

# THE IMPACT OF PLAY-BASED LEARNING ON COGNITIVE DEVELOPMENT IN EARLY CHILDHOOD EDUCATION

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## Abstract

This study aims to analyze impact of play-based learning on cognitive development in early childhood education, synthesizing findings from recent studies to provide a comprehensive understanding of how different types of play contribute to various cognitive skills in young children. This study uses a qualitative research methodology with a literature review approach to examine the impact of play-based learning on early childhood cognitive development. A literature review was selected to synthesize existing research, identify deficiencies, and provide a thorough understanding of the influence of play-based learning on children's cognitive skills. The study's findings indicate that game-based learning significantly enhances cognitive skills, including problem-solving, critical thinking, memory, and language abilities. Various types of play, such as imaginative, constructive, and interactive games, each contribute uniquely to different cognitive areas. Thus, games serve not only as entertainment but also as effective tools for promoting overall cognitive development.

**Keywords:** *Play-Based Learning, Cognitive Development, Early Childhood Education, Guided Play, Executive Function.*

## INTRODUCTION

Early childhood education is currently faced with various challenges that affect the effectiveness of children's cognitive development (Ruhayat, 2024; Sholihah & Wathon, 2023). One of the main issues is the reduction of play time in the curriculum. Many educational programs focus more attention on the academic aspect, which results in a reduction in the allocation of time to play (Gemnafle & Batlolona, 2021; Setyaningrum et al., 2014). This can hinder children's cognitive development, considering that play is an important activity to stimulate various skills and thinking abilities (Wulandari & Lestari, 2023). In addition, there is limited knowledge among educators on how to integrate game-based learning in their teaching methods (Harahap, 2022; Tatminingsih, 2019). Many educators have not fully understood the potential of games as a learning tool, so they are less effective in using them to support the children's learning process (Dewi, 2022).

The early childhood years are crucial for cognitive development (Uce, 2017), as this period lays the foundation for lifelong learning and personal growth (Fatmawati, 2020). During these formative years, children experience rapid brain development, which significantly influences their cognitive, social, emotional, and physical abilities (Phillips & Shonkoff, 2000). Play-based learning, which incorporates learning through play activities, has been widely recognized as an effective approach to fostering cognitive development in early childhood education (Moyses, 2010; Mudrikah et al., 2022). This educational approach leverages the natural inclination of children to explore, experiment, and engage with their environment, promoting active learning and critical thinking (Zigler & Bishop-Josef, 2004). Given its potential benefits, play-based learning has gained popularity among educators and policymakers as a preferred method for early childhood education (Sukirman, 2017).

Play-Based Learning is an educational approach that uses play as the primary method for teaching young children (Hartati, 2023; Putra et al., 2016). This approach leverages children's natural curiosity and desire to explore, allowing them to learn and develop through activities that are engaging, enjoyable, and

meaningful. Play-based learning is grounded in the belief that play is a vital part of childhood development, fostering not only cognitive skills but also social, emotional, and physical development (Suryana, 2021). It encourages active learning where children experiment, solve problems, and think creatively, which can significantly enhance their cognitive abilities (Meyer et al., 2021).

Cognitive Development refers to the process through which children acquire knowledge, skills, and abilities, including thinking, reasoning, problem-solving, and understanding language (Mifroh, 2020). In early childhood, cognitive development is particularly rapid, as children's brains are highly plastic and capable of forming new connections in response to experiences (Phillips & Shonkoff, 2000). Play-based learning supports cognitive development by providing opportunities for children to engage in activities that stimulate brain growth and promote cognitive functions, such as memory, attention, and executive function. For instance, through pretend play, children develop their language and storytelling skills, while structured play activities can enhance their understanding of mathematical concepts (Lillard et al., 2013).

Early Childhood Education (ECE) encompasses the educational practices and experiences provided to young children, typically from birth to eight years old (Nofianti, 2021). ECE is considered a critical period for cognitive development, as it sets the foundation for future learning and success (Fauzia, 2023). High-quality early childhood education programs often incorporate play-based learning as a key component, recognizing that play is essential for the holistic development of young children (Moyle, 2010). In today's context, there is a growing emphasis on the importance of ECE as research increasingly shows that early learning experiences can have long-lasting effects on a child's academic achievement and social-emotional well-being (Heckman, 2006).

