EĞİTİM ve İNSANİ BİLİMLER DERGİSİ
Teori ve Uygulama
Cilt: 15 / Sayı: 30 / Güz 2024

JOURNAL of EDUCATION and HUMANITIES
Theory and Practice
Vol: 15 / No: 30 / Fall 2024

Evaluation of ChatGPT Usage in Preschool Education: Teacher Perspectives

Okul Öncesi Eğitimde ChatGPT Kullanımının Değerlendirilmesi: Öğretmen Perspektifleri

Makale Türü (Article Type): Araştırma (Research)

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DOI: 10.58689/eibd.1537337

Abstract: This study aims to determine teachers' views on the use of ChatGPT in preschool education. The study was conducted using a case study, which is one of the qualitative research methods. In the 2023–2024 academic year, the study group consisted of 16 preschool teachers working in a province in the Eastern Anatolia Region of Turkey. The researcher developed a semi-structured interview form and used researcher diaries as data collection tools. An inductive content analysis approach described the data from the interviews with the participating teachers and the research diaries. The findings revealed that most of the teachers thought that ChatGPT was suitable for preschool education due to its potential, such as creating personalized and creative activities and suggesting games and stories. However, negative opinions about potential problems such as obtaining misinformation, technology addiction, decreased social interaction, and deriving age-inappropriate content were also identified. For successful integration at the pre-school level, technical requirements such as tablets and computers may be needed, as well as teacher trainings, a guide on how to use ChatGPT effectively, and information for parents. School administrators, teachers, and parents should receive training about ChatGPT, as suggested.

Keywords: ChatGPT, Artificial intelligence (AI), Preschool teachers, Kindergarten, Early childhood

Geliş Tarihi: 22.08. 2024; Kabul Tarihi: 08.10.2024

Kaynakça Gösterimi: Uğraş, M. (2024). Evaluation of ChatGPT Usage in Preschool Education: Teacher Perspectives. *Eğitim ve İnsani Bilimler Dergisi: Teori ve Uygulama, 15*(30) 387-414

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Introduction

The COVID-19 pandemic has made educational technology a vital part of the education system. In this era of continuous technological development in education, teachers need to use these technologies to contribute to their personal and professional development (Bhaskar & Rana, 2024; Escotet, 2023; Fullan et al., 2023; Kilag et al., 2024). In recent years, rapid developments in areas such as artificial intelligence and natural language processing have the potential to transform learning environments (Ahn & Chen, 2022; B. Wang et al., 2023; D. Wang et al., 2019; Zhai et al., 2021; Zhang, 2022). AI tools like ChatGPT (Chatbot Generative Pre-Trained Transformer) let students create their own learning experiences (Elbanna & Armstrong, 2024; Hadi Mogavi et al., 2021; Liu et al., 2023; Rahiman & Kodikal, 2024; Su & Yang, 2022; Xia et al., 2019), get help with their problems at any time and in any place, and get feedback (Clarizia et al., 2018; Elbanna & Armstrong, 2024; Hwang & Chang, 2023; Zhang, 2022). In this context, AI-supported language models such as ChatGPT offer unique opportunities for preschool education (Chen & Lin, 2024; Slavuj et al., 2015). Through the models, teachers and students can easily access meaningful content that is relevant to their needs (Kostiainen et al., 2018; Shoeybi et al., 2020). In this process, identifying the right needs and making effective use of models are critical. In this context, this study aims to identify the potential roles, challenges, and future prospects of using ChatGPT in preschool education. Understanding the potential of ChatGPT in the classroom and exploring its practical applications can help preschool teachers improve the learning experience in their classrooms. From this perspective, the study's aim is to determine teachers' views on the use of ChatGPT in preschool education.

What is ChatGPT?

In November 2022, Kohnke et al. launched ChatGPT, an AI-powered conversational robot (Kohnke et al., 2023). OpenAI developed ChatGPT as a natural language processing (NLP) tool (Roumeliotis & Tselikas, 2023). OpenAI designed ChatGPT to converse with people in natural language, utilizing vast amounts of trained data to generate consistent and relevant responses (Javaid et al., 2023; Roumeliotis & Tselikas, 2023). OpenAI specifically designed ChatGPT to facilitate the transmission of clear and comprehensible information and facilitate user conversations (Hill-Yardin et al., 2023; Kohnke et al., 2023). Unlike other AI applications, ChatGPT generates dialogs that present new content, maintain user interaction, and provide relevant responses in conversations with users (Rahman & Watanobe, 2023; Susnjak & McIntosh, 2024). It can create complete conversations based on human input (Alshahrani, 2023; Salvagno et al., 2023), answer questions, provide information, generate texts, and even make small talk (Haleem et al., 2022). From a sociocultural theory perspective (Vygotsky, 1978), tools like ChatGPT can mediate people's thinking and learning

(ElSayary, 2023; Javaid et al., 2023). By interacting with ChatGPT, people can develop new understandings and ways of thinking through the process of internalization (Javaid et al., 2023). However, activity theory (Engeström, 2001) suggests that the introduction of a new tool like ChatGPT into an existing activity system may lead to tensions and contradictions (Rahman & Watanobe, 2023). In this context, teachers, as actors in the education system, may face various challenges in the implementation of ChatGPT. Therefore, it is important to understand their perceptions of ChatGPT. Most studies have focused on the use of ChatGPT in the educational process (Baidoo-Anu & Owusu Ansah, 2023; Kasneci et al., 2023). However, studies examining teachers' opinions on the use of ChatGPT in education are very limited (Su & Yang, 2022). The aim of this study is to determine teachers' opinions on the use of ChatGPT in preschool education.

