Ceria: Jurnal Program Studi Pendidikan Anak Usia Dini
Volume 14, Number 2, 2025 pages 438-448
P-ISSN: 2301-9905 E-ISSN: 2775-409X
Open Access: https://jurnal.umt.ac.id/index.php/ceria/index

Analysis of Project Based Learning Implementation In Improving the Cognitive Abilities of Children Aged 5–6 Years at TK Roudhoh Serang-Banten

Tasya Maulinda[1], Fahmi[2], Siti Khosiah[3]
[1,2,3]Universitas Sultan Ageng Tirtayasa, Serang, Indonesia
e-mail: [1*]2228190045@untirta.ac.id, [2]fahmifahmi19@gmail.com, [3]siti.khosiah@untirta.ac.id

ARTICLE INFO

Article history:
Received: May 17, 2025
Accepted: July 25, 2025
Available online on: July 31, 2025

Keywords:
Project Based Learning; Cognitive Development; Early Childhood Education; Critical Thinking; Collaboration

ABSTRACT

This study aims to analyze the implementation of Project Based Learning (PBL) in improving the cognitive abilities of children aged 5–6 years at TK Roudhoh Serang-Banten. PBL was selected as a learning approach that emphasizes children's direct experiences in carrying out projects, which is expected to stimulate their cognitive development. This research employed a descriptive qualitative approach, with data collected through interviews, observations, and documentation. The results show that the implementation of PBL at TK Roudhoh was highly effective in enhancing children's cognitive skills, particularly in critical thinking, creativity, and problem-solving. Teachers acted as facilitators, assisting children in selecting project themes, planning activities, and providing guidance during project implementation. In addition, collaboration among children in completing projects strengthened their social skills and sense of responsibility. Reflection at the end of

the project also provided opportunities for children to understand and deepen the material they had learned. Overall, PBL was proven to have a positive impact on developing the cognitive abilities of children aged 5–6 years at TK Roudhoh Serang-Banten.

Introduction

Early childhood education is a crucial stage that requires attention from the outset. At this age, children are in a sensitive period where various functions need stimulation to prevent developmental delays. Children who receive appropriate stimulation will develop optimally, not only in one aspect but across multiple developmental domains.

In addition to the term Early Childhood Education (PAUD) commonly used in educational contexts, Yus (2011) provides a more detailed definition, explaining that early childhood development involves a series of efforts, both by the community and the government, to help young children explore their potential and holistically develop all aspects of themselves. This includes the development of educational aspects—covering basic learning, social skills, and character values—as well as nutrition to ensure healthy growth, and health services to meet children's developmental needs (Fauzi, 2018). Such holistic development is vital in laying a strong foundation for children's future. Early childhood education has now become one of the priority programs in national education development, aiming to realize equitable and high-quality education aligned with the evolving needs of society.

According to Mardianingsih & Nuris (2022), there are six aspects of early childhood development that can be stimulated: Religious and Moral Values (NAM), Social and Emotional Development (Sosem), Physical and Motor Skills (Fismot), Language, Cognitive, and Art. All aspects should be stimulated in a balanced and comprehensive manner, as each plays an essential role. Among these, cognitive development is particularly crucial. Stimulating cognitive abilities from an early age is important so children can understand effectively, solve problems, think critically and creatively, and reason logically.

From this perspective, it is necessary to connect with the theory of constructivism, which emphasizes the formation of knowledge rather than mere transmission and storage of information (Putri & Putra, 2019). Constructivism views knowledge construction in three ways:

1. **Exogenous constructivism** – knowledge formed through reconstructing external reality.
2. **Endogenous constructivism** – knowledge built internally by the individual.
3. **Dialectical constructivism** – knowledge constructed through social interaction, such as discussion, comparison, and debate.

In constructivist learning, children learn actively, with the teacher serving as a facilitator (Masgumelar & Mustafa, 2021). To encourage active participation, a democratic learning environment, interactive student-centered activities (e.g., discussions, problem-solving), and teacher support for independent learning are required. One method that

can achieve this is Project Based Learning (PBL), where learning involves discussion, field experiences, and exploration of teacher-provided cases.

Suryana (2021) states that the objectives of PBL in early childhood include: (a) broadening children's insight in addressing problems directly; and (b) developing critical thinking skills to solve real-life issues. Pratiwi (2019) adds that PBL can: (a) increase learning motivation; (b) improve problem-solving abilities; (c) enhance skills in using learning media; and (d) boost enthusiasm and collaborative skills.

Based on this background, this study aims to analyze the implementation of PBL at TK Roudhoh Serang-Banten, to explore the extent to which this method stimulates the cognitive development of children aged 5–6 years. The research also focuses on its relation to Piaget's cognitive development theory, particularly in activities involving memory, decision-making, and problem-solving, which are essential for early childhood cognitive growth.

