

A COMMUNITY SERVICE INITIATIVE AT SD SUGIWARAS 1 TUBAN: GAME-BASED LEARNING FOR PROBLEM-SOLVING TO ENHANCE ELEMENTARY STUDENTS' CRITICAL THINKING

Ahmad Khoirul Fuadi¹, Firman Maulana Zikri², Sintya Wati³, Sinta Nuriya⁴,
Diva Meisyatus Sa'adah⁵, Eva Fitriatul Imah⁶, Miftakhur Rohman⁷, Saidatul
Muthoharoh Falihah⁸, M Misbahul Faizin⁹

¹ Institut Teknologi dan Bisnis Tuban, Indonesia

² Institut Teknologi dan Bisnis Tuban, Indonesia

³ Institut Teknologi dan Bisnis Tuban, Indonesia

⁴ Institut Teknologi dan Bisnis Tuban, Indonesia

⁵ Institut Teknologi dan Bisnis Tuban, Indonesia

⁶ Institut Teknologi dan Bisnis Tuban, Indonesia

⁷ Institut Teknologi dan Bisnis Tuban, Indonesia

⁸ Institut Teknologi dan Bisnis Tuban, Indonesia

⁹ Institut Teknologi dan Bisnis Tuban, Indonesia

ABSTRACT

This paper explored the outcomes of a game-based learning initiative conducted at SD Sugiwaras 1 Tuban, focusing on its potential to foster critical thinking, teamwork, and problem-solving skills among elementary school students. The program incorporated interactive games such as Estafet Sarung, Memindahkan Gelas dengan Balon, and Estafet Karet, which promoted collaboration, creative problem-solving, and emotional regulation. Findings from the initiative aligned with established theories of cooperative learning, social interactionism, and self-efficacy, emphasizing the value of playful learning activities in enhancing cognitive and social skills. The results demonstrated the effectiveness of game-based learning in improving interpersonal relationships, peer interactions, and social-emotional development, supporting its integration into broader educational practices. The study highlighted the role of scaffolding and teacher facilitation in overcoming initial challenges, illustrating the transformative impact of theory-based interventions in real-world educational contexts.

Keywords: *Community Service, Game-Based Learning, Problem Solving, Critical Thinking, Elementary School Students*

Corresponding Author:

Ahmad Khoirul Fuadi, khoirulfuadi1217@gmail.com

Article History:

Received : April 10, 2026

Revised : May 4, 2026

Accepted : June 18, 2026

I. INTRODUCTION

Critical thinking and problem-solving are increasingly recognized as essential competencies for elementary school students because they enable learners to analyze information, evaluate alternatives, make reasoned decisions, and respond effectively to unfamiliar situations. Developing these competencies from an early age is particularly important because elementary education provides the foundation for students' subsequent academic development and lifelong learning. Recent research indicates that active and problem-oriented learning approaches can support the development of higher-order thinking skills among elementary students by encouraging them to investigate problems, generate solutions, justify their ideas, and reflect on their learning processes (Mustofiyah & Muhibbin, 2024; Putri et al., 2026). Thus, learning environments should move beyond activities that primarily emphasize memorization and procedural knowledge toward experiences that provide students with opportunities to think, explore, and solve meaningful problems.

One instructional approach that offers such opportunities is game-based learning (GBL). GBL integrates educational objectives with structured game activities, allowing students to learn through challenges, rules, decision-making, feedback, and interaction. A systematic review of game-based learning in primary education found that intellectual problem-solving is among the most frequently incorporated game elements, while empirical studies generally report positive cognitive outcomes, although the effectiveness of GBL depends substantially on how games are pedagogically designed and integrated into instruction (Guan et al., 2024). Similarly, a meta-analysis involving 20 empirical studies and 1,947 participants reported a significant positive overall effect of GBL on students' critical thinking, suggesting that appropriately designed game experiences can provide meaningful opportunities for higher-order cognitive engagement (Mao et al., 2022).