ChatGPT in preschool education

Many studies indicate that preschool education has a high impact on children's socialization, development, and academic achievement (Alwaely et al., 2021; Duncan et al., 2023; M.-T. Wang et al., 2020), and socioeconomic outcomes (Duncan et al., 2023; Schmerse, 2020). Indeed, preschool education is a critical and important stage in which children acquire and develop social and cognitive skills, self-esteem, and perceptions of the world (Çiftci & Bildiren, 2020; Papadopoulos, 2021; Wahyuningrum et al., 2020). Moreover, this period is an important and fundamental stage in children's learning processes (Hutt et al., 2022). It is considered one of the most effective ways to provide future generations with the necessary skills and competencies to succeed in future labor markets (Duncan et al., 2023; García-Pérez et al., 2021; M. Uğraş & Genç, 2018). Teachers play a critical role in helping children acquire these skills (Brownell et al., 2006; Darling-Hammond, 2017; Delpit, 2006; Massa, 2014; Ratcliff & Hunt, 2009). In particular, teachers' integration of technology into educational processes can help students increase their technological literacy and minimize the difficulties they may face in their future educational levels (Kurniah et al., 2023).

Knowledge and experience with information and communication technologies have a significant impact on preschool teachers' level of technology use in education(Akyar et al., 2024; Shoraevna et al., 2021). Therefore, providing training to teachers on these issues allows them to effectively incorporate ICT into their lessons. In this context, teachers' training will enable them to manage their learning environments more effectively and efficiently by integrating AI-supported tools, particularly ChatGPT, into their educational processes.

Integrating ChatGPT into educational practices equips teachers with a cutting-edge and efficient set of tools to address the evolving requirements of contemporary education (Arndt, 2023; Yu, 2024). By leveraging the advanced features of ChatGPT, educators can successfully

cope with the complexities of today's educational environment and maintain their important role in driving pedagogical progress (Yu, 2024). Preschool teachers can use AI-supported tools such as ChatGPT in their lessons to offer students various advantages and make learning processes more engaging (Elbanna & Armstrong, 2024; İpek et al., 2023; Javaid et al., 2023; Tlili et al., 2023). By providing students with personalized content and teaching strategies, ChatGPT can improve learning efficiency and support sustainable development goals (Elbanna & Armstrong, 2024; Hadi Mogavi et al., 2021; Hwang & Chang, 2023; İpek et al., 2023; Javaid et al., 2023; Liu et al., 2023; Rahiman & Kodikal, 2024; Su & Yang, 2022; Xia et al., 2019). In addition, this tool has the potential to play an important role in providing instant feedback to students' educational questions regardless of time and space (Clarizia et al., 2018; Elbanna & Armstrong, 2024; Hwang & Chang, 2023; Zhang, 2022).

AI-powered educational tools have the potential to provide educational opportunities to disadvantaged students who face geographical or economic barriers (Bulathwela et al., 2024). This can support greater equity in education and sustainable development goals by increasing educational access (Abulibdeh et al., 2024; Bulathwela et al., 2024). Furthermore, the pandemic impact in 2020 led to a global shift in education and training activities to online platforms. In addition, events that caused mass effects took place in different parts of the world (Uğraş, 2023). For example, the major earthquakes that occurred in Turkey in 2023 had a negative impact on education and training processes. Disruptions in face-to-face education led to online education becoming compulsory from time to time. Studies have shown that in this period, learning losses occurred in early childhood children that could not be fully identified (Uğraş et al., 2023). In this process, the view that technologies such as ChatGPT can be a good alternative to eliminating individual student losses comes to the fore (Maphosa & Maphosa, 2023). In this context, it is of significant importance for teachers to understand ChatGPT and learn how to integrate it into their lessons within the framework of Technological Pedagogical Content Knowledge (TPACK) (Lozano & Blanco Fontao, 2023). Teachers' active participation is crucial for the successful integration of technology into learning processes (LaToya J. O'Neal & Cotten, 2017; Lo, 2023). TPACK is a framework that highlights the intersection of technology, pedagogy, and content knowledge, emphasizing how teachers can effectively integrate technology into their teaching practices (Mishra et al., 2023). By leveraging TPACK, teachers can design more meaningful and effective lessons, especially when using advanced tools like ChatGPT (ElSayary, 2023). ChatGPT's potential to enhance both content delivery and pedagogical strategies in educational settings makes TPACK relevant to this study. Therefore, understanding how teachers can incorporate ChatGPT using the TPACK framework is crucial for maximizing the educational benefits of this technology. In the literature, there are a limited number of studies examining preschool teachers' views on the use of ChatGPT. One of these studies, conducted by Su and Yang (2022), investigated kindergarten teachers' views on ChatGPT (Su & Yang, 2022). According

to the findings of the study, there were mixed views about ChatGPT among teachers. While some teachers considered ChatGPT as a powerful educational tool, others found it mediocre. It was also emphasized that ChatGPT can have positive effects in areas such as lesson planning, pedagogical knowledge, content knowledge and 21st century skills. However, teachers' negative views on the use of ChatGPT were also identified. Among these negative views, hardware problems, lack of resources and concerns about the accuracy of the tool stand out. It should be taken into consideration that ChatGPT and other artificial intelligence tools may have different effects in different cultural contexts and therefore, it is important to conduct similar studies in different countries. This study developed a training program to familiarize preschool teachers with ChatGPT and teach them how to use this artificial intelligence tool effectively. This training program aims to determine teachers' perspectives on how to use ChatGPT in preschool education.

Methodlogy

This study employed a qualitative research method known as a case study. Qualitative research aids in comprehending the perspectives of the participants and their formation (Maxwell, 2012; Miles & Huberman, 1994). A case study, which is within the scope of qualitative research methods, is an appropriate method for understanding, exploring, and interpreting a situation, event, or phenomenon (Merriam & Tisdell, 2015). Because the case study's goal is to understand or evaluate a specific issue (Creswell, 2021), in this context, the case study approach was preferred to achieve the study's purpose.

Participants

The study's participants consisted of 16 preschool teachers working in public schools in a province in Turkey's Eastern Anatolia Region in the 2023-2024 academic year. The participants were selected based on the purposive sampling method. Purposive sampling is a frequently employed method in qualitative research to strategically locate and pick examples that contain a wealth of information in order to make the most efficient use of limited resources (Campbell et al., 2020). This sampling technique entails the identification and selection of individuals or groups who possess extensive knowledge and expertise in the subject matter of interest (Gentles et al., 2015). In this context, the preschool teachers identified participated in the study voluntarily. A consent form was obtained from each participant. In the study, instead of the participants' real names, the names that characterized them (T1, T2, T3... T16) were used. Thirteen of the participant teachers were female and three were male. Twelve of these teachers had 1-5 years of service, 3 had 6-10 years of service and 1 had 11-15 years of service. Ten of the teachers work in rural areas and the remaining six work in schools located in the central region. 14 of the teachers have bachelor's degrees, and the remaining 2 have master's degrees. Table 1 presents the teacher's self-qualifications.

