



# The Effect of Project-Based Learning on Children's Mathematical Ability and Social Skills in Kindergarten

Yesi Susanti<sup>1\*</sup>, Nurhafizah<sup>2</sup>, Setiyo Utoyo<sup>2</sup>, Serli Marlina<sup>2</sup>

<sup>1</sup>Master of Early Childhood Education Study Program, Faculty of Education, Universitas Negeri Padang, Padang, Indonesia.

<sup>2</sup>Early Childhood Education Study Program, Faculty of Education, Universitas Negeri Padang, Padang, Indonesia.

Received: January 28, 2026

Revised: March 12, 2026

Accepted: April 25, 2026

Published: April 30, 2026

Corresponding Author:

Yesi Susanti

[yesi.susanti01@gmail.com](mailto:yesi.susanti01@gmail.com)

DOI: [10.29303/jppipa.v12i4.14446](https://doi.org/10.29303/jppipa.v12i4.14446)

 Open Access

© 2026 The Authors. This article is distributed under a (CC-BY License)



**Abstract:** This study aims to analyze the effect of Project-Based Learning (PjBL) on improving early childhood mathematical abilities and social skills among children aged 5–6 years. The research employed a quantitative approach using a quasi-experimental design with a non-equivalent control group pretest–posttest design. The sample consisted of 74 kindergarten students divided into experimental and control groups. Data were collected through performance tests to assess mathematical abilities and observation sheets to measure social skills. Data analysis was conducted using the non-parametric Wilcoxon test. The results indicate a significant improvement in the experimental group compared to the control group. The average mathematical ability score increased from 12.54 (pretest) to 27.35 (posttest), with the highest N-Gain (0.87) observed in the counting indicator. Similarly, social skills improved from an average score of 1.24 to 2.79, with the highest N-Gain (0.92) in communication aspects. Statistical analysis revealed a significance value of  $p < 0.001$ , indicating that the implementation of PjBL had a statistically significant effect. These findings suggest that PjBL facilitates meaningful and contextual learning experiences, enabling children to construct mathematical understanding through concrete activities while simultaneously enhancing social interaction through collaborative tasks. In conclusion, Project-Based Learning is an effective and developmentally appropriate approach for improving both mathematical abilities and social skills in early childhood education settings.

**Keywords:** Early childhood education; Mathematical ability; Project-based learning; Social skills; Quasi-experimental design

## Introduction

Early Childhood Education (PAUD) is a strategic foundation in the national education system because it plays a role in optimizing children's cognitive, social, and emotional development from an early age. Law Number 20 of 2003 concerning the National Education System emphasizes that PAUD is intended to provide educational stimulation from birth to the age of six in order to prepare learning readiness at the next level (Shomiyatun, 2018). In this phase, children are in the golden age period, which is a period that is very sensitive to various environmental stimuli, so the quality of the learning experience provided will greatly determine the child's long-term development

(Nurhafizah, 2018; Syahrul et al., 2021). Therefore, learning at this stage must be designed systematically, contextually, and in accordance with the characteristics of the child's development.

One of the crucial aspects of development at the age of 5–6 is basic math skills and social skills. Mathematical skills are not only limited to counting activities, but also include the ability to think logically, understand the concept of quantity, as well as relate concrete experiences with abstract symbols (Az-Zahra et al., 2025; Lefevre et al., 2022; Setiyo, 2018). In the perspective of Piaget's theory of cognitive development, early childhood is at a preoperational stage, where the thought process is still concrete and simple symbolic, so mathematics learning must be based on direct

### How to Cite:

Susanti, Y., Nurhafizah, Utoyo, S., & Marlina, S. (2026). The Effect of Project-Based Learning on Children's Mathematical Ability and Social Skills in Kindergarten. *Jurnal Penelitian Pendidikan IPA*, 12(4), 410–416. <https://doi.org/10.29303/jppipa.v12i4.14446>

experience and manipulation of real objects. However, various studies show that the practice of learning mathematics in kindergarten is still dominated by conventional approaches that are classical and memorization-based, so they do not support the construction of knowledge in a meaningful way (Aini et al., 2022; Darnis et al., 2021; Suryana et al., 2025).