Currently, there is a global shift towards integrating play-based learning into early childhood education, driven by evidence that traditional, didactic methods may not be as effective for young learners (Pyle & Danniels, 2017). This trend reflects a broader recognition of the need to create learning environments that are not only educational but also responsive to the developmental needs of children. However, despite its benefits, play-based learning faces challenges, particularly in education systems that emphasize standardized testing and academic achievement from an early age. Balancing the demands of academic rigor with the developmental needs of young children remains a key issue in early childhood education today (Gray, 2011).

Despite the growing acceptance of play-based learning, there remains a notable research gap in understanding its specific impact on different aspects of cognitive development. While existing studies have demonstrated the overall benefits of play on children's social and emotional skills, there is limited empirical evidence on how various types of play—such as structured, unstructured, and guided play—specifically affect cognitive processes like memory, problem-solving, and language acquisition (Meyer et al., 2021). Furthermore, much of the current research tends to focus on Western contexts, with little attention given to how cultural differences might influence the effectiveness of play-based learning in cognitive development (Pyle & Danniels, 2017). This gap highlights the need for more extensive studies that explore the effects of play-based learning on children's cognitive development across various cultural contexts and educational systems.

The urgency of this research is highlighted by increasing emphasis on early childhood education as a determinant of future academic success and overall well-being (Agostinelli & Wiswall, 2016). As educational systems worldwide seek to enhance early learning experiences, understanding the cognitive benefits of play-based learning becomes vital for developing curricula that maximize children's developmental potential. In light of growing concerns about the academic pressures placed on young children and the corresponding reduction in playtime, it is crucial to provide empirical evidence supporting the integration of play into early education settings (Gray, 2011). This evidence is particularly important for advocating for policies that balance academic rigor with the developmental needs of young learners.

Previous studies have highlighted the importance of play in promoting various developmental outcomes, such as social skills, creativity, and emotional regulation (Fisher et al., 2013; Ginsburg & Health, 2007). Research by (Whitebread et al., 2012) suggests that play, particularly free play, fosters self-regulation and executive function, both of which are critical components of cognitive development. However, there remains a lack of consensus on the specific cognitive skills that are most affected by

different play types and the mechanisms through which these skills are developed (Lillard et al., 2013). Moreover, studies such as those by (Weisberg et al., 2013) have begun to explore the role of guided play in enhancing cognitive outcomes, yet there is still limited understanding of how guided play compares to other forms of play in various learning environments.

The novelty of this research lies in its focus on examining the impact of different types of play-based learning on specific cognitive functions in early childhood. Unlike previous studies that often treat play as a monolithic concept, this research aims to dissect the unique contributions of structured, unstructured, and guided play to cognitive development (Weisberg et al., 2013). By conducting a systematic review of existing literature and analyzing data from diverse educational contexts, this study seeks to provide a more nuanced understanding of how play-based learning influences cognitive skills such as memory, attention, problem-solving, and language acquisition. Additionally, this research will explore the moderating effects of cultural factors and educational practices on the relationship between play and cognitive development.

The primary objective of this research is to evaluate the impact of play-based learning on cognitive development in early childhood education and to identify the specific cognitive skills that are most affected by different types of play. By providing a comprehensive analysis of the existing evidence and identifying gaps in the literature, this study aims to inform educational practices and policy decisions regarding the use of play in early learning settings (Weisberg et al., 2016). The findings are expected to contribute to the academic discourse on early childhood education and offer practical insights for educators, policymakers, and parents seeking to enhance children's cognitive development through play.

This research addresses a significant gap in the literature by investigating the impact of play-based learning on cognitive development in early childhood education. By examining the specific roles of various types of play in fostering cognitive growth and considering the influence of cultural and contextual factors, this study aims to deepen our understanding of how play serves as a crucial tool for enhancing young children's cognitive abilities. The findings from this research will provide valuable insights for shaping effective educational strategies that support holistic development and nurture children's lifelong learning.

## METHOD

This study employs a qualitative research methodology using a literature review approach to examine the impact of play-based learning on cognitive development in early childhood education. A literature review was selected as the research design to synthesize existing research, identify gaps, and provide a comprehensive understanding of how play-based learning influences various cognitive skills in young children. This approach allows for an in-depth examination of theoretical perspectives, empirical studies, and case analyses that explore the relationship between play and cognitive development, offering a holistic view of current knowledge and guiding future research directions (Snyder, 2019).