Table 1. Participant Self Characteristics

Gender	**N**	**Graduations**	
Female	13	License	28
Male	3	Master's Degree	12
Professional Experience		**Region of Duty**	
1-5 Years	12	Rural	10
6-10 Years	3	Center	6
11-15 Years	1		
Total	**16**		

Implementation Process

In this study, a training program was prepared for preschool teachers to successfully integrate ChatGPT into preschool education. While preparing this training program, national and international literature was reviewed. The draft program was finalized based on the opinions of two experts in the field of artificial intelligence in education. Table 2 presents the content of the prepared training program.

Table2. ChatGPT Training Program

1st week.
- What is ChatGPT? - How to use ChatGPT? - What is the potential and importance of ChatGPT in education? - Developing the skills to ask the right questions to ChatGPT - Use in Preschool Education - Creating and organizing learning materials. - Designing activities on students' developmental areas
2nd week
• Integration of ChatGPT into Preschool Education - How can it be harmoniously integrated into the learning objectives of the preschool curriculum? - Examples of planning activities customized to student needs - Teaching students how to use ChatGPT - Security considerations when using ChatGPT - Creating ChatGPT supported lesson plans for students. **• Applications and Discussion** - Sharing preschool teachers' thoughts on integrating ChatGPT into the lesson process - Discussing the difficulties that may be encountered during implementation and solutions - An overview of the future and impact of ChatGPT in education.

We introduced artificial intelligence and ChatGPT in the prepared training and provided information on how to successfully integrate them into preschool education. Next, we conducted trainings to create sample activities using ChatGPT. We stated the safe use of ChatGPT, addressed the issues to consider, and initiated the discussion section. In this section, teachers expressed their thoughts and concerns about the use of ChatGPT in the education process. Long discussions were held on these. We completed the training in two weeks.

Data collection process

In order to examine teachers' views on the integration of ChatGPT in pre-school education, data were collected using a semi-structured interview form and the researcher's diaries. To maintain the validity and reliability of the research, the study triangulates the data collection tools to gain a wider and more deeper understanding (Thurmond, 2004). Researchers use two or more data sets for triangulation (Heale & Forbes, 2013). Denzin (2017) collected data at separate times within the scope of triangulation (Denzin, 2017). In order to determine the views of preschool teachers, teachers were interviewed at the end of the planned training. Before beginning the interview, the researcher informed the participants about the ethical issues, ensuring that the information they provided would remain confidential and not be used outside the research. Additionally, all teachers signed a written informed consent form. The researcher conducted the interviews, which typically lasted 25–30 minutes. During the interview process, follow-up questions such as "...can you give an example about...?" and "...please explain what you mean in more detail about..." were used to clarify and expand the teachers' comments and to encourage discussion. To prevent data loss, we recorded the interviews on voice recorders. At the end of the interview, the participant was made to listen to the interview recording and his or her consent was obtained. After the interviews were completed, the interview data was converted into verbatim transcripts. Before starting the research, the necessary ethics committee permissions were obtained from the relevant institutions.

Data Collection Tools

The researcher prepared a semi-structured interview form to gather teachers' perspectives on the use of ChatGPT in preschool education. After conducting the necessary literature reviews and seeking expert opinions, the researcher prepared the draft form. Two experts from the field of artificial intelligence applications in education examined this form. The interview form was finalized in line with the feedback received from the experts. Appendix 1 presents the semi-structured interview form. In addition to the semi-structured interview form, a researcher's diary was used as a data collection tool to observe teachers' activities during the training process.

Data Analysis

This study used content analysis to analyze teachers' responses to semi-structured interview questions and research diaries. Content analysis involves creating themes by giving codes to the data obtained and evaluating the data in this sense (Schreier, 2014; Yıldırım & Şimşek, 2013). The researcher determined the themes in the study through her own discussions, without building on the themes identified in previous studies. Therefore, the researcher used an inductive content analysis approach. For data analysis, coding is defined as a systematic process of classification for subjective interpretation of textual data content, which involves defining themes or categories (Elo & Kyngäs, 2008; Hsieh & Shannon, 2005). The MAXQDA program processed the data and created a comprehensive coding framework with frequency values. A researcher and a research assistant independently coded and analyzed 40% of the data. Since the independent coding of 92% of the data was compatible, only the remaining data was analyzed by the researchers. As a result of the checks, the codes with disagreements were discussed, and the agreed codes and themes were used in the study.

Ethical Approval: The ethics committee permission of the research was obtained with Fırat University Social and Human Sciences Scientific Research and Publication Ethics Committee evaluation decision date=23.08.2024, ethics evaluation document number=26480.

Findings

The results of the content analysis of the data obtained from the interviews conducted at the end of the training program attended by the preschool teachers participating in the study to integrate ChatGPT into the preschool education level are presented in the tables and figures below.

Theme 1. The use of ChatGPT in pre-school education

The themes, categories and codes related to the use of ChatGPT at preschool level are presented in Figure 1.

