Learning method innovation: Integrating projects for holistic development of early childhood.

Nadia Aliyatuz Zulfa[1✉], Hibana[2], Nurita Sari[3]

[1,2,3] Universitas Islam Negeri Sunan Kalijaga, Yogyakarta
✉nadiaaliya952@gmail.com

Abstrak

Background : Innovative learning methods are essential in early childhood education to support their holistic development, encompassing cognitive, social, emotional, and physical aspects. However, the implementation of monotonous learning methods often reduces children's interest in learning. The Project-Based Learning (PjBL) model offers a relevant approach to enhancing children's creativity and collaborative skills.

Aim.: This study aims to analyze the implementation of PjBL in improving the creativity and collaboration skills of early childhood learners and to provide practical guidance for educators.

Methode: This study employs a descriptive qualitative approach, with data collected through observation, interviews, and documentation.

Result : The findings reveal that the implementation of PjBL through thematic, partial, and occasional approaches is effective in enhancing children's engagement in the learning process. Children demonstrated improved creativity, independence, and collaboration skills. Teachers also played a significant role as facilitators throughout the project implementation process.

Conclusion.: This research provides a new contribution by exploring the implementation of PjBL in a local context, specifically in early childhood education in Indonesia. It bridges the gap between theory and practice, which has previously focused more on general applications without emphasizing children's creativity and collaboration. These findings support the development of the Merdeka Curriculum by prioritizing active, collaborative, and contextual learning relevant to the developmental needs of early childhood learners. Thus, PjBL proves to be a relevant learning model, encouraging active exploration, mastery of 21st-century skills, and meaningful learning experiences, while simultaneously serving as a solution to improve the quality of learning aligned with children's developmental needs.

INTRODUCTION

Learning methods are a core component of the educational process, aimed at creating an effective, engaging, and meaningful learning environment for students. At the early childhood education level, learning methods become even more critical as this stage represents the golden period of a child's development, influencing their cognitive, social, emotional, and motor skills in the future. (Agustina, 2021; Mariamah et al., 2021; Nikmah et al., 2023). However, a common issue in many educational institutions is the use of learning methods that tend to be monotonous and lack innovation. This is often caused by the limited creativity of educators in delivering learning materials and the insufficient utilization of teaching media. (Dewi, 2022; K. H. Purnamasari, 2020; Nikmah et al., 2023). This condition results in a less dynamic learning atmosphere, causing children to lose interest in learning.

Low learning interest in children is often caused by a lack of opportunities for exploration and creativity. As a result, their collaboration, communication, and independence skills do not develop optimally. (Dewi, 2022; L. Katz, 2011; Mariamah et al., 2021). This issue can be addressed through the implementation of learning methods that stimulate active child engagement, such as Project-Based Learning (PjBL). This method emphasizes children's involvement in exploration activities and project completion designed to answer specific questions or solve particular problems. (Dewi, 2022; K. H. Purnamasari, 2020; L. Katz, 2011).

According to Permendikbud Number 137 of 2014 on the National Standards for Early Childhood Education, creativity is one of the key indicators of early childhood development. Creativity supports children's ability to solve everyday problems in innovative ways and to generate original ideas and creations. (K. H. Purnamasari, 2020; Nikmah et al., 2023). To support this, the project-based learning method provides space for children to explore, collaborate, and develop their potential optimally. This method aligns with the educational philosophies of John Dewey and Lev Vygotsky, who emphasized the importance of direct experience ("learning by doing") and social interaction in the learning process. (Agustina, 2021; Dewi, 2022b; L. Katz, 2011)

Previous studies have highlighted learning innovations that integrate projects to support the holistic development of early childhood. Nugraha (2023) emphasized the importance of interdisciplinary approaches, such as STEAM, in formal education to optimize the creative potential of young children. (Nugraha, 2023). These findings align with the research of Idhayani (2023), which revealed that this approach creates an engaging learning environment, supports children's development, and enriches their experiences with local cultural values. (Idhayani et al., 2023). Other studies, such as those by Maria and Wahyuningrum (2022), indicate that the ATIK model innovation can create enjoyable and effective learning experiences in developing fine motor skills in early childhood. (Dwi et al., 2022).

