Investigation of Preschool Education Teachers, Preschool Children and Mothers' Opinions on Artificial Intelligence

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SUMMARY

Nowadays, artificial intelligence, which is used in different fields with the increase in the number of works and transactions carried out in digital environment, is also used in the field of education. The main purpose of this study is to examine the views about artificial intelligence of preschool children, their mothers and teachers. The research was planned with phenomenology research design, one of the qualitative research methods. The study group of the research was formed by selecting a total of 30 people in the convenience sampling method, including 5 preschool teachers teaching in public and private independent kindergartens, 1 student from each teacher's 5-year-old class and his/her mother. The data were collected through interviews and the interview questions were prepared by the researchers as open-ended questions. According to the results of the research, it was concluded that although the teachers defined artificial intelligence on the correct scientific basis, they did not have sufficient knowledge, did not use it in educational environments to increase the productivity of children and were worried. Considering the answers given by mothers and children to the questions about artificial intelligence, it can be interpreted that artificial intelligence is not defined correctly and there is a lack of knowledge, mothers have concerns that artificial intelligence may be harmful for their children, and children see artificial intelligence as a living being that they can talk to.

Keywords: Artificial intelligence, Preschool teacher, Early childhood

INTRODUCTION

In the world where we are in a world of development and rapid change at every moment, artificial intelligence has been included in our lives as a result of studies in technology. Artificial intelligence technology is an information technology that emerges by imitating human intelligence and has the ability to reason, reason, carry out many tasks at the same time, make decisions with creative results, manage many processes and perform tasks related to high logical processes such as learning from past experiences (Nabiyev, 2012; Wawrzyński, 2014; Yılmaz, 2020). Today, artificial intelligence is actively used in different fields of activity in almost all areas of our lives such as fast access to information, entertainment, finance, communication, aviation, transport, engineering, design applications, robotic coding, education and storage with the increase in the number of business and transactions carried out in the digital environment. The reflection of artificial intelligence software and robotics technologies on industry and service sectors; automotive, space, electronic devices, entertainment, finance, banking - insurance, production and manufacturing, health, robotic systems and security, as well as many business lines such as reducing the error rate with assembly and repair robots, making timings during production and ensuring efficiency; playing intelligence games in social life, smart phone assistants, software that performs analyses and language translation; it is seen that artificial intelligence is involved in many critical points in the context of unmanned vehicles and systems to support the armed forces and law enforcement agencies in terms of ensuring national and internal security (Eberl, 2019; Yılmaz, 2020; Ak, 2022).

In the 11th Development Plan of our country covering the years 2019-2023, artificial intelligence was emphasised in national technological moves, global developments and interdisciplinary studies, and efforts were initiated to train qualified individuals in these fields and to focus social orientation on these fields (Presidency of Strategy and Budget, 2019). However, according to the Governments' State of Readiness for Artificial Intelligence Report (Oxford Insight, 2023), in which the United States, Singapore, the United Kingdom and Finland are ranked first, Turkey lags behind developed countries and ranks 47th among 193 countries. In the 2024-2028 Strategic Plan of the Republic of Turkey Ministry of Industry and Technology (Ministry of Industry and Technology, 2024), it is stated that national technology activities will be carried out to improve the performance of individuals and businesses in areas where artificial intelligence and big data are collected, to develop and disseminate smart systems based on these technologies and to promote programmes. In the National Artificial Intelligence Strategy and Artificial Intelligence Institute Workshops organised by the Digital Transformation Office of the Presidency, the priority areas to benefit from artificial intelligence technologies are listed as education, health, defence, agriculture and manufacturing industry. According to the National Artificial Intelligence Strategy (2021), the focus