The primary sources of data for this research include peer-reviewed journal articles, books, government reports, and educational policy papers published over the past two decades. These sources were chosen based on their relevance to the study's main themes, which include play-based learning, cognitive development, early childhood education, and developmental psychology (Boell & Cecez-Kecmanovic, 2015). Data collection involved systematic searches in academic databases such as JSTOR, Google Scholar, PsycINFO, and ERIC, using keywords like "play-based learning," "cognitive development," "early childhood education," "preschool education," and "child development." The inclusion criteria focused on empirical studies, theoretical discussions, and comprehensive reviews that provide significant insights into the cognitive benefits of play-based learning.

To ensure a thorough and rigorous selection of literature, the data collection process included a detailed screening phase where articles and sources were evaluated for their methodological rigor, theoretical contributions, and relevance to the research questions (Tranfield et al., 2003). Sources that did not meet the inclusion criteria, such as those lacking empirical evidence or focusing on unrelated topics, were excluded. This process ensured that the review incorporated a diverse range of perspectives and findings, providing a robust foundation for analyzing the impact of play-based learning on cognitive development in early childhood.

Data analysis was conducted using thematic analysis, a qualitative method suitable for identifying, analyzing, and reporting patterns (themes) within data (Braun & Clarke, 2006). The analysis process involved several stages, including familiarization with the data, coding, theme development, and refinement. Initially, the literature was reviewed to identify key themes related to the types of play-based learning (e.g., free play, guided play, structured play), cognitive skills (e.g., memory, attention, problem-solving, language acquisition), and the specific outcomes associated with each type of play. These themes were then systematically reviewed and refined to ensure they accurately represented the findings and provided meaningful insights into the research questions (Nowell et al., 2017).

To enhance the validity and reliability of the findings, data triangulation was employed, comparing results from different studies and contexts to identify consistencies and discrepancies (Yin, 2018). This approach helped corroborate the findings and provided a comprehensive understanding of how various forms of play-based learning contribute to cognitive development in early childhood education. Additionally, the review incorporated perspectives from different cultural, social, and educational contexts to explore the generalizability of the findings and their applicability across various settings.

Overall, the qualitative literature review approach used in this study is effective for synthesizing existing knowledge and providing a detailed analysis of the impact of play-based learning on cognitive development in early childhood education. By examining a wide range of studies and theoretical perspectives, this research aims to contribute to the academic discourse on early childhood education and cognitive development and offer practical insights for educators, policymakers, and parents seeking to enhance children's learning experiences through play.

**RESULTS AND DISCUSSION**

This discussion will explore the influence of play-based learning on early childhood cognitive development. Games are not only entertainment, but also an important means to develop children's thinking skills, problem-solving, and memory. Different types of games will be discussed related to their contribution to cognitive development, as well as the influence of cultural and environmental factors.

The table below summarizes the findings from 10 selected articles that were meticulously screened from a broader collection of related literature. These articles specifically focus on the impact of play-based learning on cognitive development in early childhood education. The selection criteria for these articles included relevance to the research topic, empirical evidence, theoretical contributions, and methodological rigor. Each article provides valuable insights into how different types of play-based learning influence various cognitive skills and developmental outcomes in young children.

No.	Author(s) and Year	Title of the Article	Main Findings	Relevance to Research
1	Hirsh-Pasek et al. (2009)	A Mandate for Playful Learning in Preschool: Presenting the Evidence	Demonstrates that play-based learning enhances cognitive skills, including language development, problem-solving, and executive function.	Provides empirical evidence supporting the cognitive benefits of play-based learning.
2	Fisher et al. (2011)	Taking Shape: Supporting Preschoolers' Acquisition of Geometric Knowledge Through Guided Play	Shows that guided play significantly improves geometric knowledge in preschoolers, emphasizing the role of teacher-facilitated play in cognitive development.	Highlights the effectiveness of guided play in enhancing specific cognitive skills such as spatial reasoning.
3	Lillard et al. (2013)	The Impact of Pretend Play on Children's	Reviews evidence that pretend play contributes to cognitive development, particularly in	Provides a comprehensive overview of how pretend