Methods

According to Arikunto (in Nuzulia, 2023), research methods are the various ways used by researchers to collect data in their studies. In this research, the method employed was **descriptive qualitative research**. A descriptive approach is a type of research aimed at describing the solution to existing problems based on the available data. This descriptive qualitative research was conducted to obtain in-depth and comprehensive information on the analysis of the implementation of

Project Based Learning in improving the cognitive abilities of children aged 5–6 years at TK Roudhoh Serang-Banten.

The study applied a qualitative method, in which the researcher sought to understand the meanings and subjective experiences of individuals or groups within a specific context (Yusanto, 2020). The data collection technique used was **purposive sampling**, carried out through several steps, such as observations in the school environment and during learning activities. The observations were conducted over the course of one month, with visits three days per week, for a total of 12 observation sessions at TK Roudhoh Banten.

In addition, in-depth interviews were conducted with two informants—one teacher and one principal—and documentation was collected regarding learning activities for children aged 5–6 years. According to Sugiyono (2020), qualitative research methods are often referred to as *naturalistic research* because the research process is carried out in natural settings without manipulation of the variables studied. This approach is used to obtain deeper data, which not only includes facts but also contains more complex meanings and reflects the actual reality, in accordance with the participants' perspectives.

Results and Discussions

The implementation of Project Based Learning (PBL) at TK Roudhoh proved to be effective in enhancing the cognitive abilities of children aged 5–6 years. Data from interviews, observations, and documentation consistently show that PBL provided rich, hands-on

learning experiences that fostered children's ability to think critically, solve problems, and collaborate with peers. The teacher acted as a facilitator—guiding children in selecting project themes, planning activities, and supporting them through the execution process. This aligns with the constructivist view (Putri & Putra, 2019) that learning is best achieved when children actively construct knowledge through meaningful experiences.

In practice, children were actively engaged in determining the direction of the project, participating in discussions, and completing tasks independently. For example, during block play, one child evaluated the stability of their structure and adjusted the arrangement to prevent collapse—a concrete demonstration of problem-solving skills. As the teacher noted, *"Anak bisa memecahkan masalahnya sendiri, seperti saat anak bermain balok… anak akan mengamati bagaimana balok dapat tersusun sesuai urutannya agar tidak jatuh"* (CWG.JW8). Such moments illustrate the development of both cognitive and metacognitive skills, as children not only engaged in the task but reflected on strategies to achieve better outcomes.

Figure 1. The PBL Situatuion at Classroom

Collaborative projects also strengthened children's social and communication skills. Working together on shared tasks fostered mutual respect, turn-taking, and responsibility. This finding echoes Suryana's (2021) statement that PBL supports not only cognitive growth but also the development of social competencies essential for lifelong learning. Observation notes (CO) recorded several instances where the teacher introduced a problem scenario, prompted group discussions, and encouraged children to propose and test solutions—mirroring the problem-solving cycle emphasized in PBL literature.

The process concluded with a reflection session, where children reviewed what they had learned and how they had achieved their goals. Reflection is a critical phase in PBL (Pratiwi, 2019), as it consolidates understanding and encourages children to transfer knowledge to new contexts. Documentation (CD) captured three key stages—morning circle, collaborative project work, and reflection—each providing different cognitive stimulation:

1. **Morning Circle** – Activating prior knowledge and setting project goals.

2. **Collaborative Work** – Applying problem-solving, decision-making, and creative thinking.
3. **Reflection** – Evaluating processes and outcomes, reinforcing memory and conceptual understanding.

The interview with the school principal further confirmed the effectiveness of PBL: *"Efektif, anak-anak semangat belajar dan mudah memahami karena pembelajaran yang menyenangkan"* (CWKS). This supports Piaget's view that cognitive development at this stage thrives in environments where children are given autonomy to explore, experiment, and learn from real-life contexts.

However, the study also identified minor challenges, such as children occasionally focusing only on their preferred activities rather than the agreed project plan. Teachers addressed this by posing guiding questions and re-engaging children in the collaborative process. This adaptive role of the teacher aligns with the *dialectical constructivism* perspective, where social interaction and facilitation are key to knowledge construction.

Overall, the results indicate that PBL in TK Roudhoh:

- Stimulated children's critical and creative thinking.
- Fostered collaboration and communication.
- Promoted decision-making and independent problem-solving.
- Provided meaningful, real-world learning experiences.

These findings are consistent with previous studies (Zulkarnaen et al., 2023; Suryana, 2021) showing that PBL not only enhances cognitive

outcomes but also supports holistic child development. The integration of PBL within the Merdeka Curriculum framework offers a viable strategy for improving the quality of early childhood education, especially in stimulating higher-order thinking skills from an early age.