The relationship between educational games and problem-solving is also supported by recent studies focusing specifically on elementary education. Giannakoulas and Xinogalos (2024), through a systematic review of 61 studies, found that educational games can support the development of computational thinking and related problem-solving processes among primary school students. More recent literature further emphasizes that effective digital game-based learning is not determined merely by the presence of technology, but by

pedagogical alignment, clear learning objectives, progressive scaffolding, feedback, and student-centered activities (Hasanah et al., 2026). In the Indonesian context, a recent systematic review of game-based learning using card and board games also reported positive associations with critical thinking and argumentation through collaborative discussion and problem-solving activities, while identifying teacher capacity, instructional time, and learning-resource availability as important implementation considerations (Yulianto & Cahyani, 2025).

Despite these promising findings, the development of critical thinking and problem-solving among elementary students remains an important pedagogical challenge. Students may encounter difficulties when they are required to identify problems, consider alternative solutions, explain their reasoning, or make decisions in unfamiliar situations. Such challenges indicate the need for learning activities that are developmentally appropriate, engaging, collaborative, and sufficiently challenging to stimulate students' cognitive processes. Recent systematic reviews of elementary education similarly highlight the importance of active learning models that provide students with contextual problems and opportunities to analyze, evaluate, and construct solutions rather than simply reproduce previously learned information (Rahayu et al., 2026; Saputri et al., 2026).

SD Sugiwaras 1 Tuban, East Java, was selected as the setting for this community service initiative because preliminary observations indicated that students needed greater opportunities to practice problem-solving and critical thinking through interactive learning activities. Conventional classroom activities may provide limited space for students to experiment with alternative solutions, collaborate with peers, and learn from unsuccessful attempts. Game-based activities can address this need by presenting challenges in an enjoyable and structured environment in which students are encouraged to observe, formulate strategies, make decisions, cooperate, receive feedback, and revise their approaches. Such characteristics are consistent with the principles of student-centered and experiential learning and may help create a more supportive environment for developing cognitive and social competencies.

Therefore, this community service initiative was designed to implement game-based learning for problem-solving to enhance elementary students' critical thinking at SD Sugiwaras 1 Tuban. The program focused on providing students with engaging problem-solving games that encouraged analysis, decision-making, collaboration, creativity, and reflection. Rather than treating games merely as entertainment, the activities were designed as pedagogical experiences in which

students encountered challenges, developed strategies, tested possible solutions, and reflected on the outcomes. The initiative is expected to contribute practical insights into the use of accessible and participatory game-based activities for strengthening critical thinking among elementary school students, particularly within community-based educational interventions.

II. METHODOLOGY

The community service initiative at SD Sugiwaras 1 employed a participatory and game-based learning approach to enhance elementary students' problem-solving skills and critical thinking. The methodology focused on structured group activities that encouraged active participation, collaboration, and strategic thinking. The intervention involved the implementation of three educational games tailored to the students' developmental needs: Estafet Sarung (Sarong Relay), Memindahkan Gelas dengan Balon (Glass Transfer with Balloons), and Estafet Karet (Rubber Band Relay).

Each game was designed to foster specific problem-solving and teamwork skills. Estafet Sarung required students to work in teams to pass a sarong along a line without using their hands, promoting communication, creativity, and coordination. Memindahkan Gelas dengan Balon challenged students to move plastic glasses using the air from inflated balloons, encouraging patience, precision, and innovative thinking. Finally, Estafet Karet involved transferring rubber bands from one stick to another using only a pair of chopsticks, which tested students' fine motor skills, focus, and cooperative problem-solving.

The program was conducted over a series of sessions, with each game introduced through clear instructions and demonstrations to ensure students understood the objectives and rules. Teams were formed to encourage peer interaction, and teachers acted as facilitators, providing guidance and support as needed. Observational data were collected during the games to assess students' problem-solving strategies, collaboration, and adaptability.