However, most of these studies have not specifically focused on learning innovations for the holistic development of early childhood. This research. (Syafdaningsih et al., 2023) pengembangan inovasi media pembelajaran berbasis cerita untuk mengajarkan materi geometri pada anak usia dini (5-6 tahun). The development of innovative story-based learning media aims to teach geometry to early childhood learners aged 5–6 years. This study seeks to create a learning medium in the form of a picture storybook that is both valid and practical, designed to enhance children's understanding of geometric concepts through an engaging approach.Previous research has lacked an in-depth explanation of its novelty (state of the art). This study addresses the gap by exploring how Project-Based Learning (PjBL) can enhance the creativity and collaboration of early childhood learners, a topic that has received limited attention in local or national contexts. Earlier studies have predominantly discussed the general application of PjBL without emphasizing specific aspects such as creativity or collaboration in early childhood (Dewi, 2022b; Mariamah et al., 2021; Nikmah et al., 2023). Thus, this research offers a fresh perspective relevant to curriculum and learning method development, providing a more targeted approach to fostering essential skills in early childhood education.
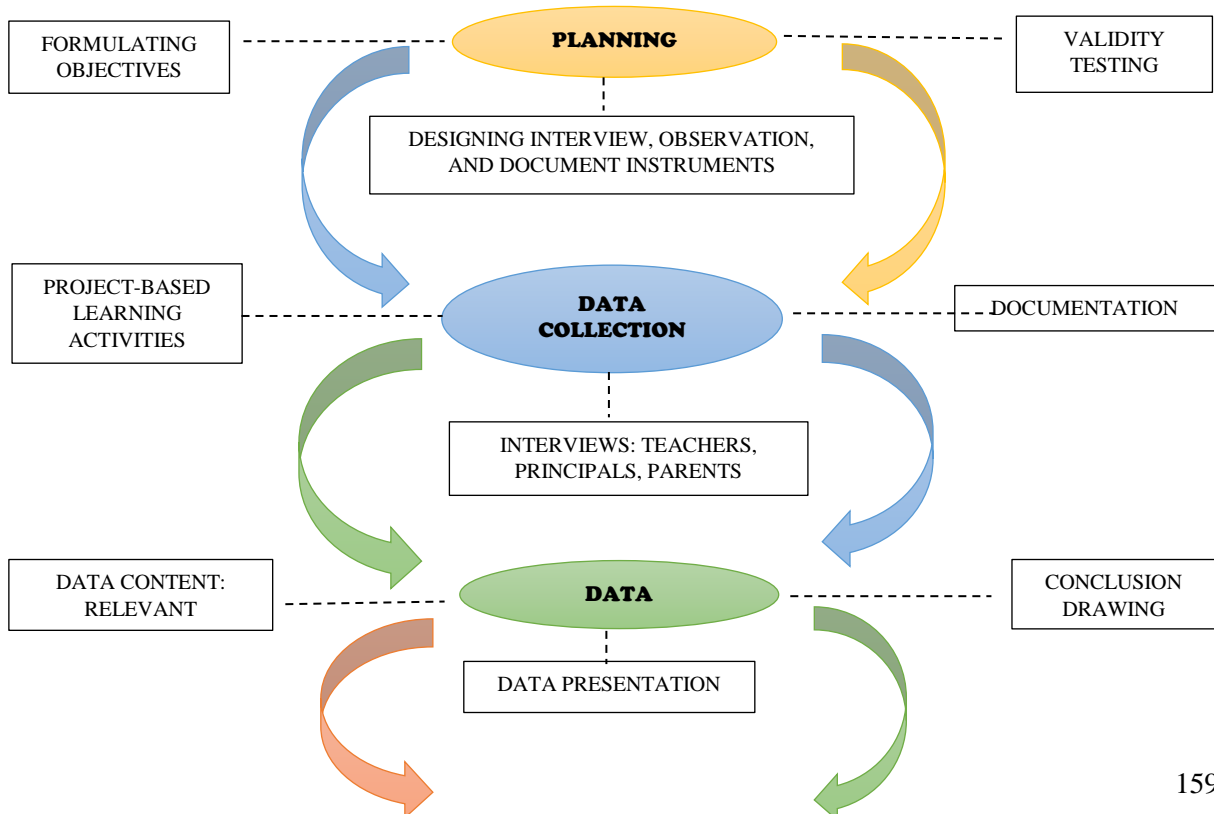
In this context, this study becomes a potential avenue to explore how Project-Based Learning (PjBL) can enhance the creativity and collaboration of early childhood learners, a topic that has not been widely discussed in local or national contexts. Furthermore, it is expected to provide practical guidance for educators in designing and implementing project-based learning tailored to the needs of young children. This research also aims to support the development of the Merdeka Curriculum, which prioritizes active and collaborative learning
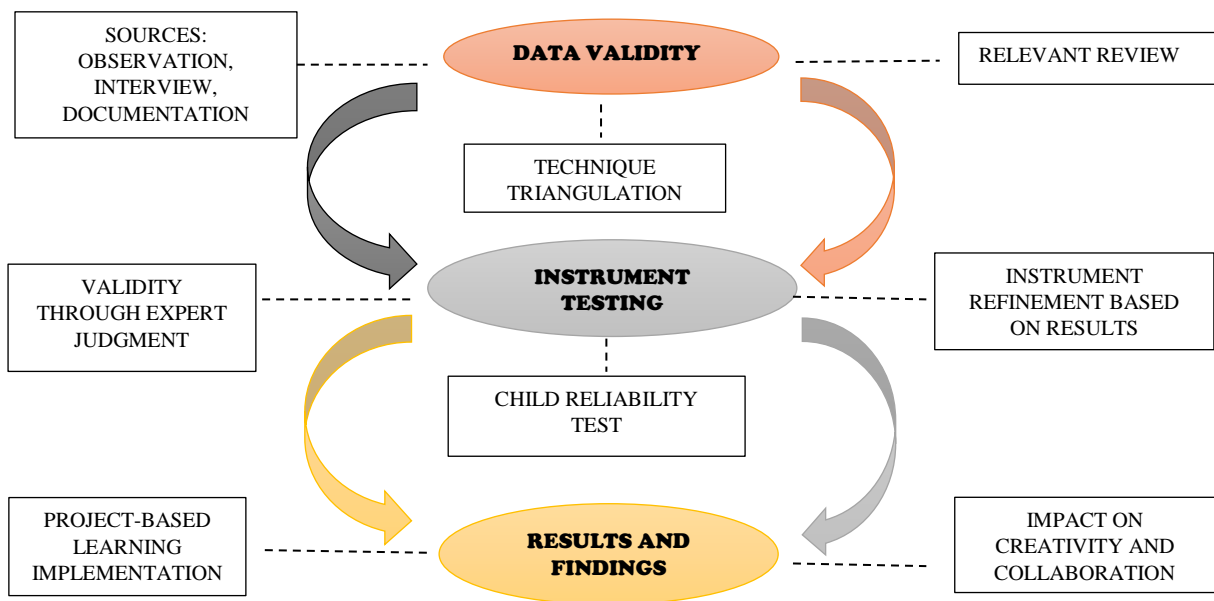
as a primary approach in early childhood education. This includes strategies to increase child engagement, the use of innovative learning media, and the application of assessments that support the holistic development of children. Therefore, this study will focus on the implementation of innovative learning methods to integrate projects for the holistic development of early childhood learners. It is hoped that early childhood education becomes more relevant, engaging, and effective in supporting children's overall development. This contribution is expected to have a positive impact not only on students but also on educators and educational institutions by providing strategies for innovative and impactful long-term learning approaches.

