



JPM

Jurnal Pengabdian Mandiri

Volume 2 Issue 2, 2025 (71-

ISSN (*online*) : 3089-3070

Homepage : <https://jurnalunived.com/index.php/MANDIRI>

Doi : <https://doi.org/10.37676/mandiri>

Implementation of Project-Based Learning in Deep Learning by Early Childhood Education Teachers in the Bunga Tanjung Cluster, Bengkulu City

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Received [10-10-2025]

Revised [13-11-2025]

Accepted [15-11-2025]

Abstract. This community service activity aims to improve the competency of early childhood education (PAUD) teachers in Gugus Bunga Tanjung, Bengkulu City, in implementing project-based learning (PjBL) as part of the in-depth learning program in accordance with the Independent Curriculum. Implementation methods included initial observation, training in developing project-based lesson plans (RPP), mentoring in teaching practice, and reflection on implementation results. This activity involved 30 teachers who participated in a series of training and mentoring sessions throughout the program. Results demonstrated improved teacher skills in designing and implementing contextual projects, active participation of children in the learning process, and character strengthening through meaningful learning experiences. The implementation of PjBL has proven relevant to the principles of the Independent Curriculum and has had a positive impact on the quality of classroom learning. This activity recommends the continued development of project ideas appropriate to the local context, resource support from schools, and the formation of a learning community for early childhood teachers to share best practices in PjBL implementation.

Keywords: *Project-Based Learning, In-depth Learning, Bengkulu City.*

INTRODUCTION

Early Childhood Education (PAUD) is a fundamental educational stage that aims to stimulate all aspects of child development, starting from cognitive, language, social-emotional, motor skills, and character building. According to Yuliani (2023), early childhood education is a foundation that greatly determines the quality of a child's learning. at the next level, so that learning strategies must be designed in such a way as to ensure their meaningfulness and sustainability. The paradigm shift in education in Indonesia, adopted through the Independent Curriculum, emphasizes the importance of student -centered, contextual learning , and encouraging active student involvement (Ministry of Education, Culture, Research, and Technology, 2022).

One model aligned with this approach is Project-Based Learning (PjBL). This model emphasizes not only the achievement of final results in the form of a product or work, but also a learning process that allows children to observe, explore, design, and reflect on their activities (Thomas, 2020). Furthermore, the integration of deep learning concepts is becoming increasingly relevant. Deep learning in the context of early childhood education (PAUD) is not simply the transfer of knowledge, but rather connects children's learning experiences to real-life situations, developing critical thinking, collaboration, creativity, and communication skills (Fullan, 2021). Research by Widyaningsih (2024) shows that learning that combines PjBL with deep

learning principles can significantly improve children's motivation, conceptual understanding, and social skills. However, implementing PjBL in early childhood education (PAUD) is not without challenges. Teachers need skills in designing projects relevant to children's developmental levels, managing classes flexibly, and assessing learning processes and outcomes holistically (Arikunto, 2021). Other challenges include limited resources, time, and technical support in schools. Therefore, ongoing mentoring and training are necessary for teachers to effectively integrate PjBL and in-depth learning. This community service activity was conducted at Gugus Bunga Tanjung, Bengkulu City, as a form of higher education's contribution to improving the quality of education at the early childhood education (PAUD) level. Through training, mentoring, and evaluation of the implementation of PjBL, it is hoped that teachers can optimize the learning process so that children experience meaningful, enjoyable, and relevant learning experiences.

RESEARCH METHODS

This community service activity uses a participatory approach, actively involving teachers in every stage. This approach was chosen to ensure that the training and mentoring process is not one-way but rather provides space for collaboration between the community service team and teachers at the Gugus Bunga Tanjung, Bengkulu City. The activity phase begins with initial observations to identify the actual conditions of the ongoing learning process. Observations are conducted through classroom visits, brief interviews with teachers, and a review of the Learning Implementation Plan (RPP) documents used. This activity aims to determine the extent of teachers' understanding of project-based learning and the application of principles. deep learning. The next stage is training and workshops. In this stage, teachers are provided with a theoretical understanding of the concepts of Project-Based Learning (PjBL) and deep learning, based on current literature, along with examples of their application in the Early Childhood Education (ECE) context.

After the theory session, practical activities are carried out, including a simulation of developing a project-based lesson plan (RPP) incorporating elements of deep learning. Next, implementation assistance is provided in the classroom. The teacher applies the design. project Which has arranged on activity Study together child, temporary team devotion to conducting observations, providing input, and helping to overcome obstacles that arise during the learning process. The final stage is evaluation and reflection. This activity is carried out through group discussions to assess the success of the implementation, identify challenges, and develop recommendations for improvement. The evaluation process is conducted qualitatively through in-depth interviews and direct observation of children's work, their involvement in the project, and the character development developed during the learning process.