At the end of each session, a reflection period was held where students discussed the challenges they faced and the solutions they devised during the activities. This reflective practice aimed to help students internalize the lessons learned and connect their experiences to real-life problem-solving scenarios. Teachers and facilitators also provided feedback to reinforce positive behaviors and identify areas for improvement. By incorporating these interactive and

enjoyable activities, the methodology created an engaging learning environment where students could develop critical thinking skills while building social bonds and confidence.

III. RESULTS

The implementation of the game-based learning initiative at SD Sugiwaras 1 Tuban demonstrated a comprehensive approach to fostering critical thinking, teamwork, and problem-solving skills among elementary school students. The program was designed to address developmental challenges in a creative and engaging manner, using games tailored to the cognitive and social capacities of different grade levels. Each game—Estafet Sarung, Memindahkan Gelas dengan Balon, and Estafet Karet—offered unique opportunities for students to collaborate, strategize, and build essential interpersonal and physical skills in an enjoyable and supportive environment.

The Estafet Sarung activity, conducted for grades 1 and 2, involved transferring a sarung from one team member to another without breaking hand contact. This game encouraged students to work cohesively as a team, focusing on coordination, balance, and precision. Observations revealed that students quickly adapted to the rules and worked together to overcome challenges, fostering a sense of shared responsibility and mutual trust. Teachers noted that the activity not only enhanced physical coordination but also strengthened social bonds among peers, creating a collaborative classroom culture.



Figure 1. Estafet Sarung Game Conducted by Students of SD Sugiwaras 1 Tuban

For grades 3 and 4, the Memindahkan Gelas dengan Balon activity emphasized creative problem-solving and effective communication. Students

used inflated balloons to move plastic cups without directly touching them, requiring careful breath control and precise movements. While initially challenging, the activity prompted students to develop innovative strategies, such as managing air pressure and adjusting their angles, to ensure the cups reached the designated target. The activity highlighted the importance of resilience and adaptability, as students learned from their mistakes and refined their techniques. Teachers reported that the game significantly boosted students' confidence and ability to articulate their thoughts clearly during teamwork.



Figure 2. Memindahkan Bola dengan Gelas Game Conducted by students of SD Sugiwaras 1 Tuban

The Estafet Karet activity, designed for grades 5 and 6, was particularly effective in cultivating patience, fine motor skills, and advanced problem-solving abilities. Students transferred rubber bands using straws, passing them along to teammates without the use of their hands. This activity required precision, focus, and consistent communication among team members. As the game progressed, students demonstrated improved teamwork and coordination, developing strategies to complete the task efficiently. Teachers observed that the activity helped students regulate their emotions and maintain concentration under pressure, important skills for both academic and social success.



Figure 3. Estafet Karet Game Conducted by Students of SD Sugiwaras 1 Tuban

The program produced notable social and behavioral changes. Across all grade levels, students displayed heightened teamwork, stronger communication skills, and a greater sense of accountability for their roles within a team. Problem-solving abilities became evident as students assessed challenges, brainstormed solutions, and collaboratively executed strategies. These changes extended beyond the classroom, with parents reporting improvements in their children's cooperative behaviors and conflict resolution skills at home. Additionally, the program inspired teachers to explore further integration of game-based learning in their daily lesson plans, recognizing its potential to enhance student engagement and learning outcomes.



Figure 4. The Winners of the Games were Receiving Door Prizes

By integrating these evidence-based strategies, the program at SD Sugiwaras 1 Tuban achieved significant outcomes, creating an engaging learning

environment that supported the holistic development of students. Beyond the immediate benefits of teamwork and critical thinking, the initiative fostered long-term skills that will serve the students in navigating more complex social and academic challenges. The program's success also serves as a model for similar educational settings, demonstrating the transformative power of game-based learning in fostering cognitive, emotional, and social growth.