On the other hand, social skills such as cooperation, communication, empathy, and the ability to interact are essential competencies that must be developed from an early age. Vygotsky's theory of social constructivism emphasizes that social interaction has a fundamental role in children's cognitive development through the concept of zone of proximal development (ZPD), where children learn optimally through collaboration with peers and adults (Syahrul et al., 2022). In addition, in Erikson's psychosocial development perspective, early childhood is at the initiative versus guilt stage, which requires space for children to take initiative, interact, and actively participate in their social environment. However, in learning practices in the field, the development of social skills is often not systematically integrated in learning activities (Novrianti et al., 2024; Wahyuni et al., 2022).

The gap between child development theory and learning practice is reinforced by empirical findings at Pembina Kinali State Kindergarten, which shows that most children are still in the "undeveloped" category in math and social skills with a percentage of 61.7%. The results of observations and interviews with teachers indicate that the limited use of interactive learning methods and the lack of use of concrete media are the main factors that hinder children's development. This condition shows that there is an urgent need for pedagogical innovation that is able to integrate concrete learning experiences with children's cognitive and social development simultaneously (Atiasih, 2025; Erviana et al., 2024; Nurfauziyyah et al., 2025).

Theoretically and empirically, Project-Based Learning (PjBL) is seen as a relevant approach to answer these problems. PjBL places children as active subjects in the learning process through direct involvement in meaningful, contextual, and collaborative projects (Bell, 2010; Sumarni et al., 2021; Susilawati et al., 2023). This approach is in line with the principles of constructivism which emphasizes that knowledge is built through real experience and social interaction. In addition, PjBL has also been proven to be able to improve critical thinking, problem-solving, and social skills through structured group work activities (Amri et al., 2026; Handayani et al., 2022). In the context of early childhood education, the application of PjBL allows children to learn mathematics contextually through environmental exploration while developing social skills through collaborative interaction.

However, research that specifically examines the effectiveness of Project-Based Learning in improving early childhood mathematics and social skills, especially in the context of kindergarten education in Indonesia, is still relatively limited. Most previous studies have tended to focus on only one aspect of development, so they have not provided a comprehensive picture of the integration between cognitive and social aspects in a single learning approach. This limitation is an important research gap to be studied further.

Based on this description, this study was conducted for the main reasons to: (1) overcome the gap between child development theory and learning practice in the field, (2) provide empirical evidence on the effectiveness of Project-Based Learning in simultaneously improving mathematical skills and social skills, and (3) provide practical contributions for teachers and early childhood education institutions in designing innovative learning that is in accordance with the characteristics of child development. Therefore, this study aims to analyze the influence of Project-Based Learning on the mathematical abilities and social skills of children aged 5-6 years in kindergarten.

## Method

### *Research Time and Location*

This research was carried out at the Pembina Kinali State Kindergarten, West Pasaman Regency, West Sumatra. The selection of the location was based on the results of a preliminary study that showed the child's low mathematical ability and social skills as well as the dominance of conventional learning. The research was carried out in the odd semester of the 2024/2025 school year, which included the preparation, implementation, and data analysis stages.

### *Research Methods*

This study uses a quantitative approach with a quasi experimental type. The design used was the Non-Equivalent Control Group Pretest-Posttest Design, which allowed researchers to compare changes in children's mathematical abilities and social skills before and after treatment, both in the experimental group and the control group.

The research population was all children aged 5-6 years at Pembina Kinali State Kindergarten. The research sample amounted to 74 children who were divided into two groups, namely the experimental group and the control group. The sampling technique uses purposive sampling by considering the equality of child development characteristics and classroom readiness.

The experimental group was given treatment in the form of Project-Based Learning (PjBL)-based learning

through mock-up project activities, while the control group used conventional learning that is commonly applied in schools.

