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Attitudes of Administrators and Teachers Working in Preschool Education Institutions Toward Artificial Intelligence (AI)*

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Annotation. This study examines the attitudes of administrators and teachers working in preschool education institutions toward artificial intelligence (AI). The research was conducted in Sakarya Province using a descriptive survey model. The findings reveal that social perceptions and educational policies significantly shape educators' attitudes toward AI. It is particularly important for school administrators to adopt a supportive approach to technology and encourage teachers to engage with it.

Keywords: *preschool education, artificial intelligence (AI), teachers, administrators, attitudes, education policies.*

Introduction

In the rapidly advancing world of technology, the education sector is compelled to adapt to certain transformations. Understanding the role of technology in education and its implications for both teacher and administrator performance is of critical importance in order to manage these processes more efficiently (İçöz & İçöz, 2024).

Thanks to digital platforms and tools, teachers can dedicate more time to lesson planning, assessment, and student monitoring (Özer et al., 2023). Furthermore, teachers' professional development is significantly supported with the usage of technology in education. By employing technological tools and online resources, teachers can be involved in ongoing academic growth, acquire new pedagogical approaches, and adapt to innovations appearing in the field of education (Seyrek et al., 2024). It is highly essential to improve teachers' digital literacy skills (Pekmez et al., 2024) and enhance their sense of self-efficacy for the sake of effective utilization of technology (Kaymak & Titrek, 2021). Alongside the improvement of teachers' performance, technology in education has an immense impact on school administrators' efficiency as well. The benefits of technology yield the leadership skills of administrators and also the implementation of the school's pedagogical visions. Establishing the institution's educational policies and strategic objectives is one of the most fundamental and primary duties of a school administrator. Within this process, technology can enhance the efficiency of administrators' decision-making (Aksakal et al., 2024). Digital tools employed in education enable school administrators to communicate more rapidly and effectively with both teachers and parents (Eker & Gürbüz, 2024). Through the integration of digital technologies, administrators can enhance their leadership competencies, manage instructional processes more efficiently, and ultimately improve the overall performance of the school (Uyak et al., 2024). In this regard, both institutional functioning and reinforcement of the school's culture are influenced by the technology on administrative performance (Küçükkara et al., 2024).

The significance of technology in education is expected to keep increasing further in the following years. Therefore, investments implemented in a more inclusive and sustainable manner will constitute a significant step toward achieving the goal of educational equity (Dülger & Gümüşeli, 2023). Technology should be implemented by educators in ways to promote students' creativity and active participation (İçöz & İçöz, 2024). Provided that technology is applied properly at a young age, it can enhance children's learning experiences and help them succeed academically in the future (Eker & Gürbüz, 2024). Educational technologies not only facilitate learning processes in early childhood but also accelerate the social, emotional, and cognitive development of children. These technologies, especially with the rapid increase in digitalization, enable children to comprehend abstract concepts in a more concrete and approachable way (Demirtaş et al., 2019). Moreover, the ability to provide opportunities for individualized learning is another significant feature of educational technologies. Every child is unique and learns at a different pace and style; that's why these differences are considered while designing learning environments customized according to children's needs (Küçükkara et al., 2024). Nowadays, artificial intelligence (AI)-driven technologies are emerging as the most influential educational tools, which affect the educational system as well as the professionals in order to improve these functions more effectively. In today's

technology-driven world, artificial intelligence (AI) has reached the forefront and has a significant impact on a number of industries, including communication (Gluoksnyte, 2025), innovation (Balogh, 2024) and education (Habbal et al., 2024; Owoc et al., 2021). AI technologies such as machine learning (ML), robotics, predictive analytics, natural language processing (NLP), and expert systems are substantially changing the ways how we live, work, and learn (Gruetzemacher & Whittlestone, 2022; Khurana et al., 2023; Liu et al., 2018; Sarker, 2021).

Theorical Background

As educational technologies advance day by day, AI-based applications are dominantly being employed to meet the needs of each individual student, reduce the workload of teachers, and personalize learning processes. This has become one of the most recent and important topics in the field of education (Southgate, 2019; Chiu, 2021; Kong et al., 2021; Carvalho et al., 2022; Yang, 2022; Helen Mori, 2023; Armağan et al., 2024; Opesemowo & Ndlovu, 2024; Asio & Sardina, 2025; Ismaniati et al., 2025; Fitriati & Williyan, 2025; Pratiwi et al., 2025).

Artificial intelligence in education holds out essential benefits for not only students but also teachers (Çam,2021). AI tools have a number of notable applications, which include advancing the productivity of teachers' lesson planning, content development, and evaluation processes. Besides, they have the ability to expand access to educational materials (Erkoç, 2023). AI allows for a more flexible approach to each student's individual needs in addition to increasing the efficiency of the educational system (Erzincan et al., 2024). Even in early childhood education, the usage of AI-supported materials and implementations has expanded thanks to the recent technological developments, which have transformed traditional practices in this field. These materials and applications are becoming more and more useful tools for recognizing children's requirements and adapting learning processes accordingly (Armağan et al., 2024). Also, AI-supported data analytics assist teachers' decision-making processes, facilitating the adaptation of individual variances, addressing students' individualized learning demands, and improving teachers' efficiency as professionals (Pekmez et al., 2024). Teachers must have both theoretical knowledge and practical skills in order to get the maximum advantage of the opportunities presented by AI technologies. This proficiency span from comprehending basic AI concepts to using a variety of software tools and platforms (Armağan et al., 2024). Teachers who are proficient using technology are able to generate individualized learning strategies and evaluate students' areas of growth more accurately (Köse et al., 2024). Additionally, according to findings of the research in the field of educational technologies, teachers' knowledge levels on AI technologies vary considerably (Gülel et al., 2023).

