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LITERATURE REVIEW: THE ROLE OF PROJECT-BASED LEARNING (PjBL) IN IMPROVING CRITICAL THINKING IN SCIENCE LEARNING

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Abstrak

Kemampuan berpikir kritis merupakan kompetensi penting yang diperlukan oleh peserta didik dalam proses pembelajaran IPA untuk menghadapi beragam tantangan di kehidupan sehari-hari. Pendekatan pengajaran yang dinilai efektif dalam mengasah kemampuan ini adalah Project-Based Learning (PjBL). Penelitian ini bertujuan untuk menganalisis bagaimana penerapan model Project-Based Learning (PjBL) berkontribusi terhadap peningkatan keterampilan berpikir kritis siswa dalam pembelajaran IPA. Metode yang diterapkan adalah Sistematik Literatur Review (SLR) dengan mengkaji beberapa artikel ilmiah nasional yang diterbitkan antara tahun 2023-2026. Data dikumpulkan melalui eksplorasi literatur di Google Scholar, ScienceDirect, Semantic Scholar, dan ResearchGate dengan menggunakan kata kunci yang sesuai. Analisis dilakukan secara deskriptif untuk menilai tujuan, metode, dan temuan dari riset yang berhubungan dengan implementasi PjBL. Temuan kajian menunjukkan bahwa PjBL secara berkelanjutan memberikan dampak positif terhadap peningkatan kemampuan berpikir kritis peserta didik. Model ini mendorong peserta didik untuk aktif terlibat dalam proses pengembangan solusi, penelitian, pengambilan keputusan, kerja sama, dan menyelesaikan proyek yang berkaitan dengan situasi nyata. PjBL juga berkontribusi pada peningkatan kinerja belajar, kemampuan komunikasi, dan keterampilan kolaborasi siswa. Dengan demikian, PjBL dapat dijadikan pilihan model pengajaran yang efektif dalam mengembangkan kemampuan berpikir kritis di pembelajaran IPA

Kata Kunci: Berpikir kritis, pembelajaran IPA, Project-Based Learning, peserta didik, systematic literature review.

Abstract *Critical thinking skills are an important competency required by students in the science learning process to face various challenges in everyday life. Project-Based Learning (PjBL) is considered an effective teaching approach in honing these skills. This study aimed to analyze how the implementation of the Project-Based Learning (PjBL) model contributes to the improvement of students' critical thinking skills in science education. The method applied was a Systematic Literature Review (SLR) by reviewing several national scientific articles published between 2023 and 2026. Data were collected through literature exploration in Google Scholar, ScienceDirect, Semantic Scholar, and ResearchGate using appropriate keywords. Analysis was conducted descriptively to assess the objectives, methods, and findings of research related to the implementation of PjBL. The study findings indicate that PjBL has a continuous positive impact on improving students' critical thinking skills. This model encourages students to actively engage in the process of developing solutions, research, decision-making, collaboration, and completing projects related to real-life situations. PjBL also contributes to improving students' learning performance, communication skills, and collaboration skills. Thus, PjBL can be used as an effective teaching model in developing critical thinking skills in science learning.*

Keywords: Critical thinking, science learning, Project-Based Learning, students, systematic literature review.

Introduction

The first step everyone must take to develop innovative and progressive ideas is education. This demonstrates that the right to an education that can help them think, behave, and interact with others is the right of every person living in Indonesia (Pahru *et al*., 2025). The role of teachers is crucial in the learning process, as learning activities are an interactive process between teachers and students. In addition to serving as providers of educational information, educators also act as learning centers and controllers of learning methods (Nurhayani *et al*., 2024). Various subjects in schools include Natural Sciences (IPA), which encompasses Biology, Physics, and Chemistry (Pahru *et al*., 2025).

