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What Drives Teachers' Use of AI in Preschool Education? A Motivational Perspective Based on Expectancy-Value Theory

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Abstract

Although the use of artificial intelligence in early childhood education is becoming increasingly important, theoretical studies explaining preschool teachers' motivation for using AI remain limited. Research based on the Expectancy-Value Theory, examining teachers' perceptions of competence, value, and cost holistically, is particularly scarce. This study examines preschool teachers' motivation to utilize AI tools through the lens of Expectancy-Value Theory, investigating how perceptions differ across demographic and usage-related factors. A mixed-methods explanatory sequential design was employed. Data were collected from 164 teachers using the QAIUM scale, and semi-structured interviews were conducted with 19 teachers representing different motivation levels. Teachers reported high expectancy and value perceptions but moderate cost perceptions regarding AI use. Higher professional experience, postgraduate education, and regular use of AI for instructional planning were associated with higher motivation and lower perceived costs. Qualitative findings revealed that teachers viewed AI as enriching instruction and enhancing professional efficiency while expressing concerns about data security, screen dependency, reduced creativity, and increased time demands. AI experience enhances teachers' self-efficacy and value perceptions while decreasing perceived cost. Findings underscore the significance of professional development for the effective implementation of AI in early childhood education.

Keywords: Artificial intelligence, Expectancy–Value Theory, Motivation, Preschool teacher.

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Introduction

Today, the rapid proliferation of digital tools has led to significant transformations in education and many other sectors. This development has sparked various debates about the role of digital tools in education, particularly as numerous studies have demonstrated their contribution to learning processes in early childhood (Hatzigianni et al., 2023; Mukherjee et al., 2024; Undheim, 2022). Indeed, the use of technology-compatible tools in education allows learning environments to be tailored to children's interests, enabling them to participate more actively in the learning process and become more independent in their experiences (Martzoukou, 2022).

Children are increasingly encountering the internet and artificial intelligence-based tools as technology advances rapidly. In our era, children can experience machine learning (ML) and deep learning-based search engines for themselves at a young age (Duarte Torres & Weber, 2011). Therefore, an important effect of digital tools in early childhood is the development of critical thinking skills in children (Behnamnia et al., 2020). In relation to episodic memory, children also believe that the information they access through their internet searches is the result of information collected by a group of people, rather than originating from an algorithm (Kodama et al., 2017). This indicates that their ability to approach information critically in digital environments is not yet fully developed. Therefore, for children to cope with the adverse effects that such misconceptions can cause, they must develop higher-level cognitive skills such as critical thinking and evaluation (Sanders et al., 2020).

The use of AI-supported preschool education programs increases children's academic competence while also contributing to their development in terms of problem-solving skills. This, in turn, increases children's performance-based motivation while also contributing to the development of their emotional regulation skills (Zhao et al., 2025). In this context, due to the needs of our age and the indispensability of technology in our lives, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) has determined a competence framework for teachers and students regarding the integration of artificial intelligence into education. The framework for students aims to increase individual independence and productivity with a human-centered mindset, raise awareness about conscious AI use and ethical use with AI ethics, develop individuals' basic knowledge and skills with AI techniques, and strengthen problem-solving, creative thinking, and design-oriented skills with AI system design (UNESCO, 2024a). For teachers, it emphasizes that artificial intelligence tools should be viewed as complementary elements that enhance teachers' fundamental roles and responsibilities, rather than supplanting them. It provides a comprehensive guide aimed at supporting teachers' professional development processes through the ethical and responsible use of artificial intelligence, while also minimizing potential societal risks for students (UNESCO, 2024b). In light of this information, artificial intelligence is considered important today as part of Education 2030, which aims to develop inclusive, quality, and lifelong learning experiences for educators, families, policymakers, and children or students. In this context, the emergence of generative AI, although not yet developed for educational purposes, has raised various ethical, legal, and social debates. Within the framework of the OECD Teaching Compass for 2030, three key areas have been identified for teachers regarding the use of artificial intelligence in education to support teachers' skills and competencies while also recognizing that they themselves are lifelong learners. These are: teacher autonomy, well-being, and competence (OECD, n.d.). Teacher autonomy enables teachers to adapt the curriculum and pedagogical strategies to the

individual needs of children, thereby creating a more responsive and inclusive learning environment. However, structural constraints, such as standardized curricula, pressures related to accountability, and limited professional development opportunities, can limit teachers' ability to utilize this autonomy effectively (OECD, 2024). In this context, teacher autonomy facilitates the coexistence of teachers and artificial intelligence in the classroom. Thus, teachers gain direct experience on how artificial intelligence can be used in education and can integrate these technologies more consciously into pedagogical purposes (Mouta et al., 2025; Tripathi et al., 2025).

In Turkey, the importance of integrating artificial intelligence into education is emphasized in the "2025-2029 Artificial Intelligence in Education Policy Document and Action Plan," a report prepared in June 2025. According to the report, artificial intelligence enhances the professional performance of teachers, and its systematic use in education, aligned with pedagogical goals, plays a significant role in improving the quality of education. In this context, it is planned to encourage the design of training programs aimed at enhancing digital skills for teachers in collaboration with the National Education Academy Presidency, and to promote the development of educational policies that will implement practical support mechanisms for integrating artificial intelligence technologies into the teaching process (Ministry of Education, 2025a).

In addition, the potential psychological effects that artificial intelligence may have on teachers, as well as how it can be designed and implemented to support teachers' well-being, are also considered important (Chua & Bong, 2024). Indeed, research has shown that emotional intelligence and psychological well-being skills impact teacher competence in utilizing artificial intelligence in teaching applications (Asad et al., 2023; Duan & Zhao, 2024). This is because these skills support teachers in understanding, managing, and empathizing with both their own emotions and those of others (Lin & Chen, 2024), while also playing an important role in teachers creating a favorable classroom climate and communicating effectively with children (Wang & Kruk, 2024; Zhi & Wang, 2024). In light of this information, maintaining a school culture that preserves teacher autonomy, integrating artificial intelligence into classrooms within the framework of ethical principles, and providing teachers with training support on artificial intelligence literacy are seen as practical elements in the healthy implementation of this process (Bleikher et al., 2025; Eyal, 2025). However, artificial intelligence should be considered as part of teaching practices that enhance teachers' expertise and support their well-being, rather than replacing them (OECD, 2025).

In the third area, teacher competencies outline the level of knowledge and skills that teachers should possess regarding the use of artificial intelligence in education and the risks that may arise from this process (OECD, n.d.). Regarding teacher competencies, Zhao et al. (2021) emphasize that the cultural context of the region where the practice takes place is crucial for teachers' professional development. For this purpose, training programs designed to support teachers' professional development should be developed in line with the needs of these regions. Therefore, determining learning outcomes in terms of artificial intelligence in a manner appropriate for the professional development of teachers working at different levels of education has become necessary in teacher training programs in this context (Al-Zyoud, 2020; Touretzky et al., 2019; Vlasova et al., 2019). However, a study emphasizes that teacher training programs should be designed to strengthen teachers' basic AI skills, inform them about appropriate AI content they can use in the classroom, combine interactive and collaborative teaching

methods, provide guidance on accessible software and hardware options, and support teachers' motivation to use AI. (Vlasova et al., 2019). Furthermore, studies examining teachers' perspectives on the use of artificial intelligence in educational settings have concluded that teachers are willing to incorporate artificial intelligence into their classrooms and adopt a supportive attitude toward their students during the learning process (Alexandre et al., 2021). In contrast, another study concluded that teachers have limited competence in digital skills and the use of artificial intelligence in educational settings (Chounta et al., 2022).