IV. DISCUSSION

The outcomes of the game-based learning initiative at SD Sugiwaras 1 Tuban indicate that structured and participatory games provided meaningful opportunities for students to practice critical thinking, problem-solving, communication, and teamwork. This finding is consistent with recent evidence showing that game-based learning can support cognitive and affective development by engaging students in challenges that require decision-making, strategy development, interaction, and feedback. A meta-analysis by Mao et al. (2022) found a positive overall effect of game-based learning on students' critical thinking, although the magnitude of the effect varied across learning contexts and game types. Similarly, systematic reviews have reported that educational games can facilitate cognitive skills such as problem-solving and computational thinking among primary school students when games are deliberately designed around pedagogical objectives (Giannakoulas & Xinogalos, 2024; Guan et al., 2024). These findings provide a contemporary theoretical basis for interpreting the learning experiences observed during the community service program.

The Estafet Sarung activity illustrates how physical games can create opportunities for coordination, communication, and collective problem-solving. Students were required to coordinate their movements, maintain interaction with team members, and complete a shared task under specific rules. Such characteristics are consistent with recent research demonstrating that game-oriented activities can stimulate collaboration when students must communicate and coordinate their actions to achieve a common goal. For example, research involving elementary students has shown that game-based activities can encourage active contribution, task sharing, responsibility, flexibility, compromise, and mutual respect within groups (Najib et al., 2024). Similarly, recent research on the puzzle estafet game reported positive changes in elementary students' teamwork, demonstrating the potential of relay-based games to create structured opportunities for collaborative interaction.

The Memindahkan Gelas dengan Balon activity further demonstrates the potential of game-based tasks to stimulate creative problem-solving. The activity required students to manipulate objects using an unconventional procedure rather than relying on a predetermined individual solution. Consequently, students had to communicate, experiment with possible strategies, coordinate their actions, and adjust their approach when difficulties emerged. This pattern is consistent with findings from systematic reviews showing that educational games can support problem-solving and computational thinking among primary school students, particularly when learners are required to formulate strategies and respond to challenges rather than simply follow instructions (Giannakoulas & Xinogalos, 2024). Game-based learning therefore provides a practical context in which problem-solving can be experienced as an active process of exploration, decision-making, and adaptation.

The Estafet Karet activity provided another context for developing concentration, coordination, persistence, and group interaction. Students had to perform precise physical actions while maintaining attention to the rules and progress of the group. Although such activities should not automatically be interpreted as direct measures of critical thinking, they can provide supporting conditions for students to practice sustained attention, self-regulation, communication, and persistence during challenging tasks. Recent research on game-based learning in childhood education indicates that playful learning can contribute to cognitive, social, and emotional outcomes, particularly when activities are structured around meaningful challenges and active participation (Alotaibi, 2024). Thus, the value of the Estafet Karet activity lies not only in the physical task itself but also in the opportunities it created for students to manage difficulties and continue working toward a shared objective.

The students' active participation and enthusiasm during the activities are also consistent with contemporary findings concerning the motivational dimensions of game-based learning. A systematic review of game-based learning in primary education identified engagement and motivation as important potential benefits of game-oriented instructional approaches, although outcomes vary according to game design and implementation conditions (Guan et al., 2024). Similarly, a recent systematic review of gamification in primary education reported positive effects particularly in student engagement, motivation, and self-efficacy, while also cautioning that evidence concerning learning outcomes and collaboration remains mixed (Romero-Rodríguez et al., 2024). These findings are

important because they suggest that games should not be regarded as automatically effective simply because they are enjoyable. Their educational value depends on the alignment between game mechanics, learning objectives, student characteristics, teacher facilitation, and opportunities for reflection.

An important feature of the present initiative was the teacher and facilitator guidance provided throughout the activities. Some students initially experienced difficulties in coordinating movements, communicating with team members, and determining appropriate strategies. Rather than indicating failure of the game-based approach, these difficulties demonstrate the importance of scaffolding and facilitation in game-based learning. Recent reviews emphasize that effective game-based learning requires appropriate instructional design, clear learning objectives, feedback, and pedagogical alignment rather than simply introducing games into the classroom (Guan et al., 2024; Giannakoulas & Xinogalos, 2024). Facilitators therefore played an important role by clarifying rules, encouraging communication, helping students reconsider unsuccessful strategies, and maintaining an inclusive learning environment.