is on the fact that strategic alignment and management between institutions and organisations will be ensured through competence areas that will be formed through quality data, advanced skills and technical infrastructure. Accordingly, researchers and practitioners will be supported to increase studies in the field of artificial intelligence in all public institutions and organisations, private sectors and universities, with public institutions at the centre. It is planned to mobilise private sectors, non-governmental organisations and universities to increase the quality and quantity in the field of artificial intelligence by enriching existing online platforms and educational contents with artificial intelligence. From this point of view, artificial intelligence in education has the potential to increase students' participation in education and provide personalised learning paths by improving teaching and learning experiences. It also supports a classroom environment different from the traditional classroom environment by facilitating teachers' administrative tasks, providing real-time feedback, and helping to adapt teaching strategies to individual student needs (Lievertz, 2019). Individuals who are qualified to respond to the changing expectations of the global world, who produce knowledge through technological changes with industrial revolutions and who can transfer knowledge when necessary, support the implementation of applications and technological developments in education (Demir, 2018; Yelkikalan et al., 2019). This technological development, of course, forces new generation technological education and training materials, educational management, teacher and student roles to change and transform (Yalçınkaya et al., 2018). Thanks to the use of artificial intelligence in education, applications such as online learning platforms, virtual reality environments and special smart tutoring systems are increasing, aiming to improve students' learning process and provide personalised support to students. In this way, it makes it possible to carry out different activities by providing students with flexibility that was not possible before.

Sidney L. Pressey showed the first examples of artificial intelligence applications in education of his era by talking about devices that immediately show test results to students and provide information about wrong-correct answers (Pressey, 1950; Holmes et al., 2019). In addition, Pressey states that artificial intelligence will facilitate teachers to spend more productive time with their students in educational management as well as supporting students' learning (Pressey, 1950). Today, artificial intelligence applications in education respond to the expectations of individuals with different types such as expert systems, intelligent tutoring systems and dialogue-based tutoring systems, and new systems are being added rapidly (Arslan, 2017). Therefore, there is a change at every stage in the education and training process, different and individual learning environments are offered, and different systems that are facilitated by artificial intelligence and respond to student needs are emerging. With the use of artificial intelligence in education, students can learn at their own pace and individual learning styles, while teachers can monitor and evaluate students' learning outcomes in real time (Vinuesa et al., 2020). It can also help teachers to prepare more adaptive and engaging curricula using artificial intelligence. Therefore, students can learn in a personalised and efficient way as well as gain a more interactive and engaging learning experience (Aguilar et al., 2021). In addition, the use of AI technology can also increase the accessibility of education, especially for students in hard-to-reach areas, students with physical or learning disabilities, and students can use this technology to access the same learning content and resources as other students (Sun et al., 2020).

In addition to positive views on the use of artificial intelligence in education, there are also negative views. Accordingly, it is worried that the use of artificial intelligence technology may cause social problems for students as a result of the lack of human interaction in the learning process (Wogu et al., 2019). Among these social problems; it can be said that the interaction between teachers and students may decrease and students' social sharing with their peers may decrease. In addition, it is also stated that the use of artificial intelligence may jeopardise the protection and privacy of personal data in terms of collecting detailed data of students (Holmes et al., 2022). As a result of the literature review, it has become inevitable to make use of artificial intelligence in the field of education at this point in the technological age. However, while the early childhood period is a period in which children are expected to learn efficiently by keeping them away from the screen and having concrete experiences, artificial intelligence applications are affecting children in this period with each passing day. In this context, the knowledge and opinions of families and teachers, who play an important role in children's lives, about artificial intelligence have an extremely valuable position in the development and transformation process of children. In order to determine the needs and goals of a better education by using artificial intelligence and to prepare a learning environment accordingly, the teacher should be able to keep up with this technology, be open to development and adapt it to the environment. Again, there are many applications that mothers and fathers can benefit from artificial intelligence in order to understand and meet the personal needs of their children by keeping up with the technology, and it is important how ready they are and what their views on artificial intelligence are. Examining the views of children, mothers and teachers, who are the digital natives of the technological age, on artificial intelligence, their readiness for situations with what they know about artificial intelligence and their positive and negative views, how children, mothers and teachers have views on artificial intelligence has been a matter of curiosity and constituted the main purpose of the research.