Based on current knowledge, teachers' autonomy, well-being, and competence levels significantly influence the integration of AI into education. Within this framework, this study aims to examine preschool teachers' motivations for using artificial intelligence tools within the framework of the Expectancy-Value Theory. The Expectancy-Value Theory, which is the focus of this study, explains the effect of motivation on individuals' behaviors and choices (Eccles & Wigfield, 2002). The Expectancy-Value Theory consists of self-efficacy beliefs, performance expectancy, and value structures (Wigfield & Eccles, 2000). According to the theory, individuals' expectations of success and the value they place on success are seen as important determinants of their motivation to perform tasks (Wigfield, 1994). Expectancy-value theory focuses on two fundamental cognitive influences: individuals' judgments regarding the likelihood of success in a task (expectancies) and their reasons for participating in the task (values). In this model, individuals consider both the value and the likelihood of success when choosing between different options. Furthermore, an individual's expectations of success are significantly influenced by their perceived competence (Bümen & Uslu, 2020). Therefore, this research is considered important in terms of revealing teachers' perceptions of their competence regarding artificial intelligence technologies, which has been an important topic in the literature recently, their perceptions of the value of these technologies, and their evaluations of the difficulties they encounter in the use process.

Theoretical Framework

This study examines the factors that determine preschool teachers' use of artificial intelligence, drawing on expectation-value theory. In this context, this section explains the theoretical basis of the study. An effective learning-teaching process depends on the success of two components. The first is ensuring learner motivation, and the second is the learner's participation in the learning process in cognitive, behavioral, and emotional dimensions (Sarıtepeci, 2018). Cognitive participation involves the individual carrying out an active, conscious, and purposeful thinking process; behavioral participation involves the individual making an effort by exhibiting positive behaviors related to learning; emotional participation involves showing interest in the learning process, establishing identification, meeting the need to belong, and developing a positive attitude towards learning (Eryılmaz, 2013; Newmann et al., 1992). At this point, one of the theories explaining individuals' behaviors related to their success in participation processes is the expectancy-value theory. The theory suggests that an individual's success depends on their effort toward learning and their expectation of reward in return for success (Slavin, 2013; Wigfield & Eccles, 2002). In contrast, expectancy-value theory attributes two premises to the underlying motivation for individuals to succeed in a task or situation: personal expectations (beliefs about being successful) and perceptions of value (the importance or meaningfulness of the task) (Atkinson, 1964; Wigfield & Eccles, 2000).

The relationship between expectation and value was first proposed by Atkinson (1964) and is accepted as a theory explaining individuals' motivation for success. The theory is based on individuals' expectations (their belief that they can achieve success) and the importance they attach to the goal (the value they place on achieving this success). In subsequent years, Atkinson's approach was developed to form the modern expectancy-value theory. The modern expectancy-value theory presents a more comprehensive model for explaining achievement motivation by combining concepts found in different motivation theories (Eccles, 1983; Wigfield et al., 2015). According to the model, the effort an individual exerts to achieve a goal and their level of self-efficacy during this process directly influence their expectation of achieving the goal (Wigfield & Eccles, 1992). Individuals' beliefs about their level of competence to achieve a goal are explained in the literature by concepts such as self-confidence and self-efficacy (Wigfield & Eccles, 2000). In expectancy-value theory, the concept of value is addressed in four dimensions (Wigfield & Eccles, 2000). These are: value, utility, interest, and cost. In this context, importance refers to the individual's assessment of the goal's significance; utility refers to the extent to which the goal aligns with long-term objectives. Interest explains the individual's interest in the goal in the context of self-determination theory in relation to the concepts of intrinsic and extrinsic motivation (Deci & Ryan, 1985), while cost explains the sacrifices made by the individual to achieve the goal (Eccles & Wigfield, 2024; Wigfield, 1994; Wigfield & Cambria, 2010). In conclusion, expectancy-value theory provides a crucial theoretical framework for understanding preschool teachers' motivations and perceptions of value regarding the use of AI, and it forms the basis for interpreting the study's findings. In this context, the research questions are listed below:

Quantitative research questions:

1. What is the level of preschool teachers' expectancy for using artificial intelligence tools?
2. What are the perceived value levels of preschool teachers' use of artificial intelligence tools (attainment, utility, interest, and cost)?
3. Do teachers' motivations for using artificial intelligence tools vary based on demographic variables?

Qualitative research questions:

1. What are preschool teachers' perceptions of their ability to use artificial intelligence tools effectively in the classroom?
2. What value do preschool teachers perceive the use of artificial intelligence tools to have in terms of their professional practice? (attainment, utility, interest, cost)

Method

Research Model

The research was planned according to the explanatory sequential design, a type of mixed methods design. The explanatory sequential design is a mixed-methods design in which quantitative data are first collected and analyzed to address the research problem, followed by the application of a qualitative phase to provide in-depth interpretation and explanation of the quantitative results obtained (Creswell, 2021). In the quantitative dimension of the research, the "Questionnaire of Artificial Intelligence Use Motives" developed by Yurt and Kaşarcı (2024) was employed to assess the motivation of pre-school teachers to utilize artificial intelligence. In the qualitative dimension, a semi-structured interview form developed by the researchers was used. Semi-structured interviews are a flexible interview technique in which questions are prepared in advance. However, the process is not entirely

rigid, allowing the researcher to rearrange questions and add probing questions when necessary, aiming to gather in-depth information through open-ended questions (Büyüköztürk et al., 2012; Sönmez & Alacapınar, 2014).

Sample

Convenience sampling was employed to select the participants for the study. In convenience sampling, the researcher creates a sample group from individuals who are accessible and willing to participate in the study. This technique is a sampling method that saves the researcher time, cost, and labor, thereby enabling the data collection process to be carried out more efficiently (Büyüköztürk et al., 2012). A total of 164 teachers from Turkey participated in the quantitative dimension of the study. Information about the participants is presented in Table 1.

Table 1. Distribution of Teachers According to Demographic Characteristics

		f	%
Gender	Female	153	93,3
	Male	11	6,7
Age	22-30 years old	61	37.2
	31-40 years old	64	39.0
	41 years old and above	39	23.8
Professional experience	1-5 years	51	31.3
	6-10 years	44	27.0
	11 years and more	68	41.7
Educational status	Bachelor's degree	123	75.0
	Master's degree	40	24.4
	Doctoral degree	1	0.6
Usage of artificial intelligence tools in the educational planning process	Yes, I use them regularly	33	20.1
	Yes, I use them occasionally	106	64.6
	No, I have never used them	25	15.2
Usage of artificial intelligence tools during lessons	Yes, I use them regularly	16	9.8
	Yes, I use them occasionally	81	49.4
	No, I have never used them	67	40.9

93.3% of participants (153 individuals) were female, while 6.7% (11 individuals) were male. Participants' ages were distributed across the following ranges: 22–30 years old (37.2%), 31–40 years old (39.0%), and 41 years old and above (23.8%). It was observed that 31.3% of participating teachers had 1 to 5 years of professional experience, 27% had 6 to 10 years, and 41.7% had 11 years or more. The vast majority of participating teachers (75%) held a bachelor's degree, with only one teacher (0.6%) holding a doctoral degree. A significant proportion of teachers (64.6%) stated that they used artificial intelligence tools in the educational planning process. When examining teachers' use of artificial intelligence during lessons, 9.8% (n=16) stated that they used artificial intelligence applications regularly, 49.4% (n=81) stated that they used them occasionally, and 40.9% (n=7) stated that they never used them.