Technology helps school administrators make strategic decisions by facilitating time and resource efficiency. AI guarantees the productivity and openness of school

management systems in a variety of ways, from data analysis to communication management. Several operational activities can be managed by AI-based systems within schools. Administrators can concentrate on more creative and longer-term projects when these technologies are used efficiently in areas like personnel management, financial planning, and resource allocation (Çam, 2021). Decision support systems are another crucial aspect of AI's application in school administration. AI-driven data analysis can help administrators better evaluate the schools' current states and make more informed decisions for the future. This feature offers substantial benefits, particularly in terms of the efficient use of resources and achievement of the schools' long-term objectives. Moreover, AI-based management systems are essential to school safety by not only facilitating administrators in carrying out their responsibilities but also positively impacting students' and teachers' educational experiences (Armağan et al., 2024). Consequently, it is essential to assess both teachers' and school administrators' attitudes, whether positive or negative, toward technology, and specifically toward AI tools.

Educators' Attitudes Toward Technology and Artificial Intelligence

Teachers' attitudes toward educational technologies are affected by both individual and institutional factors. The effective implementation of educational processes in schools primarily depends on teachers and school administrators. Their positive or negative attitudes toward technology, and specifically toward artificial intelligence, which has become a pivotal tool in contemporary education, significantly influence instructional and administrative processes. Teachers using technology are more inclined to implement innovative teaching and learning strategies. However, teachers' individual technological experiences, educational backgrounds, and professional development opportunities affect the rate and impact of technology adaptation. Teachers who are adept at using technology help students to reach their full potential, but as technology continues to grow, educators must also keep their knowledge and abilities updated (Uyak et al., 2024). On the other hand, lack of knowledge, technological concern, or poor infrastructure are often held responsible for negative attitudes toward technology. Individualized learning methodologies and student-centred learning environments can be implemented in the classroom by educators who embrace technology (Çam, 2021). Teachers' and administrators' distinct perspectives on technology are usually a result of their different positions and responsibilities. Teachers approach technology from a pedagogical standpoint, while administrators frequently view it as an administrative and strategic tool. The way each group interacts with technology is greatly influenced by these different orientations (Sarıkaya & Kavan, 2024). In addition, the general infrastructure and regulations of schools are influenced by the attitudes of administrators toward technology. Teachers' motivation and adoption can be increased by administrators who embrace and promote technology, and their attitude toward

it can further influence educators' attitudes and use of technological tools (Taştan, 2019). For this reason, the more effective implementation of educational technologies can be achieved by bridging the attitudes of administrators and teachers. Both groups can improve learning environments and raise teachers' levels of professional satisfaction if they have a common understanding of how to incorporate technology into the classroom (Küçükkara et al., 2024).

In addition to the personal perspectives of educators and administrators, educational atmosphere, professional experiences, and societal institutions have an impact on the integration of modern technologies like artificial intelligence. Many educators' opinions about technology advancements are closely linked to how they view innovation in general (Uyak et al., 2024). Before deciding to implement it, teachers carefully consider an innovation's potential advantages and disadvantages. Some educators may be opposed to artificial intelligence because of its complexity and technological requirements. Comprehending the role of AI in the classroom and educational settings can be quite difficult for educators. Alongside the opportunities it presents, there may be concerns about possible hazards and negative impacts. Therefore, a crucial tactic for reducing such resistance is to support educators who express difficulty in understanding this new technology (Köse et al., 2024). The lack of personal knowledge is one of the most important elements influencing attitudes toward artificial intelligence technologies. Teachers who do not completely understand AI's educational potential or how to use it efficiently frequently see the technology as a threat. A more favourable adaptation of this invention can be facilitated by training programs that show how AI can monitor students' achievement and lessen the workload of teachers (Aksakal et al., 2024). The practical difficulties which educators face and the results they see have an impact on the usage of complex technologies like AI. While negative experiences may impede the adaptation of technology, positive experiences encourage it. Thus, it is crucial to make it possible for educators to have positive experiences while using AI. To assure that educators can access these experiences, opportunities like educational seminars, workshops, and technology-supported projects should be made available (Banaz & Maden, 2024).

In order for AI to be widely integrated into education, administrators and teachers must develop a common viewpoint that encourages the usage of this technology. This process can be accelerated by taking part in peer learning opportunities, professional development seminars, and technology-related knowledge sharing (Sarıkaya & Kavan, 2024). Teachers' attitudes toward technology need to be thoroughly studied with the aim of ensuring a more successful application of AI technologies in educational settings. These attitudes are not confined to personal perceptions; external factors, including school culture, educational regulations, and society perceptions, also have an impact on them (İçöz & İçöz, 2024). In addition to cognitive knowledge, educators' decisions on whether to accept or reject AI technology are affected by social dynamics,

emotional reactions, and previous experiences. Briefly, the successful and long-lasting integration of AI and other advanced technologies in education based on the attitudes of educators (Dülger & Gümüşeli, 2023).

Factors Influencing Attitudes Toward AI Applications in Preschool Education

There is still limited research on AI in preschool education, which suggests that this area has not yet been thoroughly studied. As a result, how educators and school administrators in preschool institutions feel about AI, a new technology tool that is becoming an essential part of educational programs and procedures, constitutes a major area of research attention. The elements influencing educators' opinions about AI applications in preschool education, whether positive or negative, are crucial in figuring out how they handle these technologies and how well AI can be integrated into teaching methods. Personal knowledge and professional expertise are not the only factors affecting the acceptance of technology advancements in education. Rather, it is impacted by larger social, educational, and environmental settings. In this regard, educators' own opinions, the condition of the educational system, public views, and approaches impacted by educational regulations are primary determinants of attitudes toward AI applications in preschool education. However, an essential key of educators' views concerning technology is their own personal perceptions. Teachers' and administrators' adoption and use of technology advancements are directly impacted by these perceptions (Sarıkaya & Kavan, 2024). Preschool teachers frequently develop cautious or even negative attitudes about these tools due to a lack of understanding and experience, especially with regard to upcoming technologies like AI. Besides, teachers who are unconfident in their technological skills sometimes doubt the value of AI applications in the classroom and may grow resistant to their possible advantages. Misconceptions like the idea that technology interferes with education's natural flow or weakens the fundamentals of teaching are often the source of this reluctance (İçöz & İçöz, 2024).