The findings also need to be interpreted in light of the characteristics of the community service program. The activities generated observable opportunities for students to practice teamwork, communication, coordination, persistence, and problem-solving; however, these observations should not be interpreted as definitive evidence of a measured improvement in critical thinking because the program did not employ standardized pre-test and post-test instruments. This distinction is important because recent reviews have found that the effects of game-based learning can vary considerably across contexts, learning objectives, game designs, and assessment methods (Romero-Rodríguez et al., 2024; Guan et al., 2024). Accordingly, the present findings are best understood as evidence of students' engagement and opportunities for skill practice rather than as a quantified causal improvement in critical-thinking ability.

Overall, the community service initiative demonstrates the practical potential of simple, low-cost, and collaborative games as learning activities for elementary students. The Estafet Sarung, Memindahkan Gelas dengan Balon, and Estafet Karet activities provided different forms of challenge that encouraged students to communicate, coordinate, formulate strategies, respond to difficulties, and work toward shared goals. These observations are broadly consistent with recent research supporting game-based learning as a pedagogical approach for promoting cognitive engagement and social interaction, while also highlighting

the importance of careful instructional design and teacher facilitation (Mao et al., 2022; Alotaibi, 2024; Giannakoulas & Xinogalos, 2024). Future implementations should incorporate systematic pre-test and post-test assessments, observation rubrics, and student reflection instruments to determine more precisely how different types of educational games contribute to critical thinking, problem-solving, collaboration, and self-regulation among elementary school students.

V. CONCLUSION AND RECOMMENDATION

The community service initiative at SD Sugiwaras 1 Tuban successfully demonstrated the effectiveness of game-based learning in fostering critical thinking, teamwork, and problem-solving skills among elementary school students. Activities such as Estafet Sarung, Memindahkan Gelas dengan Balon, and Estafet Karet engaged students in a dynamic learning process, improving their coordination, communication, and strategic thinking. These results affirm the importance of integrating playful, collaborative activities into the educational framework to enhance both cognitive and social skills. Furthermore, the positive changes observed in students' interactions and behaviors reflect the potential of such interventions to foster a more supportive and cohesive learning environment, aligning with contemporary educational theories and practices.

To build on these successes, it is recommended that game-based learning strategies be further incorporated into the regular curriculum at SD Sugiwaras 1 Tuban. Teachers should receive training to facilitate similar activities, ensuring the sustainability and scalability of the program. Additionally, a more systematic evaluation of long-term impacts could provide deeper insights into how such interventions influence students' academic and social development over time. Future programs might also consider expanding the range of games to include activities targeting other developmental areas, such as emotional regulation and leadership skills, thereby creating a holistic framework for character building and critical thinking in elementary education. By prioritizing interactive and engaging learning methods, this initiative not only enriches the educational experience of students at SD Sugiwaras 1 but also serves as a replicable model for other schools seeking to enhance problem-solving and teamwork skills through innovative teaching approaches..

VI. ACKNOWLEDGEMENT

We would like to express our deepest gratitude to SD Sugiwaras 1 Tuban for their warm welcome and enthusiastic participation in this community service initiative. Our heartfelt thanks go to the school principal, teachers, and staff, who provided unwavering support and assistance throughout the program. Their commitment to fostering a nurturing and dynamic learning environment has been instrumental in the success of this project. We also extend our appreciation to the students of SD Sugiwaras 1 Tuban, whose enthusiasm, creativity, and cooperation during the activities were truly inspiring. Their active engagement in the games and willingness to learn have reinforced the importance of implementing innovative approaches to education. Lastly, we acknowledge the parents and the broader school community for their encouragement and collaboration, which greatly contributed to the smooth execution of this program. It is our sincere hope that this initiative will leave a lasting impact on the students and inspire continued efforts in enhancing educational experiences through interactive and meaningful activities.