This program not only conveys basic knowledge about science but also encourages deeper observation and improves students' objective abilities. Education in the field of natural science provides a clear insight into the world. Understanding scientific concepts is carried out using a realistic scientific approach (Pahru *et al*., 2025). Science subjects are usually crucial for improving students' thinking skills in understanding science and applying it in daily activities. Students' critical thinking skills will be determined by how well their thinking skills are continuously honed and developed. To face rapid development, one needs to improve academic abilities, and the skills that must be improved are critical thinking skills. Teaching critical thinking skills in science subjects is aimed at training students to be able to solve problems, as well as develop logical, systematic, critical, and thorough reasoning, as well as objective thinking that is essential in everyday life. Teaching critical thinking skills aims to enable students to better face challenges through science lessons (Rahmawati & Airlanda, 2023).

The ability to think critically is crucial because students are expected to understand and master the material taught by teachers. Improving critical thinking skills in students can be done through teaching methods applied by educators. Project-focused learning models can increase student involvement in the learning process by working on projects related to environmental issues. According to Novitasari & Mediatati (2021:6), The use of Project-Based Learning (PjBL) can improve learning outcomes in the field of science, not only in terms of average student learning scores but also in terms of the proportion of students completing the learning process. This is due to student involvement in project-focused learning. Based on this, the Project-Based Learning (PjBL) model is expected to be implemented sustainably in the classroom learning process, not only limited to science lessons, because the (PjBL) model can improve students' skills. (Rahmawati *et al*., 2025).

According to (Kemdikbud, 2023), science teaching in the 21st century faces major challenges in improving students' practical skills. National research reveals that 72% of science learning processes

that focus on material and teaching models used by teachers still rely on traditional methods, resulting in low student ability to apply scientific concepts to solve real-life problems (Yanto *et al*., 2025). This learning model actively involves students in learning activities related to everyday life through real projects. PjBL learning requires students to collect data, identify problems, design strategies, and create products or solutions. Through this application, students not only understand the theoretical basics of learning, but can also train their critical thinking skills, problem solving, collaboration, and communication (Dzaky *et al*., 2026).

Project-Based Learning (PjBL) is a method that provides opportunities for students to gain deeper and more meaningful knowledge through participation in projects that combine various fields of knowledge and skills. PjBL focuses on a student-oriented learning process, where students are actively involved in exploring problems, designing various solutions, and producing tangible products (Astuti *et al*., 2025). Based on a more in-depth review, the results of several previous studies only focused on quantitative results of improving critical thinking skills, without conducting a systematic analysis of the mechanisms by which PjBL shapes students' critical thinking processes, or how each project step plays a role in each aspect of critical thinking. Meanwhile, understanding this relationship is crucial so that teachers can design more efficient and measurable learning projects (Thursina *et al*., 2025).

Research Methods

This research method applies a systematic literature review, which can present a comprehensive, clear, and objective synthesis of findings from previous research on differentiated learning in elementary education environments in Indonesia (Ringo, 2025). Project-based learning (PjBL) can improve students' critical thinking in science learning. The results of the data sources were obtained from national and international scientific articles published in 2023–2026.

The data sources were retrieved through various academic data analysis, such as Google Scholar, ScienceDirect, Semantic Scholar, and ResearchGate. This search used keywords such as problembased learning (PjBL), critical reasoning, critical thinking, science learning, and science learning. The selected articles were those relevant to the research focus, in full text format, and discussed application of the PjBL model in Natural Science learning.

The obtained articles were then screened based on topic relevance, year of publication, and source credibility. Furthermore, the data taken from the articles, namely the data analyzed, met the criteria descriptively by examining the objectives of the research, using the methods used, and the influence of PjBL learning related to the research results on students' critical thinking skills. These findings were then analyzed to gain a comprehensive understanding and used as a basis for drawing conclusions regarding the role of PjBL in science learning to improve students' critical thinking skills.

Research Results and Discussion

Based on the analysis of various research sources, it was found that the systematic and sustainable implementation of the Project Based Learning (PjBL) model plays an effective role in developing students' critical thinking skills in Natural Science (IPA) learning. A summary of the research analysis results is presented in Table 1. Journal Review Results.