METHOD

Research Model

Since phenomenology research design, which is one of the qualitative research methods, is a research design based on constructivist and naturalistic philosophy in which the researcher defines the participants and describes their experiences related to the subject being researched (Giorgi, 2009; Günel, 2014), it was deemed appropriate to use this research design in this study since the opinions/perceptions of preschool children, their mothers and teachers about "artificial intelligence" were examined.

Working Group

The study group of the research was selected from private and public kindergartens located on the European side of Istanbul province by using simple-easy sampling method among easily accessible schools. Convenience sampling method is a sampling method that allows the researcher to create a sample starting from the most accessible participants and to work on a sample that will provide maximum savings (Cohen, Manion, & Morrison, 2005). With the permissions obtained from public and private independent kindergartens, a total of 30 people, including 5 preschool teachers, one child from each teacher's 5-year-old class and his/her mother, participated voluntarily. The demographic information of the 30 participants is as follows (Table 1; Table 2; Table 3).

Table 1. Demographic information of the children

Demographic Information	Information on Children	
Age (Month)	Mean 65,8 Months	
Gender	Girl	4
	Boy	6
	Total	10

The average age of the 10 children who participated in the study was 65.8 months. Of these children, 4 were girls and 6 were boys.

Table 2. Demographic information of the parents

Demographic Information	Information on Parents	
Mother Age	Mean 42,3	
Father Age	Mean 40,5	
	Information	**f**
Mother's Education Level	Associate Degree	3
	Bachelor's Degree	5
	Postgraduate	2
Father's Education Level	Associate Degree	5
	Bachelor's Degree	5
	Total	10

The mean age of the mothers and fathers participating in the study was respectively 42.3 and 40.5 years. When we look at the educational level of the mothers, 3 of them have associate's degree, 5 of them have bachelor's degree and 2 of them have postgraduate education. When we look at the educational status of the fathers, 5 of them have associate's degree and 5 of them have bachelor's degree.

Table 3. Demographic information of the teachers

Demographic Information	Information on Teachers	
Age	Mean 28,4	
	Information	**f**
Education Level	Associate Degree	4
	Bachelor's Degree	5
	Postgraduate	1
	Total	10

The mean age of the teachers participating in the study was 28.4 years. Considering the educational level of the teachers, 4 of them have associate degree, 5 of them have bachelor's degree and 1 of them has postgraduate education.

Data Collection Tools

The data to be used in the research were collected through interviews. The interview questions were prepared by the researchers and consisted of open-ended questions. The interviews were conducted one-on-one and face-to-face. Demographic information was obtained from each participant with the "personal information form" prepared by the researchers and their opinions about artificial intelligence with the "structured interview form". In the personal information form, age (month), gender, mother's age / father's age, mother's education level / father's education level was included for children, while age and education level was included for teachers.

Structured Interview Form

It is an interview form used by the researchers to examine all participants' knowledge about artificial intelligence, their thoughts and opinions about what kind of effects it will have on their lives. Structured interview form is the preparation of questions in a standardised way by listing the questions to be addressed to the participant in a certain order (Akman Dömbekçi & Erişen, 2022). Therefore, structured interviews can be defined as the closest data collection tool to the quantitative method (Punch, 2005). In the interviews, children, mothers and teachers were asked what artificial intelligence is, what can be done with artificial intelligence, and their opinions about artificial intelligence. In addition, different from the questions of mothers and teachers, there are questions about how they use artificial intelligence in their professions and daily lives.

Validity Reliability

In order to increase the validity and reliability of the research, diversity was ensured by applying to different data sources and various information about a subject was obtained (Cohen, Manion, & Morrison, 2005). In addition, necessary arrangements were made by taking expert opinions in the interview questions and validity and reliability were ensured in the interview questions (Yin, 2003).