Finally, within the demographic information, details were also gathered regarding the technological tools that participants frequently use and employ as educational materials. The most frequently used technological tool among participants was the smartphone (n=158). This was followed by the computer (n=121), tablet (n=26), television (n=8), smart board (n=7), and projector (n=2). The most commonly used tool for educational material was the computer (n = 122). This is followed by smartboards (n = 83), smartphones (n = 21), projectors (n = 19), tablets (n = 7), and televisions (n = 6). Based on these results, it can be concluded that there is a clear distinction

between personal use and educational use in teachers' interactions with technology.

In the qualitative dimension of the research, participants were selected from among the teachers participating in the quantitative application using purposive sampling. This selection aimed to reach teachers with varying levels of motivation scores. Thus, the aim was to include participants who could provide a deeper understanding of the expectation-value structure regarding the use of artificial intelligence. The interviews were conducted until data saturation was achieved, and the process was completed with a total of 19 teachers, comprising one male and 18 females. Participants were coded as K1, K2, K3 and so on, in accordance with the principle of confidentiality.

Data Collection Tools

In the quantitative dimension of the research, the "Demographic Information Form" and the "Questionnaire of Artificial Intelligence Use Motives (QAIUM)" were used. In the qualitative dimension, a semi-structured interview form developed by the researchers was used.

Demographic Information Form

Developed by the researchers to collect information about participants' age, gender, professional experience, frequently used technological tools, technological tools used as educational materials, and their use of artificial intelligence tools in planning education and during lessons.

Artificial Intelligence Usage Motivation Questionnaire (QAIUM)

Developed by Yurt and Kaşarcı (2024), this scale comprises 20 items and was designed based on the Expectancy-Value theory to measure individuals' motivation to use artificial intelligence applications. The scale comprises five dimensions: Expectancy, Attainment, Utility, Intrinsic/Interest Value, and Cost, and all items are answered using a 5-point Likert-type scale (1 = Completely False, 5 = Completely True). Items in the Cost dimension are reverse-scored. The average scores obtained from the scale are interpreted on a scale of 1 to 5, with motivation levels classified as very low (1.00–1.80), low (1.81–2.60), moderately high (2.61–3.40), high (3.41–4.20), and very high (4.21–5.00). High averages for the Cost dimension indicate a higher perception of time/effort cost.

Validity studies were conducted using Exploratory and Confirmatory Factor Analysis, and internal consistency coefficients were reported to be in the range of .865–.935 (Yurt & Kasarci, 2024). These findings indicate that the scale is reliable and structurally valid. For this study, the reliability analysis of the scale was repeated, and the Cronbach's Alpha value calculated for the scale was .848. Meanwhile, the Cronbach's Alpha values for the sub-dimensions ranged from .787 to .935.

Semi-structured Interview Form

The researchers developed this form to examine in depth the motivations of participating teachers regarding the

use of artificial intelligence. Developed based on the Expectancy-Value Theory, the form consists of 13 items. To determine the content validity of the form, it was sent to three experts: a preschool teacher, an assessment and evaluation specialist, and a specialist in preschool education. They were asked to evaluate the items in terms of clarity and appropriateness. Each item was scored from 1 to 5 in terms of clarity and appropriateness (1 = Very poor, 5 = Very good). The analysis revealed that the average clarity score was 4.85 and the average appropriateness score was 4.82. Since most items were rated close to 5 points, it was observed that the statements were linguistically clear and content-wise appropriate for the purpose. Accordingly, only minor linguistic corrections were made, and no significant changes were required in terms of content.

Data Collection Process

The research data were collected using online data collection forms administered via Google Forms. The survey link was initially shared with administrators of preschool institutions, who distributed it to preschool teachers working in their institutions. In addition, the link was forwarded to other preschool teachers through professional networks, and the researchers also directly shared the survey link with preschool teachers known to them.

A total of 172 responses were collected through this process. After data screening, duplicate responses and responses from participants without professional teaching experience were excluded. Accordingly, the final dataset consisted of 164 preschool teachers, and all analyses were conducted based on this sample. The necessary ethical permission for the research was obtained from the Selçuk University Faculty of Education Ethics Committee with its letter dated 22.09.2025 and numbered 1087851.

Data Analysis

The motivation scores for artificial intelligence use were first subjected to a normality test, and the skewness and kurtosis coefficients were examined. For the assumption of normal distribution to be met, it is sufficient for the skewness and kurtosis coefficients to be within the ±1 range (Tabachnick & Fidell, 2007). In this study, the calculated skewness and kurtosis coefficients were found to be within the specified range (Table 2).

Table 2. Descriptive Values of Scores Obtained from the Artificial Intelligence Usage Motivation Scale

Variables	M	SD	Skewness		Kurtosis	
			Statistic	SD	Statistic	SD
Expectancy	3.47	0.782	-0.10	0.190	-0.142	0.377
Attainment	3.64	0.953	-0.690	0.190	0.239	0.377
Utility value	3.89	0.834	-0.747	0.190	0.544	0.377
Intrinsic/ interest value	3.79	0.947	-0.870	0.190	0.725	0.377
Cost	2.63	0.770	0.460	0.190	0.417	0.377
Task Value Total	3.49	0.497	-0.855	0.190	0.521	0.377

The descriptive statistics for the scale's subscales were examined in the study. Furthermore, an independent sample t-test was used to compare participants' motivation scores regarding artificial intelligence usage according to gender and educational status. A one-way analysis of variance was performed to compare scores according to the variables of age, professional experience, use of artificial intelligence tools during lesson planning, and use of

artificial intelligence tools during lessons. The data were analysed using the free and open-source statistical software Jamovi 2.7.12.

In this study, qualitative data were analysed using a theoretical thematic analysis approach within the Expectancy-Value Theory framework. Theoretical thematic analysis is defined as an approach guided by a specific theoretical area of interest and providing an explicitly analyst-oriented analysis (Braun & Clarke, 2006). This deductive method aims to examine a specific dimension in depth rather than providing a broad description of the data as a whole (Braun & Clarke, 2006).

Results

Quantitative Findings

This section presents the findings related to the quantitative data of the study. Firstly, teachers' perceived levels of expectancy in using artificial intelligence tools were examined using descriptive statistics. Descriptive statistics regarding teachers' expectancy scores are presented in Table 3.

Table 3. Descriptive Statistics Regarding Preschool Teachers' Expectancy Scores in Using Artificial Intelligence Tools

Variable	N	M	SD
Expectancy	164	3.47	0.78

Table 3 shows that the average score for teachers' expectancy in using artificial intelligence tools is 3.47 (SD=0.78). Considering that the scale is scored on a 1-5 range and that the 3.41-4.20 range is considered "high level" (Yurt and Kaşarcı, 2024), it can be said that teachers' expectancy in using artificial intelligence tools is at a high level. Teachers' perceptions of the value of using artificial intelligence were examined, and descriptive statistics regarding the sub-dimensions: attainment, utility value, intrinsic/ interest value, cost, and the superordinate dimension: value scores are presented in Table 4.

