

Pre-Service English as a Foreign Language Teachers' Attitudes toward Artificial Intelligence*

İngilizce Öğretmen Adaylarının Yapay Zekaya Yönelik Tutumları

Pelin DERİNALP** 

Melek HALİFE*** 

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ABSTRACT: Artificial Intelligence (AI) is actively involved in many areas of contemporary society. As in many other fields, it has pioneered a significant transformation in language education. As today's preservice teachers will shape the future, it is crucial to understand their attitudes toward using AI in language classrooms. Hence, this study aims to examine the attitudes towards AI of pre-service English as a Foreign Language (EFL) teachers studying at a state university in Türkiye. An explanatory sequential mixed method research design was adopted. Data was collected via a scale with the participation of 193 pre-service EFL teachers and analyzed in line with various descriptive variables. Qualitative data were collected through in-depth interviews with 10 participants and analyzed via reflexive thematic analysis. Quantitative findings show that male participants have more positive attitudes towards AI. In addition, third-year students were found to have higher behavioral attitude scores compared to first-year students. The results of the qualitative analysis revealed that themes such as the challenges faced in the integration of AI into educational processes, the potential benefits it provides, participants' preferences for these technologies, and predictions about the future of AI in education came to the fore.

Keywords: Artificial Intelligence, attitudes, benefits of AIEd, challenges of AIEd, ELT.

ÖZ: Yapay Zeka (YZ), çağdaş toplumun birçok alanında aktif olarak yer almaktadır. Diğer birçok alanda olduğu gibi, dil eğitiminde de önemli bir dönüşüme öncülük etmiştir. Bugünün öğretmen adayları geleceği şekillendireceğinden, dil sınıflarında YZ kullanımına yönelik tutumlarını anlamak çok önemlidir. Bu nedenle, bu çalışma Türkiye'deki bir devlet üniversitesinde öğrenim gören İngilizce öğretmen adaylarının YZ'ye yönelik tutumlarını incelemeyi amaçlamaktadır. Bu çalışmada, açıklayıcı sıralı karma yöntemli bir araştırma tasarımı benimsenmiştir. Nicel veriler, 193 Yabancı Dil Olarak İngilizce öğretmen adayının katılımıyla bir ölçek aracılığıyla toplanmış ve çeşitli betimsel değişkenler doğrultusunda analiz edilmiştir. Nitel veriler ise 10 katılımcı ile derinlemesine görüşmeler yoluyla toplanmış ve tematik analiz yoluyla analiz edilmiştir. Nicel bulgular, erkek katılımcıların YZ'ye karşı daha olumlu tutumlara sahip olduğunu göstermektedir. Ayrıca, üçüncü sınıf öğrencilerinin birinci sınıf öğrencilerine kıyasla daha yüksek davranışsal tutum puanlarına sahip olduğu bulunmuştur. Nitel analiz sonuçları, YZ'nin eğitim süreçlerine entegrasyonunda karşılaşılan zorluklar, sağladığı potansiyel faydalar, katılımcıların bu teknolojilere yönelik tercihleri ve eğitimde YZ'nin geleceğine ilişkin öngörüler gibi temaların öne çıktığını ortaya koymuştur.

Anahtar kelimeler: Yapay zeka, tutum, yapay zeka destekli eğitimin faydaları, yapay zeka destekli eğitimin zorlukları, İngilizcenin yabancı dil olarak öğretilmesi.

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** Corresponding Author: Asst. Prof. Dr., Gaziantep University, Gaziantep, Türkiye, pelinderinalp@gmail.com, <https://orcid.org/0000-0003-0537-2244>

*** Certified Teacher, Gaziantep, Türkiye, melekhaliife@gmail.com, <https://orcid.org/0009-0000-5281-9147>

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The birth of artificial intelligence (AI) is recognized as one of the most important turning points in human history (Copeland, 1998). This rapidly developing field of technology is leading to radical changes not only in the labor market or industrial production processes but also in areas that require cognitive skills, such as education and language teaching. In particular, the literature has shown that in the context of educational technologies, AI has the potential to bring many innovations such as reducing teachers' workload by assisting with administrative tasks (Ahmad et al., 2022; Salas-Pilco et al., 2022), lesson planning and content development (Hashem et al., 2023), individualizing students' learning processes (Hasibuan & Azizah, 2023; Hashem et al., 2022; Tapalova et al., 2022) and enhancing assessment processes (Tomić et al., 2023; Vittorini et al., 2020).

As in other educational fields, in recent years, it has been observed that AI-based applications have come to the forefront in the field of English as a Foreign Language (EFL) teaching and have started to be used in increasingly different ways. In particular, innovations such as personalised and automated feedback systems, speech recognition technologies and online translation tools (Kasimi & Fidan, 2023; Zhou & Hou, 2025) directly affect teaching processes in EFL instruction and transform classroom practices. These technological developments necessitate language teachers to interact with AI from the early stages of their professional lives and reshape their pedagogical decisions. However, these impacts of AI raise questions about how it will be integrated into educational processes and how teachers' attitudes towards these technologies will be shaped. As pre-service teachers will shape the educational environments of the future, their attitudes towards AI are of great importance. Pre-service teachers' perceptions and attitudes have the potential to reveal not only technological adaptation at the individual level but also the extent to which the education system is prepared for this transformation. These attitudes can be decisive in how AI will be used in classroom applications, how effectively technological innovations in education will be integrated, and how teaching processes will develop. Hence, this study aims to contribute to the current debates on the role of AI in EFL and to understand pre-service EFL teachers' attitudes towards these new technologies.