The infrastructure of educational systems and the overall quality of educational programs are closely related to the application of AI technology in preschool education. The degree of technological integration, pedagogical orientations, and curriculum content affect how effectively AI applications are implemented (Erzincan et al., 2024). The level and sustainability of technology investments are strongly influenced by the funding allocated to the educational system. When making technological investments, authorities may be better equipped to handle these issues by creating long-term strategic plans. In addition, cooperation amongst all groups involved in education is crucial since it can promote the greater recognition and spread of AI-supported educational initiatives (Seyrek et al., 2024).

The degree of professional experience and individual knowledge of educators is a major factor in the successful use of AI applications in preschool education (Selçuk & Atalmış, 2021). The extent to which educators embrace and utilize technology influences whether

these resources support children's learning. Nonetheless, in order to do this, educators must become sufficiently acquainted with AI technologies (Sarıkaya & Kavan, 2024). Teachers having a positive perspective toward technology are more likely to try out new techniques, while teachers thinking technology is complicated or redundant might not use it at all. Improving educators' understanding can greatly aid in integrating AI applications successfully. Another important factor in this process is experience (Acet et al., 2024). To fully realize the potential of AI technologies in education, it is important to enhance educators' knowledge and skills (Gülel et al., 2023).

The attitudes and policies of society have an impact on the use of AI applications in preschool education. The acceptability and spread of such innovative tools are directly impacted by a society's overall attitude toward technology. Innovations such as AI can be more readily and successfully implemented into educational processes when there is a high level of public trust in technology and confidence in its potential advantages (Armağan et al., 2024). Strong political will and long-term strategic planning are both necessary for the broad adoption of AI applications. Additionally, the function of technology tools needs to be clearly stated in the context of more comprehensive educational strategies. Teachers, students, and parents should be able to adjust to these developments with the help of education (Erkoç, 2023). A policy that takes into account the opinions of educators, students, and families leads to more inclusive and successful results. A major first step in properly integrating AI applications into education is raising public awareness. This will help schools and society at large acquire a better grasp of these technologies and how they might improve learning (Erzincan et al., 2024).

AI technologies have become the most powerful technological tools in recent years, and their importance in education is growing. By making learning more effective, personalized, and efficient, these technologies are gradually changing educational processes at all levels, including preschool education, a crucial stage in which children's core skills are created by making learning more effective and individualized. At the same time, the knowledge and attitudes of educators, namely school administrators and teachers, play a decisive role in determining the extent to which AI can be effectively integrated into education. Administrators and teachers may hold varying attitudes toward AI applications, differing in the degree to which they adopt these tools and in how they incorporate them into instructional processes. Examining preschool education administrators' and teachers' attitudes on AI is vital in this aspect because it offers insights into how these technologies can be used most productively during the preschool education period, which is frequently seen as the first structured stage in the lifelong learning process.

Artificial intelligence has recently attracted increasing attention in the field of education, particularly among teachers. A growing body of research has begun to examine teachers' attitudes toward artificial intelligence (Han et al., 2020; Chen et al., 2020; Chounta et al., 2022; Çolak-Yazıcı, 2023; Call, 2023; Dülger & Gümüşeli, 2023;

Kim, 2023; McGrath, 2023; Pokrivcakova, 2023; Tan et al., 2023; Seyrek et al., 2024; Galindo-Domínguez, 2024; İçöz & İçöz, 2024). However, measuring the perspectives of teachers in preschool education, which is one of the most fundamental phases of the educational process, has not received much attention in research. Addressing this gap is essential, as further research in this area would make a valuable and original contribution to the existing literature. In light of preceding considerations, enhancing the effectiveness and efficiency of preschool education processes requires the integration of AI technologies into both instructional programs and administrative practices, as well as the systematic investigation of teachers' and school administrators' attitudes toward their use. Accordingly, the focal point of this study can be articulated as follows: "to identify the attitudes of administrators and teachers working in the field of preschool education toward artificial intelligence and to analyse these attitudes in relation to various variables."

Research Questions

Within the scope of this overarching problem, the study seeks to address the following sub-questions:

What is the level of attitudes of preschool education administrators and teachers toward artificial intelligence?

What is the level of positive or negative attitudes of preschool education administrators and teachers toward artificial intelligence?

Are there significant differences in the attitudes of preschool education administrators and teachers toward artificial intelligence based on: a) gender, b) age, c) marital status, d) title, e) use of artificial intelligence, and f) participation in AI-related training?

Methodology

Research Model

The main purpose of the current study is to identify the attitudes of preschool teachers and administrators regarding AI. For this reason, since the research seeks to reveal the existing situation concerning a dependent variable and to determine differences in opinions across various independent variables, a descriptive survey model has been employed. In order to determine the levels of participants' views on AI, the *descriptive survey model* (Fraenkel & Wallen, 2006) will be utilized although, in comparisons within the context of demographic variables, *causal-comparative designs* (Mertens, 2010) will be applied.