Analysing the Data

The research was planned with qualitative research method and data were collected by preparing a structured interview form to determine the views of the participants about artificial intelligence. Descriptive analysis method was used to analyse the data and similar answers were grouped and analysed. The categories and themes created as a result of the analysis were examined by 3 experts and the findings were obtained. The answers that are similar to each other are collected in similar categories and themes and analysed by comparing them with each other; patterns are formed by revealing their connections and relationships with each other (Gürbüz & Şahin, 2017). In the last stage, a table is created in order to see the themes created in general terms (Merriam, 2013). In the research, the findings are presented in a table in order to see the answers given by the participants in general terms. Personal information of the participants was not shared and their opinions were coded with code M for mothers, code C for children and code T for teachers.

FINDINGS

The findings on how children, mothers and teachers, who are the participants of the study, define artificial intelligence, their opinions and knowledge about this concept are given below in tables with the research questions. The answers of the participants are given in the tables as themes and with the number of answers.

Findings Related to Children

Table 4. Findings Related to Children

Theme	Codes	f
Definition of artificial intelligence	Operation of the brain and computer	3
	Watching telephone, computer, television	2
	Speech of robots and instruments	3
	Being smart	1
	Cheating	1
Use of artificial intelligence	Playing games	4
	Travelling the world	3
	Connecting to the Internet	2
	Doing business with the computer	1
Thoughts on artificial intelligence	Very useful tools	3
	Friends who can talk	3
	Game playing tool	2

	Graham Bell's invention	1
	Internet connection	1
	Scientists	6
Designer of artificial intelligence	Graham Bell	1
	Inventor or God	1
	One of our family	1
	Astronauts	1

According to Table 4, the children who participated in the study answered the question "What do you think artificial intelligence is?" as *"the work of the brain and computer", "watching phones, computers and television" and "robots talking"*. When we look at the answers of some of the children; C1. answered as "*robots, phones, tablets, computers do what we say*"; C8. answered as "*it means that the invented devices speak*" and C10. answered as "*to save the world by uniting with technology*".

They answered the question "What do you think we can do with artificial intelligence?" as "*we can have fun and play games*", "*we can travel the world*" and "*we can connect to everything*". When we look at the answers of a few of the children; C4. answered as "*We can print new games*"; C6. answered as "*We can get our jobs done and play games*".

They answered the question "What do you think about artificial intelligence?" as "*it is very useful tools for us*", "*it is a very fun friend amd I can talk with it*" and "*it helps me play games*". When we look at the answers of some of the children; C2. answered as "*there is internet, we can playgames*"; C7. answered as "*it would be a useful tool*"; C8. answered as "*I think it is very fun because it talks to me*".

Finally, to the question "Who do you think could have created artificial intelligence?", the majority of the children who participated in the study answered "*scientists*". When we look at the answers of a few of the children; C7. answered as "*scientists on the planet could have created it*" and most of the children answered as "*scientists/people*".

Findings Related to Mothers

Table 5. Findings Related to Mothers

Theme	Codes		f
Definition of artificial intelligence	Technological system		6
	Software		2
	Algorithm		2
Children's knowledge of artificial intelligence	Not know		5
	Computer Games		2
	Phone, tablet		1
	Robots		1
Use of artificial intelligence	Robotic coding		4
	Smart board and tablets		3
	Technological home appliances and smart home systems		2
	Not use		2
Theme	**Codes**		**f**
The place of artificial intelligence in life	Positive	Making life easier	3
		Reduced paperwork intensity	1
	Both Positive and Negative	Harm as well as benefit	2
	Negative	Unemployment of people	3
		People getting lazy	1

According to Table 5, mothers answered the question "What do you think artificial intelligence is?" as "*technological system*", "*software*" and "*algorithm*". When we look at the answers of a few of the mothers; M9. answered as "*a technological system that imitates the human brain*"; M10. answered as "*an algorithm that makes our lives easier and works through commands*" and most of the mothers answered as "*a technological system/technological structure that imitates the human brain*".

They answered the question "What does your child know about artificial intelligence?" as "*he/she does not know*", "*computer games*" and "*phones, tablets and robots*". When we look at the answers of a few of the mothers; M1. "*I did not have any conversation because I did not look at this subject very closely*"; M4. "*he/she knows about artificial intelligence through computer games and coding work*" and M5. "*we watched the film Wall-e and we explained that robots can do something instead of humans*".