Table 4. Descriptive Statistics Regarding Preschool Teachers' Perceptions of Task Value in the Use of Artificial Intelligence Tools

Variables	N	M	SD
Attainment	164	3.64	0.95
Utility value	164	3.89	0.83
Intrinsic/ interest value	164	3.79	0.94
Cost	164	2.63	0.77
Task Value Total	164	3.49	0.49

Table 4 shows that the attainment (M=3.64), utility (M=3.89) and intrinsic value (M=3.79) dimensions fall within the range of 3.41-4.20. This range is considered "high level" according to the scale. Accordingly, it can be said that teachers find the use of artificial intelligence important and functional and enjoy the process. The average of the cost dimension being 2.63 indicates that the perception of cost is at a moderately-high level. According to the scale guidelines, low scores in this dimension (after reverse scoring) indicate that teachers perceive the process of

learning and using artificial intelligence applications as more costly in terms of time, effort, and cognitive load (Yurt & Kaşarcı, 2024). This finding indicates that although teachers acknowledge the benefits of artificial intelligence, they believe that managing the application process requires a certain level of effort.

Table 5. Examination of Preschool Teachers' Motivation to Use Artificial Intelligence Tools According to Gender

Variables	Gender	N	M	SD	t (162)	p
Expectancy	Female	153	3.42	0.782	-2.684	0.008*
	Male	11	4.07	0.501		
Attainment	Female	153	3.62	0.966	-0.958	0.340
	Male	11	3.91	0.727		
Utility value	Female	153	3.88	0.846	-0.812	0.418
	Male	11	4.09	0.645		
Intrinsic/ interest value	Female	153	3.76	0.955	-1.517	0.131
	Male	11	4.20	0.740		
Cost	Female	153	2.65	0.775	1.592	0.113
	Male	11	2.27	0.617		

*p<0,05

According to the results of the independent sample t-test conducted by gender (Table 5), a significant difference was found only in the expectancy dimension (t(162) = -2.68, p = .008). Male teachers' perception of expectancy (M=4.07) is higher than that of female teachers (M=3.42). However, no significant difference was found between genders in the attainment (t(162)=-0.96, p=.340), utility value (t(162)=-0.81, p=.418) and intrinsic/ interest value (t(162)=-1.52, p=.131) dimensions. There is also no significant difference between the groups in the cost dimension (t(162) = 1.59, p=.113).

Table 6. Examination of Preschool Teachers' Motivation to Use Artificial Intelligence Tools According to Age Level

Variables	Age	N	M	SD	F	p
Expectancy	22–25	61	3.36	0.73	2.60	.080
	26–30	64	3.64	0.73		
	31+	39	3.35	0.91		
Attainment	22–25	61	3.55	0.80	0.93	.398
	26–30	64	3.76	0.97		
	31+	39	3.60	1.12		
Utility value	22–25	61	3.82	0.79	2.37	.099
	26–30	64	4.07	0.82		
	31+	39	3.72	0.87		
Intrinsic/ interest value	22–25	61	3.73	0.84	2.46	.091
	26–30	64	3.98	0.88		
	31+	39	3.56	1.14		
Cost	22–25	61	2.74	0.67	1.27	.285
	26–30	64	2.53	0.77		
	31+	39	2.62	0.88		

The results of the one-way ANOVA conducted according to the age variable (Table 6) showed that there was no significant difference in the motivation dimensions of teachers towards the use of artificial intelligence (p > .05). As seen in Table 6, it is noteworthy that the 26–30 age group had higher scores for expectancy (M=3.64), attainment (M=3.76), utility value (M=4.07), and intrinsic/ interest value (M=3.98) than the other groups.

However, these differences are not statistically significant ($F_{expectancy}$=2.60, p=.080; $F_{attainment}$=0.93, p=.398; $F_{utility}$=2.37, p=.099; $F_{intrinsic}$=2.46, p=.091; F_{cost}=1.27, p=.285). The fact that the means are quite close to each other in terms of cost (M=2.53-2.74) indicates that age groups evaluate the use of artificial intelligence similarly in terms of time and effort. These findings reveal that teachers' motivation towards artificial intelligence does not differ significantly according to the age variable.

Table 7. Examination of Preschool Teachers' Motivation to Use Artificial Intelligence Tools According to Their Professional Experience

Variables	Professional experience	N	M	SD	F	p
Expectancy	1-5 years	51	3.36	0.70	3.87	.024*
	6-10 years	44	3.74	0.74		
	11 years and more	68	3.39	0.84		
Attainment	1-5 years	51	3.56	0.87	0.88	.418
	6-10 years	44	3.78	0.82		
	11 years and more	68	3.62	1.09		
Utility value	1-5 years	51	3.87	0.82	0.27	.765
	6-10 years	44	3.97	0.81		
	11 years and more	68	3.86	0.88		
Intrinsic/ interest value	1-5 years	51	3.78	0.87	1.14	.325
	6-10 years	44	3.95	0.85		
	11 years and more	68	3.68	1.06		
Cost	1-5 years	51	2.75	0.73	1.28	.283
	6-10 years	44	2.51	0.69		
	11 years and more	68	2.61	0.85		

*p<0,05

The results of the one-way ANOVA conducted according to professional experience (Table 7) showed a significant difference only in the expectancy dimension (F(2,102)=3.87, p=.024). When examining the descriptive statistics, it is observed that teachers with 6–10 years of experience have higher expectancy scores (M=3.74) compared to other groups. In contrast, no statistically significant differences were found in the attainment, utility, intrinsic value, and cost dimensions (p>.05). This finding indicates that motivation towards artificial intelligence is generally independent of professional experience, but that the perception of expectancy may be higher within a specific experience range (6–10 years).

Table 8. Examination of Preschool Teachers' Motivation to Use Artificial Intelligence Tools According to their Graduation Status

Variables	Educational Status	N	M	SD	t (162)	p
Expectancy	Undergraduate	123	3.34	0.75	-3.86	<.001*
	Postgraduate	41	3.86	0.76		
Attainment	Undergraduate	123	3.55	1.00	-2.08	.039*
	Postgraduate	41	3.91	0.75		
Utility value	Undergraduate	123	3.82	0.86	-1.88	.062
	Postgraduate	41	4.10	0.74		
Intrinsic/ interest value	Undergraduate	123	3.67	0.98	-2.76	.007*
	Postgraduate	41	4.13	0.76		
Cost	Undergraduate	123	2.70	0.81	2.01	.046*
	Postgraduate	41	2.42	0.61		

*p<0,05

Table 8 compares teachers' motivation levels for using artificial intelligence according to their graduation status. According to the results of the independent samples t-test, postgraduate graduates' expectancy levels ($t(162) = -3.86$, $p < .001$), their perceptions of attainment ($t(162)=-2.08$, $p=.039$), and their intrinsic value levels ($t(162)=-2.76$, $p=.007$) were found to be significantly higher. The difference in the utility dimension was not significant ($p = .062$). In the cost dimension, the postgraduate group had a lower mean ($M = 2.42$), and this difference was significant ($t(162) = 2.01$, $p = .046$). Because higher scores on the cost dimension reflect greater perceived time and effort demands, the lower mean score indicates that teachers with postgraduate degrees view the use of artificial intelligence as requiring less time, effort, and cognitive load. Accordingly, these teachers appear to view the process of learning and using artificial intelligence applications as less laborious compared to teachers with undergraduate degrees.