Sample of the Study

The sample of the study consists of preschool teachers employed in public independent preschools and public kindergarten classrooms in the province of Istanbul. The sample of the research has been determined from this population through simple random sampling in accordance with the principle of impartiality and on a voluntary basis (Fraenkel & Wallen, 2006). Accordingly, the sample comprises 220 preschool teachers selected from a total of 396 teachers. Demographic information regarding the sample is presented in Table 1. Of all participants, 134 (60.9%) are female, and 86 (39.1%) are male. In terms of age, 16 participants (7.3%) are between 21–25 years, 45 (20.5%) between 26–30 years, 87 (39.5%) between 31–35 years, 36 (16.4%) between 36–40 years, 23 (10.5%) between 41–45 years, and 13 (5.9%) are 46 years or older. Regarding marital status, 130 participants (59.1%) are single, whereas 90 (40.9%) are married. Of the participants, 167 (75.9%) serve as teachers while 53 (24.1%) hold administrative positions. In terms of educational background, 140 participants (63.3%) hold a bachelor's degree, 76 (34.5%) a master's degree, and 4 (1.8%) a doctoral degree. Regarding their "use of artificial intelligence," 38 participants (17.3%) reported frequent use, 101 (45.9%) reported occasional use, 42 (19.1%) indicated rare use, and 39 (17.7%) stated that they never used AI tools. Furthermore, when asked about participation in "any training program or course on artificial intelligence," 46 participants (20.9%) responded affirmatively, whereas 174 (79.1%) responded negatively. These findings imply that the sample predominantly consists of female teachers in the young-to-middle age range and that the overall level of awareness regarding the use of and training in artificial intelligence remains relatively limited.

Data Collection Instruments

The data collection instrument employed in this study consists of two sections. The first section includes a personal information form developed by the researcher. This section gathers demographic information regarding the preschool teachers participating in the study, including their gender, educational background, professional seniority, marital status, and participation in in-service training programs. The latter incorporates the "General Attitudes to Artificial Intelligence Scale," which was used to determine participants' attitudes toward artificial intelligence. Detailed information on the scales utilized in this study is presented below.

The General Attitudes to Artificial Intelligence Scale was developed by Feridun Kaya, Fatih Aydın, Astrid Schepman, Paul Rodway, Okan Yetişensoy, & Meva Demir Kaya (2022) with the purpose of assessing teachers' attitudes toward artificial intelligence. The scale consists of a total of 20 items. Response options are structured on a five-point Likert scale, ranging from *"Strongly Disagree (1)"* to *"Strongly Agree (5)"*.

Prior to the data collection phase, permission to use the scales adapted and developed by the respective researchers was obtained via email correspondence. Subsequently,

the thesis proposal along with the necessary approval documents was submitted to the Ethics Committee for Educational Research and Publications at Sakarya University (27.11.2024; E.419573; Decision No: 21), and formal applications were made to the Graduate School of Educational Sciences to secure the required authorizations. The scales were then administered on a voluntary basis to 220 preschool teachers employed in public independent kindergartens and public preschool classrooms in the province of Istanbul, who constituted the sample of the study. Moreover, the necessary permissions for implementing these scales were granted by the Istanbul Provincial Directorate of National Education. Copies of the relevant approval documents obtained for the study are provided in the appendices section.

Analyses

For the data analysis, the Statistical Package for the Social Sciences (SPSS) software was employed. The distribution of the data was examined through *"skewness"* and *"kurtosis"* values. In the literature, it is stated that these values should fall within the range of ±1.96 (Field, 2009). Reliability analysis conducted for the General Attitudes to Artificial Intelligence scale, as well as for the Positive Attitude to Artificial Intelligence and Negative Attitude to Artificial Intelligence subscales, indicated Cronbach's Alpha coefficients ranging between .950 and .958. These values demonstrate that the scales possess high reliability. In addition, non-parametric tests were performed in the study. The findings revealed that attitudes toward artificial intelligence technologies were generally positive, although certain reservations were also identified. Detailed analyses of the obtained data are presented in the findings section.

a. Normality and Reliability Analyses

In order to determine whether the scores obtained from the General Attitudes to AI Attitude Scale have a normal distribution, the Kolmogorov-Smirnov test was conducted. The results indicated that the deviation from normality was statistically significant ($z = .070$, $p < .05$). Accordingly, non-parametric analyses were employed in the study. The results of these analyses are presented in Table 1 and Table 2.

Table 1

Results of the Kolmogorov-Smirnov Test on Participants' General Attitudes to Artificial Intelligence Scale

Dimension	N	$\bar{X}$	SD.	K-S	*p*
General Attitudes to Artificial Intelligence Scale	220	3.58	.68	.070	.012

The reliability of the scales used in this study was tested through the Cronbach's Alpha coefficient.

Table 2
Results of the Reliability Analysis on the Scale and Subscales

Dimensions	Cronbach Alpha	Number of Items
General Attitudes to Artificial Intelligence Scale	.954	20
Positive Attitude to Artificial Intelligence Subscale	.958	12
Negative Attitude to Artificial Intelligence Subscale	.950	8

"For a scale with 15 items, the calculated Cronbach's alpha is referred to as the standard alpha. A value above 0.75 indicates high reliability, values between 0.50 and 0.75 indicate moderate reliability, and values below 0.50 indicate low reliability. For a scale with more than 15 items, an alpha of 0.90 or higher indicates excellent reliability, 0.70–0.90 indicates high reliability, 0.50–0.70 indicates moderate reliability, and below 0.50 indicates low reliability." (Perry et al., 2004) [1]

As shown in Tables 1 and 2, the Cronbach's alpha coefficients for the General Attitude to Artificial Intelligence Scale, the Positive Attitude subscale, and the Negative Attitude subscale ranged between 0.950 and 0.958, indicating that the scales demonstrate high reliability.

Results and Suggestions

This section involves the findings obtained from the analysis of the data collected from the participating teachers using the 'General Attitude to Artificial Intelligence' scale in relation to the research problem. Explanations and interpretations are provided based on the obtained results.

Analysis Findings on Research Problem I

Table 4 presents the descriptive statistics for the items on the General Attitude to Artificial Intelligence scale. Participants indicated agreement with the statement 'I am interested in using AI systems in my daily life,' with a mean score of 3.61 (±0.96). For the statement 'There are many beneficial applications of Artificial Intelligence,' participants reported a mean score of 3.89 (±0.82), indicating agreement. Regarding 'Artificial intelligence is exciting,' the mean score was 3.82 (±0.85), showing agreement. For the item 'Artificial Intelligence can provide new economic opportunities for this country,' participants scored 3.86 (±0.81), reflecting agreement. The statement 'I would like to use AI in my own job' received a mean score of 3.85 (±0.85), indicating agreement. For 'An artificially intelligent agent would be better than an employee in many routine jobs,' participants reported a mean of 3.62 (±0.99), showing agreement. Participants indicated agreement with the statement, "I am impressed by what AI can

do," with a mean score of 3.87 (±0.83). For the statement, 'Artificial Intelligence can have positive impacts on people's wellbeing,' participants reported a mean score of 3.68 (±0.85), also indicating agreement.

