Special education teacher candidates' experiences and views regarding artificial intelligence use

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ABSTRACT

The growing integration of AI in educational environments underscores the need to equip future educators to use AI ethically and pedagogically. This necessity is particularly evident in special education, where personalized instruction, professional expertise, and ethical awareness are essential. This qualitative study utilized a phenomenological research approach to document participants' lived experiences. Data were gathered through semi-structured interviews with eight pre-service special education teachers who were actively engaged in school-based experiences throughout the inquiry. All interviews were transcribed verbatim and subjected to content analysis, facilitating the systematic identification of themes and subthemes. The study produced ten primary themes and twenty-five secondary themes. Results suggest that participants predominantly viewed AI as a pragmatic and beneficial resource, especially for time efficiency, the creation of instructional materials, and the accommodation of diverse learner needs. Artificial intelligence was perceived as possessing significant potential to enhance personalized learning and instructional planning within special education settings. Participants reported a lack of formal instruction in AI within their teacher education programs, stating that their understanding was largely derived from self-directed inquiry. Ethical concerns, particularly regarding data privacy, the accuracy of AI-generated information, and professional accountability, emerged as a significant subject. Participants underscored that AI should be viewed as a supplementary tool rather than a replacement for educators' professional competence and interpersonal engagement. The findings underscore the imperative of integrating structured AI literacy, ethical awareness, and practical applications into special education teacher training programs to facilitate responsible and effective AI use.

KEYWORDS: Special education teacher candidates; Artificial intelligence in education; Educational content development; Pre-service teacher education

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1. Introduction

Artificial intelligence (AI) has emerged as a transformative force in global education, offering new possibilities for personalized learning, administrative efficiency, and data-driven pedagogy. As nations embrace AI to enhance educational systems, questions surrounding access, equity, and ethics have also intensified (UNESCO, 2025a). International frameworks such as UNESCO's 2021 Recommendation on the Ethics of Artificial Intelligence and the AI and Education policy agenda call for human-centered, rights-based approaches to AI adoption in education, especially in support of

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inclusive and equitable learning environments (UNESCO, 2025b, 2025a). Yet, as AI reshapes the roles of both teachers and learners, many countries lack a comprehensive strategy to meaningfully integrate AI into teacher preparation programs (UNESCO, 2025b).

The recent proliferation of AI tools has created unprecedented challenges for teacher education worldwide, underscoring the imperative to train future instructors to successfully integrate AI-driven technologies in the classroom (Kuzu, 2025). In Türkiye, the Ministry of National Education (MoNE) has aligned with global initiatives by launching the Artificial Intelligence in Education Strategy and Action Plan (2025–2029) (MoNE, 2025). This policy outlines a comprehensive roadmap for digital transformation, including measures such as launching in-service AI training programs for teachers and implementing AI-powered accessibility solutions for students with special needs (MoNE, 2025). This policy-driven approach reflects a clear recognition of both the opportunities and responsibilities that AI brings to education, emphasizing ethical considerations and teacher capacity-building as foundations for sustainable, inclusive innovation in schools.

Within the field of special education, AI introduces unique opportunities and challenges that underscore the need for informed teacher readiness. On one hand, AI-based tools (e.g., intelligent tutoring systems and assistive technologies) have demonstrated potential to enhance learning for students with special needs by personalizing instruction and removing traditional barriers to participation (OECD, 2025). Recent developments in adaptive technologies, speech recognition systems, and intelligent tutoring software have improved opportunities for students with diverse needs (Kooli & Chakraoui, 2025). UNESCO also highlights that, when designed inclusively, AI systems can play a crucial role in enabling equitable learning opportunities for learners with disabilities by supporting accessibility and personalization (UNESCO, 2025a). On the other hand, the integration of AI in special education raises important ethical, legal, and practical concerns. Educators caution that if AI tools are used in sensitive processes without proper oversight, they may fail to meet required personalized standards or even risk student privacy violations (Arundel, 2025). Students with disabilities may be disproportionately affected by systems not attuned to their unique contexts, thereby exacerbating existing educational inequities. Addressing these challenges demands that special education teachers be adequately prepared not only to use AI tools but also to critically assess their appropriateness, accessibility, and ethical implications.