*Research Stages*

This research is carried out through several systematic stages as follows:



**Figure 1.** Research stages

The research stage describes the systematic flow of research implementation starting from the preliminary study stage to identify the main problems in the field, then continued with research planning which includes the preparation of Project-Based Learning (PjBL)-based learning design and instrument validation. After that, the sample was determined which was divided into experimental and control groups, followed by the implementation of a pretest to determine the child's initial ability. The next stage is treatment, where the experimental group gains PjBL learning while the control group uses conventional methods.

After the treatment is completed, a posttest is carried out to measure the improvement of the child's mathematical ability and social skills. The data obtained was then analyzed using the Wilcoxon test and N-Gain calculation to determine the level of effectiveness of the treatment, so that in the end the research results were obtained which became the basis for drawing conclusions objectively and empirically.

*Data Collection Instruments and Techniques*

The research instruments consisted of: Performance test: to measure children's math skills that include indicators of number recognition, counting, and understanding of quantity concepts. Observation sheet: to assess children's social skills which include aspects of cooperation, communication, sharing, and sportsmanship.

The instrument has been tested for validity by material experts and instrument experts and tested for reliability before being used in research.

*Data Analysis Techniques*

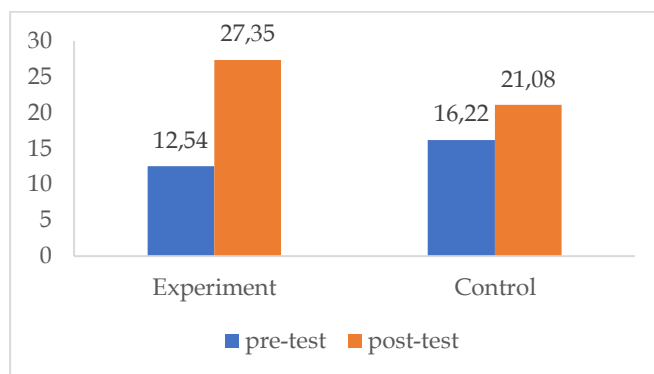
Data analysis was carried out using non-parametric statistics because the data was not normally distributed. The test used is the Wilcoxon Signed Rank Test to find out the difference in pretest and posttest scores in each group.

In addition, the improvement of the child's ability was analyzed using the N-Gain value to determine the level of effectiveness of the treatment. The N-Gain interpretation is categorized into three categories, namely low, medium, and high. The entire analysis process is carried out with the help of statistical software to ensure the accuracy and objectivity of the results.

**Result and Discussion**

The results of this study indicate that the implementation of Project-Based Learning (PjBL) has a statistically significant and practically meaningful effect on improving both mathematical abilities and social skills of children aged 5–6 years. Descriptive findings reveal that the experimental group experienced a substantial increase in posttest scores compared to the control group, confirming the effectiveness of PjBL over conventional learning approaches.

In terms of mathematical ability, the experimental group showed a sharp increase from a mean pretest score of 12.54 to 27.35 in the posttest, while the control group only reached 21.08. The highest improvement was observed in the indicator of counting quantities and associating them with number symbols (N-Gain = 0.87, high category). This finding suggests that PjBL facilitates meaningful learning by engaging children in concrete and contextual experiences, enabling them to construct mathematical understanding actively rather than relying on rote memorization.



**Figure 2.** Comparison of average math ability

These results are consistent with previous studies indicating that early childhood numeracy develops optimally when children are involved in experiential and context-based learning activities (Chiquet et al., 2023; Iskandar et al., 2024; Lefevre et al., 2022). Furthermore, project-based learning significantly enhances logical thinking and numeracy skills in early childhood through active exploration and manipulation of learning materials (Pangestuti et al., 2024). Similarly, PjBL promotes deeper conceptual understanding by integrating knowledge construction with real-world problem-solving contexts (Williamson, 2025).

From a theoretical perspective, these findings reinforce Piaget’s cognitive development theory, particularly in the preoperational stage, where children learn best through concrete experiences (Piaget, 1952; Setiyo, 2018). The use of mock-up projects in this study provides tangible learning media that help bridge the gap between abstract numerical concepts and children’s real-life experiences. In addition, the findings align with constructivist learning principles, which highlight the importance of active engagement and knowledge construction (Syahrul et al., 2021).