They answered the question "What kind of applications do you use artificial intelligence in your profession?" as "*robotic coding*", "*smart boards and tablets*" and "*technological home appliances and smart home systems*". When we look at the answers of a few of the mothers; M2. answered as "*I do not use it much in my profession*", M4. answered as "*I learn about robotic coding and try to apply it with children*" and M6. answered as "*I play educational games with smart boards and tablets*".

Finally, they answered the question "What kind of effects do you think artificial intelligence has/will have on your life?" positively as "*making life easier*" and "*reducing the density of paperwork*". When we look at the answers of a few of the mothers; M1. answered as "*it makes life easier*"; M4. answered as "*it reduces the density of documents; it helps to organise some things that need to be remembered*". Both positively and negatively, the mothers answered as follows; M8. "*I think it has harm as well as benefit. People started to behave more and more like robots, not showing their emotions*" and M3. "*it saves time, it makes people work less with the advancement of technology, it may leave them unemployed*". And mothers answered negatively as "*people becoming unemployed and lazy*". When we look at the answers of a few of the mothers; M9. "*I think that artificial intelligence can replace us humans in our future world*"; M7. "*If it is like in the films, it would scare me if it acts alone*" and M5. "*I think that artificial intelligence can replace us humans in our future world*".

Findings Related to Teachers

Table 6. Findings Related to Teachers

Theme	Codes		f
Definition of artificial intelligence	Technological system		7
	Algorithm		2
	Machine		1
Children's knowledge of artificial intelligence	Information about tablet, telephone, computer		6
	Not know		2
	Information about robots		2
Use of artificial intelligence	Use of smart board and technological materials		5
	Robotic coding studies		3
	No application		2
The place of artificial intelligence in life	Positive	Making life easier	5
	Both Positive and Negative	Positive as well as negative aspects	2
	Negative	Rising unemployment	3

According to Table 6, teachers answered the question "What do you think artificial intelligence is?" as "*technological system*", "*algorithm*" and "*machine*". When we look at the answers of some of the teachers; T3. answered as "*a technological system inspired by human intelligence in order to fulfil certain tasks*"; T10. answered as "*an algorithm that works thanks to commands that make our lives easier*" and T7. answered as "*a technological invention that can imitate human intelligence*".

They answered the question "What do the children in your class know about artificial intelligence?" as "*information about tablets, phones, computers*", "*they do not know*" and "*information about robots*". When we look at the answers of a few teachers; T1. "*when artificial intelligence is mentioned, they think of devices such as phones and tablets. Expressions such as "we play games" are used*; T8. "*they know that flying cars, advanced vehicles, robots can be made with artificial intelligence*" and T9. "*I don't think they know what artificial intelligence is*".

They answered the question "What kind of applications do you use artificial intelligence in your classroom?" as "*use of smart board and technological materials*", "*robotic coding studies*" and "*no application*". When we look at the answers of a few of the teachers; T3. answered as "*I do educational activities with technological materials such as smart board*", T7. answered as "*I do educational activities with technological materials such as smart board*" and T9. answered as "*I am not in favour of using artificial intelligence because they will be more connected to technology if we use it*".

Finally, they answered the question "What effects do you think artificial intelligence has/will have on your life?" positively as "*facilitating life*". When we look at the answers of a few of the teachers; T2. answered as "*I think it will facilitate some difficult and time-consuming tasks and save time*" and T5. answered as "*facilitating daily life*". Both positively and negatively; T3. "*although it makes people's lives easier, it makes people lazy by making them get used to comfort*" and T8. "*I think it will reduce the need for manpower by speeding up everything*". Negatively; "*increase in unemployment*" was answered as "*increase in unemployment*". When we look at the answers of a few

of the teachers; T6. "*I think that artificial intelligence will become widespread and reduce the need for human beings and leave them unemployed*" and T7. "*I think that artificial intelligence will replace humanity in our future time*".