Table 9. Comparison of Motivation Dimensions According to the Use of Artificial Intelligence Tools in the Education Planning Process

Variables	Usage of Artificial Intelligence Tools in the Education Planning Process	N	M	SD	F	p*	Games-Howell Post Hoc
Expectancy	Regular User[1] Occasional User[2] Never Used[3]	33 106 25	4.08 3.46 2.67	0.73 0.64 0.71	27.3	< .001	1>2, 1>3, 2>3
Attainment	Regular User[1] Occasional User[2] Never Used[3]	33 106 25	4.30 3.68 2.61	0.63 0.80 1.05	27.3	< .001	1>2, 1>3, 2>3
Utility value	Regular User[1] Occasional User[2] Never Used[3]	33 106 25	4.54 3.88 3.10	0.51 0.72 0.93	30.8	< .001	1>2, 1>3, 2>3
Intrinsic/ interest value	Regular User[1] Occasional User[2] Never Used[3]	33 106 25	4.44 3.79 2.92	0.50 0.90 0.92	32.5	< .001	1>2, 1>3, 2>3
Cost	Regular User[1] Occasional User[2] Never Used[3]	33 106 25	2.14 2.61 3.36	0.60 0.66 0.87	18.9	< .001	3>2, 3>1, 2>1

*All ANOVA results are significant at the $p < .001$ level.

As shown in Table 9, there were significant differences in expectancy, attainment, utility value and intrinsic/ interest value levels according to teachers' use of artificial intelligence tools in the educational planning process (F values = 18.9–32.5, $p < .001$). According to the Games-Howell multiple comparison results, the averages of those who regularly use artificial intelligence tools are significantly higher than those who use them occasionally or not at all in all motivation dimensions. Furthermore, the scores of those who use them occasionally are also significantly higher than those who do not use them at all. In terms of cost, high averages represent more time/labour costs. In this regard, it is seen that those who never use artificial intelligence have the highest cost perceptions ($M=3.36$), while regular users have the lowest ($M=2.14$). It can be said that regular use of artificial intelligence increases expectancy, attainment, utility value, and intrinsic/ interest value motivations while reducing perceived cost.

Table 10. Comparison of Motivation Dimensions According to the Use of Artificial Intelligence Tools During Lessons

Variables	Usage of artificial intelligence tools during lessons	N	M	SD	F	P*	Games-Howell Post Hoc
Expectancy	Regular User[1]	16	4.11	0.65	13.6	< .001	1>2, 1>3, 2>3
	Occasional User[2]	81	3.60	0.66			
	Never Used[3]	67	3.16	0.82			
Attainment	Regular User[1]	16	4.44	0.51	24.7	< .001	1>2, 1>3, 2>3
	Occasional User[2]	81	3.88	0.74			
	Never Used[3]	67	3.17	1.03			
Utility value	Regular User[1]	16	4.67	0.44	29.8	< .001	1>2, 1>3, 2>3
	Occasional User[2]	81	4.10	0.60			
	Never Used[3]	67	3.45	0.91			
Intrinsic/ interest value	Regular User[1]	16	4.58	0.50	26.6	< .001	1>2, 1>3, 2>3
	Occasional User[2]	81	4.05	0.71			
	Never Used[3]	67	3.29	1.02			
Cost	Regular User[1]	16	1.92	0.51	23.1	< .001	3>2, 3>1, 2>1
	Occasional User[2]	81	2.45	0.60			
	Never Used[3]	67	3.01	0.81			

*All ANOVA results are significant at the p < .001 level.

Significant differences were found in teachers' motivation levels based on their use of artificial intelligence tools during lessons (Table 10). According to the results of the one-way ANOVA, the differences between groups were statistically significant in all motivation dimensions (F = 13.6–29.8, p<.001). When examining group averages, it is seen that teachers who use AI tools regularly have higher levels of expectancy (M=4.11), attainment (M=4.44), utility (M=4.67), and intrinsic value (M=4.58) than the other two groups. The motivation levels of teachers who used it occasionally were significantly higher than those who never used it. High averages in the cost dimension indicate a higher perception of time/effort cost. Accordingly, teachers who never used it had the highest cost perceptions (M=3.01), while those who used it regularly had the lowest (M=1.92). In conclusion, regular use increases expectancy, attainment, utility value and intrinsic/ interest value, while reducing perceived cost.

Qualitative Findings

This section presents the findings related to the qualitative data of the study under the heading of research questions.

Preschool Teachers' Perceptions Regarding their Ability to Effectively Use Artificial Intelligence Tools in the Classroom Environment

In this section, teachers' expectancy regarding using artificial intelligence tools was analysed in line with Expectancy–Value Theory. As a result of coding, five sub-themes were identified under the overarching theme of "Expectancy": (1) Initial Self-Efficacy Perception, (2) Expectancy Developed through Experience, (3) Self-Efficacy Reinforced by Success Experiences, (4) Capacity to Cope with Difficulties, and (5) Contextual Expectancy. Table 11 presents the distribution of participants across the sub-themes.

Table 11. Sub-Themes Related to Preschool Teachers' Expectations Regarding Their Use of Artificial Intelligence Tools

Sub-Themes	Participants
1. Initial Self-Efficacy Perception	K1, K2, K3, K5, K6, K7, K8, K9, K10, K11, K12, K13, K14, K16, K18, K19
2. Expectancy Developed through Experience	K4, K5, K6, K10, K11, K13
3. Self-Efficacy Reinforced by Success Experiences	K4, K5, K7, K9, K10, K11, K17, K19
4. Capacity to Cope with Difficulties	K2, K3, K6, K11, K13, K16, K18, K19
5. Contextual Expectancy	K14, K15, K17, K19

The findings of the analysis indicate that pre-school teachers' perceptions of their expectancy in using artificial intelligence are multi-layered and shaped by the process. Although the majority of participants have a certain level of expectancy at the outset, this perception varies according to personal experience and context. Some teachers stated that their expectancy increased through trial and error and repetition as they used AI tools; positive student feedback and ease in daily tasks obtained during this process significantly reinforced their self-efficacy perceptions. However, some teachers indicated that they were able to manage the process by seeking help or generating solutions when encountering technical difficulties. This finding demonstrates that expectancy is based not only on "initial capacity" but also on "sustaining ability." Furthermore, teachers assessed their technological competence contextually; they felt quite competent with some tools but were more cautious with others. Overall, teachers' expectations of competence exhibit a holistic and dynamic structure shaped by initial self-confidence, experience-based learning, motivation reinforced by success, and context-specific usage preferences. Below are some participant statements as examples within the relevant theme:

"I am confident because I am knowledgeable about the subject." (K10)
"When I first started using it, I didn't have enough confidence. However, as I used it, my confidence increased." (K13)
"Based on the feedback I receive from students; I think I use artificial intelligence successfully in the classroom environment." (K5)
"Although I sometimes encounter technical or pedagogical difficulties, I see them as learning opportunities... Trying out new tools, sharing experiences with my colleagues, and conducting small experiments help me overcome these difficulties." (K11)
"I use it especially for preparing materials. I use it effectively to prepare storybooks, topic-related activities, and game materials." (K14)

What Kind of Values do Pre-school Teachers Consider Artificial Intelligence Tools to Hold in Terms of Their Professional Practice?

Analysis aimed at understanding the values preschool teachers attribute to artificial intelligence reveals that teachers evaluate this technology not only as a pedagogical tool but also as a multidimensional structure that supports their professional roles, relates to their identity, arouses curiosity, and in some cases incurs a cost burden. The findings are organized holistically under the themes of attainment, utility value, intrinsic/ interest value, and

cost within the Expectancy-Value Theory framework. These themes clarify the reasons why teachers perceive artificial intelligence tools as meaningful, valuable, or risky.

