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Review Article

Generative AI in preschool education: A systematic review with SWOT analysis

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ABSTRACT

This systematic review analyzes 21 studies that met the inclusion criteria, retrieved from academic databases including Web of Science, Scopus, SpringerLink, and ACM Digital Library, to explore the integration of generative AI (GenAI) in preschool education. A systematic review methodology was applied, with specific inclusion and exclusion criteria to ensure the relevance and quality of the selected studies. Thematic analysis was employed to synthesize the findings. The results reveal that GenAI offers significant opportunities to enhance personalized learning, improve collaboration among educators, and foster educational equity. Notably, it supports dynamic and flexible teaching practices, aids in content creation, and promotes multi-role collaboration. However, challenges such as concerns over content reliability and age appropriateness, digital competence, and the potential reduction in children's creativity must be addressed. Ethical issues, including data privacy risks and unequal access to technology, further complicate the widespread implementation of GenAI. Future research should focus on the long-term impact of GenAI on child development, examine its implementation in low-resource settings, and develop frameworks for responsible artificial intelligence use. By overcoming these challenges, GenAI has the potential to revolutionize preschool education, offering more engaging, equitable, and personalized learning experiences.

Keywords: generative AI, preschool education, SWOT (strengths, weaknesses, opportunities, threats), systematic review

INTRODUCTION

The integration of generative AI (GenAI) in preschool education has attracted increasing attention due to its potential to transform teaching and learning practices. GenAI allows for personalized learning by creating human-like content, such as text, images, and interactive materials, based on various prompts such as language input and instructions (Yan et al., 2024). This technology is shifting education away from traditional methods, creating more dynamic and engaging learning environments (Kadaruddin, 2023). One major application of GenAI in education is the development of interactive tools that assist both teachers and students with language learning and creative activities (Ghimire et al., 2024). These tools adapt to the individual needs of each student, providing a more personalized learning experience (Anderson et al., 2025). Additionally, GenAI is being used to create interactive educational content to help develop creativity and critical thinking in children (Zebua, 2024). These platforms provide preschool children with immersive learning experiences through simulations and interactive games, combining play with structured learning. For instance, GenAI-powered virtual storytelling tools help children build language skills while encouraging their creativity (Marçal et al., 2025). This approach not only improves learning outcomes but also offers more efficient and cost-effective teaching methods, complementing traditional educational approaches.

Moreover, studies have also highlighted the benefits of GenAI tools for both teachers and students. For teachers, GenAI aids in creating personalized content (Borah et al., 2024; Meli et al., 2024), enhancing classroom activities (Laak & Aru, 2024; Yang & Markauskaite, 2025), and improving classroom management (Chiu, 2024; Elsaiary, 2025). These tools offer automated assessments, quick feedback, and personalized teaching strategies, allowing teachers to adjust their pace according to each student's needs. For students, GenAI enhances learning in several areas, such as language development, creativity in art, and STEM education. Through interactive experiences, GenAI helps improve language comprehension, expand vocabulary, and refine expression (Law, 2024; Wang et al., 2025). In art education, GenAI generates images and creative tasks, encouraging students to explore and develop their artistic skills (Chu et al., 2025; Fleischmann, 2024). In STEM, GenAI aids in understanding complex concepts and fosters greater interest in science and technology through simulations and interactive activities (Bougdira & Al Murshidi, 2025; Choi, 2025; Lai, 2023).

However, the integration of GenAI into preschool education still presents several challenges, including concerns about data privacy (Giannakos et al., 2024), algorithmic bias (Sandu et al., 2024), and the reliability of AI-generated content (J. Zhao et al., 2024). Additionally, over-reliance on GenAI may impede students' development of independent problem-solving skills and critical thinking (Perifanou & Economides, 2025; Premkumar et al., 2024). To fully capitalize on the benefits of GenAI in preschool education, clear guidelines must be established to ensure its responsible use. The field is still in its early stages, with limited research and many areas yet to be explored. As the technology continues to evolve, it is crucial for educators and policymakers to collaborate in effectively integrating GenAI into teaching practices.

This paper aims to provide a comprehensive analysis of GenAI in preschool education, examining its current applications and future potential. By synthesizing the findings from 21 studies that met the inclusion criteria, this study explores how GenAI is being integrated into preschool education, assesses the SWOT (strengths, weaknesses, opportunities, and threats) associated with its adoption, and identifies directions for future research. The objective is to offer meaningful insights for researchers, educators, and policymakers, helping them use this transformative technology to enhance preschool education. The following research questions (RQs) guide this study:

RQ1: What are the key characteristics of existing research on the integration of GenAI in preschool education?

RQ2: What are the strengths of integrating GenAI into preschool education?

RQ3: What are the weaknesses of integrating GenAI into preschool education?

RQ4: What are the opportunities presented by the integration of GenAI into preschool education?

RQ5: What are the threats posed by the integration of GenAI into preschool education?

CONCEPTUAL FRAMEWORK

This study uses an integrative framework to examine the integration of GenAI in preschool education. It combines the technological pedagogical and content knowledge (TPACK) model (Koehler et al., 2017) with the technology-organization-environment (TOE) framework (Drazin, 1991). As shown in **Figure 1**, this framework anchors and interprets the SWOT synthesis.

The TPACK framework provides a micro-level lens that focuses on the knowledge educators need to integrate technology effectively. Koehler et al. (2017) argue that meaningful integration rests on the interplay of content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK). In early childhood settings, CK involves understanding child development domains and curriculum content. PK concerns developmentally appropriate practices and instructional strategies. TK involves a working grasp of GenAI tools and their affordances. The framework also highlights intersections among these domains, including technological pedagogical knowledge (TPK), which addresses how teaching and learning change with GenAI,

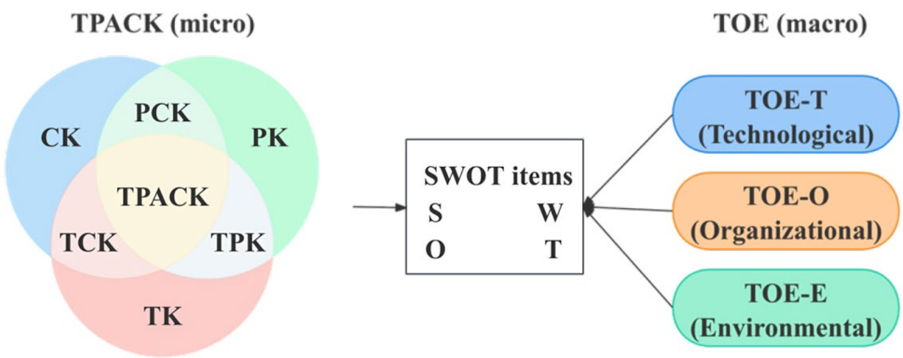

Figure 1. TPACK-TOE framework (Figure created by the authors)

and technological content knowledge (TCK), which considers how GenAI can represent and transform early childhood content. TPACK clarifies how GenAI shapes classroom practices, strengthens teaching efficacy, and influences learning outcomes. It helps explain patterns of instructional change and pedagogical innovation.

The TOE framework complements TPACK by offering a macro-level view of organizational adoption. Drazin (1991) described three contexts that shape technological innovation: technological, organizational, and environmental. The technological context concerns available GenAI tools, their functions, reliability, and compatibility with existing systems. The organizational context covers preschool characteristics, resources, leadership support, and teacher readiness. The environmental context involves external pressures such as government policy, societal expectations, parental attitudes, and concerns about educational equity. The TOE framework helps explain implementation challenges and opportunities.