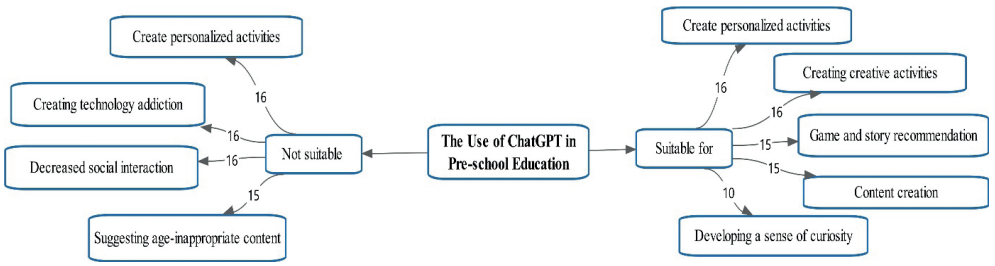

Figure 1. Teachers' views on the use of ChatGPT in preschool level

Teachers participating in this study believed that ChatGPT, with its personalized activities, creative activities, content creation, and game and story suggestions, was appropriate for preschool education levels. However, concerns such as learning misinformation, technological addiction, decreased social interaction, and the possibility of creating age-inappropriate content were also identified. The research participant, PT2, stated that *"... It can be especially useful for children to get instant information about the subjects they are curious about and to produce different games or stories. Nevertheless, I think that technology should be used limited and carefully in this age group. It is important to prioritize children's social interactions and physical activities..."*. Similarly, PT5 stated that *"...Using ChatGPT in education seems to be an interesting innovation. I think it has the potential to create different content that can attract the attention of children in particular. For example, it can immediately answer a child's question about dinosaurs or tell an interactive story about a topic. However, I think we need to be careful about how much and how technology is used in the classroom. This age group is more prone to learning through physical play and face-to-face interaction..."*. During the training, teachers, especially those working in village schools, frequently expressed both surprise and happiness. For example, PT8 *"... I think this technology can be quite new and exciting for children in the region where I work. When children meet a technology like ChatGPT, it can open a different world for them. Our limited possibilities can pave the way for us to create rich content with this tool..."*. On the other hand, PT14, who said that he was teaching in a crowded classroom and constantly discussed how it should be applied in multi-student groups during the education process, stated that *"...Working in a crowded classroom is an important obstacle in terms of giving individual attention to each child. Therefore, I think that ChatGPT can be a guide in the education process. It can be useful in areas such as the potential to provide personalized content and answering children's questions on certain topics or providing them with fun and instructive stories..."*.

Theme 2. The potential of ChatGPT in preschool learning processes

The themes, categories and codes related to the potential of ChatGPT in learning processes at preschool level are presented in Figure 2.

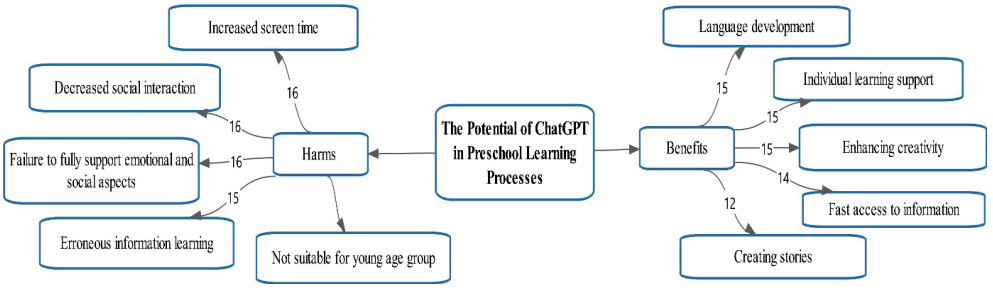

Figure 2. Teachers' views on the potential of ChatGPT for learning processes at preschool level

According to the opinions of the teachers participating in this study, ChatGPT's potential in language development, individual learning support, encouraging creativity, accessing information quickly and creating creative stories in learning processes at the preschool education level was determined. However, harmful situations such as increased screen time, decreased social interaction, inadequacy in supporting emotional and social aspects, learning incorrect information and the possibility of creating content that is not suitable for young ages were also identified. The participant in the study, PT15, stated that "... when we discuss a topic or create a story while doing group activities with children, we can use ChatGPT to generate creative ideas. Nevertheless, I plan to use this technology only at certain moments and in a way that does not negatively affect children's physical and social development. I believe that technology should not interfere with children's natural play processes. I also think that it should be used under constant teacher or parental supervision in case it produces erroneous information...". Similarly, PT13 said, "...I may consider using ChatGPT in the classroom, especially in activities that will attract children's interest. For example, when children want to learn about nature or create a new story, ChatGPT can inspire them...".

Theme 3. Requirements for the successful integration of ChatGPT into the preschool level

The themes, categories and codes related to the requirements for successfully integrating ChatGPT into the preschool level are presented in Figure 3.

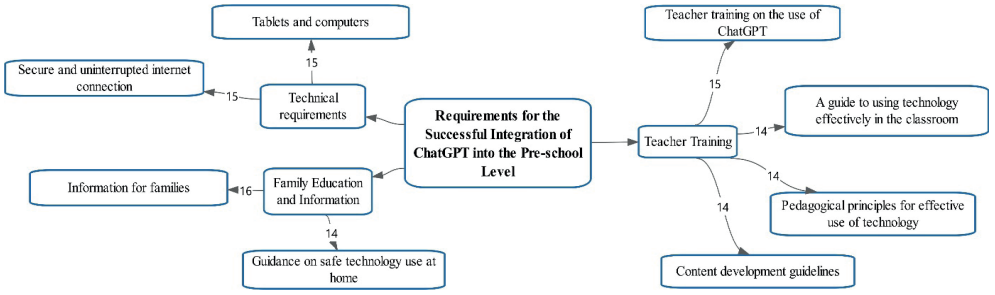

Figure 3. Teachers' views on the needs to successfully integrate ChatGPT into the preschool level

According to the teachers who participated in this study, successful integration of ChatGPT into preschool education requires technical requirements such as tablets or computers and a secure, uninterrupted internet connection. Teachers indicated the need for teacher trainings that cover topics such as identifying pedagogical principles for using technology, acquiring skills to use technology effectively in the classroom, and establishing appropriate content development guidelines. They also emphasized the importance of introducing this artificial intelligence-supported tool to families and providing necessary information about its safe

use. For example, PT5 stated that *"...It is important that we receive trainings to show how we can use this technology effectively. I also think that there should be necessary tablets or computers to use it in the classrooms..."*. Similarly, PT7 also stated that *"... In order to use ChatGPT effectively, we need to receive the necessary trainings. Devices and uninterrupted internet should be in every classroom. Along with these, I think it is important to inform the families about artificial intelligence supported tools..."*.