Literature Review

AI, defined as a field of study that endows computer systems with human-like cognitive capabilities, enabling them to learn, analyze, and make decisions in a manner akin to human reasoning (Derinalp, 2024; Derinalp & Özyurt, 2024), has rapidly penetrated many fields, notably language education. The use of AI in language education has become increasingly widespread in recent years, and this has transformed educational environments radically. Research shows that AI offers significant benefits in language education, ranging from personalizing learning processes and increasing student motivation to reducing teachers' workload and speeding up assessment processes (Derinalp, 2024; Darwin et al., 2024; Özkan et al., 2024; Taşçı & Tunaz, 2024; Yılmaz-Virlan & Tomak, 2024). It has overcome the limits of traditional teaching methods and created an innovative language learning environment by combining modern technology and pedagogical principles. The approach adopted by AI has increased students' motivation to learn by enabling the language learning process to be

more accessible, effective, and interactive. As a result of this innovative approach, the language learning process has become more efficient and effective.

Attitude can be defined as a psychological tendency to respond positively or negatively to a particular object or situation (Eagly & Chaiken, 1993). Traditionally, attitude consists of three components that interact with each other and are not mutually exclusive: cognitive, affective, and behavioral (Bagozzi, 1978; Metsärinne & Kallio, 2016; Suh & Ahn, 2022). The cognitive component denotes the set of beliefs, thoughts, and evaluations that an individual has toward an object or situation. This component reflects the individual's level of knowledge and experiences. In an educational context, a teacher's knowledge and beliefs about technology use, for example, may determine the extent to which the teacher can effectively integrate these tools. The affective component delineates feelings or emotions towards a particular object, situation, or person. Such responses encompass both positive and negative emotions and are crucial in developing one's attitude. An example can be a teacher's positive attitude toward the use of technology might increase their willingness to adopt it in their lessons. The behavioral component, in turn, represents the individual's actions and reactions based on their attitude. This represents a concrete reflection of an individual's attitude and shows the link between attitudes and behaviors. Thus, teachers with a positive attitude tend to use educational technologies more frequently, whereas teachers with a negative attitude might be expected to show reluctance to use these technologies.

Not only definitional explanations but also theoretical frameworks provide guidance in understanding individual attitudes towards the integration of technology into education. In this regard, the Technology Acceptance Model (TAM) and Technological Pedagogical Content Knowledge (TPACK) framework, which are among the theories widely used in the field of educational technologies, constitute the conceptual basis of this study. The Technology Acceptance Model (TAM), developed by Davis (1989), accounts for individuals' intentions to accept and use a technology through two basic elements: perceived usefulness and perceived ease of use. This model provides an important theoretical basis for understanding the basic cognitive judgments that shape pre-service teachers' positive or negative attitudes towards AI-based tools. The TPACK framework developed by Mishra and Koehler (2006), in turn, emphasizes that teachers need to holistically blend pedagogical, content, and technology knowledge in order to use technology effectively. This framework enables to evaluate practioners' perceptions about integrating technology into teaching environments from a pedagogical perspective.

In line with these frameworks, the impact of teachers' attitudes towards educational technologies on their adoption and integration of innovative tools into classroom practices has been examined in many studies (Aljohani, 2021; Harakchiyska & Vassilev, 2024; Zhang et al., 2023). For example, Harakchiyska & Vassilev (2024) examined the attitude and readiness of Bulgarian pre-service teachers to use AI in EFL instruction. The participants were found to have a positive attitude and willingness to adopt AI. Moreover, they also found that pre-service EFL teachers considered AI technologies' positive impact on the development of learners' skills to engage in meaningful oral or written communication and comprehend the meaning of the provided texts audibly or visually. This finding is in line with Aljohani (2021) who observed the opinions and attitudes of EFL teachers and students in Saudi Arabia. The results showed

that teachers and students had positive attitudes towards using AI in learning the English language. Zhang, et al (2023), in turn, investigated the factors influencing pre-service teachers' acceptance of AI. Their findings revealed that the most important factors affecting pre-service teachers' intentions to use AI technology are perceived usefulness and ease of use, with perceived usefulness having a stronger effect, and that gender differences affect attitudes in this area by increasing female pre-service teachers' concerns about the use of AI. The study also emphasized the challenges and the weak link between theoretical, pedagogical, and ethical concerns.

The increasing importance of AI and educational technologies in teaching processes has attracted a certain amount of interest in Türkiye as in other contexts. For example, Hınız's (2024) one-year case study revealed the positive and negative perceptions of in-service teachers and learners towards generative AI tools such as ChatGPT, highlighting their potential to improve language skills and diversify learning materials. However, the study also pointed to risks such as plagiarism, decline in cognitive skills and lack of critical thinking. Özkan et al.'s (2024) systematic review, in turn, reported that both pre-service and in-service EFL teachers perceived AI as a tool that facilitates and personalizes teaching, but they raised concerns such as ethical issues and lack of adequate training. Arslan (2025) also drew attention to the lack of technical and pedagogical knowledge of EFL instructors at the university level and emphasized the need for professional development in this area.