CONCLUSION AND DISCUSSION

With the increasing importance o artificial intelligence, awareness is increasing in children, families and education. When children are asked what artificial intelligence is, it would be appropriate to say that they do not have a complete idea. There were even children who made comments in the form of animism (making devices talk). In parallel with this finding, in Saçan, Tozduman Yaralı, and Kavruk's (2022) study examining children's metaphorical perceptions of the concept of artificial intelligence, children interpreted it as a living being even if it is not a living being. Since "artificial intelligence" is an abstract concept for children, children cannot yet make sense of what to do with artificial intelligence and it was concluded that they presented the concrete activities they know as ideas. Since children generally started to recognise artificial intelligence with Siri and smart assistant applications on the phone, it can be said that they think that they can talk to artificial intelligence and make friends with it. Kewalramani et al. (2021) examined children's inquiry literacy with the use of robotic toys with artificial intelligence interfaces in early childhood and concluded that children who play with social robots created by artificial intelligence develop various inquiry and literacy skills. Many studies have shown that children in early childhood develop scientific thinking skills and problem solving skills through artificial intelligence applications and activities and gain knowledge about artificial intelligence through the developed curriculum (Su & Yang, 2022; Williams et al., 2019; Kandlhofer et al., 2016). Su and Zhong (2022), in their research examining the design of artificial intelligence curriculum in early childhood and children's future orientations, emphasised that artificial intelligence is used in educational levels such as university, high school and secondary school, but it should also be used in early childhood; the design of the curriculum to develop children's knowledge, skills and attitudes about artificial intelligence is important. In addition, this study proved that the use of social robots used in artificial intelligence as learning companions and programmable objects helps young children to grasp the principles of artificial intelligence. Thus, information on which teaching methods have the greatest impact on children's learning was also obtained. Finally, when the children were asked by whom artificial intelligence was developed, they answered that it was developed by "scientists". This reveals that children know that artificial intelligence emerged as a result of scientific studies and their awareness about artificial intelligence. In Vandenberg and Mott's (2023) research on children's views on artificial intelligence in instrument development, it was concluded that children aged 9-11 have a complex understanding of what artificial intelligence is, what can be done with artificial intelligence, and how they feel; and that students do not have specific detailed knowledge about artificial intelligence due to their high level of knowledge and misconceptions. In this study, we can say that most of the children know that artificial intelligence is a technological system created by scientists. However, it was understood that children had limitations in terms of making sense of artificial intelligence due to their young age. However, unlike Vandenberge and Mott's study, it can be concluded that their feelings about artificial intelligence are not complex and they have a general positive opinion.

When the answers of the children's mothers to the interview questions are analyzed, it can be interpreted that the mothers do not have accurate information about artificial intelligence. In addition to this, the mothers mentioned that artificial intelligence has bad as well as good sides and mentioned their concerns about the issues that may harm children. In parallel with this finding of the study, Glassman et al. (2021), in their study examining the use of artificial intelligence to reduce the use of technology in early childhood, evaluated artificial intelligence positively at many points for the child, but also included their concerns. Again, when the mothers discussed how much their children knew about artificial intelligence and what they could do about artificial intelligence, they commented that their children did not have much knowledge about artificial intelligence. However, they stated that they know that games and technological devices such as phones and tablets are related to artificial intelligence. Alrusaini and Beyari (2022) examined the sustainability effect of artificial intelligence and parental control on children's behavior while using smart device applications and concluded that the use of artificial intelligence is more sustainable in children's behavior than parental control. While both parental control and the use of artificial intelligence affect children's behavior, it was found that the elements that had the greatest impact on children's behavior were social media, video streaming and game applications. However, artificial intelligence could not create emotional relationships and could not replace mother-child attachment (Yunike et al., 2023). When mothers were asked about the use of artificial intelligence in their professions, the majority mentioned robotic coding and smart boards/tablets. In this age where artificial intelligence is used with different applications in every occupational group, mothers also mentioned the existence of artificial intelligence in technological household appliances. Thanks to artificial intelligence adapted to all kinds of sectors, critical problems caused by human errors can be significantly reduced. And while people hesitate to apply it in situations with various risks, artificial intelligence evaluates many possibilities very quickly, determines the least risky road map and helps to accept the risk and start the process (Kumar, 2019). Finally, when mothers were asked about the effects of artificial intelligence on their lives, it is seen that they have positive as well as negative opinions. In Osetskyi et al.'s (2020)