In terms of social skills, the experimental group also demonstrated a significant increase, with average scores rising from 1.24 to 2.79. The most prominent improvements were observed in communication and cooperation aspects, with an N-Gain value reaching 0.92 (high category). This indicates that PjBL not only enhances cognitive outcomes but also plays a crucial role in fostering children's social-emotional development.

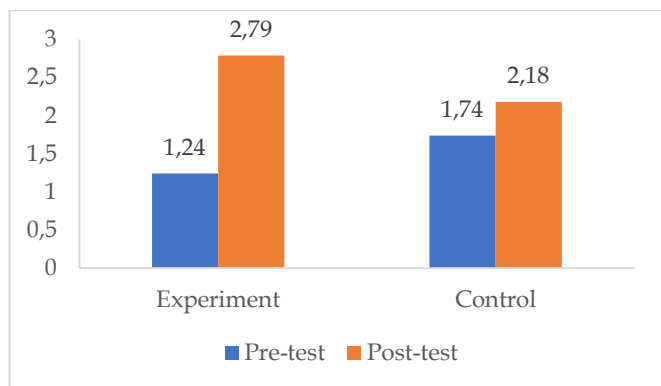


Figure 3. Comparison of social skills average

This finding is supported by previous research showing that collaborative learning environments, such as those created through PjBL, effectively promote social interaction, communication, and teamwork among young learners (Novrianti et al., 2024; Saputri et al., 2024; Susilawati et al., 2025). In line with this, experiential learning approaches encourage students to actively participate in group activities, thereby improving interpersonal skills (Efstratia, 2014). Moreover,

Georgieva et al. (2021) found that active learning strategies significantly enhance children's social interaction and cooperative behavior in early childhood settings.

The improvement in social skills observed in this study can also be explained through Vygotsky’s social constructivist theory, which emphasizes the role of social interaction in cognitive and social development (Vygotsky et al., 1978). Through collaborative project activities, children engage in meaningful dialogue, negotiate roles, and solve problems collectively, which contributes to the development of higher-order social competencies (Ceballos et al., 2026; Gauci, 2025; Lee et al., 2015). Additionally, this aligns with Erikson’s psychosocial development theory, particularly the initiative versus guilt stage, where children develop confidence and social initiative through active participation in group activities (Erikson, 1963; Parvin, 2025).

Table 1. Wilcoxon Test

Test Statistics <sup>a</sup>	
	Pretest - Posttest
Z	-5.312b
Asymp. Sig. (2-tailed)	<.001

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks

Statistical analysis using the Wilcoxon test yielded a significance value of < 0.001, indicating a very significant difference between pretest and posttest scores in the experimental group. This confirms that the observed improvements are not incidental but are a direct result of the PjBL intervention. The use of non-parametric analysis is appropriate given the non-normal distribution of the data and the characteristics of early childhood subjects (Creswell, 2017).

Overall, the findings of this study are in line with a growing body of literature that highlights the effectiveness of Project-Based Learning in early childhood education. Bell (2010) and Zhang et al. (2021) emphasize that PjBL supports the development of 21st-century skills, including critical thinking, collaboration, and communication. In the context of early childhood education, this approach is particularly relevant as it integrates cognitive and social development in a holistic and developmentally appropriate manner.

Thus, this study not only confirms the effectiveness of PjBL in improving mathematical abilities and social skills but also strengthens previous empirical findings by providing evidence within the context of early childhood education in Indonesia. The integration of project-based activities with concrete learning media offers a promising pedagogical alternative to address the

limitations of conventional, teacher-centered approaches.

## Conclusion

Based on the results and discussion, it can be concluded that the implementation of Project-Based Learning (PjBL) significantly and effectively improves the mathematical abilities and social skills of children aged 5–6 years in kindergarten. The improvement in mathematical ability was seen from a substantial increase in scores in the experimental group, especially in the indicators of counting and relating quantities to number symbols, which showed that project-based learning was able to facilitate the construction of knowledge through concrete and contextual experiences. In addition, children's social skills, especially in the aspects of communication and cooperation, have also experienced a high increase as a result of children's active involvement in collaborative activities during the learning process. These findings are strengthened by the results of statistical tests that show significant differences between before and after treatment, thus confirming that PjBL is an effective, holistic, and appropriate learning approach in accordance with the characteristics of early childhood development in integrating cognitive and social aspects optimally.