RESULTS AND DISCUSSION

Results

Community service activities at the Tanjung Flower Cluster in Bengkulu City have had a positive impact, seen in improving teacher competency, learning quality, and child development. Twenty-five teachers participated in the activity. who are actively involved in every stage, starting from training, preparation of Learning Implementation Plans (RPP), to project implementation in class.

After participating in a series of training and mentoring sessions, the teachers demonstrated significant improvement in their conceptual understanding of project-based learning. A simple pre-test and post-test evaluation showed an increase in the average comprehension score from 62% to 88% . Teachers not only gained a clearer understanding of the principles and stages of Project-Based Learning (PjBL), but were also able to differentiate PjBL from conventional thematic learning.

Teachers' ability to design lesson plans has also significantly improved. They can create lesson plans that include learning objectives, activity flow, media selection, and assessment instruments that focus on the learning process and product. Teachers' creativity has also grown, as evidenced by the use of locally sourced learning materials such as used bottles, cardboard, and plants found around the school to support project implementation.

Improvements in the quality of learning were also evident during the project's implementation. Children were seen to be more active in asking questions, expressing opinions, and participating in group activities. The projects addressed themes relevant to their lives, children, such as "Making a Garden Mini at School" and "Toy Market Traditional," so they can connect learning concepts to real-life experiences. Furthermore, teachers are able to integrate various aspects of child development into a single project, from numeracy and language skills to art and social skills.

The results of the observations also show a positive impact on development. Children's social skills improve through group work, sharing roles, and respecting the opinions of their peers. Their creativity is evident in the unique work they produce, in accordance with imagination each, such as park mini or toys traditional Homemade. Furthermore, children develop a sense of responsibility and independence because they are actively involved from the planning stage to the completion of the project.

The project's implementation also encouraged the involvement of other parties within the school environment. Parents and school staff participated by providing materials and providing support during activity taking place, so that created ecosystem learning collaborative between schools, families, and communities.

However, there are several challenges faced during the implementation of these activities, such as time constraints amidst a busy school schedule, varying student abilities that require differentiated learning, and limited available materials and tools. However, these obstacles can be overcome through teachers' creativity in utilizing resources. Power local and collaboration with various party. In a way overall, results activity

shows that PAUD teachers in Gugus Bunga Tanjung, Bengkulu City are able to implement project-based learning that leads to in-depth learning, although further mentoring is needed to maintain the quality and sustainability of the program.

Discussion

Implementation activities of project-based learning in in-depth learning by PAUD teachers in Tanjung Flower Cluster, Bengkulu City, shows there is an increase in understanding Teacher about planning, implementation, and evaluation learning. As many as

The 12 teachers who participated in the training were able to apply project-based learning principles in their lesson plans. The average increase in teachers' understanding and skills was in the "good" category, with a significant percentage increase compared to before the training.

Project-Based Learning (PjBL) is oriented towards involvement active students in solve the problem real, do exploration, and producing meaningful products (Kokotsaki, 2020). In the context of early childhood education (PAUD), PjBL encourages children to learn through direct experience, develop curiosity, and practice social and communication skills.

The implementation of deep learning in early childhood education (PAUD) refers to an approach that emphasizes not only memorization but also conceptual understanding, connections between materials, and application in everyday life (Fullan, 2021). By combining PjBL and deep learning, teachers can create relevant, challenging, and child-centered learning experiences.

Results observation show that after training, teachers become more creative in designing projects that are appropriate to the characteristics of early childhood. For example, the "Mini Garden at School" project involves children in the process of planting, caring for, and observing

plant growth. This activity integrates various aspects of child development, such as cognitive, fine motor, language, and socio-emotional skills (Kemendikbudristek, 2022).

Furthermore, collaboration between teachers increased due to group discussions in developing project-based lesson plans. According to Wahyuni (2023), teacher collaboration in lesson planning can improve the quality of learning and strengthen a sense of community within the school environment.



Figure 1 Participant Early Childhood Education Teacher in Group Flower Cape City Bengkulu in participating in PKM activities

Project implementation also had a positive impact on parental involvement. Teachers reported that parents became more active in helping their children at home, for example by providing materials or assisting children in working on projects. This parental involvement aligns

with Pramono's (2024) findings, which state that family support is a crucial factor in the successful implementation of project-based learning in early childhood education.

Thus, the application of PjBL in in-depth learning not only improves teachers' teaching skills, but also contributes to the achievement of holistic, creative, and contextual early childhood education goals.

CONCLUSION

The implementation of project-based learning at the Tanjung Flower Cluster in Bengkulu City has successfully improved teacher competency and children's engagement in the in-depth learning process. Of the 25 teachers who participated in the activity, 22 (88%) showed significant improvement in their competency in designing and implementing project-based learning, while 3 (12%) still required further mentoring. The Project-Based Learning (PjBL) model has proven relevant to the Independent Curriculum approach, as it provides meaningful learning experiences, encourages character building in children, and develops collaboration, communication, creativity, and problem-solving skills. The results of this community service demonstrate that PjBL can be an effective learning strategy for improving the quality of early childhood education, particularly in PAUD settings.

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