The integrated use of TPACK and TOE provides a comprehensive analytic lens that resolves a key limitation of using either framework alone. Prior work shows that a purely individual view or a purely organizational view yields an incomplete account of technology integration (Linstone, 1989). The combined perspective links levels of analysis. In this study, it guides the analysis and interpretation of the systematic review. The TOE lens is attended to the technological, organizational, and environmental contexts. The TPACK lens focuses on how educators combine content, pedagogy, and technology in practice. Using this integrated lens, the review provides theoretical depth and practical guidance for GenAI integration in early childhood education.

METHODS

This study examines the empirical literature on the implementation and impact of GenAI in preschool education. It includes 21 studies that met the inclusion criteria, published between December 2022 and July 2025. This timeframe was chosen because it marks the public release of GenAI tools, such as ChatGPT, in late 2022, which led to a significant increase in scholarly attention (Perifanou & Economides, 2025).

The study followed the PRISMA framework (Page et al., 2021) and used a three-stage process to select relevant studies. In the first stage, the researchers validated keywords to guide the search. These keywords were then used across academic databases to find potential publications. The second stage involved an initial screening based on predefined inclusion and exclusion criteria. In the final stage, the full texts of shortlisted articles were reviewed for eligibility and thematic relevance.

Article Selection

Literature was retrieved from Scopus, Web of Science, SpringerLink, and the ACM Digital Library. To ensure both precision and breadth, relevant keywords and Boolean operators were carefully selected for the search (Bramer et al., 2018). The keywords were organized into two main clusters. The first cluster focused on GenAI-related terms, such as “Generative artificial intelligence,” “GenAI,” “Generative AI,” “AI-generated content,” “ChatGPT,” “AIGC,” “LLM,” and “Large Language Model.” The second cluster targeted preschool education, including terms like “Preschool,” “Early childhood,” and “Kindergarten.” Boolean operators (AND/OR) were used to combine the two clusters, allowing for a comprehensive search at the intersection of GenAI and preschool education. **Table 1** presents the full search strings used in each case.

Table 1. Search strings

Database	Search Strings
Web of Science	TS = ("Generative artificial intelligence*" OR "GenAI*" OR "Generative AI*" OR "AI-generated content*" OR "ChatGPT" OR "AIGC" OR "LLM" OR "Large Language Model*") AND TS = ("Preschool" OR "early childhood*" OR "kindergarten")
Scopus	TITLE-ABS-KEY ("Generative artificial intelligence*" OR "GenAI" OR "Generative AI*" OR "AI-generated content*" OR "ChatGPT" OR "AIGC" OR "LLM" OR "Large Language Model*") AND TITLE-ABS-KEY ("PRESCHOOL" OR "EARLY CHILDHOOD*" OR "Kindergarten")
SpringerLink	("Generative artificial intelligence*" OR "GenAI" OR "Generative AI*" OR "AI-generated content*" OR "ChatGPT" OR "AIGC") AND ("PRESCHOOL" OR "EARLY CHILDHOOD*" OR "Kindergarten")
ACM Digital Library	[[All: "generative artificial intelligence*"] OR [All: "genai"] OR [All: "generative ai*"] OR [All: "ai-generated content*"] OR [All: "chatgpt"] OR [All: "aigc"]] AND [[All: "preschool"] OR [All: "early childhood*"] OR [All: "kindergarten"]]

Table 2. Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Period	From December 2022 to July 2025	Before December 2022 and after July 2025
Language	English	Languages other than English
Accessibility	Open or institutional access to the full text	Not accessible
Research categories	Education & Educational Research	Other areas
Source	Journal articles, conference papers, and book chapters	Non-scholarly source types (e.g., magazines, reports, and preprints)
Study type	Empirical studies	Non-empirical studies
Topic	Focused on use of GenAI; education-related	Not focused on use of GenAI; not education-related

De-Duplication

After the initial search, all records were imported into EndNote reference management software. The de-duplication process was conducted in two stages. First, duplicates were identified and removed using the software's automatic duplicate detection function (matching based on title, author, and year). Second, this automated process was subsequently verified through the manual check by the researchers to ensure no duplicates remained and no unique records were erroneously deleted. This two-stage process removed 19 duplicate records.

Article Screening

In the second phase of the study, records retrieved from academic databases were screened using predefined inclusion and exclusion criteria. This step aimed to minimize selection bias and ensure that the selected studies were relevant, high-quality, and focused on the research topic.

Initially, a total of 952 records were retrieved from the following databases: Web of Science (n = 24), Scopus (n = 88), SpringerLink (n = 480), and ACM Digital Library (n = 360). Records were excluded based on the following criteria: non-English articles (n = 34), non-scholarly source types (e.g., magazines, reports, preprints) (n = 271), inaccessible full texts (n = 3), and articles unrelated to preschool or early childhood education (n = 393). After removing 19 duplicates, the remaining records were screened by their abstracts. **Table 2** provides a summary of the exclusion criteria.

Eligibility and Inclusion

After the initial screening, the remaining 232 articles were reviewed in full to assess their eligibility for inclusion. Each article was evaluated based on key elements such as the title, abstract, RQs, methodology, and conclusions. These components were carefully examined to ensure alignment with the study's objectives and relevance to at least one of the RQs. Following this review, 21 articles that met the predefined inclusion criteria were retained. A data extraction table was then created using Microsoft Excel to organize and extract relevant information. To ensure accuracy and clarity, reviewers cross-checked the extraction process, minimizing the risk of errors or omissions. **Figure 2** provides a visual summary of the eligibility and extraction process.

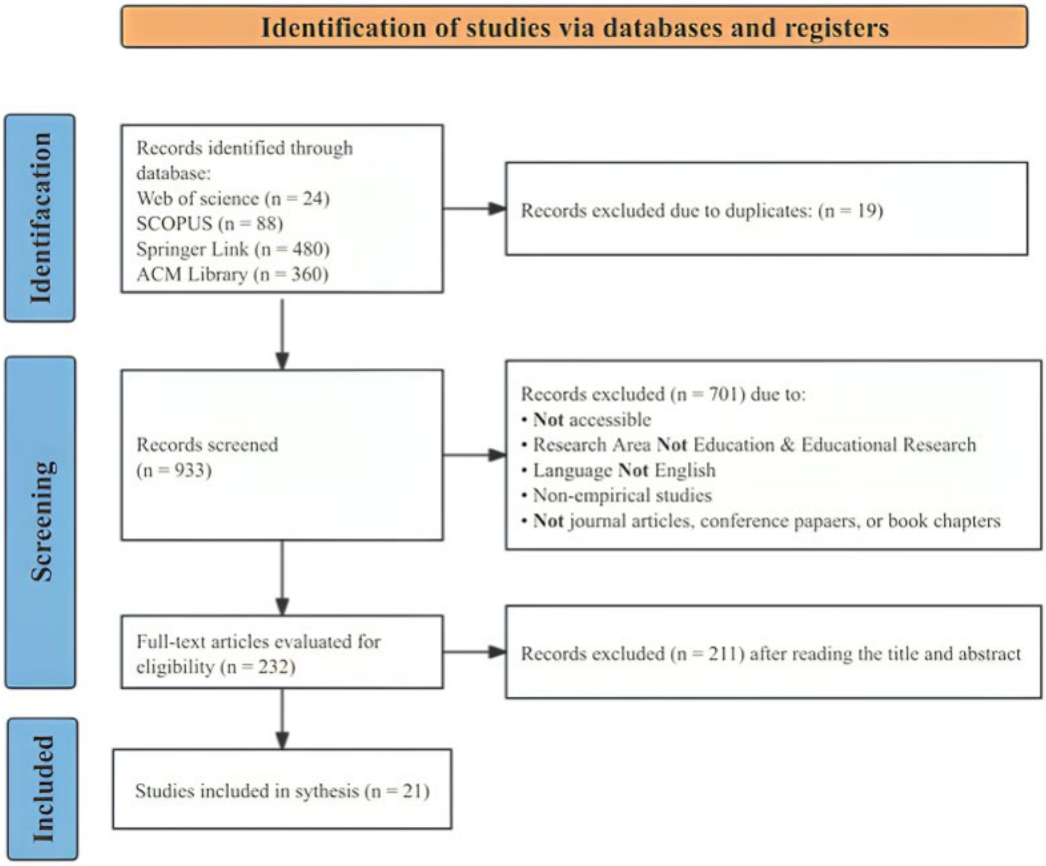

Figure 2. PRISMA flow diagram of article selection [Figure created by the authors based on Page et al. (2021)]