METHOD

This study adopts a qualitative approach with a descriptive design to provide an in-depth and detailed depiction of the implementation of the project-based learning model in developing creativity and collaboration skills among early childhood learners. This method was chosen because it is well-suited for exploring phenomena in a contextual manner and understanding the complex learning processes within early childhood education settings.

The research was conducted at Raudhatul Athfal Al-Hidayah Leranwetan, Palang Subdistrict, Tuban Regency, East Java, involving children aged 4–5 years. The primary informants included three classroom teachers as implementers of the learning method, the school principal as the policy supervisor, and five parents as observers of children's development at home. The sample was purposively selected to ensure that the subjects and informants were directly involved in the implementation and observation of the project-based learning process. The study was carried out over three months, from July to September 2024. Data validation was conducted through source and technique triangulation, which involved collecting data from various perspectives to ensure the accuracy and credibility of the findings.

SOURCES: OBSERVATION, INTERVIEW, DOCUMENTATION	DATA VALIDITY	RELEVANT REVIEW
	TECHNIQUE TRIANGULATION	
VALIDITY THROUGH EXPERT JUDGMENT	INSTRUMENT TESTING	INSTRUMENT REFINEMENT BASED ON RESULTS
	CHILD RELIABILITY TEST	
PROJECT-BASED LEARNING IMPLEMENTATION	RESULTS AND FINDINGS	IMPACT ON CREATIVITY AND COLLABORATION

RESULTS AND DISCUSSION

A. Results

The implementation of Project-Based Learning in early childhood education is divided into three forms: total project-based learning, partial project-based learning, and occasional project-based learning. (Sari & Y, 2018) Physical development is inseparable from mental, social, and emotional development, making project-based learning an appropriate approach to optimally develop all aspects of students' growth. (Darsinah, 2021).

Project-based learning is a teaching model that supports the concept of "independent learning" for students. It serves as a co-curricular activity within the framework of the Merdeka Curriculum.(Khoirurrijal et al., 2022).

This study emphasizes significant results relevant to the goals of developing creativity and collaboration skills in early childhood through PjBL. The following results of the implementation of each type of project-based learning are relevant.

First, **Total Project-Based Learning.** Total project-based learning integrates all aspects of learning into a unified whole through a thematic approach, reflecting how young children understand the world holistically. The findings show that this model significantly: First, enhances children's creativity. Children were able to create products such as cardboard vehicles (e.g., toy cars, hot air balloons, airplanes), combining art, cognitive, and physical elements. This demonstrates that total projects enable children to express creative ideas through various interdisciplinary activities. Second, improves collaboration skills. Improving collaboration enables children to work together in groups in role-playing to complete projects collaboratively, strengthening social and communication skills. The relevance to the research objectives lies in showing that total project-based learning creates a learning environment that supports the holistic development of children, including their physical, social, emotional, and cognitive aspects as a whole.

Second, **Partial Project-Based Learning.** Partial project-based learning combines conventional approaches with themed project-based activities. The findings show that children have the opportunity to explore ideas gradually through a process that starts with discovering a theme and progresses to project execution. For example, the theme "My Fun

Environment" led to the exploration of vehicles and the development of collaborative activities designed with teachers. In this process, children's involvement in planning the project significantly enhanced their sense of responsibility and active participation, supporting their collaboration skills. This process is relevant to the research objectives because children are not only encouraged to complete projects but are also given active roles in designing and reflecting on their projects, thus supporting gradual creative and collaborative development.

Third, **Occasional Project-Based Learning.** In occasional projects, activities such as "gardening projects" are conducted. The results of this study show that children learned to plant, harvest, and process garden products, which not only enhanced their inquiry skills but also strengthened group cooperation through practical activities. This project also contributed to improving children's creativity in utilizing natural materials and completing projects based on their experiences. The alignment with the research objectives is evident in how occasional projects encourage children to actively engage in projects related to real life, supporting the development of collaborative and problem-solving skills

Child-centered project-based learning is useful for developing projects individually and in groups. Project-based learning refers to an inquiry-based learning approach that encourages students to construct knowledge by engaging them in completing meaningful projects and developing tangible products. (Guo et al., 2020). Project-based learning encompasses problem-solving, decision-making, inquiry skills, and creative skills. (Zayyinah et al., 2022). The stages of project-based learning are aligned with the stages developed by The George Lucas Foundation in 2005, as referenced in (Sari, 2018) which include identifying fundamental questions, designing a project plan, creating an activity schedule, monitoring students and project progress, testing results, and evaluating experiences. Children's activities begin with determining fundamental questions.