In addition to studies covering in-service teachers and both in-service and pre-service teachers, studies focusing entirely on pre-service teachers also have an important place in the literature. Although the number of studies examining pre-service teachers' perceptions of AI is increasing in Turkey, these findings are generally fragmented and independent. For example, while Yetkin and Özer-Altinkaya's (2024) qualitative study reveals that pre-service teachers have both positive and negative, complex and contradictory attitudes towards AI, Eyüp and Kayhan's (2023) quantitative study shows that pre-service teachers' anxiety towards AI affects their attitudes towards technology. Similarly, Taşçı and Tunaz's (2024) study revealed that while pre-service EFL teachers embraced the advantages of AI tools such as time saving and access to information, they had concerns about job security, data privacy, and possible negative effects on critical thinking skills. When these studies are evaluated together, it is seen that pre-service EFL teachers develop multi-layered and dynamic perceptions towards AI technologies not only positively or negatively but also emotionally (anxiety, uncertainty) and pedagogically (usefulness, ease of use). This calls for a more in-depth analysis of pre-service EFL teachers' positions in AI-supported learning environments and their reflections on future classroom practice. The current study aims not only to measure pre-service EFL teachers' perceptions of AI, but also to understand more holistically the pedagogical and affective dynamics underlying these perceptions. In this line, the research questions of the current study are articulated as:

RQ1. What are the attitudes of pre-service EFL teachers in Türkiye toward the use of AI?

RQ2. How do pre-service teachers perceive the benefits, challenges, and future implications of AI integration in language teaching?

Method

A total of 193 pre-service EFL teachers (134 females, 59 males) from a state university in the Southeast region of Turkey participated in the study. The participants consisted of students in the 1st, 2nd, 3rd, and 4th grades of the university and the inclusion criterion was to be studying in the English Language Teaching program. Participation was voluntary and the data collection process was carried out by the second researcher, who was an undergraduate student, to ensure that the students did not feel any pressure to participate in the study.

The integration of quantitative and qualitative methods in the study was carried out according to the explanatory sequential mixed method design (Creswell & Poth, 2018). In the first stage, quantitative data were collected and analyzed. Then, qualitative interviews were conducted by selecting specific participants through purposive sampling to elaborate and explain the quantitative findings. In this process, quantitative and qualitative data were integrated in the sample selection, interpretation of findings and reporting stages. Considering the role and position of the researchers in the data collection and analysis process, researcher subjectivity contributed to the interpretation of the data and was evaluated with a reflexive approach.

In the first phase of the study, the Student Attitudes towards Artificial Intelligence Scale (SATAI) developed by Suh and Ahn (2022) was used to measure the participants' attitudes towards AI. This 26-item 5-point Likert scale consists of three dimensions: cognitive, affective, and behavioral and its validity was supported by good fit indicators, with RMSEA of 0.075, SRMR of 0.047, TLI of 0.928 and CFI of 0.937. These values indicate that the model provides a good fit and is valid. The reliability of the scale was ensured by internal consistency tests (i.e., Cronbach's Alpha) and high reliability levels were obtained. The internal consistency of the scale in the current sample was high (Cronbach's $\alpha = .96$). The results of the Shapiro-Wilk test ($W = 0.98608$, $p = .1157$) and the Q-Q plot show that the total scores are normally distributed (see Appendix A for Q-Q plot). Hence, it can be said that the parametric test assumptions are met. T-tests and One-way Analysis of Variance (ANOVA) tests were applied to examine whether there were significant differences between the scale results across the study levels and genders. The data obtained were analyzed using descriptive statistics.

Quantitative data collection was carried out through an online questionnaire via Google Forms, which included demographic information and the items of the scale. Among the demographic data questions, a closed-ended question was used to determine the level of familiarity of the participants with AI. In this question, participants were asked to define themselves as familiar or unfamiliar. After the scale application, the highest and lowest ranked five students from each end were determined according to their total scores, and semi-structured interviews were conducted with these 10 students following purposive sampling method. In this context, the students with the highest and lowest total scores represent the most appropriate examples to understand how participants' attitudes towards AI are shaped across a wide range and extremes. By rendering the differences between the participants' attitudes more salient, this method provided more comprehensive and meaningful insights into attitudes towards AI. The demographic data and scale total scores of the interviewed participants are presented in Table 1 below.

Table 1

Demographic Data and Scale Total Scores of Interviewed Participants

Participant	Gender	Grade	Total Score
P1	Female	Fourth-grade	128
P2	Female	Fourth-grade	130
P3	Male	Third-grade	31
P4	Female	Third-grade	128
P5	Female	Third-grade	54
P6	Male	Third-grade	118
P7	Female	Second-grade	53
P8	Female	Second-grade	122
P9	Female	Third-grade	49
P10	Female	Third-grade	56

The interviews were conducted by the second researcher using questions prepared by the lead researcher. The purpose of administering the semi-structured interviews by the second researcher was to enable the participants to respond more honestly and openly without feeling any authority or academic pressure during the interview. While the scale was administered in English, participants could choose to be interviewed in Turkish or English, with the majority preferring Turkish. The interviews were audio recorded, and the transcription and analysis process was carried out by the first researcher.