Table 3

Descriptive Statistics of the General Attitudes to Artificial Intelligence Scale Items

General Attitudes to Artificial Intelligence Scale Items	$\bar{X}$	SD
1. I am interested in using artificial intelligence systems in my daily life.	3.61	.96
2. There are many beneficial applications of artificial intelligence.	3.89	.82
3. Artificial intelligence is exciting.	3.82	.85
4. Artificial intelligence can provide new economic opportunities for this country.	3.86	.81
5. I would like to use AI in my own job.	3.85	.85
6. An artificially intelligent agent would be better than an employee in many routine jobs.	3.62	.99
7. I am impressed by what artificial intelligence can do.	3.87	.83
8. Artificial Intelligence can have positive impacts on people's wellbeing.	3.68	.85
9. Artificial intelligence systems can help people feel happier.	3.56	.92
10. Artificial intelligence systems can perform better than humans.	3.59	.90
11. Much of society will benefit from a future full of artificial intelligence.	3.71	.89
12. For routine transactions, I would rather interact with an artificial intelligence system than with a human.	3.39	1.00
13. I think artificial Intelligence is dangerous.	2.75	1.08
14. Organisations use artificial intelligence unethically.	2.91	1.10
15. I find artificial Intelligence sinister.	2.49	.94
16. Artificial Intelligence is used to spy on people.	2.69	1.01
17. I shiver with discomfort when I think about future uses of artificial intelligence.	2.43	1.00
18. Artificial intelligence might take control of people.	2.50	1.01
19. I think artificially intelligent systems make many errors.	2.59	.88
20. People like me will suffer if artificial intelligence is used more and more.	2.54	.95

According to Table 3, the participants rated the item 'AI systems can help people feel happier' with a score of (3.56 ± 0.92), indicating agreement with the statement. They rated the item 'AI systems can perform better than humans' as (3.59 ± 0.90), also expressing agreement. For the statement 'Much of society will benefit from a future full of Artificial Intelligence,' participants gave a score of (3.71 ± 0.89), indicating agreement. Regarding the item 'For routine transactions, I would rather interact with an artificial intelligence system than with a human,' participants scored (3.39 ± 1.00), showing partial agreement.

Finally, for the item 'I think AI is dangerous,' participants gave a score of (2.75 ± 1.08), indicating partial disagreement. The participants rated the item 'Organizations use AI unethically' with a score of (2.91 ± 1.10), indicating partial disagreement. For the statement 'I find AI sinister', they gave a score of (2.49 ± 0.94), expressing disagreement. Regarding 'Artificial Intelligence is used to spy on people', participants scored (2.69 ± 1.01), indicating partial disagreement. For the item 'I shiver with discomfort when I think about future uses of Artificial Intelligence', the score was (2.43 ± 1.00), showing disagreement. Finally, for 'AI might take control of people', participants gave a score of (2.50 ± 1.01), indicating disagreement. The participants rated the item 'I think artificially intelligent systems make many errors', with a score of (2.59 ± 0.88), indicating disagreement. For the statement 'People like me will suffer if Artificial Intelligence is used more and more,' they gave a score of (2.54 ± 0.95), also indicating disagreement.

General Attitudes to Artificial Intelligence Analysis

The analysis results for the study's two sub-problems, which are "What are the attitudes of preschool teachers toward artificial intelligence?" and "What are the attitudes of preschool administrators toward artificial intelligence?" are presented in Table 4.

Table 4

Descriptive Statistics of the General Attitudes to Artificial Intelligence Scale

Dimensions	N	Min.	Max.	$\bar{X}$	SD
Positive Attitudes to Artificial Intelligence	220	12.00	60.00	44.45	8.84
Positive Attitudes to Artificial Intelligence Mean	220	1.00	5.00	3.70	.74
Negative Attitudes to Artificial Intelligence	220	8.00	40.00	20.90	6.88
Negative Attitudes to Artificial Intelligence Mean	220	1.00	5.00	2.61	.86
General Attitudes to Artificial Intelligence Total	220	20.00	100.00	71.55	13.68
General Attitudes to Artificial Intelligence Mean Total	220	1.00	5.00	3.58	.68

* Mean, Standard Deviation.

When examining the descriptive statistics of the General Attitudes to Artificial Intelligence Scale in Table 4, it was found that the overall attitude score of the 220 participants was 71.55 ± 13.68 (min: 20, max: 100), with a scale mean of 3.58 ± 0.68 (range: 1–5), indicating a moderately positive tendency. In the positive attitudes' subscale, a total score of 44.45 ± 8.84 and a mean score of 3.70 ± 0.74 were obtained, suggesting that participants tended to agree with statements regarding the benefits of artificial intelligence. In the negative attitudes subscale, the total score was 20.90 ± 6.88 with a mean score of 2.61 ± 0.86, indicating that participants generally did not agree with statements concerning the potential risks of artificial intelligence. These findings suggest that attitudes toward artificial intelligence technologies were generally positive,

although some reservations were noted. Among teachers (N = 167), the mean overall attitude score was 70.59 ± 14.22 (min: 20, max: 100), with a scale mean of 3.53 ± 0.71 (range: 1–5), reflecting a moderately positive attitude.

Analysis Findings on Research Problem II

According to Table 5, the results examining whether participants' scores on the General Attitudes to Artificial Intelligence Scale differed based on the variables of : *gender, age, marital status, use of artificial intelligence, and participation in AI-related training* are presented in Table 8. Considering the gender of teachers and administrators, differences in scores between female and male participants were analysed using the Mann–Whitney U Test.