Table 1. Journal Review Results

No.	Researcher's Name	Year	Research Title	Discovery Results
1.	Na'afilah, Muhamad, & Hilman.	2023	Penerapan Model Pembelajaran Project Based Learning (PjBL) Untuk Meningkatkan Kemampuan Berpikir Kritis Peserta Didik Pada Mata Pelajaran IPA.	The problem-based learning model (PjBL) can be proven to help improve students' critical thinking skills in Natural Sciences (IPA) subjects, as shown by the NGain value of 0.71 and positive student

				responses reaching 81.8% so that (PjBL) is considered effective for use in science learning.
2.	Ansya', Y. A.	2023	Upaya Meningkatkan Minat dan Prestasi Belajar Siswa Kelas Empat Sekolah Dasar dalam Pembelajaran Sains Menggunakan Strategi PjBL (Pembelajaran Berbasis Proyek)	PjBL in science learning is able to improve students' critical thinking, problem solving, decision making, as well as students' ability to collaborate and communicate.
3.	Rahmawati, & Airlanda.	2023	Efektivitas Model Problem Based Learning dan Project Based Learning Terhadap Kemampuan Berpikir Kritis Peserta didik	Critical thinking skills in students can be improved with PjBL learning through the process of planning, synthesizing ideas, and solving problems in science learning.
4.	Amrullah *et al.*	2024	Analisis Strategi Pembelajaran IPA untuk Meningkatkan Berpikir Kritis Peserta didik: Literatur Review (2014-2023)	In the context of Natural Sciences learning, PjBL supports students to improve analytical thinking skills through exploration activities, problem solving, and project preparation.
5.	Sholeh *et al.*	2024	Penerapam Pembelajaran Berbasis Projek (PjBL) Dalam Meningkatkan Kemampuan Berpikir Kritis Peserta didik	PjBL promotes the development of critical thinking skills by encouraging students to analyze and solve problems relevant to their daily experiences.
6.	Zahara	2024	Pengaruh Model Pembelajaran Project Based Learning Terhadap Kemampuan Berpikir Kritis Peserta didik Pada Pembelajaran IPA di Kelas V Sekolah Dasar.	PjBL has a positive impact on students, namely improving critical thinking skills and problem-solving skills, scientific abilities, and conceptual understanding in science learning. Its effectiveness is demonstrated by the posttest results of the experimental class, which were better than those of the control class.
7.	Ahiri	2025	*Sistematic Literature Review:* Pengaruh Model Pembelajaran Pjbl (*Project - Based Learning)* Terhadap Keterampilan Berpikir Kritis Mahapeserta didik	This literature review demonstrates that PjBL learning can improve students' critical thinking skills through project activities that support analysis, problem-solving, collaboration, and reflection.
8.	Sopiah, *et al.*	2025	Pengaruh Model Project Based Learning (PJBL) terhadap Keterampilan Berpikir Kritis Peserta didik pada Materi IPAS Kelas IV SD	PjBL has a significant influence on students' critical thinking skills, and is able to improve critical thinking skills with moderate effectiveness.
9.	Agustina, *et al*	2025	Implementasi Model Project Based Learning (PJBL) Untuk Menningkatkan Kemampuan Berpikir Kritis Pada Mata Pelajaran IPAS di Sekolah Dasar	The PjBL learning model can increase great flexibility in science learning in everyday life, and can improve cognitive understanding derived from students' experiences, develop critical thinking skills in observing phenomena, and formulate logical conclusions.
10	Andini, & Muhammad	2025	EfektivitasModel Project-Based Learning untuk Meningkatkan Keterampilan Berpikir Kritis Peserta didik Sekolah Dasar	In theory, the successful implementation of PjBL can improve critical thinking skills, as outlined in Vygotsky's social constructivism theory, where social interaction and collaboration play a crucial role in students' cognitive growth.
11	Pujiono, *et al*	2025	Efektivitas Strategi	The PjBL method has a significant