The first stage in the implementation of the project-based learning method begins with educators posing several fundamental questions related to the theme to be addressed that day, in accordance with the prepared lesson plan. This aligns with the results of interviews with educators who stated that:

"By providing open-ended or fundamental questions to children, they can express their opinions creatively in line with their ideas."

This statement aligns with the findings of research by (Loretha et al., 2023) which explains that fundamental or open-ended questions from teachers can stimulate students' thinking and deepen their understanding. According to research conducted by (Mayasari et al., 2016) and (Novianto et al., 2018), fundamental questions in project-based learning activities are steps that educators must take to explore students' knowledge, answers, comments, and thoughts regarding a project to be assigned. These fundamental questions should be complemented by additional questions that motivate and guide students to carry out project activities aimed at producing a product to solve a problem (Fauzi et al., 2019).

Designing a project plan is the second stage in the project-based learning process. The learning implementation plan is documented in the form of a Semester Learning Implementation Plan (RPPS), Weekly Learning Implementation Plan (RPPM), and Daily Learning Implementation Plan (RPPH). The project planning stage involves planning the learning process, setting game rules, selecting activities that address fundamental questions, determining the time allocation, and choosing the tools and materials to be used. (Agustina, 2021; K. H. Purnamasari, 2020; Muis & & Dewi, 2021). The project activity implementation plan is prepared by educators and students when they are about to carry out the project activities. This aligns with the results of an interview with the school principal, who stated:

"The project-based learning activity plan has already been prepared and outlined in

the lesson plan (RPP). However, teachers and students usually create a project plan collaboratively, starting with forming small groups, allocating time, setting ground rules, and determining the objectives of the project activity."

The results of the interview indicate that the implementation of the design function is aimed at determining the objectives of activities, assessment, understanding, guiding questions, and reflections by educators and students.

Figure 1. Stage of Determining Fundamental Questions

Figure 2. Explanation of Game Rules

Game rules are created as regulations that must be followed by students during the learning process. Observational results show that the rules of the game are conveyed at the start of each learning session. If, during the learning process, a child forgets the agreed-upon rules, the educator or classmates will remind them (Figure 2). The rules that students must adhere to during the learning process include: keeping their hands and feet in check, taking only the necessary tools and materials, not fighting over items, returning tools and materials to their original place after the activity, and taking responsibility to the best of their ability if they accidentally damage a friend's project. This aligns with research by (Wajdi, 2017) which states that game rules are established to instill a sense of ownership and responsibility in students toward the learning activities.

Learning activities use loose parts (Figure 3) as play materials in the project-based learning process. Observations during the implementation of project-based learning activities with the theme of Eid al-Fitr revealed that students used various play materials to create their projects, including carpets, funnels, modeling clay, blocks, pom-poms, cans, spools of thread, sticks, bottles, nuts, bolts, CDs, cardboard, miniature grass, jenitri seeds, shells, modeling clay, popsicle sticks, plates, blocks, pine flowers, and mahogany fruit. Loose parts are loose materials or objects that can be moved, modified, and reassembled according to the students' intended use. (Imamah, 2020). Research conducted by (Isnaini & Ariyanti, 2022) and (Hardiyanti & Rosnaeni, 2023) shows that learning using loose part materials can enhance students' creativity levels. When students are free to explore their environment, it enriches their creative ideas, develops their imagination, and stimulates their curiosity.

The third stage involves scheduling activity plans, where activity schedules are planned and designed at the beginning of the year or semester and one week before the learning activities take place. This is consistent with the results of an interview with the school principal, who stated:

"At the beginning of the year, we have already created a routine schedule. One week before the lessons, teachers also design a schedule for activities for the upcoming week. After the activities are completed, teachers reflect on them to plan the next learning design. Teachers involve students by asking them whether they want to continue the current activity or move on to a new one. The lesson plan (RPP) also includes targets, estimating that the activities can be completed within a week. However, if the children lose interest, the activities are replaced with other learning activities."