The integration of AI into special education holds substantial promise due to its capacity to individualize learning materials and support diverse learner needs (Almarzouq et al., 2025; Yaşar & Vuran, 2025). Despite this perceived potential, both pre-service and in-service special education teachers demonstrate low levels of actual AI use, largely due to limited knowledge of specific applications and uncertainty about how to integrate them effectively into instruction (Almarzouq et al., 2025; Yaşar & Vuran, 2025). In addition, the limited AI adoption is associated with systemic barriers, including inadequate technological infrastructure—such as insufficient access to smart boards, computers, and reliable internet—and insufficient training that remains largely theoretical and quickly forgotten when not applied in practice (Almarzouq et al., 2025; Çay et al., 2020; Yaşar & Vuran, 2025).

The widespread emergence of digital and AI-based technologies in educational contexts has foregrounded the question of how future teachers are prepared to adopt these tools in pedagogically grounded and ethically responsible ways. Recent research indicates that although pre-service special education teachers recognize the value of digital tools for supporting diverse learner needs, many feel inadequately prepared and lack sufficient hands-on training opportunities (Vellonen et al., 2025). Evidence further shows that their level of digital literacy strongly shapes how useful and easy

to use they perceive AI applications to be, which in turn directly influences their intention to adopt such tools in educational contexts (Yao & Wang, 2024). A recent study by Ozturk et al. (2025) reported that pre-service special education teachers perceive AI as a promising tool for assessment, diagnosis, instruction, and material development for learners with special needs, while simultaneously expressing concerns regarding ethical use, data security, and potential risks. Psychological factors also shape how pre-service special education teachers perceive and approach AI integration. For instance, Sümer-Dodur (2025) found that pre-service special education teachers' conscientiousness is closely linked to their attitudes toward AI, with AI literacy enhancing attitudes and AI anxiety reducing them. Despite growing awareness and generally positive perceptions, a pronounced gap persists between special education teachers' belief in AI's importance and their limited actual use in classroom practice (Almarzouq et al., 2025).

Artificial intelligence (AI) has rapidly become a central focus in educational research due to its potential to enhance personalized learning, adaptive instruction, and data-informed decision-making. Recent systematic reviews document the expanding range of AI applications in education, including intelligent tutoring systems, learning analytics, and associated ethical considerations (Wang et al., 2024). However, much of the existing literature concentrates on general teacher education and technological readiness, frequently emphasizing attitudes or competency measures rather than pedagogically grounded integration (Meylani, 2024). Research in special education remains comparatively limited. Studies have examined AI awareness among in-service special education teachers (Hocaoğlu, 2025) and digital competency and AI literacy levels among special education students (Vosoughmatin, 2025), yet these investigations are predominantly quantitative and do not explore how pre-service special education teacher candidates interpret and contextualize AI use within inclusive and individualized instructional settings. Similarly, research on pre-service teachers' AI use more broadly highlights efficiency gains and content generation (Çelik, 2025), but rarely addresses the distinctive pedagogical and ethical demands inherent in special education. Moreover, scholarship on AI integration in special education teacher preparation tends to foreground faculty or institutional perspectives rather than candidates' lived experiences (Kaczorowski et al., 2024). Addressing this gap, the present qualitative study examines special education teacher candidates' experiences and views on the use of AI. To guide this inquiry, the following research questions are investigated:

- What are special education teacher candidates' perceptions of artificial intelligence in educational contexts?
- How do special education teacher candidates describe their educational exposure and experiences with artificial intelligence?
- How do special education teacher candidates describe the perceived pedagogical value of artificial intelligence in special education?
- What are the challenges special education teacher candidates experience in using artificial intelligence tools?
- What are the ethical concerns perceived by special education teacher candidates in relation to artificial intelligence?
- How do special education teacher candidates envision the future role of artificial intelligence in special education practice?