No.	Author(s) and Year	Title of the Article	Main Findings	Relevance to Research
		Development: A Review of the Evidence	language, narrative skills, and social cognition.	play influences various cognitive domains.
4	Whitebread et al. (2012)	The Importance of Play: A Report on the Value of Children's Play with Policy Recommendations	Argues that play, especially free play, fosters self-regulation and executive functions, which are critical for cognitive development.	Supports the role of free play in developing cognitive skills essential for learning and academic success.
5	Weisberg et al. (2016)	Guided Play: Where Curricular Goals Meet a Playful Pedagogy	Suggests that guided play can effectively blend play with educational goals, enhancing cognitive outcomes such as problem-solving and creativity.	Discusses the balance between play and curriculum, reinforcing the cognitive benefits of guided play.
6	Toub et al. (2016)	Guided Play: Principles and Practices	Explores principles of guided play and its impact on cognitive development, particularly in enhancing children's language and literacy skills.	Examines how guided play supports language acquisition and literacy development in early childhood.
7	Pyle & Danniels (2017)	A Continuum of Play-Based Learning: The Role of the Teacher in Play-Based Pedagogy	Investigates the different roles teachers play in play-based learning environments and how these roles affect cognitive development outcomes.	Provides insight into the pedagogical approaches within play-based learning and their impact on cognitive skills.
8	Ginsburg (2007)	The Importance of Play in Promoting Healthy Child Development	Discusses the broad developmental benefits of play, including cognitive, emotional, and physical development, with a focus on brain development during play.	Offers a holistic view of the developmental benefits of play, emphasizing cognitive aspects.
9	Gray (2011)	The Decline of Play and the Rise of Psychopathology in Children and Adolescents	Highlights the negative impact of reduced playtime on children's cognitive and emotional development, stressing the importance of play in early education settings.	Provides a critical perspective on the consequences of diminishing play opportunities on cognitive development.
10	Moyles (2010)	The Excellence of Play	Examines the role of different types of play in early childhood settings, emphasizing their impact on cognitive development and overall learning experiences.	Discusses the various forms of play and their specific contributions to cognitive development in early childhood education.

The literature review findings presented in the table provide a comprehensive overview of the impact of play-based learning on cognitive development in early childhood education. A critical analysis of the selected studies reveals a consistent agreement among researchers on the cognitive benefits of play-based learning, particularly in enhancing children's language skills, problem-solving abilities, executive

functions, and overall cognitive development. The studies by Hirsh-Pasek et al. (2009) and Fisher et al. (2011) underscore the importance of play in fostering essential cognitive skills such as language acquisition and spatial reasoning, highlighting the effectiveness of different types of play, including guided play, in supporting cognitive growth (Fauzi, 2019; Weisberg et al., 2016).

Furthermore, the role of educators in facilitating play-based learning is highlighted in several studies, particularly in the work of Pyle and Danniels (2017) and Weisberg et al. (2016). These studies demonstrate that the involvement of teachers in guiding and scaffolding play activities can enhance cognitive outcomes, especially when educational goals are seamlessly integrated into playful activities. The concept of guided play, where educators provide subtle guidance to extend children's learning while maintaining the playful nature of the activity, emerges as a highly effective pedagogical strategy. This approach bridges the gap between free play and structured learning, ensuring that children benefit cognitively while still engaging in developmentally appropriate play.

The results of this literature study highlight the changing landscape in early childhood education, especially the challenge of balancing play and academic learning. Gray (2011) examined the negative impact of reduced play time on children's cognitive and emotional development (Gray, 2011). This decline is due to increasing academic pressure and a shift towards more formal education in the early years. This perspective is in line with broader concerns in the early childhood education literature, where the role of play is diminishing due to a greater emphasis on academic readiness.

Another important aspect highlighted in the literature is the holistic nature of play-based learning, as articulated by Ginsburg (2007) and Moyles (2010). These studies provide a broader perspective on the developmental benefits of play, extending beyond cognitive skills to include social, emotional, and physical development. The findings suggest that play-based learning not only enhances cognitive development but also supports overall well-being and development, making it an indispensable element of early childhood education. This holistic view underscores the need for comprehensive educational approaches that integrate play to foster well-rounded development in young children.

Play-based learning is a crucial element in early childhood education that plays an important role in cognitive development. These findings show the need for variety and balance in the play experience, the active role of educators in guiding the game, and the importance of keeping play at the core of education amid academic pressure. Further research should investigate the different impacts of the types of games, the contextual factors that affect their effectiveness, and how to integrate games into early childhood education curricula.

### Discussion

The findings from the literature review clearly demonstrate that play-based learning has a significant impact on cognitive development in early childhood education. A critical examination of the selected studies reveals that various types of play—such as guided play, free play, and pretend play—contribute differently to cognitive skills development. For instance, (Fisher et al., 2013; Weisberg et al., 2016) provide robust empirical evidence that guided play enhances cognitive functions such as language acquisition, problem-solving, and executive functions. This finding aligns with the increasing emphasis on active learning pedagogies in early childhood education, where play is recognized as a powerful tool for engaging children in meaningful learning experiences.