Quality Appraisal

The methodological quality of the 21 included studies was appraised by two independent reviewers using the Joanna Briggs Institute (JBI) critical appraisal checklists. This study selected the checklist that matched each study design. For example, randomized controlled trials used the RCT checklist, and analytical cross-sectional studies used the cross-sectional checklist. Discrepancies were resolved through discussion until a consensus was reached. When consensus was not possible, a third reviewer adjudicated. Overall quality varied across studies but was adequate for the purposes of this synthesis.

Table A1 in the **Appendix A** reports item-level ratings for each study using yes (Y), no (N), unclear (U), or not applicable (NA). This study also assigned an overall quality grade (high, moderate, and low) based on the percentage of fulfilled criteria (> 80% for high, 50-80% for moderate, and < 50% for low). Of the 21 studies, six were high quality, fourteen were moderate, and one was low. In the narrative synthesis, this study prioritized evidence from high- and moderate-quality studies. The low-quality study was retained only for qualitative and contextual interpretation and was not used to support core inferences.

RESULTS

Key Characteristics of the Integration of GenAI in Preschool Education

The analysis of the reviewed studies (**Figure 3**) shows that most of the articles were published in 2024, accounting for the highest number at 10 articles. This was followed by 2025, with 8 articles published. In contrast, only 3 articles were published in 2023.

In 2023, only 3 articles were published, likely due to the early stage of GenAI adoption in preschool education. The slow start may have been caused by limited awareness and exploration of GenAI's potential in this field. However, 2024 saw a significant increase in publications, reflecting growing interest and recognition of GenAI's impact on preschool education. This surge in research was likely driven by the wider

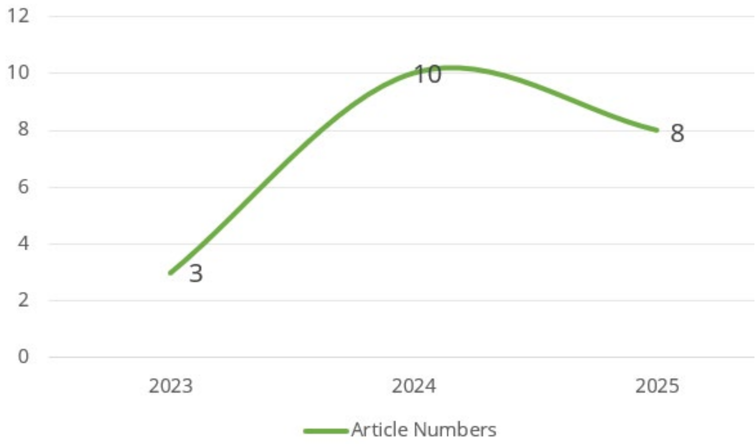

Figure 3. Annual scientific production of articles (n = 21) (Figure created by the authors)

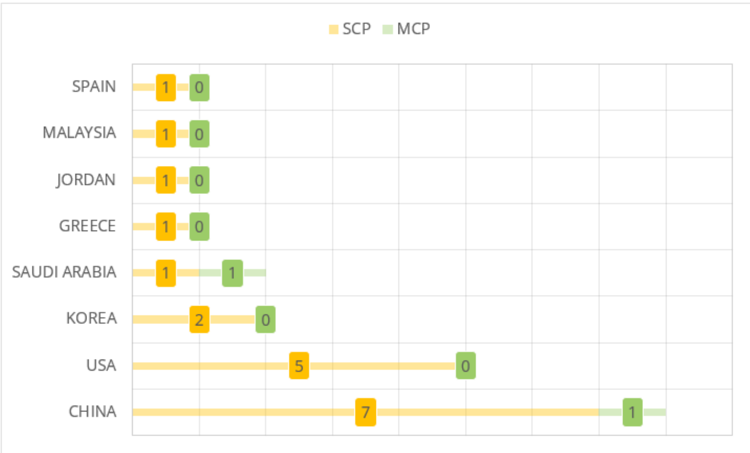

Figure 4. Distribution of included studies by country and type of collaboration (SCP vs. MCP) (Figure created by the authors)

adoption of GenAI tools like ChatGPT and advancements in the technology. For 2025, only 8 articles were recorded, but it is important to note that **Figure 3** reflects data up to July. As research on GenAI continues to expand, the number of publications in 2025 is expected to increase in the latter half of the year, potentially reaching or surpassing the number of articles published in 2024.

The distribution of articles by country and collaboration type is shown in **Figure 4**. China leads with eight articles, followed by the United States with five. South Korea and Saudi Arabia each have two articles, while Greece, Jordan, Malaysia, and Spain have one. China has the highest number of single-country productions, with seven articles. In contrast, multi-country collaborations (MCP) are less frequent, with China and Saudi Arabia each having one. Notably, the other countries have no MCPs, indicating a preference for domestic research. These findings highlight the differences in levels of international collaboration and independent research across countries.

Regarding the methodologies adopted in the reviewed studies (**Figure 5**), the mixed-methods approach is the most prevalent, accounting for 48% of the articles. Qualitative methods account for 24% of the studies, while quantitative methods account for 28%. The strong presence of mixed-methods research suggests a growing interest in combining the strengths of both qualitative and quantitative approaches to gain a more comprehensive understanding of GenAI in preschool education. While quantitative methods contribute to generalizability and statistical rigor, qualitative approaches offer insights into contextual and experiential dimensions. The balanced use of these methodologies reflects an effort to capture both measurable outcomes and nuanced educational experiences.

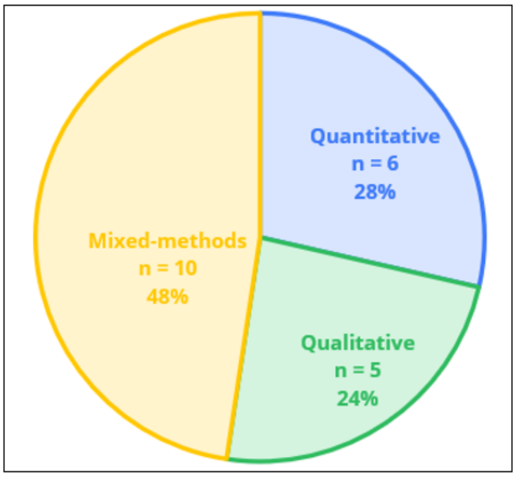

Figure 5. Methodology of studies (Figure created by the authors)