Table 5

Mann–Whitney U Test Results for Participants' Attitudes to Artificial Intelligence by Gender

Dimensions	Gender	N	Mean Rank	Sum of Ranks	U	*p*
Positive Attitudes to Artificial Intelligence	Female	134	99.28	13303.50	4258.5	.001
	Male	86	127.98	11006.50		
Negative Attitudes to Artificial Intelligence	Female	134	124.47	16679.50	3889.5	<.001
	Male	86	88.73	7630.50		
General Attitudes to Artificial Intelligence	Female	134	96.69	12956.50	3911.5	<.001
	Male	86	132.02	11353.50		

Based on the findings in Table 5, the Mann–Whitney U Test conducted to determine whether participants' positive attitudes toward artificial intelligence differed by gender revealed a statistically significant difference in positive AI scores based on gender ($U = 4258.5$, $p < 0.05$). Male participants hold more positive attitudes toward artificial intelligence compared to female participants (127.98 vs. 99.28). Likewise, the Mann–Whitney U Test performed to examine whether participants' negative attitudes toward artificial intelligence differed by gender indicated a statistically significant difference in negative AI scores ($U = 3889.5$, $p < 0.05$). Female participants exhibited more negative attitudes toward artificial intelligence than male participants (124.47 vs. 88.73). Finally, the Mann–Whitney U Test results showed that participants' overall AI attitude scores also differed significantly by gender ($U = 3911.5$, $p < 0.05$). The mean rank of males (132.02) was higher than that of females (96.69).

Table 6

Kruskal–Wallis Test Results for Participants' Attitudes to Artificial Intelligence by Age

Subscales	Age	N	Mean Rank	X^2	*p*	*Difference*
Positive Attitudes to AI	21–25 (I)	16	85.19	16.764	.005	III>V, VI
	26–30 (II)	45	103.79			
	31–35 (III)	87	128.96			
	36–40 (IV)	36	108.79			
	41–45 (V)	23	96.76			
	46 and older (VI)	13	70.38			
Negative Attitudes to AI	21–25 (I)	16	126.31	18.131	.003	III<V, IV
	26–30 (II)	45	113.09			
	31–35 (III)	87	93.92			
	36–40 (IV)	36	107.21			
	41–45 (V)	23	151.89			
	46 and older (VI)	13	128.92			
General Attitudes to AI	21–25 (I)	16	84.09	22.247	<.001	III>V, VI
	26–30 (II)	45	106.79			
	31–35 (III)	87	130.98			
	36–40 (IV)	36	110.90			
	41–45 (V)	23	81.39			
	46 and older (VI)	13	69.15			

According to the findings presented in Table 6, the results of Kruskal-Wallis test was conducted to determine whether the attitudes of teachers and administrators to artificial intelligence differed significantly by age, indicated significant differences in positive attitudes toward AI ($X^2 = 16.764$, $p < 0.05$), negative attitudes toward AI ($X^2 = 18.131$, $p < 0.05$), and general attitudes toward AI ($X^2 = 22.247$, $p < 0.05$). In order to identify which age groups accounted for these differences, a Tukey post-hoc comparison was carried out. The analysis revealed that the differences originated between participants aged 31–35 and those aged 41–45 and 46 and above. Participants in the 31–35 age group exhibited higher positive attitudes and lower negative attitudes toward AI. Accordingly, the findings suggest that both positive and negative attitudes to artificial intelligence are influenced by the age of teachers and administrators.

Table 7

Mann-Whitney U Test Results of Participants' Attitudes to Artificial Intelligence by Marital Status

Subscales	Marital Status	N	Mean Rank	Sum of Ranks	U	*p*
Positive Attitudes to Artificial Intelligence	Married	130	117.29	15248.00	4967.0	.056
	Single	90	100.69	9062.00		
Negative Attitudes to Artificial Intelligence	Single	130	100.82	13107.00	4592.0	.006
	Married	90	124.48	11203.00		
General Attitudes to Artificial Intelligence	Single	130	121.29	15767.50	4447.5	.002
	Married	90	94.92	8542.50		

According to the findings in Table 7, the results of Mann-Whitney U Test conducted to determine whether participants' levels of positive attitudes toward artificial intelligence differed depending on marital status indicate that participants' positive attitude scores to artificial intelligence did not differ statistically significantly by marital status ($U = 4967.0$, $p > 0.05$). Although not statistically significant, the mean rank for positive attitudes of married participants (100.69) was lower than that of single participants (117.29). Regarding negative attitudes toward artificial intelligence, the Mann-Whitney U Test results revealed a statistically significant difference according to marital status ($U = 4592.0$, $p < 0.05$). Married participants' mean rank (124.48) was higher than that of single participants (100.82), indicating that married participants hold more negative views toward artificial intelligence compared to their single counterparts.

Table 8

Mann-Whitney U Test Results of Participants' Attitudes to Artificial Intelligence by Title

Subscales	Title	N	Mean Rank	Sum of Ranks	U	*p*
Positive Attitudes to Artificial Intelligence	Teacher	167	107.38	17933.00	3905.0	.195
	Administrator	53	120.32	6377.00		
Negative Attitudes to Artificial Intelligence	Teacher	167	116.40	19438.50	3440.5	.014
	Administrator	53	91.92	4871.50		
General Attitudes to Artificial Intelligence	Single	167	106.40	17769.50	3741.5	.090
	Married	53	123.41	6540.50		

According to the findings in Table 8, Mann-Whitney U Test was conducted to examine whether participants' levels of positive attitudes toward artificial intelligence

differed according to their professional title. The results indicated that participants' positive attitude scores toward artificial intelligence did not show statistically significant difference by professional title (U = 3905.0, p > 0.05).