One of the major themes emerging from the review is the differential impact of various play types on specific cognitive skills. For example, (Lillard et al., 2013) highlight that pretend play fosters narrative skills and social cognition, while (Whitebread et al., 2012) emphasize that free play is crucial for developing self-regulation and executive function. This differentiation is particularly relevant in the current educational climate, where there is a push towards standardization and accountability in early education. It suggests that incorporating a variety of play types can cater to diverse developmental needs, thereby supporting a more holistic approach to early childhood education.

The role of educators in facilitating play-based learning is another key finding from the literature. Studies such as those by Pyle and Danniels (2017) and Weisberg et al. (2016) show that guided play, where educators provide scaffolding and support, can significantly enhance cognitive outcomes. This aligns with

Vygotsky's theory of the Zone of Proximal Development (ZPD), which posits that children learn best when they are supported by more knowledgeable others (Vygotsky, 1934). By subtly guiding play activities, educators can help children reach higher levels of cognitive functioning, suggesting that professional development for teachers in play facilitation is crucial.

The current trend towards more structured and academically focused early childhood education poses a challenge to the integration of play-based learning. Gray (2011) discusses the negative impact of reduced playtime on children's cognitive and emotional development, attributing this decline to increased academic pressures and a focus on formalized instruction. This trend is concerning, as it contradicts the evidence presented in the literature review, which strongly supports the cognitive benefits of play-based learning. The diminishing role of play in early education reflects a broader societal shift towards valuing academic achievement over developmental appropriateness, which may undermine the holistic development of young children (Mutiah, 2015).

Another important aspect highlighted in the literature is the holistic nature of play-based learning, as articulated by (Ginsburg & Health, 2007; Moyles, 2010). These studies emphasize that play-based learning supports not only cognitive development but also social, emotional, and physical growth. This is particularly relevant in the context of today's increasingly diverse and globalized classrooms, where educators are challenged to meet the needs of all learners. By integrating play into early childhood curricula, educators can provide a more inclusive and responsive learning environment that fosters all aspects of child development (Rumiyati & ZulFitria, 2024).

The findings also have important implications for educational policy and practice. As noted by Toub et al. (2016), the principles and practices of guided play offer a framework for integrating educational goals with playful pedagogy. This suggests that policymakers should consider revising early childhood education standards to prioritize play as a central component of the curriculum. Given the strong evidence supporting the cognitive benefits of play-based learning, there is a need for policies that encourage a balance between play and academic learning, rather than favoring one at the expense of the other.

Moreover, the global shift towards digital learning, accelerated by the COVID-19 pandemic, presents both challenges and opportunities for play-based learning. While digital tools can enhance learning experiences and provide new avenues for play, there is a risk that screen-based activities could replace traditional forms of play that are crucial for cognitive development (Weisberg et al., 2016). This underscores the importance of finding ways to integrate digital and physical play in a manner that maximizes cognitive benefits while minimizing potential drawbacks.

From a theoretical perspective, the findings support Piaget's theory of cognitive development, which emphasizes the role of active exploration and hands-on learning in cognitive growth (Piaget, 1964). Play-based learning aligns with Piagetian principles by providing children with opportunities to engage with their environment, experiment, and construct knowledge through play. The studies reviewed suggest that when children are given the freedom to explore and engage in play, they develop critical thinking and problem-solving skills, which are foundational for future learning.

In summary, the impact of play-based learning on cognitive development in early childhood education is well-supported by the literature. The findings highlight the need for a balanced approach that incorporates various types of play, emphasizes the role of educators in facilitating play, and recognizes the holistic benefits of play-based learning. As the field of early childhood education continues to evolve, it is crucial to advocate for policies and practices that prioritize play as a fundamental component of young children's learning experiences. By doing so, educators can ensure that all children can develop the cognitive skills and dispositions necessary for lifelong learning and success.

## CONCLUSION

This study has analyzed the impact of play-based learning on early childhood cognitive development by synthesizing findings from various recent studies. The results of the study show that game-based learning has a significant contribution to improving cognitive skills, such as problem-solving, critical thinking, memory, and language skills. Different types of games, such as imaginative, constructive, and interactive play, each make a specific contribution to different cognitive aspects. Therefore, games are not

only entertainment, but also an effective tool to support overall cognitive development. These findings suggest that early childhood education policies balance academic learning and play. Educators need to integrate different types of play in the learning process, and policies should support play-based learning methods to achieve the holistic development of children.

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