The interview results align with the findings of (Pardomuan, 2013) and (Nuryadi et al., 2018) which state that during the stage of scheduling activities, collaboration among educators is essential. Educators involve students in planning the activity schedule, setting deadlines for project completion, guiding students when they use methods that are less relevant to project-based learning, and asking students to provide reasons or explanations for their choice of methods in completing the project.

Figure 3. Loose Parts   **Figure 4.** Monitoring Activities

The fourth stage in the implementation of the project-based learning method is monitoring students and project progress. Monitoring during project-based learning is carried out by educators during activities to assess students' progress and the development of their projects. Monitoring (Figure 4) serves as a stage to gather information about the challenges students face in completing their projects, assisting them in developing their creative ideas, which are then manifested in their projects.

During the monitoring process, educators visit each group and ask questions about what has been successful, what has not, the reasons behind the project's implementation, and the obstacles encountered. Findings from studies by (Darsinah, 2021) and (Nurinayah et al., 2021) indicate that educators are responsible for students' activities during the learning process. Monitoring by educators facilitates each stage of the students' process, with educators acting as guides in the students' learning activities.

Testing the results is the fifth stage in the implementation of the project-based learning method. At this stage, educators observe and document the outcomes of the project and the development of students during each learning activity. One of the assessment results is presented in Figure 5. Based on an interview with an educator, it was stated that:

"We observe every activity the children engage in. Teachers also take photos and videos of the activities, which are then documented in the form of anecdotal notes and analyzed for the children's development. The analysis aims to help teachers understand which developmental milestones the child has achieved and include this information in the semester report. The results of the developmental analysis are also used to plan the next learning activities."

The results of this analysis will be used as material for reporting children's development to parents, evaluating the learning process, and preparing for subsequent learning activities. As stated by (Purba et al., 2023) assessment is conducted to assist educators in measuring the achievement of standards and learning objectives. Assessment plays a role in evaluating the standards and achievements of each student and providing feedback to improve their understanding. Additionally, assessment can support educators in planning the next learning schemes.

Figure 5. Assessment of Results   **Figure 6.** Recalling and Evaluation Stage

The final stage in the implementation of the project-based learning method is recalling and evaluating experiences (Figure 6). The evaluation of experiences is conducted after the completion of learning activities. The following are the results of an interview with an educator:

> *"Teachers always allocate time for children to reflect on their project activities so that if they feel something is lacking in their project, they can add to it according to their ideas. Children are also asked to express their feelings after participating in the project-based learning activity. This allows teachers to understand how the children feel—whether they are happy, interested in the project activities, or not. The results of the children's expression of feelings are then used as input and evaluation for the project activities planned for the following day.".*

The interview results align with research conducted by (Henita et al., 2023) which states that at the end of the learning process, educators and students engage in a review or reflection on project activities and the outcomes achieved. Reflection activities can be carried out individually or in groups.

The significance and relevance of this study lie in the fact that the development of creativity through the implementation of PjBL has been proven to create a learning environment that enables children to express creative ideas, both in the form of products and in problem-solving processes. Furthermore, the improvement of collaboration skills in project-based learning provides opportunities for children to interact, communicate, and work together with their peers, significantly supporting collaborative abilities.

Support for the concept of *Merdeka Belajar* (Independent Learning) is also evident, as PjBL aligns with this concept by encouraging children to become active learners capable of critical and creative thinking.

B. Discussion

A learning model is a conceptual framework used as a guide for implementing learning, systematically structured to achieve learning objectives, encompassing syntax, social systems, reaction principles, and support systems (Joice & Well). According to Arends, as cited in Trianto, "a learning model is a plan or pattern used as a guide for planning classroom learning" (Silitonga & Susanti, 2023). This learning model must align with the learning approach being utilized, including teaching objectives, stages of learning activities, the learning environment, and classroom management (Munar et al., 2021).