			Pembelajaran Berbasis Proyek (PjBL) dalam Mengembangkan Berpikir Kritis Peserta didik MI Nurul Huda Sukaraja	impact and fosters students' critical thinking skills. The direct application of PjBL can be understood from several important aspects that support students' critical thinking processes, this is in line with the goals of science education which aim to motivate students to think critically, creatively, and find solutions. PjBL learning, learning that demands students to be responsible, collaborative, and independent as a student learning experience.
12	Yuniah *et al.*	2025	Implementasi Model *Project Based Learning* dalam Meningkatkan Keterampilan Berpikir Kritis Peserta didik pada Materi IPA di Kelas V SDN 28 Bandar Baru	The findings of the study show that the Project Based Learning (PjBL) model successfully improves students' critical thinking skills through active participation in completing projects and solving problems.
13.	Sembiring	2025	Pembelajaran IPA Berbasis STEM–PjBL: Tinjauan Kritis Implementasi dan Integrasi Teknologi Deep Learning untuk Meningkatkan Keterampilan Berpikir Kritis dan Kreatif Peserta didik	STEM-PjBL based science learning in science learning can improve students' critical thinking by involving students in contextual projects, authentic scientific activities, and problem solving that encourage analysis, synthesis, and evaluation.
14.	Septianingsih *et al.*	2026	Efektivitas Project Based Learning dalam Meningkatkan Hasil Belajar IPA: *Systematic Review*	Research shows that this learning model (PjBL) can consistently improve students' academic achievement, critical thinking skills, scientific knowledge, enthusiasm for learning, and collaborative skills in science. Furthermore, project-based learning encourages active participation and responsibility throughout the learning process.
15	Widyastika *et al.*	2026	Penerapan Model Project Based Learning Berbasis Platform Quizizz Untuk Meningkatkan Pemahaman Konsep dan Kemampuan Berpikir Kritis Peserta didik Sekolah Dasar	The improvement in students' academic development, both in conceptual understanding and critical thinking skills, demonstrates the effectiveness of the Project-Based Learning model in creating interactive, relevant, and meaningful learning activities. Project activities encourage students to thoroughly investigate problems, collaborate, and present solutions to real-life challenges.

Based on Table 1, findings from 15 journals published in 2023–2026 indicate that problem-based learning (PjBL) has the potential to improve students' critical thinking skills in science learning. Research by Na'afilah *et al*., (2023) states that improving students' critical thinking skills can be achieved through PjBL learning. This aligns with research by Ansya (2023) that found that using the PjBL model in science learning can improve students' critical thinking skills. Rahmawati and Airlanda (2023) also stated that PjBL-based learning is very effective in improving students' critical thinking skills in analyzing and solving problems.

Research conducted by Amrullah *et al*., (2024), Sholeh *et al*., (2024), and Zahara (2024) confirmed that student involvement in project activities can help them improve their critical thinking

skills through investigation, discussion, and problem-solving. The results of the same study indicate that PjBL can create a learning environment that places students at the center of learning. According to Amrullah *et al*., (2024), during the learning process, students are given the opportunity to learn independently, identify problems, and create solutions based on observations and analysis. These findings are supported by Sholeh *et al*., (2024) and Zahara (2024) who state that student involvement in learning can indirectly improve critical thinking skills, because students are required to use rational reasoning in making decisions.

The results of the 2025 study were also consistent. Ahiri (2025), Sopian *et al*., (2025), and Pujiono *et al*., (2025) found that the application of the learning model (PjBL) was effective in improving critical thinking skills in students. Pujiono *et al*., (2025) stated that through learning activities that encourage higher-order thinking processes, PjBL has a significant influence on the development of students' critical thinking skills. The implementation of projects also teaches students responsibility, cooperation, and independence when completing learning tasks. The findings of Pujiono *et al*., (2025) are in line with the results of research by Ahiri (2025) and Sopian *et al*., (2025) which show that the learning model (PjBL) not only helps with cognitive aspects, but also develops students' social skills and character.