Theme 4. The future of ChatGPT in preschool education

The themes, categories and codes related to the future of ChatGPT in pre-school education are presented in Figure 4.

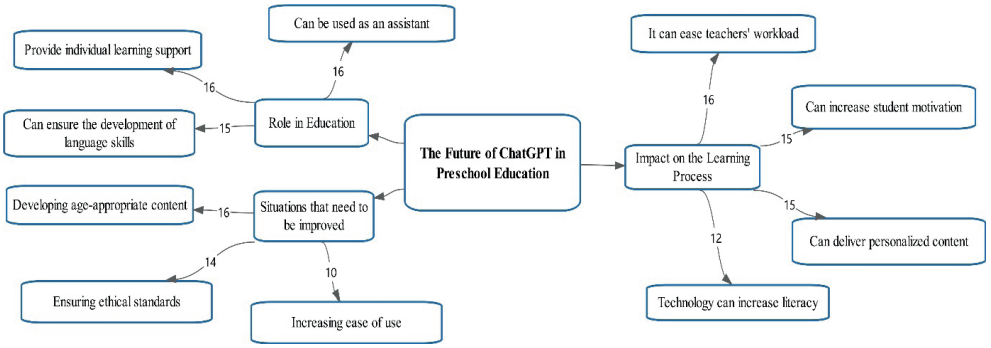

Figure 4. Teachers' views on the future of ChatGPT in preschool education

According to the views of the teachers who participated in this study, ChatGPT can be used as an assistant in pre-school education level and can provide individual learning support and language development. The participants' views were that ChatGPT can lighten the workload of teachers, increase students' motivation and technology literacy levels, and provide personalized content. In addition to these, teachers also stated that ChatGPT needs improvements in areas such as developing age-appropriate content, ensuring ethical standards and increasing ease of use. For example, PT1 stated that *"... Using ChatGPT as an assistant in my classroom will enable me to better respond to the individual learning needs of children. Providing advantages such as language development, increasing students' motivation, increasing their technology literacy levels from an early age will enable this technology to be used more in the future..."*. On the other hand, PT3 stated that *"... the integration of AI-supported tools into traditional teaching processes will provide significant advantages for both teachers and students. Thanks to these tools, our workloads will decrease, we will be able to provide personalized content, and we will be able to give quick feedback. However, in order for this integration to be healthier, I think it is necessary to develop age-appropriate content, to make it easier to use and most importantly to ensure ethical standards..."*

Discussion

The study examined preschool teachers' views on the use of ChatGPT. In this context, a training program for the introduction and effective use of ChatGPT was prepared and implemented. This training program determined the opinions of the participating teachers about the use of ChatGPT at the preschool education level. According to the study, teachers believe ChatGPT can provide significant benefits at the preschool education level in areas such as personalized activities, creative activities, content creation, and game and story suggestions. However, the study also identified teachers' views on potential risks, including learning misinformation, technological addiction, decreased social interaction, and the creation of age-inappropriate content. In the literature, there are findings that ChatGPT is an effective educational tool that can support students with self-regulation difficulties (Li et al., 2023; H. Uğraş & Uğraş, 2024). ElSayary (2023) emphasizes that ChatGPT creates opportunities to provide students with different experiences and rich, effective suggestions in lessons (ElSayary, 2023). In this framework, ChatGPT's contributions to teaching processes are considered significant advantages in terms of teaching. Many benefits that ChatGPT offers to teachers and students are also mentioned in the existing literature (Albadarin et al., 2024; Atlas, 2023; Baidoo-Anu & Owusu Ansah, 2023; Feser, 2024; Mai et al., 2024; Opara et al., 2023). Similarly, in a study conducted by Ağmaz (2023), it was stated that ChatGPT can produce age-appropriate content for children, support creative thinking skills, and help in storytelling in early childhood (Ağmaz, 2023). In addition, Allehyani & Algamdi (2023) stated that ChatGPT can provide advantages in children's second language learning in early childhood (Allehyani & Algamdi, 2023). According to the literature's findings, ChatGPT positively impacts preschool education by fostering creativity, offering personalized learning materials, and enhancing children's language skills. However, we conclude that careful planning is necessary for the safe and effective use of ChatGPT in educational settings, given the risks associated with its use.

The teachers who participated in the study were of the opinion that ChatGPT can be useful in preschool education due to its potential for language development, individual learning support, encouraging creativity, fast access to information, and creating creative stories. These results reflect the idea that ChatGPT can enrich teachers' teaching processes and meet students' different learning needs. However, they were also concerned about the potential risks associated with ChatGPT, including increased screen time, decreased social interaction, inadequate support for emotional and social aspects, inaccurate information learning, and the possibility of creating content that is inappropriate for young people. In this context, technological pedagogical knowledge and experience can help preschool teachers effectively integrate ChatGPT into the teaching process and reduce potential risks. Studies in the

literature also reflect these conflicting results (Abdaljaleel et al., 2024; Hwang & Chang, 2023; Jauhiainen & Guerra, 2023; Kasneci et al., 2023; Liu et al., 2023; Murgia et al., 2023; Pasca & Arcese, 2024; Young & Shishido, 2023; Yu, 2024). For example, Allehyani & Algamdi (2023) state that ChatGPT can provide advantages for children's second language learning in early childhood (Allehyani & Algamdi, 2023); Luo et al. (2024) state that it can be a conversational tool for children and can also improve their intelligence (Luo et al., 2024); Zhao et al. (2024) state that it can provide many benefits such as storytelling, creativity, and knowledge acquisition (Zhao et al., 2024); and Abdaljaleel et al. (2024) draw attention to the possible negative effects of ChatGPT (Abdaljaleel et al., 2024). Alshater (2022) and Hong (2023) state the potential to inhibit students' critical thinking skills (Hong, 2023; M Alshater, 2022). Despite ChatGPT's potential to support various learning needs in preschool education, teachers' views and literature findings suggest its careful implementation and pedagogical approach. Therefore, training teachers to minimize potential risks of ChatGPT and effectively utilize its advantages is crucial.