2. Method

This study was designed using phenomenology, a qualitative research design. Phenomenology is a research design that aims to examine, in depth and detail, individuals' experiences related to a phenomenon, their perceptions, and the meanings they attribute to these experiences (Yıldırım & Şimşek, 2013). In this context, the study aimed to reveal participants' experiences regarding the phenomenon under investigation. Data for the study were collected using a semi-structured interview technique.

2.1. Participants and Procedure

The participants in the study were selected from undergraduate students enrolled in the Department of Special Education at XXX University. The study sample consisted of eight participants. Participants were identified using a simple random sampling technique. In simple random sampling, each individual has an equal and independent probability of being included in the study (Büyüköztürk et al., 2018). Therefore, the study employed a robust sampling method with high representativeness, in which all individuals in the population had equal and independent probabilities of selection. Table 1 shows the demographic information of the participants.

Table 1 ***Demographic Characteristics of the Participants***

Variable	Category	f	%
Gender	Female	5	62.5
	Male	3	37.5
Age	21–25 years	8	100
Educational level	Third year	1	12.5
	Fourth year	7	87.5
Level of interest in technology	High	8	62.5
	Moderate	1	12.5
	Low	2	25

In this study, a semi-structured interview form developed by the researchers was used as the primary data-collection instrument. The interview questions were designed to explore participants' attitudes toward artificial intelligence (AI), their experiences with AI technologies, the challenges they encountered, and their perspectives on integrating AI into educational content.

The development process began with a comprehensive review of the relevant literature to generate an initial item pool. Subsequently, the draft interview form was evaluated by two experts in special education and one expert in educational technology for clarity, content coverage, alignment with the research questions, and linguistic appropriateness. Based on expert feedback, three items were reworded to reduce ambiguity, two conceptually overlapping items were merged, and minor terminological refinements were made to ensure conceptual consistency in the use of AI-related constructs. These revisions enhanced the content validity and internal coherence of the instrument in accordance with established qualitative research standards (Kallio et al., 2016).

2.2. Measures

For the study, ethical approval was first obtained from the Social and Human Sciences Research Ethics Committee of XXX University (Decision No. 367768, dated 18 August 2025). Prior to the interviews, participants were informed in detail about the purpose of the research, the voluntary nature of their participation, their right to withdraw at any stage without penalty, and the procedures related to audio recording and data use. Written informed consent was obtained from all participants before the commencement of the interviews, and explicit permission for audio recording was secured in advance.

Subsequently, semi-structured interviews were conducted with teacher candidates who agreed to participate in the study, using the "Semi-Structured Interview Form." Each interview lasted approximately 30 minutes. In line with the prior consent obtained, the interviews were audio-recorded to ensure data accuracy and completeness. After all interviews were completed, the researchers initiated the transcription process. For this purpose, an artificial intelligence-assisted audio and video transcription tool (Turboscribe.ai) was used to enable efficient, accurate transcription. To enhance methodological rigor, the researchers carefully reviewed and cross-checked all AI-generated transcripts against the original audio recordings. Through this procedure, the full content of each interview was transcribed accurately while minimizing potential information loss.

2.3. Data Analysis

The research data were analyzed using content analysis. Content analysis is a systematic technique that organizes textual data into meaningful categories through coding procedures conducted within predefined analytical frameworks (Büyüköztürk et al., 2018). In the present study, all participant responses were first transcribed and examined in detail. Subsequently, two researchers independently coded the data and generated preliminary categories and themes through iterative comparison. To ensure the reliability of the coding process, inter-coder reliability was calculated using the formula proposed by Miles and Huberman (1994). The calculated reliability coefficient was 86%, indicating a substantial level of agreement between the coders. Following this calculation, discrepancies were reviewed and resolved through discussion, and the final thematic framework was established based on consensus.