Table 12. Sub-themes Related to the Attainment Value Preschool Teachers' Attribute to the Use of Artificial Intelligence Tools

Sub-Themes	Participants
1. Importance Attributed to Professional Development	K1, K2, K3, K4, K5, K6, K7, K8, K9, K10, K11, K13, K14, K15, K17, K18
2. Alignment with Teaching Identity	K1, K2, K3, K4, K5, K6, K9, K10, K11, K13, K14, K15, K16, K17, K18, K19
3. Importance Attributed to Student Development	K1, K2, K3, K4, K5, K6, K9, K10, K11, K13, K14
4. Professional Functionality and Ease of Use	K3, K4, K7, K12, K17, K19

Table 12 presents the sub-themes that emerged regarding the attainment value teachers attributed to the use of artificial intelligence tools. Teachers' perceptions of attainment are evident in several dimensions. Firstly, it is common for artificial intelligence to be seen as a necessity for professional development. Participants define technology as an element that updates their teaching roles and supports professional renewal. Furthermore, the issue of AI's compatibility with the teaching identity shows diversity in opinions: while some teachers embrace the technology as a natural part of their innovative identity, others state that it only partially aligns with their values. The emphasis on student development stands out as a common point; participants state that artificial intelligence increases students' motivation to learn, enriches processes, and is effective in preparing them for the skills required by the era. Overall, the findings on the theme of attainment show that artificial intelligence has gained a meaningful place in teachers' professional positioning. Below are some participant statements as examples within the relevant theme:

"As a teacher, I believe that using artificial intelligence technologies effectively is important for my professional development." (K6)
"It overlaps quite a bit... I believe that the learning habits of the new generation need to be considered." (K5)
"The more effectively we as teachers use artificial intelligence, the more we will prepare children for the technological age, perhaps taking today's technology to a much more advanced level." (K4)
"It can prepare work for us in a very short time that could sometimes take days or weeks." (K19)

Table 13. Sub-themes Related to the Utility Value Provided by Artificial Intelligence Tools According to the Opinions of Preschool Teachers

Sub-Themes	Participants
1. Utility Supporting the Teaching Process	K1, K2, K3, K4, K5, K6, K9, K10, K11, K12, K13, K14, K15, K16, K17, K18, K19
2. Utility Contributing to Classroom Management	K1, K2, K3, K4, K5, K6, K7, K11, K13, K14, K15, K16, K17, K19

Table 13 presents sub-themes related to the utility provided by artificial intelligence tools according to teachers' views. The utility value theme reflects teachers' concrete observations on how artificial intelligence transforms

teaching processes. The majority of participants define artificial intelligence as a tool that makes learning more engaging, understandable, and memorable. In addition, teachers stated that AI-supported materials provide strong support in terms of visualisation and differentiating teaching. Opinions on classroom management show more diversity: while some participants find technology effective in managing attention, others see this contribution as limited. In summary, the theme of utility reveals that the educational functions of artificial intelligence are strongly accepted, but its effects on classroom management are evaluated more contextually. Below are some participant statements as examples within the relevant theme:

"I prefer to use it for concepts that would remain abstract for children. It attracts their interest more, and they don't lose focus on the subject immediately." (K2)
"I believe the greatest contribution of artificial intelligence tools to the teaching process is in personalising learning and enriching the teaching process." (K11)
"…I can say it most facilitates classroom management. It can quickly bring a distracted class back together." (K13)

Table 14. Sub-themes of Intrinsic/ Interest Value Towards Artificial Intelligence Tools According to the Opinions of Preschool Teachers

Sub-Themes	Participants
1. High Interest and Curiosity	K1, K2, K3, K4, K5, K6, K9, K10, K11, K13, K14, K15, K18, K19
2. Moderate And Conditional Interest	K6, K7, K8, K15
3. Lack Of Interest and Negative Attitude	K16, K17

Table 14 presents sub-themes related to teachers' intrinsic/interest value regarding the use of artificial intelligence tools. The theme reflects teachers' intrinsic inclinations towards using artificial intelligence tools. Most participants find exploring artificial intelligence exciting and express a willingness to develop themselves in these areas. Interest was seen to vary depending on the context for some teachers; situations where students' reactions aroused interest were noteworthy. In contrast, two participants stated that they did not find the AI interesting and did not have internal motivation. The overall picture of this theme is that curiosity about artificial intelligence is widespread but not equally intense among all teachers. Below are some participant statements related to this theme:

"Acquiring new knowledge in a new field is very interesting." (K19)
"It attracts my interest because it attracts the children's interest." (K15)
"I don't find it very interesting because I don't find it reliable." (K16)

Table 15 presents sub-themes related to teachers' perceptions of the cost of using artificial intelligence tools. Findings related to the cost theme indicate that teachers evaluate the use of artificial intelligence not only in terms of its advantages but also in terms of its potential burdens and risks. Participants indicated that artificial intelligence carries significant concerns such as creating a tendency towards laziness, increasing the risk of screen

addiction, limiting creativity, and data security. It was also stated that AI technology has resource-based costs such as time consumption, mental load, and financial accessibility. However, some participants emphasised that these costs are balanced by the conveniences provided in the teaching process. The findings reveal that cost-benefit analysis is an area that requires caution and attention for teachers. Below are some participant statements as examples within the relevant theme:

Table 15. Sub-themes of Cost Value Regarding Artificial Intelligence Tools According to the Opinions of Preschool Teachers

Sub-Themes	Participants
1. Perceived Risks	K1, K2, K3, K4, K6, K9, K10, K11, K12, K13, K14, K15, K16, K17, K18, K19
2. Resource Consumption and Workload Costs	K2, K3, K4, K5, K6, K8, K9, K10, K11, K13, K14, K16, K17, K18, K19

“Overuse can make people forget to think and research. People may become lazy, thinking that there is a brain thinking for them anyway.” (K13)
“Not having sufficient awareness on this subject and the security risk worry me.” (K3)
“It takes up so much of my time that my paperwork is falling behind.” (K2)
“Most of the time it makes things easier, but sometimes it tires my mind because it feels like keeping up with these innovations is a separate responsibility.” (K19)

When the qualitative findings are examined holistically, it is seen that preschool teachers’ perceptions of artificial intelligence tools have a multi-layered structure. Teachers define artificial intelligence as an element that supports teaching processes, enriches learning, and strengthens their professional roles on the one hand; on the other hand, they also mention the cognitive, ethical, and practical costs that come with its use. The themes emerging within the Expectancy–Value Theory framework show that teachers’ expectations regarding these technologies are a dynamic process that develops with experience, while value attributions vary in terms of attainment, utility value, intrinsic/interest value, and cost dimensions. The findings reveal that the use of artificial intelligence is evaluated in terms of both its supportive and limiting aspects in teachers’ professional positioning; this indicates that teachers make a multifaceted assessment when integrating technology into their pedagogical practices.

Discussion

This study aimed to determine preschool teachers’ motivation to use artificial intelligence. The quantitative analysis of the study was conducted using QAIUM, developed by Yurt and Kaşarcı (2024). The qualitative analysis of the study was conducted by the researchers using a semi-structured interview form based on Expectancy-Value Theory with preschool teachers. The findings of the mixed-methods study were analyzed in both quantitative and qualitative terms. The results obtained in this context are discussed comparatively in this section.

A key finding from the study's quantitative results is that the number of female teachers exceeds that of male teachers. This is mainly due to the fact that, according to the 2024-2025 statistics of the Ministry of Education (2025b), of the total 81,263 teachers working in preschool education in Turkey, 75,734 are female and 5,529 are male. Globally, in early childhood education and care (ECEC) programs, similar to Turkey, the vast majority of teachers are women (Khamis et al., 2025). This situation limits the generalizability of differences due to gender.