Teachers participating in this study believe that successful integration of ChatGPT into preschool education requires meeting technical requirements such as tablets or computers and a secure, uninterrupted internet connection. Failure to meet these requirements creates obstacles for teachers to use this tool effectively during the integration process (Dwivedi et al., 2023; Kasneci et al., 2023; Montenegro-Rueda et al., 2023; Tan & Subramonyam, 2023). Strengthening the technical infrastructure will help teachers successfully integrate ChatGPT into the process (Chan, 2023; Kasneci et al., 2023; Whalen & Mouza, 2023). Teachers indicated the need for teacher trainings that cover topics such as identifying pedagogical principles related to technology use, gaining skills to use technology effectively in the classroom, and creating appropriate content development guidelines. They also emphasized the importance of introducing this AI-supported tool to families and informing them about its safe use. Yang et al. (2023) show that school administrators and parents' safety concerns are among the difficulties encountered in integrating ChatGPT into the teaching process (Yang et al., 2023). School administrators and parents generally have concerns about the security of the information generated by ChatGPT, as well as ethics and privacy concerns related to the use of this tool (Limna et al., 2023; Ray, 2023; Wu et al., 2023). Attention to these issues is important for a more effective integration process (Elbanna & Armstrong, 2024). In this context, comprehensive support, both technically and pedagogically, can ensure the effective integration of ChatGPT into preschool education.

According to the teachers who participated in this study, ChatGPT can serve as an assistant at the preschool level, offering individual learning support and fostering language development. The participants also believe that ChatGPT can ease the workload of teachers, increase

students' motivation and technology literacy levels, and provide personalized content. These features will allow students to experience a more effective teaching process through ChatGPT. Furthermore, the enormous potential that this tool can bring to the teaching process increases the potential to diversify and personalize learning processes (Kewalramani et al., 2021; Williams et al., 2019). According to Cooper (2023), ChatGPT can save teachers time in the teaching process (Cooper, 2023). It helps teachers improve their teaching practices (Whalen & Mouza, 2023). ChatGPT can significantly reduce teachers' workload, allowing them to devote more time to fostering innovation and making breakthroughs in various fields (Van Dis et al., 2023). On the other hand, teachers indicated that ChatGPT needs improvements in areas such as developing age-appropriate content, ensuring ethical standards, and increasing ease of use. According to the literature (Baidoo-Anu & Owusu Ansah, 2023; Perkins, 2023; Jalil et al., 2023; King & chatGPT, 2023; Mogali, 2023; Szabo, 2023), ChatGPT has the potential to generate false information and raise doubts about the accuracy and reliability of the information it derives. Teachers identified issues that require improvement, as they have the potential to present significant challenges. This may pose problems, especially in terms of reliability and accuracy of information. Furthermore, it's important to acknowledge that ChatGPT's training on large datasets may lead to the generation of biased or erroneous information (Baidoo-Anu & Owusu Ansah, 2023; Gilson et al., 2022; Khan et al., 2023). Teachers, students, and parents should have sufficient information literacy in order to minimize the impact of both the issues that teachers state as needing improvement and the problems of inaccuracy of information that this tool may produce (Celik, 2023; B. Wang et al., 2023). Furthermore, to ensure the effective use of ChatGPT in educational processes, additional efforts should focus on content development and the establishment of ethical standards for this tool. We should also create training programs and support mechanisms to guarantee the correct and effective use of technology by teachers.

This study provides preliminary information for teachers to use ChatGPT more effectively and sustainably in preschool education. The small number of participants in this study is a limitation. It consists of 16 teachers from a few preschools in a province in Turkey's Eastern Anatolia Region, which limits the findings' generalizability. This is due to time and resource constraints. For future studies, we recommend researchers conduct a larger study with preschool teachers with different characteristics. In addition, this study was based on interview data and researcher diaries at the end of the training on the use of ChatGPT in preschool education. However, the results may not fully reflect the effects in the real classroom environment. We were unable to conduct the research in classroom settings. For future studies, we recommend researchers focus on the classroom use of ChatGPT in preschool education and its long-term effects. These results will provide an opportunity to evaluate the long-term effects of ChatGPT. We have not explored the perspectives of school

administrators, parents, or other stakeholders, whose opinions are crucial for the use of ChatGPT in preschool education. This may be important for a more holistic assessment of the potential benefits and harms of using this AI-supported tool in preschools. For this reason, we suggest that future studies should also include other stakeholders in education.

Ethical Approval: The ethics committee permission of the research was obtained with Fırat University Social and Human Sciences Scientific Research and Publication Ethics Committee evaluation decision date=23.08.2024, ethics evaluation document number=26480.

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Appendix:

1- Semi-structured interview form

- What are your thoughts on the use of ChatGPT in preschool education?
- What do you think about the potential contributions of ChatGPT to children's learning processes?
- What are the necessary conditions to successfully integrate ChatGPT into preschool education?
- What are your thoughts about the future of ChatGPT in preschool education?

Okul Öncesi Eğitimde ChatGPT Kullanımının Değerlendirilmesi: Öğretmen Perspektifleri