3. Findings

In this section, the findings and interpretations obtained from the analysis of the data collected through semi-structured interviews with special education teacher candidates are presented. The findings are organized into 10 main themes and 25 subthemes associated with them.

3.1. General Perceptions of AI

The majority of participants consider AI technologies functional and practical. P1 evaluated AI as an educationally efficient tool by stating, "It makes our lives easier and enables us to access information quickly and accurately." However, P3 described the rapid development of AI as "frightening," and was among the participants who adopted a cautious approach toward technology. This finding suggests that, although participants' perceptions of technology are generally positive, they harbor concerns about its uncontrolled use. Table 2 presents the categories related to participants' general perceptions of AI.

Table 2 *General Perceptions of AI*

Theme	Subtheme	f	Participants
General perceptions of artificial intelligence	Functionality and practicality	5	P1, P2, P4, P5, P6
	Concern and fear	2	P3, P7
	Overall positive evaluation	1	P8

3.2. Experiences with AI Education

The majority of the participants stated that they had not taken a course specifically focused on AI during their university education. However, P2 reported experiencing individual development through technology-integrated activities embedded in the courses. P6, on the other hand, emphasized that AI was addressed only indirectly in the curriculum. This finding indicates that AI education has not yet been systematically incorporated into teacher education programs. Table 3 presents the categories related to participants' perceptions of their AI education experiences.

Table 3 *Perceptions Regarding AI Education Experiences*

Theme	Subtheme	f	Participants
AI education experience	Lack of formal training	6	P1, P2, P3, P4, P5, P8
	Limited or indirect exposure to training	2	P6, P7

3.3. Benefits of AI in Special Education

Participants placed particular emphasis on AI's capacity to provide individualized instruction in special education. P2 highlighted the transformative role of AI in special education by stating, "Preparing plans tailored to each student can be accomplished in a shorter time and in a more effective manner." In addition, P4 stated that AI could support students with speech and language difficulties by providing feedback aimed specifically at improving their speech and language skills. Table 4 presents the categories related to participants' perceptions of AI's benefits in special education.

Table 4 *Benefits of AI in Special Education*

Theme	Subtheme	f	Participants
Benefits of AI in special education	Individualized educational support	6	P2, P3, P5, P6, P7, P8
	Support in language and communication	2	P4, P6

3.4. Impact of AI Applications

The majority of participants stated that the most prominent impact of AI in education emerges in the areas of material and content development. Participants reported that AI diversifies instructional materials, saves teachers time during adaptation processes, and enables content to be tailored to students' individual characteristics. For example, P4 indicated that AI could help set more accurate

goals in individualized education plans by identifying details that teachers might otherwise overlook. In addition, two participants noted that AI could play important roles in promoting educational equity and supporting individual adaptation. Participants emphasized that AI could equalize learning opportunities by facilitating access to the same materials for students with differing resources. However, some participants viewed AI's contribution to classroom instruction as limited. According to these participants, AI does not play a directly transformative role in current special education practices but instead functions as a supportive tool for teachers. Table 5 presents the categories related to participants' perceptions of the impact of AI applications.

Table 5 ***Impact of AI Applications***

Theme	Subtheme	f	Participants
Impact of AI applications	Material and content development	4	P1, P4, P5, P6
	Equity of opportunity and individual adaptation	2	P3, P8
	Skepticism or limited perspectives	2	P2, P7

3.5. Experience with AI-Supported Content Development

Most participants reported making limited use of AI tools during the content development process. Participant P3 stated, "I prepared presentations using the Gamma website," emphasizing AI's time-saving role in material development. Similarly, P2 reported actively using AI when preparing instructional materials. However, some participants, such as P7, reported that they lacked direct experience with AI tools but had observed their peers' projects. Table 6 presents the categories related to participants' experiences with AI-supported content development.