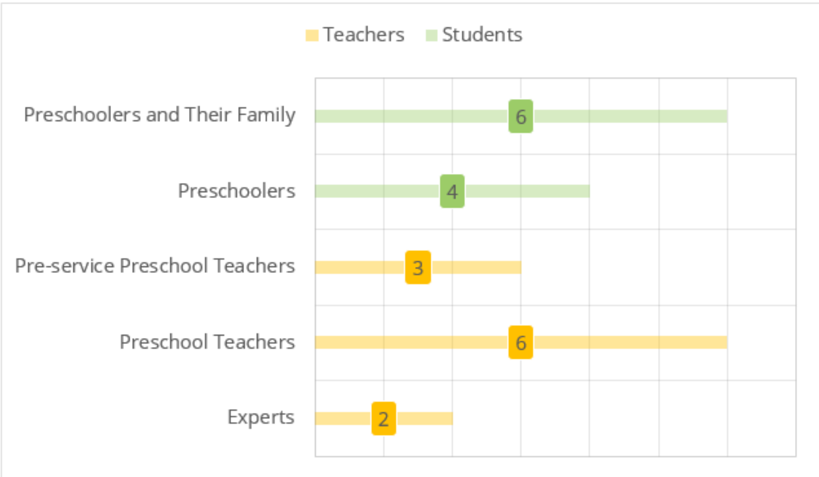

Figure 6. Study samples (Figure created by the authors)

Regarding the samples of the studies, these included various groups of educators and students (**Figure 6**). A total of 11 articles focused on teachers, with 3 articles examining pre-service preschool teachers, 6 articles focusing on preschool teachers, and 2 articles involving experts. On the student side, 10 articles were centered on preschool children, with 4 articles focusing on preschoolers and 6 articles including both preschoolers and their families. This distribution highlights the emphasis on preschool teachers and children, as well as the inclusion of family perspectives in some studies.

The keyword co-occurrence analysis of the selected studies was conducted using R's bibliometrix package. This tool allowed for the creation and visualization of bibliometric networks. **Figure 7** presents the thematic clusters along with the primary keywords identified in the studies.

1. **Cluster 1:** The first cluster consists of 6 keywords and is represented in blue. This group of keywords mainly refers to early childhood education and its associated teaching methods. The keywords in this cluster are child, children, science education, physics concept, storytelling approaches, and storytelling.
2. **Cluster 2:** The second cluster consists of 6 keywords and is represented in green. This group of keywords primarily refers to creative thinking, early childhood education, and digital skills. The keywords in this cluster are brainstorming, generative thinking, early childhood, foreign language, digital competence, and bring your own device.
3. **Cluster 3:** The third cluster consists of 5 keywords and is represented in red. This group of keywords mainly refers to the interaction between humans and technology. The keywords in this cluster are GenAI, human-computer interaction, human engineering, conversational agents, and computational linguistics.

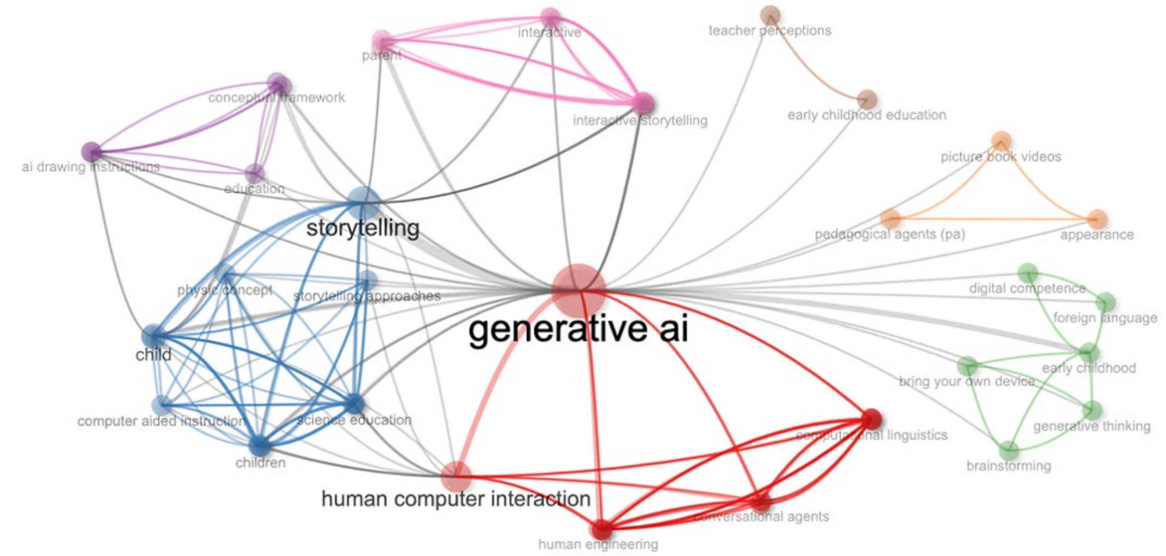

Figure 7. Network of keywords (Figure created by the authors)

Table 3. Strengths of integrating GenAI into preschool education

Theme categories	Core strengths	Supporting articles
Teaching environment and interaction optimization	Immersive learning environments, longer child utterances and denser turn-taking	Dietz Smith et al. (2024), Hijón-Neira et al. (2024), Luo et al. (2024)
Multi-role support and collaboration	Teacher effectiveness, parental support, special education collaboration	Hijón-Neira et al. (2024), Luo et al. (2024), Seiradakis (2023), Y. Sun et al. (2024)
Child development promotion	Higher-order thinking, language development, creativity	Aldalalah and Eyadat (2025), Lu et al. (2024), Luo et al. (2024), C. Zhang et al. (2024)
Resources and efficiency optimization	Automated content generation, resource reuse, reduced administrative workload	Aldalalah and Eyadat (2025), Hijón-Neira et al. (2024), M. Sun et al. (2025)

4. **Cluster 4:** The fourth cluster consists of 3 keywords and is represented in purple. This group of keywords mainly refers to the integration of AI in educational frameworks. The keywords in this cluster are education, conceptual framework, and AI drawing instruction.
5. **Cluster 5:** The fifth cluster consists of 3 keywords and is represented in pink. This group of keywords primarily focuses on parental involvement and interactive learning methods. The keywords in this cluster are parent, interactive, and interactive storytelling.
6. **Cluster 6:** The sixth cluster consists of 3 keywords and is represented in orange. This group of keywords focuses on visual and interactive learning tools. The keywords in this cluster are picture book videos, appearance, and pedagogical agents.
7. **Cluster 7:** The seventh cluster consists of 2 keywords and is represented in brown. This group of keywords focuses on teachers' views and early childhood education. The keywords in this cluster are teacher perceptions and early childhood education.

The Strengths of Integrating GenAI into Preschool Education

Guided by the integrated TPACK-TOE framework, the review identified key strengths of GenAI in preschool education (**Table 3**). At the micro level of teaching practice (TPACK), GenAI's clearest current strength is enabling teachers to design language-rich, interactive activities. Classroom studies report denser turn-taking and longer child utterances in immersive tasks (e.g., Dietz Smith et al., 2024). Studies also find growth in higher-order thinking and creative expression through GenAI-supported prompts (e.g., Lu et al., 2024; C. Zhang et al., 2024).