Genişletişmiş Özet

Giriş

COVID-19 salgını, eğitim teknolojilerini eğitim sisteminin hayati bir parçası haline getirmiştir. Eğitimde teknolojinin sürekli geliştiği bu çağda, öğretmenlerin kişisel ve mesleki gelişimlerine katkı sağlamak için bu teknolojileri kullanmaları gerekmektedir (Bhaskar & Rana, 2024; Escotet, 2023; Fullan et al., 2023; Kilag et al., 2024). Son yıllarda, yapay zeka ve doğal dil işleme gibi alanlardaki hızlı gelişmeler, öğrenme ortamlarını dönüştürme potansiyeline sahiptir (Ahn & Chen, 2022; C.-Y. Wang & Lin, 2023; D. Wang et al., 2019; Zhai et al., 2021; Zhang, 2022). ChatGPT gibi yapay zeka araçları öğrencilere, kişiselleştirilmiş öğrenme deneyimleri sunma, (Elbanna & Armstrong, 2024; Hadi Mogavi et al., 2021; Liu et al., 2023; Rahiman & Kodikal, 2024; Su & Yang, 2022; Xia et al., 2019), yer ve zamandan bağımsız olarak problemlerine çözüm önerileri sağlama ve geri bildirimde bulunma imkanı sunmaktadır (Clarizia et al., 2018; Elbanna & Armstrong, 2024; Hwang & Chang, 2023; Zhang, 2022). Bu bağlamda, ChatGPT gibi yapay zeka destekli dil modelleri, okul öncesi eğitim kademesine de benzersiz fırsatlar sunmaktadır (Chen & Lin, 2024; Slavuj et al., 2015). Modeller aracılığıyla, öğretmenler ve öğrenciler, ihtiyaçlarına uygun ve anlamlı içeriklere kolayca ulaşabilmektedir (Kostiainen et al., 2018; Shoeybi et al., 2020). Bu süreçte, doğru ihtiyaçların belirlenmesi ve modellerin etkin kullanımı büyük önem taşımaktadır. Bu bağlamda, araştırma, okul öncesi eğitim kademesinde ChatGPT kullanımının potansiyel rollerini, zorluklarını ve gelecekteki beklentilerini belirlemeyi amaçlamaktadır. ChatGPT'nin sınıf içindeki potansiyelini anlamak ve pratik uygulamalarını keşfetmek, okul öncesi öğretmenlerinin sınıflarında öğrenme deneyimini geliştirmelerine katkı sağlayabilir. Bu bakış açısıyla araştırmanın amacı, okul öncesi eğitim kademesinde ChatGPT kullanımına yönelik öğretmen görüşlerini belirlemektir.

Yöntem

Bu çalışmada, durum çalışması olarak bilinen bir nitel araştırma yöntemi kullanılmıştır. Nitel araştırma, katılımcıların görüşlerini anlamamıza ve bu görüşlerin nasıl oluştuğunu anlamamıza yardımcı olmaktadır (Maxwell, 2012; Miles & Huberman, 1994). Nitel araştırma yöntemleri kapsamında olan durum çalışması ise, bir durumu, olayı veya olguyu anlama, keşfetme ve yorumlamak için uygun bir yöntemdir (Merriam & Tisdell, 2015). Çünkü durum çalışmasının amacı belirli bir konuyu anlamak veya değerlendirmektir (Creswell, 2013). Bu bağlamda araştırmanın amacına ulaşmak için durum çalışması yaklaşımı tercih edilmiştir.

Katılımcılar

Araştırmanın katılımcıları, 2023-2024 eğitim öğretim yılında Türkiye' nin Doğu Anadolu Bölgesindeki bir ilde bulunan devlet okullarında görev yapan 16 okul öncesi öğretmeni oluşturmaktadır. Katılımcılar belirlenirken amaçlı örnekleme yöntemine göre belirlenmiştir. Amaçlı örnekleme, nitel araştırmalarda, sınırlı kaynakların en verimli şekilde kullanılması amacıyla bilgi açısından zengin olan vakaların belirlenmesi ve seçilmesi için yaygın bir tekniktir (Campbell ve diğerleri, 2020). Bu örnekleme yöntemi, araştırma konusu hakkında bilgi ve deneyime sahip bireylerin veya grupların tanımlanmasını ve seçilmesini içerir (Gentles vd., 2015). Bu kapsamda belirlenmiş olan okul öncesi öğretmenleri araştırmaya gönüllü olarak katılmışlardır. Her katılımcıdan gönüllü olur formu alınmıştır.

Uygulama Süreci

Bu araştırmada, okul öncesi öğretmenlerinin ChatGPT' nin, okul öncesi eğitim kademesine başarılı bir şekilde entegre edilebilmesi için bir eğitim programı hazırlanmıştır. Bu eğitim programı hazırlanırken ulusal ve uluslararası literatür taranmıştır. Oluşturulan taslak program eğitimde yapay zeka alanındaki iki uzmandan görüşleri alınarak son şekli verilmiştir.

Veri toplama süreci

Okul öncesi eğitim kademesine ChatGPT' nin entegre edilmesi ile ilgili öğretmenlerin görüşlerini incelemek için yarı yapılandırılmış görüşme formu ve araştırmacı günlükleri kullanılarak veriler toplanmıştır. Çalışmanın geçerliliğini ve güvenilirliğini sağlamak için araştırma, daha geniş ve daha derin bir anlayış elde etmek amacıyla veri toplama araçlarını üçgenlemektedir (Thurmond, 2004). Üçgenleme kapsamında veriler ayrı zamanlarda toplanmıştır (Denzin, 2017). Okul öncesi öğretmenlerinin görüşlerini belirlemek amacıyla, planlanan eğitimin sonunda öğretmenler ile mülakat yapılmıştır.

Veri Toplama Araçları

Okul öncesi eğitim kademesinde ChatGPT kullanımına yönelik öğretmen görüşlerini belirlemek amacıyla araştırmacı tarafından yarı yapılandırılmış bir görüşme formu hazırlanmıştır. Taslak form, gerekli literatür incelemeleri ve uzman görüşleri alınarak hazırlanmıştır. Bu form, eğitimde yapay zekâ uygulamaları alanında uzman iki kişi tarafından incelenmiştir. Uzmanlardan alınan dönütler doğrultusunda görüşme formuna son hali verilmiştir. Veri toplama aracı olarak yarı yapılandırılmış görüşme formunun yanı sıra öğretmenlerin eğitim sürecindeki faaliyetlerini gözlemlemeye yönelik araştırmacı günlüğü kullanılmıştır.