Table 6 ***AI-Supported Content Development Experience***

Theme	Subtheme	f	Participants
AI-supported content development experience	Personal development and experience	6	P2, P3, P4, P5, P6, P8
	Participants lacking direct experience	2	P1, P7

3.6. Difficulties in the Use of AI

Participants reported various difficulties with the accuracy of information obtained through AI tools, access issues, the need for training, and a lack of technical knowledge. Participant P2 expressed concerns about content reliability, noting that "The possibility that AI may provide incorrect information is the biggest problem." Participant P6 noted that the Turkish equivalents of special education terminology were neither adequately recognized nor used accurately by the system. Table 7 presents the difficulties participants experienced when using AI.

Table 7 *Difficulties in the Use of AI*

Theme	Subtheme	f	Participants
Difficulties in the use of AI	Issues of trust and information accuracy	4	P2, P6, P7, P8
	Access and economic constraints	3	P1, P4, P8
	Need for training and lack of technical knowledge	3	P3, P5, P6

3.7. Ethical Concerns

Most participants reported ethical concerns related to data privacy and shared responsibility. Participant P1 emphasized the risks related to data security, noting that "AI's easy access to photographs and information may lead to ethical issues." Participant P2 pointed out that they had not received AI-related coursework and therefore emphasized the need for teachers to receive training in this area. Participant P8 raised the possibility that some teachers might use AI to avoid professional responsibility. These findings indicate that pre-service teachers need support not only in technical competencies but also in ethical awareness. Table 8 outlines participants' ethical concerns regarding AI.

Table 8 *Ethical Concerns Regarding AI*

Theme	Subtheme	f	Participants
Ethical concerns regarding AI	Data privacy and boundary issues	6	P1, P2, P5, P6, P7
	Insufficient training and avoidance of responsibility	2	P2, P8
	No ethical concerns	1	P4

3.8. The Impact of AI on Learning Processes

The majority of participants reported that AI plays a supportive role in learning processes, particularly by enhancing personalization and motivation. Participants indicated that AI facilitates learning and enhances retention by generating content tailored to students' different learning paces, attention spans, and individual characteristics. For example, Participant P6 noted that AI-based systems provide content adaptable to students' individual needs, which in turn increases students' classroom engagement. Similarly, Participant P5 emphasized that AI offers multidimensional learning opportunities and makes learning more enduring through audiovisual supports. In contrast, two participants perceived the impact of AI on learning processes as limited. Participant P2 stated that behavior management is a fundamental goal in special education and indicated that AI remains insufficient in this regard. This indicates an overall positive perception of AI in learning processes; however, different expectations and limitations may emerge depending on the application area. Table 9 summarizes information regarding the impact of AI on learning processes.

Table 9 *The Impact of AI on Learning Processes*

Theme	Subtheme	f	Participants
The impact of AI on learning processes	Personalization and motivation	6	P1, P3, P4, P5, P6, P8
	Perceived limited benefit	2	P2, P7

3.9. Predictions Regarding AI

Participants believe that AI will assume an increasingly central role in education. Participant P1 supported this view by stating, "The new generation of teachers is closely integrated with AI; therefore, AI will play a key role in shaping future educational practices." However, participants such as P6 emphasized that AI cannot replace teachers and that human interaction is indispensable, particularly in special education. In this context, participants expressed optimism about AI while also underscoring the importance of teacher guidance. Table 10 presents the participants' predictions regarding AI.

Table 10 *Predictions Regarding AI*

Theme	Subtheme	f	Participants
Predictions	A positive and supportive role	5	P1, P4, P5, P6, P8
	The necessity of preserving human interaction	2	P3, P6
	The need for system improvement	1	P2

3.10. Initial Encounter with AI

Most participants reported first encountering AI through social media, peer networks, and mobile applications. Participant P6 stated, "I first learned about AI through social media posts and my friends." This indicates that the process was developed informally. Participant P2 emphasized that AI should not be limited to contemporary tools such as ChatGPT and noted that earlier applications, such as Siri, should also be considered within this scope. Table 11 presents information regarding the participants' initial encounters with AI.