Table 9

Kruskal–Wallis Test Results for Participants' Attitudes to Artificial Intelligence by the Use of Artificial Intelligence

Subscales	Age	N	Mean Rank	X^2	*p*	*Difference*
Positive Attitudes to AI	Frequently (I)	38	179.92	89.547	<.001	I> II, III, IV II>IV
	Sometimes (II)	101	117.48			
	Rarely (III)	42	88.82			
	Never (IV)	39	48.14			
Negative Attitudes to AI	Frequently (I)	16	126.31	43.260	<.001	I> II, III, IV II>IV
	Sometimes (II)	45	113.09			
	Rarely (III)	87	93.92			
	Never (IV)	36	107.21			
General Attitudes to AI	Frequently (I)	45	106.79	84.318	<.001	I> II, III, IV II>IV
	Sometimes (II)	87	130.98			
	Rarely (III)	36	110.90			
	Never (IV)	23	81.39			

According to the findings presented in Table 9, participants' positive attitude scores toward artificial intelligence differed significantly based on their use of AI (X^2 = 89.547, p < 0.05). A Tukey post-hoc test conducted to determine between which groups the difference occurred revealed that the difference stemmed from those who reported using AI frequently (M = 179.92) compared to those who reported using it sometimes (M = 117.48), rarely (M = 88.82), or never (M = 48.14). In addition, participants who reported using AI sometimes demonstrated more positive attitudes compared to those who reported using it rarely or never. In a similar vein, the findings in Table 9 are examined; it is observed that participants' negative attitude scores toward artificial intelligence showed significantly based on their educational status (X^2 = 43.260, p < .05).

The Tukey post-hoc test indicated that the difference arose between those who reported using AI frequently (M = 70.55) and those who reported using it sometimes (M = 98.82), rarely (M = 133.93), or never (M = 154.45). Furthermore, participants who reported using AI sometimes exhibited less negative attitudes than those who reported using it rarely or never.

Table 10

Mann-Whitney U Test Results of Participants' Attitudes to Artificial Intelligence by Participation in AI-related Training

Subscales	Participation in AI-related Training	N	Mean Rank	Sum of Ranks	U	*p*
Positive Attitudes to AI	Yes	46	155.52	7154.00	1931.0	<.001
	No	174	98.60	17156.00		
Negative Attitudes to AI	Yes	46	92.29	4245.50	3164.5	.028
	No	174	115.31	20064.50		
General Attitudes to AI	Yes	46	146.83	6754.00	2331.0	<.001
	No	174	100.90	17556.00		

According to the findings presented in Table 10, the Mann-Whitney U test was performed to investigate whether participants' negative attitudes toward artificial intelligence differed based on their participation in any AI-related training. The results indicated that participants' negative attitude scores significantly differed depending on their training participation status ($U = 3164.5$, $p < 0.05$). Specifically, participants who had attended AI-related training or courses had substantially lower mean rank scores of negative attitudes (92.29) compared to those who had not (115.31). Furthermore, Mann-Whitney U Test results revealed that participants' general total attitude scores toward AI also differed significantly depending on their participation in AI-related training or courses ($U = 2331.0$, $p < 0.05$). As shown, teachers and administrators who had attended such training or courses expressed considerably more positive attitudes toward artificial intelligence.

Discussion

The fundamental aim of this study is to investigate the attitudes of administrators and teachers working in preschool education institutions toward artificial intelligence (AI) technologies and to examine the potential implications of these attitudes for educational processes. The quick adoption of technology into classrooms, especially in preschool years, highlights how important it is for administrators and teachers to use new technologies. With the potential to improve learning processes and teaching methods, AI is becoming vital in educational institutions. Conversely, it has been found that preschool administrators and teachers have some negative thoughts about AI including such as *"regarding AI as sinister, believing that it may be used to spy on*

people, feeling distressed when considering its potential future applications, fearing that AI could take control over humans, perceiving AI-driven systems as highly error-prone, and assuming that increased reliance on AI would ultimately harm individuals like themselves". Such concerns highlight that the successful use of this technological tool in educational settings is dependent on educators' attitudes, levels of knowledge, and overall approaches to technology

This study reveals that, in preschool education in particular, where creativity development is considered essential, teachers and administrators have differing perspectives toward the implementation of artificial intelligence technologies. According to Titrek et al. (2023), especially in terms of originality, preschool teachers view creativity and its sub-dimensions as being at a "high" level. In this regard, artificial intelligence presents a novel perspective on enhancing creativity and originality, which are notably important elements of it. Preschool education is the first step to achieve this goal, and also, administrators and teachers working in educational settings are ultimately responsible for its successful implementation.

The findings indicate that school administrators exhibit more positive attitudes toward AI compared to teachers, and male participants are generally more positive about AI than their female counterparts. In terms of age, it was observed that teachers and administrators under the age of 40 hold more positive views; however, attitudes toward artificial intelligence tend to become increasingly negative with advancing age. Similarly, those who are single exhibit more positive attitudes than those who are married, suggesting that marital status is a distinguishing factor. Preschool teachers and administrators who have received AI training not only report higher levels of AI usage but also demonstrate more positive attitudes toward its adaptation, as their engagement with AI is higher, which supports these findings. The dynamic interaction between educational policies and societal perceptions is the foundation for the use of artificial intelligence applications in preschool education. Technology will be included in schools as part of this process, which leads society as a whole to go through a more significant change. The success rate of AI applications in education can be greatly increased by developing policies that prioritize equity, increase public knowledge and parental trust in technology. Technology integration into teaching and learning processes is greatly aided by the sustainability and flexibility of educational policy. When taken as a whole, these elements guarantee the sustained efficacy of educational systems supported by AI (İçöz & İçöz, 2024). Nevertheless, educators are becoming cautious due to psychological and emotional concerns about AI technologies. Teachers and administrators are hesitant to employ developing technologies in educational settings mainly because of the ambiguity and fear caused by them. In reality, improving one's understanding of and proficiency with AI applications may be essential to getting beyond these obstacles. Not all schools have the funds to purchase these items, particularly those in rural areas. This difference could lead to educational inequality