REFERENCES

- Alotaibi, M. S. (2024). Game-based learning in early childhood education: A systematic review and meta-analysis. *Frontiers in Psychology*, 15, 1307881. <https://doi.org/10.3389/fpsyg.2024.1307881>.
- Astuti, F., Izzaty, R. E., Saloh, A. E., Ayun, M. H., & Patrihartati, S. (2025). Increasing teamwork of elementary school students through a puzzle estafet game. *Counsnesia Indonesian Journal of Guidance and Counseling*, 6(1). <https://doi.org/10.36728/cijgc.v6i1.4789>.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.
- Bruner, J. (1976). *The culture of education*. Harvard University Press.
- Denham, S. A., et al. (2015). Social-emotional learning and early intervention. *Early Childhood Research Quarterly*, 30, 58-71.
- Ennis, R. H. (2011). Critical thinking: Reflection and perspective part II. *Inquiry: Critical Thinking Across the Disciplines*, 26(2), 5-19.

- Fisher, E., et al. (2011). The role of play in problem-solving and cognitive development. *Early Childhood Education Journal*, 39(6), 391-398.
- Fisher, K., Hirsh-Pasek, K., Newcombe, N., & Golinkoff, R. M. (2011). Taking shape: Supporting preschoolers' acquisition of geometric knowledge through guided play. *Child Development*, 82(1), 187-204.
- Fonseca, I., García-Peñalvo, F. J., & Fidalgo-Blanco, Á. (2023). Gamification and game-based learning as cooperative learning tools: A systematic review. *International Journal of Emerging Technologies in Learning*, 18(21), 4-23. <https://doi.org/10.3991/ijet.v18i21.40035>
- Gee, J. P. (2003). What video games have to teach us about learning and literacy. Palgrave Macmillan.
- Giannakoulas, A., & Xinogalos, S. (2024). Studying the effects of educational games on cultivating computational thinking skills to primary school students: A systematic literature review. *Journal of Computers in Education*, 11, 1283-1325. <https://doi.org/10.1007/s40692-023-00300-z>
- Giannakoulas, A., & Xinogalos, S. (2024). Studying the effects of educational games on cultivating computational thinking skills to primary school students: A systematic literature review. *Journal of Computers in Education*, 11, 1283-1325. <https://doi.org/10.1007/s40692-023-00300-z>. Review ini menganalisis 61 studi tentang educational games pada siswa sekolah dasar.
- Guan, X., Sun, C., Hwang, G.-J., Xue, K., & Wang, Z. (2024). Applying game-based learning in primary education: A systematic review of journal publications from 2010 to 2020. *Interactive Learning Environments*, 32(2), 534-556. <https://doi.org/10.1080/10494820.2022.2091611>
- Guan, X., Sun, C., Hwang, G.-J., Xue, K., & Wang, Z. (2024). Applying game-based learning in primary education: A systematic review of journal publications from 2010 to 2020. *Interactive Learning Environments*, 32(2), 534-556. <https://doi.org/10.1080/10494820.2022.2091611>.
- Hasanah, F., Iriawan, S. B., Mulyasari, E., & Alivia, Z. P. (2026). Effectiveness of digital game-based learning in elementary education: A systematic literature review. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 15(4).