For the qualitative data analysis, in this study, Braun and Clarke's (2019) reflexive thematic analysis approach was adopted. Reflexive thematic analysis focuses on discovering and interpreting patterns of meaning in the data with the active participation of the researcher, so that themes are not fixed and predetermined but dynamic constructs that emerge through interaction with the data. This approach recognizes the researcher's subjectivity as a resource and uses it consciously in the interpretation of the data. The analysis process consists of six stages: familiarizing with the data, coding, generating themes, reviewing themes, identifying themes and reporting. In the coding stage, both explicit (semantic) and implicit meanings were taken into account, thus aiming to gain an in-depth understanding of the participants' attitudes. The researcher ensured impartiality by constantly reviewing the presuppositions and maintaining transparency throughout the analysis. The analysis was rendered both descriptive and interpretive by using sample quotations during the coding process. In this way, not only the participants' statements were presented, but also the contextual and conceptual meanings underlying these statements were revealed. The analysis process was carried out on the MAXQDA software and the data were thematically classified and analyzed in depth.

Ethical Procedures

In the study, ethical principles were respected. Ethical approval of this study is obtained from Gaziantep University with approval number 456833. In this regard, data was collected only after obtaining ethical approval from the institutions where the participants were enrolled. Their informed consent was subsequently sought. Additionally, to ensure confidentiality, their names were anonymized to protect their identities.

Findings

The scale data obtained in this study was analyzed with descriptive statistics in the SPSS software. The interview data, in turn, was analyzed by the thematic analysis method in the MAXQDA software. Below, the findings related to both data sets are presented respectively.

Quantitative Results about EFL Teachers' Attitudes towards AI

The scale data was analyzed to investigate whether pre-service EFL teachers' attitudes towards AI differed according to several variables. The effect of gender, which is one of these variables, on attitudes towards AI was statistically evaluated in this regard. The results are presented below (Table 2).

Table 2

T-Test Results of SATAI Scale According to Gender

	Gender	n	\bar{x}	SD	t	p
Behavioral	Female	134	15.45	3.574	-1.105	.270
	Male	59	16.07	3.629		
Affective	Female	134	34.27	7.926	-1.337	.183
	Male	59	35.98	8.823		
Cognitive	Female	134	36.90	10.055	-2.654	.009*
	Male	59	41.14	10.548		
ScaleSum	Female	134	86.62	19.372	-2.114	.036*
	Male	59	93.19	20.995		

* $p < .05$

Upon examining Table 2, statistically significant differences were found in favor of male participants in the behavioral dimension ($t(191) = -2.65$, $p = .009$) and in the total scale scores ($t(191) = -2.11$, $p = .036$) of the SATAI scale. This finding suggests that the attitudes of males towards AI are significantly higher than those of females in the cognitive dimension and the total scale scores.

Pre-service teachers' familiarity with AI technologies may shape their attitudes toward these technologies and their perceptions of their use. Therefore, another variable

addressed in this study is pre-service teachers' familiarity levels with AI. The results of the analysis are tabulated below (Table 3).

Table 3
Descriptive Results of SATAI Scale According to Familiarity

	Familiarity	n	\bar{x}	SD
Behavioral	Not-familiar	4	10.25	5.560
	Familiar	189	15.75	3.473
Affective	Not-familiar	4	25.25	12.790
	Familiar	189	34.99	8.032
Cognitive	Not-familiar	4	32.00	14.629
	Familiar	189	38.33	10.271
Scale Sum	Not-familiar	4	67.50	32.634
	Familiar	189	89.07	19.600

* $p < .05$

When Table 3 is examined, it is seen that participants who are not familiar with AI exhibit lower attitudes in all sub-dimensions and total score of the scale. Especially in behavioral and affective dimensions, significant score differences are noteworthy. However, since the sample size of the unfamiliar group was quite limited ($n=4$), these differences were not statistically tested, but only interpreted at a descriptive level.

Another variable that was explored in this study was previous exposure or usage of AI. The participants were asked whether they used the AI technologies before or not. The analysis of self-reported data was presented in Table 4.

Table 4
T-Test Results of SATAI Acale According to Previous Use of AI or Not

	Previously used or not	n	\bar{x}	SD	t	p
Behavioral	Not-used	23	14.00	4.101	-2.356	.019*
	used	170	15.86	3.473		
Affective	Not-used	23	31.87	9.678	-1.827	.069
	used	170	35.19	7.959		
Cognitive	Not-used	23	32.57	11.878	-2.826	.005*

	used	170	38.96	9.941		
ScaleSum	Not-used	23	78.43	23.033	-2.637	.009*
	used	170	90.01	19.286		

* $p < .05$

When Table 4 is examined, it is seen that there are statistically significant differences in behavioural ($t(191) = -2.36, p = .019$) and cognitive ($t(191) = -2.83, p = .005$) dimensions of the SATAI scale and the total score ($t(191) = -2.64, p = .009$) in favor of those who have used AI before. No significant difference was observed in the affective dimension ($t(191) = -1.83, p = .069$). These results reveal that the attitudes of individuals who use AI are higher in behavioural and cognitive dimensions compared to those who do not use AI, but do not show a similar trend in the affective dimension.