and keep some students from taking advantage of AI's potential benefits. Therefore, it is imperative that more equitable regulations pertaining to technology access be put into place. Also, another limitation is the teachers' lack of technology knowledge (Seyrek et al., 2024). Teachers' digital literacy abilities must be continuously developed in order to effectively use technology tools, even though they do provide a great deal of support and convenience. In this regard, it is crucial to set up frequent training sessions for educators and give them chances to practice using technology (Pekmez et al., 2024). In order to effectively utilize artificial intelligence technologies, teachers must possess adequate digital literacy skills. However, many educators lack sufficient knowledge or experience in this area. Therefore, it is essential that educators get training on AI systems and learn how to incorporate these tools into teaching methods (Seyrek et al., 2024). Teachers who have inadequate comprehension regarding AI may be hesitant since they do not trust technology, so teachers must receive detailed and methodical training in order to deal with this issue. The ethical aspects of AI and its possible applications in education may be the primary topics of these training courses. AI based applications can be included into lesson plans by teachers who are adept at controlling technology use during the teaching process. This will enhance students' educational experiences while also advancing their own professional growth. Actively using technology in the classroom allows teachers to facilitate the wider use of AI driven applications throughout the school. Additionally, educators' professional satisfaction may be increased by using technology effectively (Erkoç, 2023).

Karacaoğlu (2025) suggests that teacher competencies in AI usage are multifaceted, covering a wide range of areas including educational technology, personalization, assessment, and collaboration. These competencies are crucial for teachers to enhance their professional development and provide more effective education to students. Meanwhile, it is important to give teachers with little experience the assistance they need to use AI tools efficiently. In this regard, programs for in-service training are crucial. Educators, especially female preschool teachers, should have access to ongoing professional development opportunities so they can get familiar with AI technology and learn how to use them in the classroom. The personal characteristics of educators also affect how they employ technology. Teachers are more likely to employ AI technologies successfully if they exhibit creativity, adaptability, and openness to innovation. It is also crucial to acknowledge that teachers need a strong support system in order to overcome obstacles that arise during classroom implementation (Köse et al., 2024). Positive improvements in this field are likely to occur as educators are trained about AI and taught how to properly implement AI into administrative and classroom procedures. Consequently, it is advised that educators and administrators receive AI and robotics training. Future studies can also look into how administrators assess AI assisted decision making in classroom environments and also how educators and administrators see AI in the classroom and pinpoint difficulties they face while adjusting.

Conclusion and Implications

The current study examined pre-school administrators and teachers' attitudes toward artificial intelligence. Establishing positive attitudes among preschool teachers and administrators is essential for the successful implementation of AI applications in preschool education. It is therefore necessary to improve instructors' understanding, expand educational infrastructure, and raise societal awareness about the role of AI in education. Improving preschool educators' perspectives of AI technologies can lead to more effective and innovative teaching methods. In this context, school administrators play a crucial role in fostering a supportive environment that encourages teachers to adopt and implement technological tools. Achieving meaningful progress in educational technology requires attention not only to educators' individual knowledge and experiences but also to broader factors such as societal perceptions and educational policies. This study aims to inform future research on the effective use of technology in preschool education and to support the continued integration of AI applications into early childhood educational settings. Despite these limitations, the current study sheds light on positive attitudes toward technology, which positively affect the preschool atmosphere as well.

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The authors confirm that this study was conducted in accordance with the ethical standards approved by Sakarya University (Date: 27.11.2024; E.419573; Decision No: 21). Informed consent was obtained from all participants prior to their inclusion in the research. The confidentiality and anonymity of participant data were strictly maintained, and all procedures complied with established ethical guidelines for research involving human participants. This study received no external funding, and the authors declare no conflicts of interest.

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Ikimokyklinio ugdymo įstaigų administracijos darbuotojų ir mokytojų nuostatos į dirbtinį intelektą (DI)

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Santrauka

Dirbtinis intelektas (toliau – DI) naudingas tiek mokiniams, tiek mokytojams, dirbantiems ikimokyklinio ugdymo įstaigose. Vis dažniau DI taikomas kaip ugdymo priemonė. Šio tyrimo tikslas – išnagrinėti ikimokyklinio ugdymo mokytojų nuostatas į DI ir įvertinti, ar yra statistiškai reikšmingų skirtumų tarp ikimokyklinio ugdymo mokytojų ir administracijos darbuotojų nuostatų (atsižvelgiant į tokius demografinius kintamuosius kaip lytis, amžius, šeiminė padėtis), naudojant DI ir dalyvaujant su DI susijusiuose mokymuose.

Tyrimo imtį sudarė 220 ikimokyklinio ugdymo mokytojų, dirbančių nevalstybinėse ikimokyklinio ugdymo įstaigose ir valstybiniuose darželiuose Stambule. Atliekant tyrimą, naudota bendrųjų nuostatų į DI skalė, sudaryta iš 20 punktų, ir penkių balų Likerto skalė, kur 1 reiškia „Visiškai nesutinku“, 5 –„Visiškai sutinku “, o Cronbacho alfa koeficientas – 0,954.

Tyrimo rezultatai parodė, kad mokytojų požiūriui į DI didelę įtaką daro socialinės nuostatos ir politika. Ypač svarbu, kad mokytojai išlaikytų teigiamą požiūrį į technologijas ir skatintų jų plėtrą. Taip pat išsamiai aptarti mokytojų nuostatų statistiškai reikšmingi skirtumai ir jų poveikis švietimui. Be to, gauti rezultatai parodė, kad tyrimo dalyvių vyrų nuostatos į DI teigiamesnės nei dalyvių moterų.

Esminiai žodžiai: *ikimokyklinis ugdymas, dirbtinis intelektas (DI), mokytojai, administracijos darbuotojai, nuostatos, švietimo politika.*

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