A learning model can be defined as a conceptual framework that outlines systematic procedures for organizing learning experiences to achieve specific learning objectives. The selection of a learning model is adjusted to the characteristics of the subject matter and the characteristics of each basic competency presented. (Sit et al., 2016).

Project-Based Learning (PjBL) is a learning model that uses projects or activities as a medium. According to (Kementerian Pendidikan dan Kebudayaan Republik Indonesia, 2018) Project-Based Learning enables students to engage in exploration, assessment, interpretation, synthesis, and information processing to produce various forms of learning outcomes. Through the Project-Based Learning method, students develop a project either individually or in groups to create a product. Topics in the project approach should be concrete, closely related to the children's personal experiences, engaging, and have emotional and intellectual potential. (Jamila et al., 2023).

The emergence of the Project-Based Learning model is rooted in the principles of theories proposed by several figures, including Piaget and Vygotsky with constructivism (Sari, 2018) Piaget stated that knowledge develops as individuals encounter new experiences that modify their prior knowledge. Meanwhile, Vygotsky's social constructivism theory emphasizes that individual thinking is influenced by the social environment through scaffolding and the Zone of Proximal Development (ZPD). ZPD identifies the gap between an individual's ability to solve problems independently and their ability when assisted by an adult or a more capable peer (Berk & Winsler, 1995:26).

In the context of PjBL, scaffolding is highly relevant as teachers can provide support during the initial stages of the project and gradually reduce their intervention, allowing students to learn independently. This theory reinforces the idea that project-based learning enables students to develop collaboration and problem-solving skills in real-life situations.

Another figure associated with the theoretical principles of PjBL is John Dewey. Project-based learning stems from Dewey's concept of "Learning by Doing." According to Dewey, active learning provides opportunities for students to work productively and discover various forms of knowledge. Dewey also emphasized that learning should be democratic, allowing students the freedom to choose projects that interest them. This creates meaningful learning experiences by involving real-world connections across different fields of study.

Kilpatrick's Contribution. Kilpatrick expanded Dewey's ideas into project-based learning, emphasizing collaboration between teachers and students. According to Katz...

"They key featute of project is that it is a research effort deliberately focused on finding answer to questions about a topic posed either by the children, the teacher, or the teacher working with the children" (L. G. & C. Katz, 1994).

Project-based learning is defined as a learning activity conducted collaboratively or in groups through a project (Lokey-Vega et al., 2018) Through the Project-Based Learning model, students are given the opportunity to explore, evaluate, interpret, synthesize, and acquire various types of information during the learning process.(Berhitu et al., 2020).

The PjBL model has significant implications for teachers and policymakers in education. Teachers are provided opportunities to implement active learning that directly involves students, enhancing higher-order thinking skills (HOTS) through analysis, evaluation, and creation. Teachers also foster students' collaboration and communication skills. Furthermore, policymakers integrate PjBL into the curriculum to support conceptual learning and provide training for teachers to understand the effective implementation of PjBL. (Muis & & Dewi, 2021). There are several stages in using the Project-Based Learning approach in the learning process, namely posing questions, designing a product plan, evaluating the product, and conducting assessments through observation during the children's project activities. (Ringotama et al., 2022)

The phases or stages of the project-based learning model are briefly explained in **Table 1** below:(Sumardyono et al., 2016)

Table 1. Phases of the Project-Based Learning Model

Phase	Activity	Description
1	*Start with the Essential Question*	• Provide questions that can be used to describe the task to students, enabling them to complete it through a project. • Begin with an in-depth examination and apply the problem to real-world scenarios. • Educators ensure that the discussed problem is relevant to their students.
2	*Design a Plan for the Project*	• Students and educators collaborate to plan activities. • The expected impact of this activation is for students to feel involved and take a leading role in the project. • Planning includes actions, techniques, and supplies needed for project completion.
3	*Create a Schedule*	• To complete the project, students and educators collaborate to plan an activity schedule. • At this level, students are asked to: • Create a timeline for completing the project. • Set a project completion date. • Encourage students to plan new methods. • Guide students in developing appropriate approaches related to the project. • Explain the reasons behind their choice of method.
4	*Monitor the Students and the Progress of the Project*	• Educators are responsible for supervising students' activities during the project. • Educators oversee students' activities and act as facilitators. • Educators can create a rubric designed to facilitate the monitoring process by recording all significant activities.
5	*Assess the Outcome*	• Assessment is conducted to test competencies and evaluate the progress of each student, either in groups or individually.