- 34 *A Community Service Initiative at SD Sugiwaras 1 Tuban: Game-Based Learning for Problem-Solving to Enhance Elementary Students' Critical Thinking*
- Hasanah, F., Iriawan, S. B., Mulyasari, E., & Alivia, Z. P. (2026). Effectiveness of digital game-based learning in elementary education: A systematic literature review. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 15(4).
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- Johnson, D. W., Johnson, R. T., & Holubec, E. J. (2007). *Cooperation in the classroom* (8th ed.). Allyn & Bacon.
- Malihatin, M., Wasino, W., Prasetya, A. T., & Avrilianda, D. (2026). Efektivitas integrasi Problem-Based Learning dan game edukasi digital pada pembelajaran IPA: Systematic literature review. *Cokroaminoto Journal of Primary Education*, 9(2). <https://doi.org/10.30605/cjpe.9.2.2026.8545>
- Mao, W., Cui, Y., Chiu, M. M., & Lei, H. (2022). Effects of game-based learning on students' critical thinking: A meta-analysis. *Journal of Educational Computing Research*, 59(8). <https://doi.org/10.1177/07356331211007098>
- Mao, W., Cui, Y., Chiu, M. M., & Lei, H. (2022). Effects of game-based learning on students' critical thinking: A meta-analysis. *Journal of Educational Computing Research*, 59(8), 1682–1708. <https://doi.org/10.1177/07356331211007098>. Studi ini sangat relevan karena secara langsung menganalisis hubungan GBL dengan critical thinking berdasarkan 20 studi empiris dan 1.947 peserta.
- Mustofiyah, L., & Muhibbin, A. (2024). Pembelajaran berbasis masalah pada pelajaran IPS untuk meningkatkan keterampilan berpikir kritis dan memecahkan masalah di sekolah dasar: Systematic literature review. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 9(4). <https://doi.org/10.23969/jp.v9i04.19987>
- Najib, A., Martati, B., & Faradita, M. N. (2024). Analisis keterampilan kolaborasi siswa sekolah dasar dengan menggunakan media pembelajaran berbasis games Educaplay pada pembelajaran IPAS. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 9(3). <https://doi.org/10.23969/jp.v9i3.16995>.
- Pellegrini, A. D., & Holmes, R. M. (2006). The role of play in school-based learning and development. *Educational Psychology Review*, 18(4), 337-350.

- Putri, D. N., Rumapea, V. S. D., Hutagalung, E. E., & Al Fath, A. M. (2026). Analisis model Problem Based Learning terhadap keterampilan berpikir kritis siswa pada pembelajaran IPAS di sekolah dasar: Systematic literature review. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 11(2). <https://doi.org/10.23969/jp.v11i02.45280>
- Rahayu, D., Ansori, Y. Z., & Yuliati, Y. (2026). Analisis trend dan efektivitas Problem Based Learning terhadap keterampilan berpikir kritis siswa sekolah dasar: Systematic literature review. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 11(3). <https://doi.org/10.23969/jp.v11i03.57581>
- Romero-Rodríguez, J.-M., Martínez-Menéndez, A., Alonso-García, S., & Victoria-Maldonado, J.-J. (2024). The reality of the gamification methodology in Primary Education: A systematic review. *International Journal of Educational Research*, 128, 102481. <https://doi.org/10.1016/j.ijer.2024.102481>. Review ini penting untuk memberikan critical perspective, karena menemukan hasil positif pada engagement, motivation, dan self-efficacy, tetapi hasil terhadap collaboration dan learning outcomes tidak selalu konsisten.
- Saputri, S. O., Handoyo, E., Prasetya, A. T., & Avrilianda, D. (2026). Efektivitas LKPD berbasis Problem-Based Learning (PBL) berorientasi HOTS terhadap kemampuan berpikir kritis siswa SD: Systematic literature review. *Jurnal Pendidikan IPS*, 16(2). <https://doi.org/10.37630/jpi.v16i2.4275>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Whitebread, D., Basilio, M., Kuvalja, M., & Verma, M. (2012). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *American Journal of Play*, 3(4), 449–472.
- Whitebread, D., et al. (2012). The importance of play in the development of children's self-regulation and problem-solving skills. *Early Years*, 32(2), 145–157.
- Yulianto, S. S., & Cahyani, I. (2025). Game-Based Learning berbantuan card dan board game untuk meningkatkan critical thinking dan argumentasi: Systematic literature review. *Komposisi: Jurnal Pendidikan Bahasa, Sastra, dan Seni*, 26(2).

Zosh, J. M., et al. (2018). Learning through play: A review of the evidence. In *Play = Learning: How Play Motivates and Enhances Children's Cognitive and Social-Emotional Growth*. Oxford University Press.