## Acknowledgments

I would like to thank all those who have supported the completion of this article. Thank you to the supervisor who has provided meaningful direction and guidance. I also appreciate all colleagues and parties who have contributed to the Project-Based Learning on children's mathematical abilities and social skills in kindergarten, as well as those who have provided opportunities and support during the research process.

## Author Contributions

Yesi Susanti: Research concept, media design, data collection, analysis, article writing. Nurhafizah: Theory development, methodology, data analysis, article revision. Setiyo Utoyo: Initial media design, product trial, data collection, analysis. Serli Marlina: Field testing, data processing, media evaluation, writing trial results.

## Funding

This research was independently funded by the researcher.

## Conflicts of Interest

The authors declare no conflict of interest.

## References

Aini, A. N., Widjayatri, R. D., Fatihatusyidah, Esya Anesty Mashudi, Lizza Suzanti, & Budhi Tristyanto. (2022). Implementation of Mathematics

Learning For Early Childhood Through The Traditional Bekel Ball Game. *JOYCED: Journal of Early Childhood Education*, 2(2), 236–246. <https://doi.org/10.14421/joyced.2022.22-13>

Amri, N. A., & Hakim, A. (2026). Analisis Kebutuhan Pengembangan Metode Project-Based Learning (PjBL) untuk Kemampuan Berpikir Kritis Anak di Taman Kanak-Kanak. *Student Journal of Early Childhood Education*, 6(1), 56–72. <https://doi.org/10.37411/sjece.v6i1.4516>

Atiasih, A. (2025). Inovasi Pembelajaran Matematika Anak Usia Dini Berbasis STEAM Melalui Media Loose Parts untuk Membangun Kompetensi Abad 21. *Jurnal Syntax Imperatif: Jurnal Ilmu Sosial Dan Pendidikan*, 6(4), 1104–1113. <https://doi.org/10.54543/syntaximperatif.v6i4.795>

Az-Zahra, R. T., Suryana, D., Yaswinda, & Eliza, D. (2025). Development of Smart Box Media Based on QR Code Technology to Improve Early Childhood Numerical Literacy Skills. *Jurnal Penelitian Pendidikan IPA*, 11(3), 80–86. <https://doi.org/10.29303/jppipa.v11i3.10538>

Bell, S. (2010). Project-Based Learning for the 21st Century: Skills for the Future. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 83(2), 39–43. <https://doi.org/10.1080/00098650903505415>

Ceballos, H., Bogaart, T. Van Den, van Ginkel, S., Spandaw, J., & Drijvers, P. (2026). How collaborative problem solving promotes higher-order thinking skills: A systematic review of design features and processes. *Thinking Skills and Creativity*, 59, 102001. <https://doi.org/10.1016/j.tsc.2025.102001>

Chiquet, S., Martarelli, C. S., Weibel, D., & Mast, F. W. (2023). Learning by teaching in immersive virtual reality – Absorption tendency increases learning outcomes. *Learning and Instruction*, 84(September 2022). <https://doi.org/10.1016/j.learninstruc.2022.101716>

Creswell, J. W. (2017). *Research Design; Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks, CA: SAGE Publications.

Darnis, S., & Dodd, J. (2021). Increasing the Learning Result of Early Mathematics Odd and Even Numbers through Montessori “Cards and Counters” Activity: A Quasi-experimental Study. *Al-Athfal: Jurnal Pendidikan Anak*, 7(2), 99–110. <https://doi.org/10.14421/al-athfal.2021.72-01>

Efstratia, D. (2014). Experiential education through project based learning. *Procedia - Social and Behavioral Sciences*, 152, 1256–1260. <https://doi.org/10.1016/j.sbspro.2014.09.362>