The descriptive statistics of the study indicate that the vast majority of preschool teachers utilize artificial intelligence tools in their educational planning processes; however, the rate of using these tools during teaching drops significantly. This result is consistent with the study by Kölemen and Yıldırım (2025). Participants in the study reported that their lack of AI literacy and low expectancy stemmed from insufficient knowledge of AI-related content and infrastructure, physical inadequacies in classrooms, and a lack of suitable materials. Furthermore, preschool teachers in this study expressed concerns that, despite the widespread use of AI in early childhood education, the potential for personal data security breaches and the violation of children's privacy led to constraints in integrating it into their processes. Lamanauskas (2025) also states that artificial intelligence at the preschool and elementary school levels reduces teachers' workload, improves children's individual learning experiences, and positively affects the development of innovative learning methods. However, the study also indicates that artificial intelligence may negatively affect critical thinking and literacy skills, weaken memory, and raise ethical issues due to the risk of fraud. In parallel, Chounta et al. (2022) concluded that K-12 teachers' limited knowledge of artificial intelligence causes concern about its use, yet they find AI useful for accessing multilingual content. When these results are evaluated together, although the use of artificial intelligence in preschool education is widespread in the teaching planning process, teachers' ethical concerns about artificial intelligence and physical hardware deficiencies in the teaching process limit its use. In addition, for artificial intelligence to fully realize its potential in preschool education, it is critically necessary to increase teachers' professional development needs and application experience. The role of innovative technologies in improving quality monitoring processes in early childhood education is also significant at this point. Virtual observations, AI and large language model-based tools, and mobile platforms have been shown to support accessibility, accuracy, and integration in quality assurance processes. However, ethical concerns, lack of evidence in AI-related studies, and the difficulties AI may cause in adapting to the process stand out as significant limitations of AI (Khasanova, 2025). It has been determined that an AI-supported teaching system in a disadvantaged area improves the learning process by eliminating inequality of opportunity in preschool quality processes, increasing resource utilization, facilitating lesson planning, and ensuring children's active participation in the process (Zhang & Zhou, 2025). Consequently, it is believed that the balanced application of these technologies by expert teachers will strengthen early childhood education systems.

When examining the technological tools most frequently used by preschool teachers in the study, smartphones clearly stand out, followed by computers. Other technological tools (tablets, televisions, projectors, etc.) are limited in terms of both usage and material production. Konca and Tantekin Erden (2021) similarly reported that preschool teachers frequently use televisions, computers, and smartphones in their classrooms. In a study comparing preschool education in eight countries (Cyprus, Denmark, Estonia, Greece, Italy, Spain, Turkey, and the United States of America (USA)), the technological tools that teachers reported children had access to in early

childhood centers were tablets and computers, respectively. However, television, which was commonly used in early childhood education centers during the period when technology was integrated into classrooms, is no longer employed in the four countries examined in the study (Denmark, Greece, Spain, and the USA) (Slutsky et al., 2021). These findings indicate that, while the use of technology in preschool education is becoming increasingly diverse, there is a growing trend toward the use of individual or portable devices, such as smartphones and computers. Furthermore, the fact that television has been completely removed from classrooms in some countries suggests a growing trend toward more interactive and individualized digital tools in early childhood education, rather than relying on passive screen use.

In the analysis conducted by gender, it was concluded that male teachers had a significantly higher perception than female teachers only in terms of expectancy, while no significant difference was found in other value dimensions (attainment, utility, intrinsic value, and cost). Similarly, the studies by Yeniçeri and Kenan (2025) showed that male teachers had a more positive attitude towards artificial intelligence than female teachers. In contrast, the studies by Arıkanoğlu and Yaman Lesinger (2024) found that female teachers had a more positive attitude towards artificial intelligence than their male counterparts. The fact that men have higher self-confidence than women in using artificial intelligence technologies has also been supported by various studies in the literature (Cai et al., 2017; Latif et al., 2023).

Analyses based on age variables showed no significant difference in teachers' motivation dimensions regarding AI use. Although the 26–30 age group had relatively higher scores for expectancy, attainment, utility, and intrinsic value compared to other groups, these differences were not statistically significant. In contrast, studies suggest that age does not play a decisive role in the use of artificial intelligence (Göksu & Göksu, 2024; Mert Burtgil, 2024; Muzaffer & Ünal, 2025). This result indicates that teachers' adaptation to artificial intelligence may be high regardless of age.

Analyses based on professional experience revealed a significant difference only in terms of expectancy, with teachers who had 6–10 years of experience scoring higher than other groups. In contrast, no significant differences were found in other motivation dimensions. However, studies suggest that experience does not play a decisive role in the use of artificial intelligence (Çayak, 2024; Göksu & Göksu, 2024). Furthermore, İçen (2024) stated that teachers' levels of awareness of artificial intelligence varied according to their length of service, with teachers having 11–20 years of experience showing higher awareness than those with 21 years or more of experience. This suggests that teachers can gain the knowledge, skills, and belief to use AI tools effectively once they reach a certain level of experience.

Analyses based on graduation status reveal that graduate teachers have significantly higher levels of expectancy, benefit importance, and intrinsic value. There is no significant difference in the benefit dimension, and in the cost dimension, the graduate group perceives the process as more laborious, with a higher perception of time and effort. Contrary to the findings of this study, research conducted by Galindo-Domínguez et al. (2024) indicates that a positive attitude toward artificial intelligence is more effective in determining teachers' high digital expectancy, regardless of their educational level, gender, age, years of experience, or field of study. Similarly, other studies

have found that educational status does not influence attitudes toward artificial intelligence (Acet et al., 2024; Aksakal Taşkıran et al., 2024).

The frequency with which teachers use AI tools in the educational planning process creates significant differences in terms of expectancy, attainment, utility, and intrinsic value levels; those who use them regularly have higher motivation scores across all dimensions than those who use them occasionally or not at all, while the perception of cost is highest among those who never use them and lowest among those who use them regularly, indicating that regular use increases expectancy and motivation and reduces perceived cost. This finding is consistent with research results indicating that teachers view artificial intelligence as an effective, important, and high-quality tool for reasons such as planning the educational process, enhancing the effectiveness of material design, and enriching lessons through stimuli (Köse et al., 2023; Küçükkara et al., 2024).

The frequency with which teachers use artificial intelligence tools during lessons creates significant differences in their motivation levels; those who use them regularly have the highest motivation scores in terms of competence, usefulness-importance, benefit, and intrinsic value, while those who never use them have the highest scores in terms of perceived cost, indicating that regular use increases motivation and reduces perceived cost. Studies by Seyrek et al. (2024) also support this finding. The study indicates that teachers frequently use AI tools in their lessons and find developments related to AI positive and exciting. However, it is also observed that teachers who avoid using AI in their lessons, contrary to the general trend, express the view that AI increases costs (Köken & Dagal, 2024).

The study examined preschool teachers' motivations regarding artificial intelligence within the framework of Expectancy-Value Theory. In this context, the QAIUM scale was utilized in the quantitative research section, comprising five dimensions: expectancy, attainment, utility value, intrinsic/interest value, and cost. In the qualitative dimension, the developed interview form was structured based on Expectancy-Value Theory; questions were created in line with the themes of expectancy, value (attainment, utility value, intrinsic/interest value, cost).

The study found that preschool teachers have a high level of perceived expectancy in using artificial intelligence tools. However, when examining participant statements, teachers indicated that they did not feel completely expectant due to the rapidly changing nature of AI technology. Therefore, they stated that they tried to improve their skills through trial and error, repetition, and individual effort. Some participants in the study stated that they attempted to increase their confidence by trying out AI tools multiple times before using them in the classroom. They sometimes felt anxious about solving any errors they might encounter, but generally believed they could overcome them. However, it is understood that as they used AI tools effectively, their sense of achievement increased, and the ease provided in tasks such as material preparation, lesson planning, and organizing student feedback strengthened teachers' perceptions of self-efficacy.

