55 in the ALES score type for the program applied for." It also states that ALES score must not be lower than 55 (URL-1). ALES score requirements of universities and the YÖK regulations are parallel. ALES is one of the requirements for graduate studies. ALES exam, which has many functions in universities, is also required for admission to PhD. The fact that individuals selected for universities receive education and will later train scientists necessitates a more qualified selection, making ALES an important criterion (Abdioğlu & Çevik, 2017). While there are universities that do not require ALES score for master's programs, every university requires one for phd. Based on this, it can be assumed that master's program is the first step in acquiring scientific research skills and is intended to be more accessible, while for PhD, academic education is selective and structured with high entry criteria in terms of research competence. It can be argued that more standardized and measurable selection process is implemented with the aim of fostering academic specialization, preparing students for scientific production, and training scientists.

Regarding the language entry requirements for PhD, 35 universities offer a language requirement. YÖK Graduate Education and Training Regulation states, "A minimum score of 55 on international foreign language exams recognized as equivalent to central foreign language exams accepted by the Council of Higher Education is required for admission to PhD, other than their native language." (URL-1) University requirements and YÖK regulations are parallel. Knowing a foreign language provides many personal benefits to individuals. Foreign language, a mandatory course in education programs, is crucial for accessing internationally relevant information in doctoral fields (Bayındır & Kara, 2019). The expectation of following international publications, critically evaluating the field in Türkiye and globally, and publishing in English necessitates standardization in language exams. It's conceivable that PhD also expect a higher level of academic proficiency and research capacity in foreign languages.

When examining the preparation requirements for PhD, 15 universities do not offer a preparatory program, while 12 universities offer one for students who are outside their field of study. Preparatory programs are crucial for graduate education. Preparatory courses offered in graduate programs can be provided to improve their foreign language skills (Bülbül, 2003), or to individuals who have completed their master's degree in other fields as preparatory training related to the program they are applying for (Karaman & Bakırcı, 2010). YÖK Graduate Education and Training Regulation does not specify whether a scientific preparation course is required (URL-1). Due to the absence of such a provision in the YÖK regulation, it

appears that universities adopt different approaches to scientific preparation. The fact that some universities offer a preparatory course for students who are outside their field of study may be intended to address applicants' lack of knowledge of basic concepts and theories. In a study conducted by Bertlek (2016), the vast majority of participants found scientific preparation courses sufficient for understanding and mastering new field. In this respect, it can be said that preparatory programs play an important role in graduate education for students coming from outside their field of study.

Thirty out of 35 universities offer a publication requirement before graduation, at different times and under different conditions. The Council of Higher Education (YÖK) Graduate Education and Training Regulations do not contain publication requirement, but rather the phrase "fulfilling other conditions determined by the senate for graduation" (URL-1). Indeed, when universities examine their publication requirements for graduation, they reveal varying requirements. The publication requirement for doctoral programs is higher than for master's programs. This can be explained by the inherent nature of PhD, which encourages students to actively participate in scientific production and to make their field-specific knowledge visible through publication. In this sense, the publication requirement can be considered a requirement in PhD. Keleş & Tonbul (2020) state that publishing in graduate programs is considered important for generating and disseminating knowledge. Universities consider the publication requirement, which is offered for graduating from a doctoral program by actively participating in scientific production, to be important (Karagöz & Alpaydın, 2024). From this perspective, it can be argued that publication requirements are essential for doctoral programs.

An examination of PhD reveals that 12 universities require at least seven compulsory courses, while 11 universities require eight or more. The statement in the Council of Higher Education's Graduate Education and Training Regulations (URL-1) that "...consists of at least seven courses, a seminar, a qualifying exam, a thesis proposal, and a thesis study, totaling at least 240 ECTS credits" is consistent with these findings. Programs with a high course load suggest that they aim to expand students' theoretical and methodological competence in the field, while programs offering a lighter course load may suggest a mindset that directs students to earlier research activities and thesis production, or that they consider a smaller number of courses sufficient for graduation. In this context, Yıldıran (2012) argues that the higher number of courses offered by universities in Curriculum and Instruction PhD aims to provide the knowledge and skills necessary for the field. It is plausible that the number of courses differing from the specified number reflects the universities' own orientations and enriches the field.

Ethics Committee Approval Information

This study doesn’t require an ethics committee approval because it is a review article.

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