These micro-level pedagogical gains are reinforced at the macro level of the TOE framework. Evidence shows that GenAI strengthens organizational practice by streamlining collaboration among teachers, parents,

Table 4. Weaknesses of integrating GenAI into preschool education

Theme categories	Core issues	Supporting articles
Content quality and reliability risks	Factual errors, lack of age appropriateness, limited depth	Ho et al. (2025), J. Lee et al. (2024), Seiradakis (2023), Su and Yang (2024)
Technical limitations and localization constraints	High technical threshold, language limitations	Allehyani and Algamdi (2023), Seiradakis (2023), Su and Yang (2024), Yu et al. (2025)
Negative impact on the educational process	Creativity suppression, hindered independent thinking	Bai et al. (2025), Ho et al. (2025), Lu et al. (2024)
Operational and implementation challenges	Insufficient digital literacy, substantial time demands, lack of training	Allehyani and Algamdi (2023), Su and Yang (2024), Wong et al. (2024)

Table 5. Opportunities presented by the integration of GenAI into preschool education

Theme categories	Core opportunities	Supporting articles
Teacher role transformation and competence enhancement	Designer role shift, teacher-as-designer workflows (planning, orchestration, and co-creation)	AlAli and Al-Barakat (2023), Seiradakis (2023), Su and Yang (2024)
Educational equity and resource expansion	Low-resource areas, regional support, multilingual education	Bai et al. (2025), He et al. (2025), J. Lee et al. (2024)
Policy and ecological development	AI framework, curriculum standardization	Allehyani and Algamdi (2023), Ho et al. (2025), Wong et al. (2024)

and specialists (e.g., Luo et al., 2024). It also improves technological workflows through automation, which reduces preparation time and administrative workload (e.g., Aldalalah & Eyadat, 2025).

The Weaknesses of Integrating GenAI into Preschool Education

While GenAI brings benefits to preschool education, limitations are also reported. **Table 4** summarizes the main challenges. In the technological context of the TOE framework, studies report GenAI reliability issues that constrain classroom use. Typical problems include factual inaccuracies, age-inappropriate phrasing, and limited depth in generated content (e.g., Su & Yang, 2024). Usability barriers add to these concerns. Many GenAI tools require substantial digital competence and offer uneven language support, reducing accessibility and teacher confidence (e.g., Allehyani & Algamdi, 2023; Yu et al., 2025).

At the level of TPACK, these constraints are reflected in the learning process. Evidence indicates that over-reliance on GenAI may coincide with fewer opportunities for creativity and with hindered development of independent thinking (e.g., Bai et al., 2025; Lu et al., 2024). Under such conditions, effective integration of technology, pedagogy, and content becomes harder to sustain. Organizational and environmental contexts present additional barriers. At the school level, insufficient digital literacy, high time investment, and a lack of training impede effective adoption (e.g., Wong et al., 2024).

The Opportunities Presented by the Integration of GenAI into Preschool Education

The findings, interpreted through the TPACK-TOE framework, identify key opportunities for integrating GenAI into preschool education (**Table 5**). At the TPACK level, the core opportunity is a shift in the teacher's role and competence enhancement. Empirical reports show that GenAI supports a designer-oriented approach to teaching (e.g., AlAli & Al-Barakat, 2023). Building on this approach, GenAI supports a teacher-as-designer workflow, including planning, orchestration, and co-creation with children.

These pedagogical opportunities enable broader impacts within the TOE framework. In the environmental context, GenAI can provide targeted support in low-resource and multilingual settings, which broadens access to quality early learning (e.g., He et al., 2025). Realizing the full potential of these opportunities requires supportive conditions within the environmental context. It includes the development of AI literacy frameworks and clear curriculum standards to guide responsible adoption (e.g., Wong et al., 2024).

The Threats Posed by the Integration of GenAI into Preschool Education

As summarized in **Table 6**, integrating GenAI into preschool education presents several threats. In the technological context of the TOE framework, ethical and privacy risks are prominent. Studies report weaknesses in data security, content or algorithmic bias, and insufficient supervision of outputs. These issues

Table 6. Threats posed by the integration of GenAI into preschool education

Theme categories	Core threats	Supporting articles
Ethical and privacy risks	Data security, content bias, lack of supervision	Hijón-Neira et al. (2024), Luo et al. (2024), C. Zhang et al. (2024)
Educational equity and digital divide	Unequal resource distribution, disparities in technology accessibility	Aldalalah and Eyadat (2025), Luo et al. (2024), Y. Sun et al. (2024)
Teacher role and competence crisis	Diminished professional autonomy, skill gaps, creativity replacement	AlAli and Al-Barakat (2023), Hijón-Neira et al. (2024), M. Sun et al. (2025)
Governance and implementation barriers	Policy gaps and vacuums, infrastructure limitations, cultural resistance	AlAli and Al-Barakat (2023), He et al. (2025), M. Sun et al. (2025)

Figure 8. Key insights into integrating GenAI into preschool education (Figure created by the authors)

threaten children's safety and privacy and can erode trust in digital tools (e.g., Luo et al., 2024). These technological risks directly exacerbate a critical threat within the environmental context: educational inequity. Unequal resource distribution and uneven access to devices and connectivity can widen the digital divide, concentrating benefits among better-resourced groups (e.g., Y. Sun et al., 2024).

Within the TPACK framework, additional threats concern the teacher's role and the learning process. Over-reliance on GenAI may reduce professional autonomy and displace teachers' creative input in lesson design and delivery (e.g., Aldalalah & Eyadat, 2025). Governance and implementation barriers can sustain these risks in the organizational and environmental contexts of the TOE framework. Policy gaps, limited infrastructure, and cultural resistance make routine and responsible adoption difficult and delay the development of safeguards and supports that could mitigate the threats identified above (e.g., He et al., 2025). By contrast, these threats are systemic and require governance, infrastructure, and equity measures beyond the classroom.

In summary, key insights into integrating GenAI into preschool education are illustrated in **Figure 8**.

Table B1 in **Appendix B** shows the summary of the selected studies.

DISCUSSION

Key Characteristics of the Current Situation of Integrating Genai into Preschool Education

This study argues that GenAI integration in preschool education is accelerating, yet uneven. Publication trends show a field in its infancy. Most studies appear after 2024 and reflect a surge linked to widely used tools such as ChatGPT. Notably, growth is concentrated in China and the United States, while cross-country collaboration is limited and may slow the development of widely transferable practices. The field is therefore nascent and fragmented. This pattern aligns with prior work by Sripan and Jeerapattanatorn (2025), showing that early diffusion often clusters in technologically advanced regions.

Methodological patterns also indicate an early stage. In these studies, mixed methods designs are common and capture both outcomes and classroom processes. However, many studies emphasize feasibility and descriptive effects rather than causal inference. Furthermore, samples focus on teachers and preschoolers in classroom settings. Although this yields practical insights, it still leaves organizational and policy mechanisms underexamined. Across contexts, higher resource settings more often report instructional design and child outcomes, whereas emerging contexts more often document implementation constraints.

Keyword mapping shows breadth without convergence. Clusters span creativity, digital competence, human-computer interaction, and parental involvement. This diversity signals interdisciplinary momentum yet also the absence of a shared explanatory backbone. To convert breadth into explanatory power, this study adopts a multilevel lens. It links micro classroom dynamics within TPACK to macro-level organizational, technological, and ethical environments within TOE. This lens guides the synthesis of existing research and clarifies directions for future work.

SWOT of Integrating GenAI into Preschool Education

This study applies to the TPACK-TOE framework to examine how GenAI is currently used in preschool education. Existing research suggests that GenAI helps teachers personalize learning materials and make classroom activities more interactive (Dietz Smith et al., 2024; Hijón-Neira et al., 2024; Luo et al., 2024). These features show how GenAI contributes to teachers' TCK. By using GenAI, teachers can adjust content to meet individual learning needs and respond to children in real time. This approach not only increases instructional efficiency but also fosters more dynamic classroom interactions. Such interactions are particularly valuable in early childhood settings, where language development and emotional expression often emerge through social engagement (Lyu et al., 2024).