		• It provides feedback on the level of understanding achieved by students or groups and supports educators in planning subsequent learning activities.
6	*Evaluate the Experience*	• Students and educators reflect on the activities and outcomes of the project at the end of the learning process. • The reflection process is carried out individually or in groups. • Students are asked to describe their thoughts and experiences while working on the project during this stage. • Educators and students collaborate to improve performance during the learning process, with the ultimate goal of finding solutions to the problems posed at each initial stage of learning.

This study has several limitations, including a focus on implementing PjBL that is restricted to certain activities, potentially making the results not fully generalizable. Furthermore, challenges were encountered in managing time and resources for project implementation in large classes, as well as limitations in formative and summative assessments that encompass all aspects of project-based learning.

The findings of this research have important **implications** for educational practices, policy development, and teacher training. In practice, the study highlights the effectiveness of Project-Based Learning (PjBL) in fostering creativity, collaboration, and holistic development in early childhood education. It aligns with the goals of the Merdeka Curriculum, emphasizing active and engaging learning approaches tailored to young learners. Furthermore, policymakers are encouraged to integrate PjBL into curricula and provide support through teacher training programs, ensuring that educators are equipped to implement these methods effectively. This **research contributes** significantly to both theory and practice. Theoretically, it extends the application of Vygotsky's Zone of Proximal Development (ZPD) and Dewey's "learning by doing" concepts within the context of early childhood education. Practically, it bridges the gap between theory and implementation, showcasing how PjBL can be adapted to Indonesian classrooms through thematic, partial, and occasional approaches. These findings provide valuable insights for creating more dynamic and engaging learning environments that support children's cognitive, social, emotional, and physical development.

However, this study has **limitations** that warrant attention. The results are specific to certain settings and activities, limiting generalizability to broader contexts. Resource constraints, particularly in less-equipped schools, pose challenges for scaling PjBL. Additionally, the lack of a comprehensive assessment framework hinders a full evaluation of PjBL's effectiveness in addressing all aspects of early childhood development. These limitations highlight the need for further exploration to refine and expand the application of PjBL in diverse educational settings. **Future research** should focus on addressing these limitations and exploring new avenues. Longitudinal studies can provide insights into the long-term effects of PjBL on creativity and collaboration. The development of robust formative and summative assessment frameworks will help evaluate its impact comprehensively. Additionally, research on integrating digital tools with PjBL can support the

development of 21st-century skills in young learners. Scaling PjBL across diverse regions and contexts will further validate its effectiveness and adaptability in early childhood education.

CONCLUSION

Project-Based Learning (PjBL) is a constructivist-based learning approach that places students at the center of the learning process, provides real-world experiences, and supports the development of higher-order thinking skills. Based on this study, the PjBL approach has been proven effective in increasing student engagement, facilitating meaningful learning, and enhancing collaboration, critical thinking, and creativity in early childhood learners.

The novel contribution of this research lies in the adaptation of the PjBL model for early childhood education, emphasizing children's cognitive and emotional aspects in alignment with Vygotsky's ZPD theory and Dewey's "learning by doing" concept. This study also highlights that the implementation of PjBL at this educational level requires intensive scaffolding support from teachers to ensure project success.

The findings provide practical insights that integrating PjBL into the early childhood education curriculum not only enhances academic skills but also prepares children to face 21st-century challenges. However, the success of its implementation depends on teacher training, available resources, and appropriate evaluation strategies.

AUTHOR CONTRIBUTION STATEMENT

NAZ conceptualized the study, designed the research framework, led data collection, and drafted the manuscript. H contributed to methodological design, data validation, and manuscript revisions. NS conducted the literature review, contextualized the study, and refined the manuscript. All authors reviewed and approved the final version.

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