In addition to these variables, One-way ANOVA was applied to determine the differences across grades according to the dimensions of the scale. This analysis was conducted to examine whether the attitudes of pre-service EFL teachers at different grade levels towards AI exhibit a statistically significant difference in terms of dimensions.

Table 5
The Results of One-Way ANOVA Test

	Grade	N	Mean	Std. Deviation	F	df	Sig.	Post-hoc
Behavioral	1	67	14.64	3.311	3.225	3	0.024*	3 > 1
	2	57	15.81	3.276				
	3	35	16.74	4.046				
	4	34	16.18	3.802				
	Total	193	15.64	3.593				
Affective	1	67	32.94	7.618	3.118	3	0.027*	4 > 1
	2	57	34.42	7.971				
	3	35	35.91	8.59				
	4	34	37.91	8.67				
	Total	193	34.79	8.225				
Cognitive	1	67	35.75	9.704	3.962	3	0.009*	4 > 1
	2	57	37.53	9.612				
	3	35	39.46	10.637				
	4	34	42.85	11.25				
	Total	193	38.2	10.366				
ScaleSum	1	67	83.33	18.033	3.962	3	0.009*	4 > 1

2	57	87.75	18.83
3	35	92.11	21.733
4	34	96.94	21.436
Total	193	88.63	20.058

*, $p = 0.05$

As can be seen from Table 5, the One-way ANOVA results revealed statistically significant differences in the behavioral ($F(3, 193) = 3.23, p = .024$), affective ($F(3, 193) = 3.12, p = .027$), cognitive ($F(3, 193) = 3.96, p = .009$), and total scale scores ($F(3, 193) = 3.96, p = .009$) based on participants' grade levels. Results of post-hoc analyses revealed that the mean behavioral score of third-grade students was significantly higher ($3 > 1$) than the mean behavioral score of first-grade students.

Similarly, in the affective dimension, the mean score of fourth-grade students ($\bar{X} = 37.91$) was significantly higher than the mean score of first-grade students ($\bar{X} = 32.94$). In the cognitive dimension, the mean score of the fourth-grade group ($\bar{X} = 42.85$) was significantly higher than that of the first-grade group ($\bar{X} = 35.75$). When the total scale scores were analyzed, the mean overall score of the fourth-grade students ($\bar{X} = 96.94$) was also significantly higher than the mean of the first-grade group ($\bar{X} = 83.33$). These findings indicate that the affective and cognitive attitudes of the participants at higher grade levels are more positive and this development is also evident in the overall scale.

Qualitative Results about EFL Teachers' Attitudes towards AI

The results of the qualitative analysis can be categorized under five main themes: challenges of artificial intelligence in education (AIEd), pedagogical benefits of AI, preferences for AIEd, the future of AIEd, and differences between AI-integrated classrooms and traditional classrooms. Below, these main themes and their sub-themes are presented in detail.

Challenges of AIEd

While addressing the challenges related to the use of AIEd, pre-service teachers highlighted a number of issues. For example, one of the participants stressed the uncertainty and fear created by the lack of knowledge about artificial intelligence as follows:

Actually, I am confused because I do not know much about AI and it is actually scaring me. So, it is an unusual thing for my life, and our life, the human life. So, because it is new, a kind of a new technology. I am scared (P5).

Although she could not articulate the reason behind her fear, she repeatedly emphasized her anxiety about the potential impact of AI usage in education. It is also worth noting that this participant had a low total scale score (See Appendix B for the joint-display table). Some other participants were more informed about the potential negative impacts of AIEd. Of two noted their concerns regarding AI leading to laziness among the students by stating:

I do not prefer to use AI but unfortunately, today's conditions encourage you to use AI. On the one hand, I think it is beneficial, but on the other hand, I have a negative view of excessive use. It makes students lazier (P10).

Here, it is observed that the participant exhibits a negative attitude towards the use of artificial intelligence. However, like P5, P10 also lacks an adequate explanation of the reasons underlying this negative attitude. The participant states that it might lead students to be lazy, but does not provide concrete information about why or how this could happen. On the other hand, P9 is more specific on this issue, stating that:

But negatively, I think that we would become very dependent on Artificial Intelligence and I think it would lead people to be lazy... I think we could lose our research skills. Because, when I was studying we relied on the dictionaries we had and our teachers, but now they [this generation's students] can access everything by typing. Even now, they will do a lot of homework or prepare slides [by using AI]. Yes, they trust too much. Whereas I think it can kill some creativity... (P9)

It was interesting to see that while highlighting the challenges of AIEd, some participants addressed the contextual challenges. In this regard, infrastructural challenges were noted. For example, one of the participants stated that "AI depends on the internet. So, electricity-related shortages may occur (P8)." In a similar vein, another participant stressed that "I do not believe that we currently can use artificial intelligence in every classroom. While access to technology is easy in some metropolitan areas, this may be impossible in remote areas (P9)". Looking at the issue from a broader perspective, P6 drew attention to some underdeveloped regions and countries by stating "We are using technology here, but many countries cannot use technology".