research, while parents evaluate artificial intelligence positively due to receiving real-time feedback, information tracking their children's progress, providing new learning opportunities for their children, and reducing the problems of families with poor financial situation by accessing education; they evaluate it negatively due to the elimination of communication between individuals and the mechanization of people due to the decrease in interaction. Accordingly, it can be interpreted that the concerns of mothers/parents and the opinions they express intersect at a common point due to the fact that it is not yet known how artificial intelligence will have an impact and that they are in great uncertainty, albeit in different countries.

Teachers, the last participants of the study, defined artificial intelligence correctly by evaluating it from a technological perspective. However, it was observed that while they made positive comments about artificial intelligence like mothers, they also approached it with negative thoughts. When asked what the children in their classes knew about artificial intelligence, it was observed that they generally gave answers about technological devices such as tablets, phones, computers and robots. It can be interpreted that teachers do not talk much about artificial intelligence with children in their classes and do not conduct research on this subject. Therefore, it can be said that they cannot comment much on what level of knowledge children have about artificial intelligence and what they know. When asked how they use artificial intelligence in their classrooms, most of the teachers mentioned activities with the smart board. However, it can be interpreted that many learning systems and materials that include artificial intelligence are not used by teachers, so the teachers participating in the study do not yet know exactly how to use artificial intelligence in education. In contrast to this finding of the study, Demir Dülger and Gümüşeli (2023) examined the views of school administrators and teachers on artificial intelligence and found that artificial intelligence offers opportunities in education by providing different learning areas. In Alharbi and Köprülü's (2023) study on teachers' views on the effects of artificial intelligence on educational processes, improving accessibility to increase the use of artificial intelligence, addressing different learning styles, providing personalized and engaging learning experiences, facilitating teachers' administrative tasks such as grading, and saving time and resources by facilitating time-consuming tasks such as verifying exam papers were presented as suggestions. In addition, despite teachers' positive expectations of AI, researchers have noted that before adopting AI in the classroom, teachers must first learn how to use the technology and successfully integrate it into their curriculum (Jia, He, & Le, 2020; Qin, Li, & Yan, 2020). They also emphasized that teachers need to understand the importance of AI and the possibilities it can bring to education in order to be open to integrating advanced technology into their lessons (Kim & Kim, 2022). Karsenti, Bugmann, and Parent (2019) suggest that AI-based learning systems can provide teachers with the information they need to track their students' learning styles, abilities, and individual development, and to customize teaching methods in accordance with students' individual needs and differences. In Akdeniz's (2019) research on the evaluation of artificial intelligence-based toys for children, positive comments were made about the use of technology in education and the fact that artificial intelligence is interesting, motivating, easy to use. Although teachers have not yet actively used artificial intelligence in their education processes, when asked about its impact on their lives, teachers who responded positively focused more on work efficiency and facilitating daily life. Teachers with positive as well as negative views commented that artificial intelligence not only makes things easier but also makes individuals lazy. On the negative side, they stated that it would create unemployment in the future and many other negative opinions.

When the findings of the research are examined, it is seen that children in early childhood cannot yet fully understand artificial intelligence due to their concrete experiences. Children, who have the idea that animism and artificial intelligence are "a friend they can talk to", generally have the idea that they can use artificial intelligence as a tool that they can have fun and play games with. The reason for this may be that children in our country and in the world generally use technology as a means of play and entertainment. It is also natural for them to define artificial intelligence as "a friend they can talk to" thanks to Siri and smart assistants on their parents' phones. While children define artificial intelligence as a "useful tool", parents and teachers are concerned about children's introduction to artificial intelligence. It can be said that parents interpret technological developments from a limited perspective with the view that it facilitates the tasks in daily life and saves time by enabling many tasks to be done easily. Of course, it is important for parents to be informed about artificial intelligence in the child-family bond, to be able to guide their children in the right way and to support their children with productive activities.