Furthermore, participants emphasized that they still require support in areas such as issuing the correct commands to obtain the desired output, selecting the appropriate tools, and adhering to ethical usage conditions. These results reveal that preschool teachers' expectations regarding their use of AI tools are reinforced by experience, and this

process increases and develops their motivation. Similarly, a study conducted by Su and Yang (2024) with preschool teachers also highlights ChatGPT as a powerful tool. This study demonstrates that artificial intelligence facilitates the effective design of teaching activities, promotes stimulus diversity by suggesting various materials during learning processes, such as language learning activities, and enhances teachers' work efficiency while improving their job satisfaction. However, unequal access to this technology poses an obstacle to teachers' success in diversifying the educational process. Tuomi's (2022) study also views artificial intelligence as an important tool among 21st-century educational practices for teachers, aiming to impart skills and experiences that are non-epistemic and do not directly provide information. The research results indicate that the use of artificial intelligence tools can enhance learning outcomes through technological experiences, thanks to the increased self-efficacy and motivation of preschool teachers.

The quantitative findings of the study show that preschool teachers generally evaluate AI tools positively in terms of value dimensions. High scores in the sub-dimensions of usefulness-importance, benefit, and intrinsic value reveal that teachers find AI tools functional, interesting, enjoyable, and pedagogically satisfying. In contrast, the moderate scores in the cost dimension indicate that teachers perceive the process of learning and using AI tools as more costly in terms of time, effort, and cognitive load. The qualitative findings of the study also support these results.

When linked to the interview questions, the value classification within the scope of the attainment dimension reveals that preschool teachers view artificial intelligence as compatible with their professional values and educational understanding. Teachers also stated that artificial intelligence enriches children's learning experiences, helps them adapt to the technological age's requirements, and supports their professional development. Furthermore, teachers view artificial intelligence as a valuable tool for developing innovative and effective teaching methods; however, they emphasize the need to support children's development in all aspects and to use technology in a measured and responsible manner. This finding is also consistent with the results obtained from quantitative analysis. Samara and Kotsis (2024) similarly emphasize that AI tools are innovative and effective teaching methods, concluding that their use by preschool teachers in teaching processes enables children to participate in the learning process actively and that AI is important because it supports children's mental potential and creativity. Additionally, Brito et al. (2018) emphasized the importance of artificial intelligence in preschool education, determining that AI toys support children's inquiry and discovery skills by establishing human-like interactions with them. Another study contributes to the literature by showing that the use of AI-enabled toys in conjunction with physical and digital environments develops children's inquiry skills and emphasizes the need to strengthen the professional competence of preschool teachers so that they can effectively use such robotic toys (Kewalramani et al., 2021; Özer et al., 2023).

Teachers state that they use artificial intelligence tools within the utility dimension of value classification, specifically to increase student interest, personalize learning, and make lessons more interactive during the teaching process. At the same time, AI tools save time in preparing activities and materials, enable the visualization of complex concepts, and facilitate the development of activities suitable for different learning styles. Furthermore, these tools make classroom management easier by allowing lesson content to be adapted to students'

levels and interests and enabling more time to be devoted to classroom interaction. Teachers stated that they view artificial intelligence not only as a tool to capture students' attention and make lessons more engaging, but also as a resource that supports their professional development. This finding is consistent with the results obtained from quantitative analysis. Similar to the research findings, Qayyum et al. (2024) emphasize in their study that preschool teachers believe AI tools improve targeted learning outcomes and that, in addition, senior teachers in the field believe AI feedback contributes to the learning process. At the same time, their views on the effectiveness of artificial intelligence in lesson planning, material creation, and the assessment process contribute to the usefulness of artificial intelligence in providing motivation (Kaya & Köseoğlu, 2024). In contrast, Köken and Dagal (2024) found that preschool teachers possess theoretical knowledge about artificial intelligence but lack sufficient practical experience. For this reason, teachers stated that they avoided using artificial intelligence to increase children's learning efficiency in the classroom.

Teachers find using artificial intelligence technologies within the intrinsic/interest value dimension of the value classification quite interesting and motivating. For teachers, artificial intelligence enables them to make the teaching process more efficient, develop their own professional skills, and provide children with individual learning experiences. Teachers stated that being open to new technologies encourages them to continually renew themselves, and that being part of the transformation in education is inspiring. They also expressed their excitement about developing themselves by sharing their experiences with their colleagues. Some teachers, however, pointed out that this interest and motivation may decrease if artificial intelligence recommends unreliable sources or produces unreliable results. This finding is consistent with the results of quantitative analysis. It aligns with the findings of Akdeniz and Özdinç (2021), who developed an AI-based toy for preschool children and found that it increased children's academic achievement and that its engaging nature boosted their desire to learn. In another study, teachers' views that AI is a tool that provides lasting learning opportunities, increases student motivation, and supports learning processes emphasizes the effect of AI on increasing children's motivation (Köse et al., 2023).

Teachers state that the use of artificial intelligence within the "cost" dimension of value classification brings both advantages and challenges in terms of time and energy. It has also been noted that artificial intelligence saves teachers time in planning activities and reduces their professional workload. However, the financial costs incurred due to paid artificial intelligence tools and the necessity of constantly engaging with technological tools are also cost factors that teachers perceive as relatively high. This finding is consistent with the results obtained from the quantitative analysis. This result is supported by Küçükkara et al. (2024)'s research, where preschool teachers mentioned time savings and the possibility of individualized planning as positive aspects of artificial intelligence. Additionally, studies supporting the findings of this research have also determined that artificial intelligence reduces teachers' workload and saves time (Cojean et al., 2023; Özer et al., 2023; Xu & Ouyang, 2022; Xuan & Yunus, 2023). Consequently, while teachers acknowledge the time savings and efficiency advantages provided by artificial intelligence, they also consider factors such as cost, difficulty, and additional effort that arise during the implementation process, emphasizing that these circumstances may affect their motivation to use it.

Conclusion and Recommendations

In conclusion, when the quantitative and qualitative findings of the study are considered together, it becomes apparent that preschool teachers' motivation towards artificial intelligence is shaped within the framework of various variables. Teachers' regular use of artificial intelligence tools significantly increases their perceptions of competence, their assessments of the benefits and importance of technology, their perceived levels of benefit, and their internal value attributions; conversely, as frequency of use decreases, perceived costs increase. This situation demonstrates that AI experience not only enhances technical competence but also positively impacts teachers' psychological readiness and professional motivation. However, the higher cost perception of teachers who avoid using AI in their lessons indicates that cognitive and affective barriers that hinder the adoption of technology in educational environments persist. At the same time, it has been determined that individual experience, digital competence, and usage habits largely influence teachers' motivation regarding artificial intelligence, while gender is a factor related to limited and specific dimensions. At the same time, it has been determined that individual experience, digital literacy, and usage habits significantly influence teachers' motivation regarding artificial intelligence, while gender is a factor related to limited and specific dimensions. When evaluated in conjunction with similar studies in the literature, the finding that teachers proficient in digital fields develop more positive attitudes towards artificial intelligence suggests that both technological knowledge and self-efficacy perception play a significant role in integrating artificial intelligence. These findings emphasize the importance of strengthening digital pedagogical competencies in teacher training programs, providing practical examples of usage, and offering guidance on the safe and effective implementation of AI-supported teaching processes to increase preschool teachers' motivation towards AI.

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

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

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