Concerns regarding cheating and plagiarism were also repeatedly stressed (P1, P3, P4, P6, P7, and P9). Although the participants used different phrases, in summary, they agreed that cheating is an important problem in the use of artificial intelligence. This was expressed by P1 as "[M]aybe cheating is the most common problem that we should handle because students are really likely to cheat on exams and texts and quizzes (P1)." This was not a surprising finding as such issues are commonly associated with AI use in educational settings, where students may be tempted to rely on AI-generated content rather than their own work.

Classroom management issues and teachers' technological pedagogical content knowledge and skills were also highlighted. To exemplify, in terms of classroom management, P8 pointed out the difficulty of maintaining classroom management in teaching with AI, while P1 argued that teaching with AI would not necessarily ease the teacher's job, that "teaching with AI would not be equivalent to coming to class unprepared", and that "the teacher needs to be competent when teaching with AI". It was also interesting to find that P1 strongly believed that "...you cannot use AI so much with the younger students ...because students might see AI as a tool for learning and might not care about the teacher at all". This implies that for AI to be effective in teaching, the teacher must be competent in AI tools and have a support system that includes pedagogical content knowledge. This also brings into focus the necessity for teachers to undertake continued professional development and training to help them embrace AI use in their instructional activities.

Pedagogical benefits of AI usage

Learners' access to AI at home, independent from the teacher, to learn topics they do not understand or to continue their studies with reinforcing activities, and 24/7 accessibility of AI, providing an interactive and personalized experience, led to the

emergence of the sub-theme “AI as a supporting learning tool” in the study. For example, P1 expressed that

There are many positive impacts (of AI) because it really helps students understand. For example, some students may be too shy to ask questions to the teacher in the classroom. So, they might ask AI later on and they could get what they were expecting as an answer.

The possibility of providing instant and individualized feedback, increasing students' motivation, and learner autonomy were among the other sub-themes that emerged from data analysis. An interesting finding was the sub-theme of authentic materials (realia) in EFL classrooms. It is significant because pre-service teachers' awareness of this topic and their emphasis on the potential of AI to deliver authentic materials shows that they recognize the contextual learning opportunities that technology provides in language teaching. This awareness may indicate that future teachers will tend to use AI not only to improve language skills but also as a tool that enables students to connect with the real world.

Another valuable sub-theme was the potential of AI to streamline the teacher's work. In this context, P2 emphasized the time-saving aspect of AI by stating that "It allows me to have more time". P3, in turn, noted the ease of preparing lesson plans, and pointed out that "I think the process of planning will be easier while using AI... I will probably use some parts of planning in my lessons which could make my job easier." P6 emphasized its contributions to the material and content designing process. In addition, P7 and P9 stated that AI can render teaching-learning activities more interactive and enjoyable for students so that these activities can be performed more efficiently.

Preferences for AIEd

As per the preferences of AI usage in the classroom, the participants' views varied. P9 and P10 stated that they did not prefer the use of AI in their teaching-learning processes; however, they agreed that they would partially integrate it into their lessons considering the current necessities of today's conditions in terms of digitalization and the increasing importance of technological tools in education. On the other hand, one participant who stated that she was a tech-savvy person affirmed that she would definitely use AI in her classes. This indicates that some pre-service teachers are more open-minded and willing to incorporate AI into the educational process. yet, some other participants (P1, P3, P5, and P6) emphasized that only traditional methods are not enough and that they believe that the combination of these two approaches will create an effective education process. This indicates that the place of AI in education is still controversial and although some pre-service teachers may have some reservations about adopting this technology, some others are convinced that it is a beneficial tool. Indeed, it can be concluded that striking a balance between AI and traditional teaching methods will enrich the learning experiences of both teachers and students. This has the potential to create a more effective and interactive environment in teaching processes.

Future of AIEd

Another theme that emerged from the data analysis was the future of AIEd. In this regard, the way that the pre-service teachers envisioned the AIEd also varied. In this context, most of the pre-service teachers expressed their thoughts about the role of the

teacher. For example, P4 argued that the need for teachers will decrease for students using AI, while P6 stated that the authority of the teacher will weaken, but AI cannot replace the teacher by stating:

With the use of AI, the active role of the teacher is diminishing and this pushes the teacher into a more passive position ... This passivity leads to a decrease in the students' need for the teacher. However, this is not only about the learning process; teachers do not just impart knowledge in the classroom. They emotionally guide and mentor students. At this point, it is not possible for AI to replace the teacher. For example, while a teacher observes and analyzes students throughout a semester, AI cannot do this kind of continuous assessment; it can only offer temporary solutions.

This view is supported by P1, as well. She stated that:

I do not think it can ever replace a teacher because a teacher's role is not just simply giving information and teaching students. There are some classroom management roles, there are some monitoring roles. So, only AI cannot solely perform these roles by itself. So, a teacher is an essential part of the classroom, but it can help teachers in a way to improve the overall learning outcomes.

Although the participants' views differed, they generally believed that AI would change the role of the teacher in the future. This indicates that the role of AI in education will be shaped in a way that supports the functions of teachers, but the teacher will continue to be an indispensable part of the educational process.