Table 11 *Initial Encounter with AI*

Theme	Subtheme	f	Participants
Initial encounter with AI	Social media and friends	6	P3, P4, P5, P6, P7, P8
	Everyday technological tools	2	P1, P2

4. Discussion and Conclusion

The findings of this qualitative study reveal a critical tension in the current landscape of special education teacher preparation: pre-service teachers possess a high level of awareness regarding the functional potential of AI, yet they operate within a vacuum of formal pedagogical training and ethical

guidance. These results align with and significantly extend the recent body of literature concerning AI in inclusive education settings.

A primary finding of this study is that while participants view AI as a practical, time-saving tool, they lack the technical skills to integrate it effectively. This corroborates the findings of Azizoglu and Çakir (2025), who identified a discrepancy where special education teachers exhibited high attitudes toward ICT but moderate-to-low competency in generative AI due to insufficient training. Similarly, Hocaoğlu (2025) found that while teachers had high theoretical awareness, their ability to integrate AI into educational processes was significantly lower. The current study extends this by illustrating that pre-service teachers are attempting to bridge this gap through informal channels like social media, a strategy that carries risks of misinformation. This finding supports Goldman et al.'s (2025) argument that without standalone, explicit technology coursework, teachers are left to a "do-it-yourself" approach that fails to leverage the full potential of evidence-based writing and instruction practices. Beyond "lack of training," the present study extends the debate by showing that first encounters with AI occur primarily through social media, peers, and everyday tools, implying that competence development is shaped by informal networks rather than the curriculum—an equity concern in teacher preparation.

Participants identified the creation of Individualized Education Programs (IEPs) and the diversification of materials as the most significant affordance of AI. This finding strongly validates the work of Rakap (2024), who demonstrated that AI tools can assist novice teachers in developing high-quality IEP goals and identifying tailored interventions. It also confirms the broader proposition that AI can contribute to inclusive learning through personalization and adaptive supports, but that real-world uptake remains constrained by training and readiness conditions (Almarzouq et al., 2025). The findings are also theoretically consistent with technology acceptance perspectives: in contexts where AI is perceived as useful and manageable, intentions to use strengthen; conversely, when competence and confidence are limited, adoption is inhibited (Yao & Wang, 2024). Notably, participants' emphasis on personalization suggests that "AI literacy" in special education should not be reduced to tool operation; it must include the capacity to align AI outputs with individualized education planning, accommodations, and evidence-based instructional decision-making.

Furthermore, the participants' view of AI as a mechanism for "opportunity equality" aligns with Hopcan et al.'s (2023) systematic review, which highlighted AI's role in personalizing learning environments to meet unique needs. However, the current study adds a nuance regarding the "human element"; participants emphasized that while AI can generate content, it lacks the pedagogical nuance to replace the teacher. This mirrors the metaphorical analysis by Eriçok et al. (2024), where teacher candidates described AI as a "helper" or "assistant" rather than a replacement, emphasizing its role in reducing workload rather than usurping professional judgment. Similarly, this finding aligns with prior conclusions that technology is perceived as support for face-to-face interactions rather than a substitute for authentic encounters (Vellonen et al., 2025). Taken together, these findings position teacher education reform within a broader, human-centred framing: effective AI integration requires safeguarding relational pedagogy and ensuring that assistive and adaptive benefits do not erode professional judgment or care.