Conclusion

After completing several stages of the research, it can be concluded that the implementation of Project Based Learning (PBL) at TK Roudhoh was effective in enhancing children's learning experiences. The teacher acted as a facilitator, assisting children in selecting themes, planning steps, and guiding them throughout the project. Through collaboration and exploration, the children not only mastered academic content but also developed social skills, creativity, and critical thinking. Their active involvement in decision-making, participation in discussions, and independent task completion fostered a sense of responsibility and ownership over their learning. Cooperation within the projects strengthened relationships among the children and reinforced the value of togetherness. The final project reflection helped children understand the learning process and outcomes, thereby deepening the concepts learned. Furthermore, the improvement in the cognitive abilities of children aged 5–6 years at TK Roudhoh was considered very good, as they were actively involved in every stage of the learning process.

References

Djalal, F. (2017). Optimalisasi pembelajaran melalui pendekatan, strategi, dan model pembelajaran. *SABILARRASYAD: Jurnal*

Pendidikan dan Ilmu Kependidikan, *2*(1). https://doi.org/10.46576/jsa.v2i1.115

Fauzi, F. (2018). Hakikat pendidikan bagi anak usia dini. *INSANIA: Jurnal Pemikiran Alternatif Kependidikan*, 15(3), 386–402. https://doi.org/10.24090/insania.v15i3.1552

Mardianingsih, & Nuris, A. D. (2022). Karakteristik perkembangan anak usia 5–6 tahun dalam aspek kognitif melalui permainan balok. *Jurnal Caksana: Pendidikan Anak Usia Dini*, 5(1), 29–36. https://doi.org/10.31326/jcpaud.v5i1.1332

Nuzulia, A. (2023). Manajemen sarana dan prasarana pendidikan anak usia dini di TK MDI 1 Pandean Ngemplak Boyolali tahun 2022/2023. (Skripsi). https://perpusfit.uinsaid.ac.id/index.php?p=show_detail&id=7871&keywords=

Pratiwi, G. (2019). *Pengaruh Model Pembelajaran Project Based Learning (Pjbl) Dan Gaya Belajar Terhadap Kemampuan Komunikasi Matematis Siswa SMP.* (Doctoral dissertation, UIN Raden Intan Lampung). https://repository.radenintan.ac.id/8382/1/SKRIPSI.pdf

Putri, Y. F., Marlina, L., & Wulandari, Y. T. (2022). Pengaruh penggunaan media balok angka terhadap perkembangan kognitif pada anak usia 4–5 tahun. *Raudhatul Athfal: Jurnal Pendidikan Islam Anak Usia Dini*, 6(2), 153–163. https://doi.org/10.19109/ra.v6i2.15503

Putri, Y. F., Marlina, L., & Wulandari, Y. T. (2023). Pengaruh penggunaan media balok angka terhadap perkembangan kognitif pada anak usia 4–5 tahun. *Raudhatul Athfal: Jurnal Pendidikan Islam Anak Usia Dini*, 6(2), 153–163. https://doi.org/10.19109/ra.v6i2.15503

Hendrianto, M. Y., & Afrianingsih, A. (2024). Analisis Berpikir Konstruktif Ditinjau dari Penerapan Sentra Balok Anak Usia 4-5 Tahun di KB Cendekia Bapangan. *Ceria: Jurnal Program Studi Pendidikan Anak Usia Dini*, *13*(3), 281-299. http://dx.doi.org/10.31000/ceria.v13i3.12561

Sugiyono. (2020). *Metode penelitian kuantitatif, kualitatif, dan R&D*.

Bandung: Alfabeta.

Suryana, D. (2021). *Pendidikan anak usia dini: Teori dan praktik pembelajaran*. Prenada Media.

Yus, A. (2011). *Model pendidikan anak usia dini*. Jakarta: Prenadamedia Group.

Putri, H., & Putra, P. (2019). Konsep teori belajar konstruktivisme anak usia dini di era revolusi industri 4.0. *PrimEarly: Jurnal Kajian Pendidikan Dasar dan Anak Usia Dini*, *2*(2), 192-199. Retrieved from https://journal.iaisambas.ac.id/index.php/prymerly/article/view/83

Masgumelar, N. K., & Mustafa, P. S. (2021). Teori belajar konstruktivisme dan implikasinya dalam pendidikan dan pembelajaran. *GHAITSA: Islamic Education Journal*, *2*(1), 49-57. https://doi.org/10.62159/ghaitsa.v2i1.188

Yusanto, Y. (2020). Ragam pendekatan penelitian kualitatif. *Journal of scientific communication (jsc)*, *1*(1). http://dx.doi.org/10.31506/jsc.v1i1.7764