- Erikson, E. H. (1963). *Childhood and Society, 2nd Edn New York*. Norton.
- Erviana, Y., Kasanah, U., Sari, N., Munawir, A. N. E. R., Mahendra, Y., Munawaroh, S., Maulidia, L. N., Fajrinur, Mulyawan, G., Mulyani, N. S. R. D., Sitio, D. S., Kara, Y. M. D. K., Muzdalifah, F., Larekeng, S. H., Separ, F. M., Sari, D. D., Sari, M., Rahmawati, E. dan, & Yansa, H. (2024). *Perkembangan Anak Usia Dini*. Mifandi Mandiri Digital.
- Gauci, S. A. (2025). Advancing Higher-Order Thinking Skills in Early Childhood: A Conceptual Framework for a Thinking-based Pedagogy in Maltese Kindergarten Schools. *Malta Journal of Education*, 6(02), 89-109. <https://doi.org/10.62695/uhso3751>
- Georgieva, G. D., Macedonia, N., Horvatovikj, V., Macedonia, N., Vasilevska, V. T., & Macedonia, N. (2021). Integration Of Digital Tools In Early Childhood: Focus On Play-Based Learning, Active Learning, And Social Interaction. *KNOWLEDGE-International Journal*, 71, 267-271. Retrieved from <https://www.ceeol.com/search/article-detail?id=1383940>
- Handayani, A., & Sinaga, S. I. (2022). Penerapan Model Project Based Learning dalam Meningkatkan Kemampuan Berpikir Kritis Anak Usia Dini. *PAUD Lectura: Journal of Early Childhood Education*, 5(1), 2598-2060. <https://doi.org/10.31849/paud-lectura.v>
- Iskandar, B., Hashipah, H., & Zulaeha, V. S. (2024). Integrasi Lingkungan dalam Pembelajaran Matematika: Studi Literatur Pembelajaran Konstektual Berbasis Lingkungan bagi Anak Usia Dini. *Jurnal Paud Agapedia*, 8(2), 243-252. <https://doi.org/10.17509/jpa.v8i2.78851>
- Lee, D., Huh, Y., & Reigeluth, C. M. (2015). Collaboration, intragroup conflict, and social skills in project-based learning. *Instructional Science*, 43(5), 561-590. <https://doi.org/10.1007/s11251-015-9348-7>
- Lefevre, J. A., Skwarchuk, S. L., Sowinski, C., & Cankaya, O. (2022). Linking Quantities and Symbols in Early Numeracy Learning. *Journal of Numerical Cognition*, 8(1), 1-23. <https://doi.org/10.5964/jnc.7249>
- Novrianti, W., & Nurhafizah, N. (2024). Implementasi Media Papan Pintar Angka Modifikasi Dalam Mengembangkan Kemampuan Berhitung Anak Di Taman Kanak-Kanak Islam Shabrina. *Bunayya : Jurnal Pendidikan Anak*, 10(2), 263. <https://doi.org/10.22373/bunayya.v10i2.25182>
- Nurfauziyyah, A., Gandana, G., & Rizqi, A. M. (2025). Analisis Pengembangan Permainan Numeration Board Untuk Mengenalkan Numerasi Pada Anak Usia 5-6 Tahun. *INNOVATIVE: Journal Of Social Science Research*, 5(4), 1-11. Retrieved from <https://j-innovative.org/index.php/Innovative/article/view/20939>
- Nurhafizah, N. (2018). Pelatihan Pembuatan Media Pembelajaran Anak Usia Dini Menggunakan Bahan Sisa. *Early Childhood : Jurnal Pendidikan*, 2(2b), 44-53. <https://doi.org/10.35568/earlychildhood.v2i2b.288>
- Pangestuti, D. Y., Iriyanto, T., & Anisa, N. (2024). Penerapan Metode Pembelajaran Berbasis Proyek untuk Meningkatkan Kemampuan Berpikir Logis pada Anak Kelompok B di KB-TK Anak Teladan Kota Malang. *SIBERNETIK: Jurnal Pendidikan Dan Pembelajaran*, 2(1), 38-45. <https://doi.org/10.59632/sjpp.v2i1.268>
- Parvin, A. (2025). Integrating Social-Emotional Learning (SEL) into Early Childhood Curriculum. *Journal of Pediatric Medicine and Health Sciences*, 3(5), 2993-2149. Retrieved from <http://eprints.umsida.ac.id/16106/>
- Piaget, J. (1952). *The Origins of Intelligence in Children*. New York: International Universities Press.
- Saputri, W. D., Mahardani, A. J., & Wulansari, B. Y. (2024). Enhancing Early Childhood Creativity through Project-Based Learning: Indonesian Traditions at KJRI Penang. *Lectura : Jurnal Pendidikan*, 15(2), 497-508. <https://doi.org/10.31849/lectura.v15i2.20631>
- Setiyo. (2018). *Metode Pengembangan Matematika Anak Usia Dini*. Ideas Publishing.
- Shomiyatun, S. (2018). Menanamkan Budaya Literasi Pada Anak. *Abdau: Jurnal Pendidikan Madrasah Ibtidaiyah*, 1(2), 148-172. <https://doi.org/10.36768/abdau.v2i1.41>
- Sumarni, S., Putri, R. I. I., & Andika, W. D. (2021). Project Based Learning (PBL) Based Lesson Study for Learning Community (LSLC) in kindergarten. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(2), 989-996. <https://doi.org/10.31004/obsesi.v6i2.1637>
- Suryana, D., & Az-Zahra, R. T. (2025). QR Code-Based Animated Videos to Improve Early Childhood Numeracy Literacy Skills. *Proceedings of the 7th International Conference on Early Childhood Education*, Icece, 252-257. <https://doi.org/10.5220/0014069800004935>
- Susilawati, Doyan, A., Rokhmat, J., & Mulyadi, L. (2023). Analysis Validation of Modern Physics Learning Media Based on Smartphone Integrated Project Based Learning to Improve Students' Creativity and Scientific Literacy. *Jurnal Penelitian Pendidikan IPA*, 9(10), 7888-7892. <https://doi.org/10.29303/jppipa.v9i10.5404>
- Susilawati, Doyan, A., Rokhmat, J., Mulyadi, L., Rizaldi,