Despite the perceived utility, participants expressed profound anxiety regarding data privacy, "hallucinations," and the ethical implications of AI use. These concerns are consistent with Almarzouq et al. (2025), who identified lack of data privacy regulations and clear ethical guidelines as major obstacles to AI adoption in Kuwaiti special education contexts. The participants' specific fear of "responsibility escape"—where teachers might over-rely on AI—resonates with the findings of

Agmaz and Erguleç (2024), whose participants used metaphors like "a huge void" to describe the ethical uncertainty surrounding AI. This suggests that the "digital literacy" defined by Yao and Wang (2024) must be expanded in teacher education to include "AI ethical literacy" to ensure that teachers can navigate the moral complexities of automated decision-making affecting vulnerable populations. The present study extends the debate by explicitly linking ethics to teacher agency and professional accountability—an especially high-stakes dimension in special education, where student data are sensitive and instructional decisions carry significant implications for learners' rights and participation.

While the current study focused on pre-service teachers' opinions, the barriers they anticipated regarding access align with findings from practicing teachers. Çay et al. (2020) noted that even when teachers are willing, infrastructure deficiencies (e.g., lack of internet access and hardware) prevent integration. Similarly, Yaşar and Vuran (2025) found that special education teachers struggle to access paid versions of AI tools (such as Canva Pro or advanced ChatGPT), which limits the practical application of these technologies in under-resourced schools.

This study contributes qualitative evidence that pre-service special education teachers' AI orientations are characterized by pragmatic optimism (particularly regarding personalization and material adaptation) alongside substantive concerns about training deficits, reliability, access inequities, and ethics. The findings underscore that AI integration in special education teacher education is currently shaped more by informal exposure than by systematic curricular design, leaving preparedness uneven and potentially reproducing a new layer of digital inequity within the profession.

4.1. Limitations and Recommendations for Future Research

Several limitations should be considered when interpreting the findings of this study. First, the study relied on a small sample size of eight pre-service special education teachers selected via convenience sampling. While this number is consistent with the phenomenological design aimed at gathering deep, qualitative insights, it restricts the generalizability of the findings to the broader population of special education teachers. Unlike quantitative studies that utilize larger samples to establish broad trends, this study reflects the experiences of a particular cohort within a single institutional context; thus, the results may not be representative of pre-service teachers in different geographical regions or educational programs. Second, the data collected relied exclusively on self-reported perceptions and opinions regarding AI. Self-reported data can be subject to social desirability bias, where participants may overstate their competencies or align their responses with perceived positive expectations of AI integration. Third, the study focused on pre-service teachers who are not yet fully immersed in the professional teaching environment. Their views on the utility of AI for tasks such as Individualized Education Program (IEP) development are based on theoretical knowledge or limited internship experiences rather than long-term professional practice. Finally, this study represents a cross-sectional snapshot of opinions at a time when generative AI technologies are evolving rapidly. The perceptions of technology in education can shift significantly over relatively short periods due to external factors (e.g., the COVID-19 pandemic) or technological advancements. The specific tools mentioned by participants (e.g., ChatGPT, Gamma) and the ethical concerns raised may evolve as new regulations and more specialized AI tools for special education are developed. Future research should consider longitudinal designs to track how these initial perceptions evolve as pre-service teachers transition into the workforce.

5. Declarations

5.1. Author Contributions (CRediT)

The author(s) confirm(s) contribution to the paper as follows: Study conception and design: MS, YİB; data collection: YİB, MS; analysis and interpretation of results: EÖ, YİB, MS; draft manuscript preparation: EÖ, MS. The author(s) reviewed the results and approved the final version of the article.

5.2. Conflict of Interest

The authors declare that there is no conflict of interest to disclose

5.3. Funding Statement

The authors declare that the study received no funding.

5.4. Data Availability Statement

Data are available from the corresponding author upon reasonable request.

5.5. Ethics Approval

This study was approved by the Kırıkkale University Social and Human Sciences Research Ethics Committee (date: 18.08.2025, decision number: 08). All procedures were conducted in accordance with the ethical standards of the relevant institutional ethics committee and the principles of the Declaration of Helsinki. Participation was voluntary, and informed consent was obtained from all participants prior to data collection.

5.6. Use of Artificial Intelligence (AI) Tools

The authors declare that no generative AI tools or automated writing assistance tools were used during the preparation of this work

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