While this review affirms that GenAI can support responsive dialogue, it also raises a key concern related to TPK. The algorithms behind these personalized responses rely on large, aggregated datasets. Although the outputs often appear individualized, they are typically shaped by generalized patterns rather than specific classroom contexts. As a result, GenAI interactions may lack the spontaneity and cultural sensitivity needed for open-ended exploration and creative expression (Zhai et al., 2024). These qualities are especially crucial in early childhood education, where learning unfolds through play, imagination, and meaningful social interaction. Therefore, the core challenge is not only technical reliability, as noted by Holzinger et al. (2025), but also the preservation of pedagogical integrity. GenAI should be seen as a tool that enhances, rather than replaces, the creative exchanges that are central to high-quality preschool learning.

Furthermore, the literature highlights GenAI's potential to reduce teacher workload by automating routine tasks such as lesson planning and content generation (Aldalalah & Eyadat, 2025; Hijón-Neira et al., 2024; M. Sun et al., 2025). These findings are consistent with earlier studies on AI-assisted teaching efficiency (Ehtsham et al., 2025). In addition to reducing teachers' individual workload, GenAI has also been shown to support better collaboration between educators, parents, and specialists (Luo et al., 2024; Seiradakis, 2023; Y. Sun et al., 2024). By streamlining communication and centralizing information, it allows different stakeholders to coordinate more efficiently in planning and supporting children's learning. As Fu et al. (2024) note, such an approach emphasizes shared responsibility across roles and aims to respond more effectively to children's diverse developmental needs.

Despite these advantages, this shift presents a dilemma for the teaching profession. On one hand, the automation of administrative tasks may free teachers to focus more on student-centered instruction. This aligns with current visions of more flexible and responsive teaching roles (Sahu, 2024). On the other hand, excessive reliance on GenAI for instructional decision-making may undermine teacher autonomy and weaken their professional agency. The challenge is further compounded by many educators' limited digital competence (Galindo-Domínguez et al., 2024). These challenges reflect not only individual limitations in TPACK but also weaknesses in organizational support. From the perspective of the TOE framework, this includes limited time for professional development, few opportunities for collaboration, and a lack of long-term investment in building digital capacity. In light of these challenges, this review suggests that professional development should move beyond basic technical skills. It should empower teachers to critically evaluate and adapt GenAI-generated content in order to uphold pedagogical quality.

At the same time, GenAI is viewed as an effective tool for promoting educational equity. It offers the potential to deliver scalable and personalized learning resources, particularly in multilingual and low-resource contexts (Bai et al., 2025; He et al., 2025; J. Lee et al., 2024). As Weng and Fu (2025) observe, such technologies can expand access to quality educational content and help reduce learning gaps in early childhood settings. However, this promise is not without constraints. The goal of broadening access depends heavily on reliable infrastructure and basic digital literacy (DiMaggio et al., 2004), which are often lacking in the communities that stand to benefit the most. Without targeted investment and supportive policies, GenAI may reinforce existing inequalities. Moreover, in areas with limited oversight, concerns about data privacy and algorithmic bias are especially serious (Osório de Barros & Severino Soares, 2025). To avoid these risks, this review argues that equity should not be treated as an outcome but as a guiding principle throughout the process of GenAI integration. This involves supporting teachers in developing the necessary digital and pedagogical skills (TPACK), strengthening institutional capacity through infrastructure and training (organization), and implementing inclusive policies that protect learners and promote fair access (environment).

Limitations

This review has several limitations. First, the generalizability of the findings is constrained by the relatively small corpus of included studies (n = 21), which reflects the early stage of this field. To enhance robustness, this study applied design-specific JBI checklists and gave greater weight to higher-quality studies. Nevertheless, the limited sample may restrict thematic saturation and coverage. Second, the inferential strength of the review is tempered by limitations in the primary literature. Many studies were small in scale, used cross-sectional or quasi-experimental designs, had short follow-up periods, and included limited or nonequivalent control groups. These features increase the risk of confounding and reduce confidence in interpretations drawn from aggregated evidence. Third, potential selection and publication biases cannot be ruled out. Searches were restricted to four major databases (Web of Science, Scopus, SpringerLink, and ACM Digital Library), English-language records, and a December 2022-July 2025 window. Relevant studies in other languages, regional outlets, or the grey literature may have been missed, which could affect representativeness. Fourth, the review focuses on the integration of GenAI in preschool education. This focus offers targeted insight but narrows the scope of analysis and limits transferability to other educational levels. Finally, although two independent reviewers used consensus procedures and JBI checklists, residual reviewer bias and selective outcome reporting in the primary studies cannot be excluded. For these reasons, this study interprets the findings cautiously and within preschool contexts. Future work should broaden sources to include non-English and grey literature, standardize outcome measures, and conduct comparative studies across educational levels.

CONCLUSION

This review has examined the integration of GenAI into preschool education, highlighting both its potential and the challenges it brings. GenAI offers several benefits, including enhancing personalized learning, fostering collaboration between educators and families, and promoting educational equity. By supporting flexible teaching roles and enabling the creation of localized, engaging content, GenAI provides dynamic learning experiences tailored to young children's developmental needs. Its scalability further allows it to bridge educational gaps in underserved areas, offering a promising tool for democratizing access to quality early childhood education.

However, the integration of GenAI is not without its challenges. The quality and reliability of AI-generated content, digital competence requirements for educators, and the risk of reducing children's creativity and independent thinking are notable concerns. Furthermore, the ethical and privacy risks, along with the digital divide, could limit the potential of GenAI in diverse educational settings. Tackling these challenges will require clear policies, systemic support, and comprehensive professional development for educators to use GenAI effectively and responsibly.

Future research should focus on refining the pedagogical applications of GenAI, investigating its long-term impact on child development, and addressing the barriers to its integration, particularly in low-resource settings. Additionally, developing frameworks to guide the ethical use of GenAI and ensure equitable access for all children will be crucial for its successful implementation in preschool education.

Implications

Integrating GenAI offers educators new ways to reshape their instructional roles. To realize these benefits, schools should make GenAI a planned and regular part of instruction rather than an occasional add-on. As part of this plan, teachers can schedule a weekly activity of about thirty minutes. Each activity begins with clear learning intentions and ends with a brief reflection to consolidate learning. Within the session, teachers pair digital generation with hands-on creation so that children turn ideas into tangible artifacts. This sequence links purpose, practice, and reflection, and the blended approach strengthens conceptual development while supporting creative expression.

To make such integration effective, preschool teachers first need targeted professional development that builds digital proficiency and pedagogical adaptability. Guided by these goals, training should cover age-appropriate prompt design and practical strategies for managing classroom dynamics when GenAI tools are in use. After training, growth in competence should be demonstrated through concrete outputs such as completed lesson plans and brief reflective notes. Progress is then tracked with a rubric that uses three indicators, namely novelty, usefulness, and clarity in tasks that involve GenAI. In this way, teachers use the rubric results in regular reflections to adjust strategies and refine task design over time. As these routines take hold, GenAI can deepen engagement while preserving professional judgment and teacher autonomy. To sustain this shift, schools need to provide ethical guidance that addresses data privacy and child protection. Clear policies build trust among educators, families, and school communities and lay the foundation for responsible and sustainable use in early childhood settings.