Veri Analizi

Bu araştırmada, öğretmenlerin yarı yapılandırılmış görüşme sorularına verdikleri yanıtlar ve araştırma günlükler içerik analiziyle incelenmiştir. İçerik analizi, elde edilen verilere kodlar verilerek temaların oluşturulmasını ve verilerin bu anlamda değerlendirilmesini kapsamaktadır (Schreier, 2014; Yıldırım & Şimşek, 2013). Araştırmacı çalışmadaki temaları, daha önce yapılan çalışmalardan belirlenmiş temalar üzerine inşa etmeden, kendi tartışmaları yoluyla belirlemiştir. Bu nedenle araştırmacı tümevarımcı bir içerik analizi yaklaşımı kullanmıştır. Veri analizi için, kodlama, tema veya kategori tanımlamayı içeren, metinsel veri içeriğinin öznel yorumlanması için sistematik bir sınıflandırma süreci olarak tanımlanmaktadır (Elo & Kyngäs, 2008; Hsieh & Shannon, 2005). Elde edilen veriler, MAXQDA programında işlendikten sonra frekans değerlerinin yer aldığı kapsamlı bir kodlama çerçevesi oluşturulmuştur.

Bulgular

Bu çalışmaya katılan öğretmenlerin görüşlerine göre, ChatGPT'nin okul öncesi eğitim kademesi için kişiselleştirilmiş etkinlikler, yaratıcı etkinlikler, içerik oluşturma, oyun ve hikâye önerileri gibi konularda uygun olduğu belirlenmiştir. Bununla birlikte, yanlış bilgi öğrenme, teknolojik bağımlılık, sosyal etkileşimin azalması ve yaşa uygun olmayan içeriklerin oluşturulma ihtimali gibi endişeler de tespit edilmiştir.

Bu çalışmaya katılan öğretmenlerin görüşlerine göre, ChatGPT' nin okul öncesi eğitim kademesinde öğrenme süreçlerinde dil gelişimi, bireysel öğrenme desteği, yaratıcılığı teşvik etme, bilgiye hızlı ulaşma ve yaratıcı hikayeler oluşturma konularındaki potansiyeli faydalı olabileceğine yönelik görüşleri belirlenmiştir. Bununla birlikte, ekran süresinin artması, sosyal etkileşimin azalması, duygusal ve sosyal yönün desteklenmesinde yetersiz kalma, hatalı bilgi öğrenme ve küçük yaşlar için uygun olmayan içeriklerin oluşturulma ihtimali gibi zararlı durumları da tespit edilmiştir.

Bu çalışmaya katılan öğretmenlerin görüşlerine göre, ChatGPT'nin okul öncesi eğitim kademesine başarılı bir şekilde entegre edilmesi için tabletler veya bilgisayarlar ve güvenli, kesintisiz internet bağlantısı gibi teknik gereksinimlerin karşılanması gerekmektedir. Öğretmenler, teknoloji kullanımıyla ilgili pedagojik ilkelerin belirlenmesi, teknolojiyi sınıfta etkili kullanma becerilerinin kazandırılması ve uygun içerik geliştirme rehberlerinin oluşturulması gibi konuları kapsayan öğretmen eğitimlerine ihtiyaç duyulduğunu belirtmişlerdir. Ayrıca, bu yapay zekâ destekli aracın ailelere tanıtılması ve güvenli kullanımıyla ilgili gerekli bilgilendirmelerin yapılmasının önemine de vurgu yapmışlardır.

Bu çalışmaya katılan öğretmenlerin görüşlerine göre, ChatGPT'nin okul öncesi eğitim kademesinde asistan olarak kullanılabileceği, bireysel öğrenme desteği ve dil gelişimi sağlayabileceğine yönelik görüşleri belirlenmiştir. Katılımcılar, ChatGPT' nin öğretmenlerin iş yükünü hafifletebileceği, öğrencilerin motivasyonunu ve teknoloji okuryazarlık düzeylerini arttırabileceğini, ayrıca kişiselleştirilmiş içerikler sunabileceğine yönelik görüşleri belirlenmiştir. Bunlarla birlikte öğretmenler, ChatGPT' nin yaşa uygun içerikler geliştirme, etik standartlarının sağlanması ve kullanım kolaylığının arttırılması gibi alanlarda iyileştirmeler gerektiğine yönelik düşünceleri de belirlenmiştir.

Sonuç ve Tartışma

Öğretmenlerin görüşleri, ChatGPT'nin okul öncesi eğitim kademesi için kişiselleştirilmiş etkinlikler ve yaratıcı etkinlikler tasarlamada etkili olabileceğini göstermektedir. ChatGPT'nin dil gelişimi, bireysel öğrenme desteği, yaratıcılığı teşvik etme, bilgiye hızlı ulaşma ve yaratıcı hikayeler oluşturma gibi öğrenme süreçlerinde faydalı olabileceği tespit edilmiştir. Öğretmenlerin iş yükünü hafifletme ve öğrencilerin teknoloji okuryazarlık düzeylerini artırma konusunda potansiyel sağladığı belirlenmiştir. ChatGPT'nin hatalı bilgi öğrenme ve küçük yaşlar için uygun olmayan içeriklerin oluşturulma ihtimali konusunda endişeler tespit edilmiştir. Teknolojik bağımlılık riskini artırma ve sosyal etkileşimin azalması gibi konularda çekinceler belirlenmiştir. ChatGPT'nin duygusal ve sosyal yönlerin desteklenmesinde yeterli olamayabileceği yönünde görüşler belirlenmiştir. Başarılı bir entegrasyon için tabletler veya bilgisayarlar ve güvenli, kesintisiz internet bağlantısı gibi teknik gereksinimlerin karşılanması gerektiği tespit edilmiştir. Teknoloji kullanımıyla ilgili pedagojik ilkelerin belirlenmesi ve teknolojiyi sınıfta etkili kullanma becerilerinin kazandırılması için öğretmen eğitimlerine ihtiyaç duyulduğu tespit edilmiştir. Yapay zekâ destekli araçların ailelere tanıtılması ve güvenli kullanımına yönelik bilgilendirmelerin yapılmasının önemi tespit edilmiştir. Bu bulgular ışığında, ChatGPT'nin okul öncesi eğitim kademesinde etkili bir şekilde kullanılabilmesi için teknik altyapı ve eğitim gereksinimlerinin karşılanmasının yanı sıra içeriklerin yaşa uygunluğunun ve etik standartlarının sağlanması gerektiği sonucuna varılmıştır.