Differences between AI-Integrated Classrooms and Traditional Classrooms

Another theme that emerged from the data is the comparison of teaching with AI and traditional methods. In this context, it can be inferred that in general, participants regard AI as a transformative tool in education. They emphasise that AI brings authentic materials into the classroom and provides a more interactive learning experience. P4 expressed this by stating:

I think AI is more beneficial. For many years, we were learning with traditional methods. I think they are not beneficial. They are not [a] good way for teaching English. We need some natural things like native speakers. We need video records, voice recordings from native speakers.

It was interesting to see that participants associated AI with authenticity. Although they did not articulate in detail why and how “with AI the teacher uses more authentic materials” (P1), they believed that AI “is one of the most important tools for teaching English because we can reach lots of real products. We can reach lots of native speakers with AI” (P4). In language learning particularly, they stated that AI provides access to resources similar to native speakers and offers engaging materials such as visuals and multimedia. Traditional methods, on the other hand, were perceived as more rigid and rote-based, lacking the interactive possibilities offered by AI.

Another difference noted in the comparison of AI-based and traditional teaching was that while traditional teaching requires physical resources such as books and infrastructure, AI-based learning is more flexible as it can be accessed with a device and an internet connection (P4). However, concerns regarding access to devices and the internet were also raised by P6 and P9 as noted under the challenges of AIED theme.

Another aspect that arose was the lack of emotion in AI. For example, P9 articulated this difference between the AI-based and traditional teaching by stating:

The language taught will be the same. So, the language already has certain rules and meanings, and we teach it in the same way both through AI and the traditional way, but the way we teach and communicate with the student will be different. And, I think that the teacher is in the

foreground and will exhibit a better way than AI. Because, AI cannot understand the capacity of the student. It only answers the questions that are asked of it. However, a teacher understands the level of competence of the student.

Confusing AI-based teaching with AI taking the teacher's role, P9 believes that AI can provide support to students in the cognitive domain, but it may be insufficient in the affective dimension. According to this view, although AI is effective in transferring knowledge and providing conceptual skills to students, it lacks in understanding students' emotional needs and responding to them appropriately. Teachers, on the other hand, understand students' needs better, contribute more effectively to the learning process, and students communicate more easily with their teachers. This shows that the teacher is in a superior position in the teaching process in this regard compared to artificial intelligence.

Discussion

Examining the attitudes of pre-service EFL teachers, who are the teachers of the future, towards AI is important as it is an indicator that can directly affect the role and use of AI in education. In this regard, the current study's findings reveal that pre-service EFL teachers' attitudes towards AI differ according to demographic and experience variables. First, it was observed that male participants' cognitive attitudes and general attitudes towards AI were more positive than female participants. The higher scores of males on the cognitive dimension indicate that they have a more positive or strong disposition in their knowledge, beliefs, and thoughts about AI. Similarly, higher scores of males in total scale scores indicate that they have a more positive attitude towards AI in general. This finding is mostly in line with the existing literature (Fietta et al., 2022; Schepman & Rodway, 2023; Yetişensoy, 2024; Zhang & Defoe, 2019) with some exceptions (Katsantonis & Katsantonis, 2024). To exemplify, Fietta et al. (2022) also conducted a study with 829 participants (377 females and 452 males) and found that women had a more negative attitude than men. This may indicate that female participants exhibit a more cautious or hesitant approach to their perceptions of AI. Considering that Katsantonis and Katsantonis (2024) conducted their study in Greece with 190 students, inconsistencies or exceptions might occur due to contextual differences or the uneven distribution of gender groups in their sample (82.45 % female).

Descriptive results suggest that participants who reported being familiar with AI technologies exhibited more positive attitudes in the affective and behavioral dimensions compared to those unfamiliar with AI. However, this difference was not observed in the cognitive dimension. Given the very small number of participants in the not familiar group, these findings should be interpreted with caution and considered indicative rather than conclusive. As previous research suggests, familiarity is generally associated with positive perceptions (Garcia-Marques et al., 2016); however, the lack of a significant difference in the cognitive dimension suggests that mere knowledge is not sufficient to develop positive attitudes in this dimension. This can be associated with the concepts of perceived usefulness and perceived convenience in the context of the technology acceptance model. This, further, implies that cognitive attitudes may be shaped by additional factors beyond familiarity, such as individuals' critical thinking

abilities (Simonovic et al., 2022), richness of experience (Katsantonis & Katsantonis, 2024), or level of education.

In addition, the participants who actively use AI exhibit higher attitudes towards it in the behavioral and cognitive dimensions, but do not show a similar trend in the affective dimension, suggesting that usage experiences play an important role in shaping individuals' attitudes towards AI. The behavioral scores of third-grade students, which is another finding of this study, are significantly higher than those of first-grade students, which supports the above finding. This difference may be explained by senior students having integrated AI more into their educational processes or having gained more knowledge about the technology. However, previous studies yielded mixed findings. In Cho and Seo's study (2024) with nursing students, it was found that second-year students had significantly higher acceptance attitudes towards AI than third-year students. Yet, in Kostantionso and Kostantinos' study (2024), no significant relationship was found between students' grade level and their affective and behavioral attitudes. This diversity in students' attitudes towards AI in different contexts and across different disciplines suggests that a combination of individual, educational, and contextual factors may be influential in shaping attitudes.