At the policy level, well-structured frameworks are essential to ensure the equitable adoption of GenAI in preschool education. The first step is to address the digital divide by guaranteeing basic access to essential technologies, particularly in underserved areas. This requires providing each site with a minimum set of shared devices and stable internet connectivity to establish foundational infrastructure for participation. Once access is secured, attention must turn to the safety and accountability of the tools deployed. Procurement standards should endorse only technologies that offer local data storage, incorporate child protection features, and demonstrate transparent privacy safeguards. These standards can be operationalized through system-wide templates for informed consent and data minimization, ensuring responsible data practices. With access and protections in place, the next priority is capacity building. Policymakers should support the development of age-appropriate AI literacy programs that equip both educators and children with the knowledge to engage with GenAI ethically and effectively. Building on these foundations, curriculum policy should formally embed GenAI into the standard preschool program. Implementation can begin with a defined pilot across one academic year and periodic reviews before broader scale-up. Evidence from the pilot can then inform resource allocation, training design, and curriculum adjustments. Together, these steps turn opportunities into routines and safeguards that work in preschool classrooms and endure across the system.

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APPENDIX A

Table A1. Methodological quality assessment of included studies (n = 21) using JBI checklists

Articles	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	OA
Bai et al. (2025)	Y	N	U	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Moderate
Aldalalah and Eyadat (2025)	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Moderate
Lu et al. (2024)	Y	Y	Y	Y	Y	Y	N	Y	Y	NA	NA	NA	NA	High
Y. Zhao et al. (2024)	Y	N	U	Y	Y	Y	Y	Y	N	NA	NA	NA	NA	Moderate
Allehyani and Algamdi (2023)	Y	Y	Y	Y	Y	N	Y	Y	NA	NA	NA	NA	NA	High
Wong et al. (2024)	Y	Y	N	Y	Y	Y	N	Y	Y	NA	NA	NA	NA	Moderate
Y. Sun et al. (2024)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	NA	NA	High
He et al. (2025)	U	Y	Y	Y	Y	N	N	Y	Y	Y	NA	NA	NA	Moderate
Y. L. Zhang (2025)	Y	Y	Y	Y	N	N	Y	Y	NA	NA	NA	NA	NA	Moderate
Hijón-Neira et al. (2024)	Y	Y	Y	Y	Y	Y	Y	N	Y	NA	NA	NA	NA	High
Luo et al. (2024)	U	Y	Y	Y	Y	N	N	Y	Y	Y	NA	NA	NA	Moderate
Su and Yang (2024)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	NA	NA	NA	High
AlAli and Al-Barakat (2023)	U	Y	U	U	N	N	U	U	NA	NA	NA	NA	NA	Low
Seiradakis (2023)	N	Y	Y	Y	Y	N	N	Y	Y	Y	NA	NA	NA	Moderate
M. Sun et al. (2025)	Y	Y	Y	Y	N	U	Y	Y	Y	Y	NA	NA	NA	Moderate
J. Lee et al. (2024)	Y	Y	Y	Y	Y	N	U	Y	Y	Y	NA	NA	NA	Moderate
Ho et al. (2025)	Y	Y	U	Y	N	U	Y	Y	Y	Y	NA	NA	NA	Moderate
C. Zhang et al. (2024)	Y	U	Y	N	N	Y	U	Y	Y	Y	U	Y	Y	Moderate
Dietz Smith et al. (2024)	U	Y	Y	Y	Y	N	N	Y	Y	Y	NA	NA	NA	Moderate
Y. Lee et al. (2023)	U	Y	Y	Y	Y	N	N	Y	Y	Y	NA	NA	NA	Moderate
Yu et al. (2025)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	NA	NA	High
Summary	High: 6, Moderate: 14, & Low: 1													

Note. OA: Overall appraisal; Y = Yes; N = No; U = Unclear; NA = Not applicable (as per the specific JBI checklist used); & Criteria for OA: High: > 80% of applicable criteria fulfilled; Moderate: 50-80% of criteria fulfilled; & Low: <50% of criteria fulfilled

APPENDIX B

Table B1. Summary of the selected studies

Article title	References	Country	Sample	Sample size	Methodology	Key findings
Predicting teachers' intentions for AIGC integration in preschool education: A hybrid SEM-ANN approach	Y. L. Zhang (2025)	Malaysia	Preschool teachers	n = 433 (EC teachers)	Quantitative: Cross-sectional survey	Satisfaction is the strongest predictor of continued AIGC use, followed by attitude and flow experience, while expectation confirmation significantly enhances both perceived usefulness and satisfaction. ANN analysis further confirms confirmation and satisfaction as the most influential factors, highlighting that positive user experience, engagement, and expectation fulfillment are critical to long-term adoption, whereas perceived ease of use has a relatively minor effect.
AI-generated context for teaching robotics to improve computational thinking in early childhood education	Hijón-Neira et al. (2024)	Spain	Pre-service teachers	n = 122 (pre-service EC teachers)	Quantitative: Quasi-experimental (2-group)	The experimental group exhibited higher engagement and understanding of CT concepts, with notable improvements in problem-solving and algorithmic thinking. Participants in the AI-generated context group reported increased confidence in their ability to teach with educational robots and a more positive attitude toward technology integration in education.
Aladdin's genie or Pandora's box for early childhood education? Experts chat on the roles, challenges, and developments of ChatGPT	Luo et al. (2024)	China	Experts	n = 6 (professor-level experts)	Qualitative: Interview	ChatGPT serves two primary roles in early childhood education: (1) as a conversational agent for young children and (2) as an on-call facilitator for educators and caregivers.
Powerful or mediocre? Kindergarten teachers' perspectives on using ChatGPT in early childhood education	Su and Yang (2024)	China Hong Kong	Preschool teachers	n = 10 (EC teachers)	Qualitative: Interview	Kindergarten teachers held mixed views on ChatGPT, recognizing its potential benefits for lesson planning, pedagogical knowledge supplementation, and 21st century skills development, while highlighting challenges of hardware/resources limitations and content accuracy concerns, and emphasizing the need for policy support and teacher training.
Leveraging the revolutionary potential of ChatGPT to enhance kindergarten teachers' educational performance: A proposed perception	AlAli and Al-Barakat (2023)	Saudi Arabia	Preschool teachers	n = 60 (EC teachers)	Quantitative: Cross-sectional survey	The proposed approach for utilizing ChatGPT was confirmed to effectively improve kindergarten teachers' educational performance. This demonstrates success in addressing professional challenges and enhancing teaching practices.
Unpacking experts' opinions on ChatGPT potential assistive roles and risks in early childhood special education	Seiradakis (2023)	Greece	Experts	n = 6 (ECSE experts)	Qualitative: Interview	Content analysis of interview data revealed four assistive ChatGPT themes: (1) ChatGPT as a pedagogical assistant for special education co-teachers, (2) ChatGPT as an inclusive education assistant for mainstream teachers, (3) ChatGPT as a personal assistant for head teachers, and 4) ChatGPT as a family engagement facilitator. ChatGPT risk themes included: (1) Teachers and parents' hallucinations, (2) Exclusion instead of inclusion, and (3) Lack of evidence -based practices and guidelines.
Generative AI in Chinese early childhood education: Teachers' usage patterns, perceptions, and factors influencing pedagogical applications	M. Sun et al. (2025)	China	Preschool teachers	n = 10 (EC teachers)	Mixed: Cross-sectional survey/interview	Moderate to high adoption rates despite varying artificial intelligence literacy, with strong perceived utility, achievement value, and intrinsic motivation outweighing minimal implementation barriers; institutional supports, especially organizational culture, peer collaboration, and curriculum-aligned customization were pivotal adoption drivers.

Table B1 (Continued).