When teachers were asked about artificial intelligence, it can be interpreted that they gave a more technical and accurate definition, but they were weak in their use of artificial intelligence on an educational basis. Teachers state that they use artificial intelligence in the learning environment only as a tool for playing music, playing videos and conducting different scientific researches. However, while artificial intelligence in education can be used at all levels of education, it is of great importance especially in the preschool period because it provides children with a scientific basis, supports many cognitive skills such as critical thinking and problem solving skills, provides a fun learning environment and provides information effectively.

Modern technologies and methodologies have emerged with the rapid changes in recent years. Teaching methods have changed; artificial intelligence-supported materials such as video-assisted learning and virtual reality have

been designed to support student participation and make educational planning efficient. Therefore, as a result of teachers' efficient use of artificial intelligence in the educational environment, it can be expected to be a tool that children will use in their own lives as their awareness and knowledge about artificial intelligence increases. In addition to these, thanks to the artificial intelligence-supported environment offered by teachers, improvement and personalization in children's learning experience, accessibility and equality for all individuals, and positive reflections on children's learning processes are expected. In addition to the justified concerns of parents and teachers, it is becoming a necessity of the age to introduce children to artificial intelligence applications that they can use for the benefit of children and in their own lives. Suggestions in this regard are given below.

Recommendations

Children's acquaintance with artificial intelligence will provide them with an advantage in the digital age and in all the opportunities they will encounter in the future. Children's knowledge about artificial intelligence is of great importance for them to achieve success in many technological fields, to develop problem solving and critical thinking skills, to save resources by using technology consciously, to create new products by developing their creativity, and to make good use of opportunities on a global scale in the world and for their career and personal development. In this age where digital literacy is gaining importance, it can provide economic advantages in terms of work, time, energy and money by facilitating children's adaptation to technology. Interviews with children revealed that children have a positive approach to artificial intelligence, but they do not fully understand what it is. For this reason, it can be suggested that children should be given information about artificial intelligence in workshops suitable for their age and developmental levels in different learning environments, their development should be monitored with artificial intelligence applications, and artificial intelligence applications should be included in learning environments.

During the interviews with the mothers, it was observed that they were not yet able to make sense of artificial intelligence and had concerns about how they could use it appropriately. Therefore, it is of great importance for parents to become acquainted with artificial intelligence in order to understand the needs and interests of their children in the current age. In addition to these, it can provide advantages in terms of guiding their children to use technology correctly and effectively, being a good role model for their children, supporting their children's future education and career journeys, understanding them better, making family communication more efficient and providing entertainment. Introducing artificial intelligence to parents, providing them with information about artificial intelligence applications that they can use efficiently for their children and themselves, and making applications can be provided. Non-governmental organizations and educational associations can be contacted to provide support for everyone to access this resource.

As a result of the studies conducted with teachers, it was seen that most of the teachers were able to define artificial intelligence. However, teachers, like mothers, have concerns about artificial intelligence. However, artificial intelligence is the indispensable technological progress of the future. It is expected to be used everywhere. Therefore, it is important for teachers to get acquainted with artificial intelligence, to be able to offer personalized learning experiences instead of traditional learning-teaching processes in the digital age, to follow the progress of children in the teaching process and to determine their needs with their individual differences, and to help students prepare for the future business world and society. In the light of the findings, it can be recommended to support teachers with in-service trainings, different artificial intelligence workshops and studies. With the opening of artificial intelligence to the use of society in November 2021, studies in the field have started. However, it was observed in the literature that studies on this subject have not yet become widespread. For this reason, increasing opinion research on the subject, conducting research on the use of artificial intelligence and conducting impact studies will also reinforce the knowledge on this field.

Notes

This research titled "Investigation of Preschool Education Teachers, Students and Mothers' Opinions on Artificial Intelligence" was presented as a paper at the 8th International Preschool Education Congress.

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