One of the qualitative findings of the study is the challenges of AI concerning such as lack of knowledge, lack of understanding of AI or vulnerability to misguidance, anxiety, and ethical violations such as cheating and plagiarism. In addition, inadequate infrastructure and classroom management problems were also frequently raised. These findings were in line with the existing literature. For example, studies addressing the impacts of AI in education often point to a lack of technological infrastructure, which points to socioeconomic disparities resulting from unequal access to technology (Salas-Pilco et al., 2022). Teachers' inadequate technological pedagogical content knowledge (Adipat et al., 2023; So & Kim, 2009), along with ethical concerns and misuse of AI, such as cheating and plagiarism (Cotton et al., 2023) are also significant challenges to the effective integration of these technologies, as extensively highlighted in the literature. However, while the existing literature emphasizes how AI can support teachers in classroom management (Wang, 2021; Younas et al., 2023), it was interesting to see that the participants of this study perceived that the integration of AI into the classroom environment could cause classroom management issues. This difference may stem from participants' limited knowledge and experience about the potential benefits of AI in education and its supportive role in classroom management, or factors such as lack of pedagogical preparation and infrastructure. Although the participants seemed to be aware of the pedagogical advantages of AI, such as accessibility and time-saving, they may have been unable to apply this theoretical knowledge in practice. This indicates that pre-service teachers need more comprehensive training on the integration of AI in the classroom.

Implications, Limitations, and Future Directions

This study has revealed that attitudes towards AI are manifested differently in the cognitive, affective, and behavioral dimensions of EFL preservice teachers. The findings suggest that familiarity with AI positively affects especially affective and behavioral attitudes, but it is not sufficient alone in the cognitive dimension. Therefore, it is important to systematically include AI literacy in teacher education programs.

Adding modules on the pedagogical use, ethical dimensions, and practical applications of AI technologies in the programs will be effective in developing candidates' critical thinking skills. In addition, opportunities need to be provided for the use of AI-supported tools in internship and practicum processes. For policy makers it is imperative to update national teacher education programs to include AI skills and to develop standards on the ethical use of AI in education and data security.

The study has some limitations. First of all, the data was collected from a single state university in south-eastern Turkey, which limits the generalizability of the findings. In addition, due to the homogeneous nature of the sample, the views of pre-service teachers from different geographical regions and different university types could not be reflected. There are also limitations related to the data collection method; there may be a social desirability effect on the participants' responses. Moreover, due to the rapid change of AI technologies, the attitudes obtained represent only a specific time period.

This study reveals the diversity of pre-service EFL teachers' attitudes towards AI. While some pre-service EFL teachers were hesitant to adopt this technology, others were convinced of its potential benefits. This finding suggests that the place of AI in language education is not yet fully clarified. Since teachers' mindset towards innovative approaches in education influence the adoption and effective integration of new technologies (Lopes et al., 2023; Sarhan, 2023), the relationship between pre-service EFL teachers' attitudes towards AI and teachers' mindset could also be an important research topic.

In future research, it is also recommended to conduct similar studies with pre-service teachers from different regions and different educational institutions. Comparative research with in-service teachers and teacher trainers can reveal the effects of AI in education more comprehensively. It is also important to conduct experimental research measuring the effectiveness of educational interventions to increase AI literacy and qualitative studies examining the integration of AI into classroom practices. Finally, in-depth studies on the perception of ethical and pedagogical responsibilities related to AI would enrich the body of knowledge in this field.

Conclusion

This study examined the attitudes of pre-service EFL teachers in Türkiye towards AI and how these attitudes are shaped by various factors. The findings of the study revealed that males had higher attitudes towards AI than females, and participants who were familiar with AI and had used AI before had more positive attitudes than those who were not familiar. In addition, third-year students were found to have higher behavior scores than first-year students. However, the participants had limited knowledge about the potential benefits of AI in education and some of them were still hesitant to integrate AI into their teaching-learning processes. The results of the study suggest that not only technological but also pedagogical and ethical dimensions of AI integration should be considered. In order to effectively integrate AI into education, teachers need to be both knowledgeable about how to use this technology and able to evaluate the possible consequences of these technologies in the classroom and in the general educational environment. The study reveals that the relationship between pre-service EFL teachers' attitudes towards AI and teacher mindset needs to be examined in

more depth and that this relationship may be a critical factor for the effective integration of AI into education.

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Statement of Responsibility

Pelin Derinalp: Conceptualization, methodology, software, validation, formal analysis, investigation, resources, data curation, writing-original draft, writing-review & editing, visualization, supervision, and project administration. Melek Halife: Data collection, transcription, and funding acquisition. The first draft of the manuscript was written by Pelin Derinalp and both authors commented on previous versions of the manuscript. Both authors read and approved the final manuscript.

Conflicts of Interest

No conflict is disclosed.

Data Availability Statements

Data is available based on request.

Author Bios:

Pelin Derinalp is a researcher and academician in the field of education. She obtained her MA in ELT from the University of Southampton, UK, and her PhD in TESOL from the University of York, UK. Her research interests include English language teaching (ELT), reflective practice, and emerging educational technologies.

Melek Halife is an educator and researcher in the field of English language teaching (ELT). While studying in the ELT department at Gaziantep University, she was awarded a TÜBİTAK scholarship to conduct this research. She is now a certified teacher, and her research interests focus on educational technologies and their applications in language teaching.

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