Article title	References	Country	Sample	Sample size	Methodology	Key findings
Open sesame? Open salami! Personalizing vocabulary assessment-intervention for children via pervasive profiling and bespoke storybook generation	J. Lee et al. (2024)	Korea	Preschoolers and their family	n = 9 (families)	Mixed: Observational, in-the-wild field deployment (single-group)/post-deployment qualitative parent interviews	OSOS significantly improved children's vocabulary acquisition by personalizing storybooks with contextually integrated, daily-life-relevant words, though AI-generated content showed limitations in narrative diversity and visual consistency.
SET-PAiREd: Designing for parental involvement in learning with an AI-assisted educational robot	Ho et al. (2025)	USA	Preschoolers and their family	n = 20 (families)	Mixed: Observation/ interview/ quantitative ratings/ logs	Parental involvement in children's learning is influenced by three factors: skill, energy, and time, resulting in eight typical scenarios. 80% of parents concerned about the age-appropriateness and accuracy of AI-generated content, 65% preferring an "AI generation + human refinement" collaboration model when time is available, and 63% adjusting their perception of children's abilities after interaction, particularly correcting underestimations of advanced math concept mastery.
Mathemyths: Leveraging large language models to teach mathematical language through child-AI co-creative storytelling	C. Zhang et al. (2024)	USA	Preschoolers	n = 35 (children aged 4-8 years)	Mixed: RCT	Mathemyths AI was equally effective to human partners in teaching mathematical language to 4-8-year-old children though human interactions elicited longer responses and fewer expressions of uncertainty. AI uniquely improved definition comprehension, with no significant differences in story co-creation quality or future use intention between conditions, and younger children matched older children's creative output with AI scaffolding.
ContextQ: Generated questions to support meaningful parent-child dialogue while co-reading	Dietz Smith et al. (2024)	USA	Preschoolers and their family	n = 12 (parent-child dyads (child age: 4–6))	Mixed: Observation/ interview/ descriptive quantitative analysis	ContextQ increased meaningful conversational turns for parents and for children by generating open-ended and life-connected questions. Parents adapted to children's needs by modifying (68%) or ignoring (32%) questions, promoting emotional dialogue from 12.1% to 30.8%. This indicates AI-generated questions combined with parental mediation effectively enhance the quality and depth of parent-child co-reading conversations.
DAPIE: Interactive step-by-step explanatory dialogues to answer children's why and how questions	Y. Lee et al. (2023)	Korea	Preschoolers and their family	n = 16 (aged 5-7 years)	Mixed: Controlled within-subjects experiment (observation/ interview/ survey)	DAPIE improved children's comprehension test scores, reduced attention distraction, increased interaction duration, and achieved significantly higher ratings in "willingness to reuse" and "teacher trustworthiness" through step-by-step explanations, comprehension checks, and adaptive adjustments. This indicates that interactive step-by-step explanations effectively enhance children's understanding and engagement with complex explanations, though limitations such as operational burden and error detection difficulties exist.
AI-assisted integration of computational thinking: Pre-service teachers' experiences in early childhood mathematics education	Yu et al. (2025)	USA	Pre-service Teachers	n = 24 (pre-service teachers)	Qualitative: Open-ended questionnaire/ reflection/ lesson plans/ interaction documentation/ exploration assignments	The findings revealed three patterns in how pre-service teachers leveraged AI as a scaffold: generating initial ideas for CT integration, refining these ideas for specific teaching contexts, and clarifying CT concepts for deeper understanding. Pre-service teachers demonstrated strategic decision-making in their AI use, successfully designing developmentally appropriate CT-integrated activities while maintaining professional judgment in content adaptation.

Table B1 (Continued).

Article title	References	Country	Sample	Sample size	Methodology	Key findings
Can AI-generated pedagogical agents (AIPA) replace human teacher in picture book videos? The effects of appearance and voice of AIPA on children's learning	Bai et al. (2025)	China	Preschoolers	n = 80 (5.5-6.5y)	Quantitative: RCT	The results revealed no significant difference in reading performance between the AI teacher and the real teacher. Eye-tracking data indicated that AIPA appearance and voice did not increase cognitive load, and children expressed a comparable preference for AIPAs and human teachers. While AIPAs may lack human micro expressions and intonation nuances, they hold promise as complementary tools in early education.
Brainstorming based on ChatGPT in developing generative thinking among students considering bring your own device policy	Aldalalah and Eyadat (2025)	Jordan	Pre-service Teachers	n = 32 (pre-service ECE, male)	Quantitative: RCT	Brainstorming based on ChatGPT develops generative thinking skills.
Integrating urban mining concepts through AI-generated storytelling and visuals: Advancing sustainability education in early childhood	Lu et al. (2024)	China Taiwan	Preschoolers	n = 60	Mixed: Quasi-experimental (2-group)/ observation	Observations showed the structured group demonstrated greater comprehension, engagement, and narrative ability, indicating enhanced cognitive and communication skills. The digital system interface featured animations and images for engagement, while tutorial-driven navigation allowed young learners to interact freely with sustainability-focused story options. The findings highlighted structured storytelling's ability to improve language and narrative skills, alongside fostering digital and environmental literacy.
DailyPhysics: Fostering physics concept exploration in children through a tangible AI storytelling approach	Y. Zhao et al. (2024)	China	Preschoolers	n = 8 (ages 4–7)	Mixed: Quasi-experimental (single-group pre–post)/ observation/ interview	DailyPhysics effectively sparked children's curiosity in exploring everyday scientific phenomena and significantly improved their ability to grasp and apply physical concepts.
Digital competences: Early childhood teachers' beliefs and perceptions of ChatGPT application in teaching English as a second language (ESL)	Allehyani and Algamdi (2023)	Saudi Arabia	Preschool teachers	n = 543 (EC teachers, Mecca)	Quantitative: Cross-sectional survey	The participating EC teachers reported a high need for training associated with their social awareness of applying ChatGPT in teaching practices. The respondents had positive attitudes towards applying ChatGPT in teaching ESL and believed it is a very useful pedagogical tool in EC settings. However, they expressed their concern about the potential risks of ChatGPT on young children who have less knowledge and inadequate digital skills.
Navigating the digital shift: Early childhood educators' attitudes towards generative artificial intelligence and emerging technologies	Wong et al. (2024)	China Hong Kong	Preschool teachers	n = 97 (EC teachers)	Mixed: Cross-sectional survey/ open-ended question	While educators recognized the potential of generative AI for enhancing lesson planning and personalized learning, actual usage was inconsistent, with over half reporting no use of these technologies in their teaching. A significant barrier was inadequate training and resources, with 77.1% reporting insufficient professional development. Educators emphasized the need to balance technology with traditional sensory-based learning, highlighting the importance of direct experiences in early childhood development.

Table B1 (Continued).

Article title	References	Country	Sample	Sample size	Methodology	Key findings
Exploring parent's needs for children-centered AI to support preschoolers' interactive storytelling and reading activities	Y. Sun et al. (2024)	China	Preschoolers and their family	n = 17 (parents of children aged 3-6)	Qualitative: Interview	Parents are cautiously positive about AI storytelling tools. They see AI as a "secret weapon" to help with storytelling but agree it can't replace parents' love and interaction. AI tools help save time and bring new experiences, but young kids can't use them alone. The tools often create content that's too hard for kids to understand and limit creative thinking.
StoryPal: Supporting young children's dialogic reading with large language models	He et al. (2025)	USA	Preschoolers and their family	n = 23 (children from 4 to 7 and their parents)	Mixed: Cross-sectional survey/ observation/ interview	The system's dynamic scaffolding effectively supported struggling readers while challenging proficient ones. Parents valued StoryPal as a supplementary tool that maintained children's reading engagement when they were unavailable but emphasized that it should not replace parent-child interactions. Findings demonstrate the potential of LLM-powered agents to support dialogic reading by adhering to established educational practices.