- D. R., Fatimah, Z., Ikhsan, M., & Ardianti, N. R. (2025). Integration of Smartphone-Based Learning Media and Project-Based Learning to Enhance Creativity and Scientific Literacy in Physics. *International Journal of Information and Education Technology*, 15(7), 1449–1459. <https://doi.org/10.18178/ijiet.2025.15.7.2346>
- Syahrul, S., & Nurhafizah, N. (2021). Analisis Pengaruh Pola Asuh Orang Tua Terhadap Perkembangan Sosial dan Emosional Anak Usia Dini Dimasa Pandemi Corona Virus 19. *Jurnal Basicedu*, 5(2), 683–696. <https://doi.org/10.31004/basicedu.v5i2.792>
- Syahrul, S., & Nurhafizah, N. (2022). Analisis Pola Asuh Demokratis terhadap Perkembangan Sosial dan Emosional Anak di Masa Pandemi Covid-19. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(6), 5506–5518. <https://doi.org/10.31004/obsesi.v6i6.1717>
- Vygotsky, L. S., & Cole, M. (1978). *Mind in Society: Development of Higher Psychological Processes*. Harvard University Press.
- Wahyuni, A., & Sari, N. F. (2022). Peningkatan Keterampilan Sosial melalui Metode Bermain Kooperatif Tipe Make A Match pada Anak Usia Dini. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(6), 6961–6969. <https://doi.org/10.31004/obsesi.v6i6.2300>
- Williamson, E. (2025). Effectiveness of Project-Based Learning in Developing Critical Thinking Skills among Secondary School Students. *Pakistan Languages and Humanities Review*, 9(III), 1–11. [https://doi.org/10.47205/plhr.2025\(9-iii\)35](https://doi.org/10.47205/plhr.2025(9-iii)35)
- Zhang, L., Li, S., & Zhao, Q. (2021). A review of research on adakites. *International Geology Review*, 63(1), 47–64. <https://doi.org/10.1080/00206814.2019.1702592>