Similar results were also found in the research of Yuniah *et al*., (2025), Sembiring (2025), and Widyastika *et al*., (2026), which showed that PjBL is effective in various science materials and educational levels. Based on the research results of Yuniah *et al*., (2025), Sembiring (2025), and Widyastika *et al*., (2026), the effectiveness of PjBL is not just a temporary finding, but has been proven in various learning contexts. PjBL can be considered effective as a learning model.

The PjBL model can explain the improvement of critical thinking skills by prioritizing students as the main subjects in learning. According to Amrullah *et al*., (2024), during the project, students not only receive information from the teacher but are also involved in the process of searching, processing, and evaluating the collected information. Pujiono *et al*., (2025) explained that learning experiences through projects encourage students to think more deeply in solving problems. Widyastika *et al*., (2026) also found that students are able to connect science concepts with problems that occur in everyday life so that learning becomes more meaningful. This condition strengthens critical thinking skills as demonstrated through the ability to analyze, evaluate, provide reasons, and formulate solutions to a problem.

The review results show that the project-based learning (PjBL) model is one of the most effective models for improving students' critical thinking skills in science learning. Many studies show that students are actively involved in processes such as problem-solving, investigation, decision-making, and project completion that require abstract intelligence. In science learning, PjBL can be an alternative learning model that is useful for improving critical thinking skills.

Conclusion and Suggestions

A review of fifteen journals published from 2023 to 2026 revealed that the use of the Project-Based Learning (PjBL) model positively influences students' critical thinking skills in science education. PjBL encourages students to be actively involved in the process of problem-solving, investigation, decision-making, and project completion, which helps them improve their higher-order critical thinking skills. PjBL is a relevant learning model and can be used for science learning, as shown by the consistent results of various studies. Therefore, teachers can utilize the Project-Based Learning (PjBL) model in science learning to support the development of students' critical thinking skills. In addition, schools are expected to support its implementation by providing appropriate facilities and infrastructure. Future researchers can develop studies on the application of PjBL to more specific science materials or integrate it with other learning approaches to achieve broader results.

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Bibliography

Astuti, F.R., Sahara, I.R., & Gusmaneli, G. (2025). Pelaksanaan Pembelajaran Berbasis Proyek (PjBL) dalam Pembelajaran Pendidikan Agama Islam, *Jurnal Bintang Pendidikan Indonesia*, *3*(1), 01-15.

Agustina, D., *et al.*(2025). Implementasi Model Project Based Learning (PJBL) Untuk Meningkatkan Kemampuan Berpikir Kritis pada Mata Pelajaran IPAS di Sekolah Dasar. *Jurnal Tahsinia*, *6*(12), 1866-1880.

Ahiri, Y. (2025). Systematic literature review: Pengaruh model pembelajaran PjBL (Project-Based Learning) terhadap keterampilan berpikir kritis mahapeserta didik. *Edusaintek: Jurnal Pendidikan, Sains dan Teknologi, 12*(3), 1566–1582.

Amrullah, L. A., *et al*. (2024). Analisis strategi pembelajaran IPA untuk meningkatkan kemampuan berpikir kritis peserta didik: Literature review (2014–2023). *Indonesian Journal of Teacher Education, 5(*1), 21–28.

Andini, N. H., & Muhammad. (2025). Efektivitas Model Project-Based Learninguntuk Meningkatkan Keterampilan Berpikir Kritis Peserta didik Sekolah Dasar. *Jurnal Kajian Pendidikan dan Sosial, 6*(2), 189-200.

Ansya', Y. A. (2023).Upaya Meningkatkan Minat dan Prestasi Belajar Peserta didik Kelas IV Sekolah Dasar pada Pembelajaran IPA Menggunakan Strategi PjBL (Project-Based Learning). *Jurnal Ilmu Manajemen dan Pendidikan (JIMPIAN), 3*(1), 43-52.

Dzaky, M., Ibrahim, Y., & Hamdani, A.R. (2026). Pengaruh Model Project Based Learning (PjBL) Berbantuan Linoit terhadap Peningkatan Kemampuan Berpikir Kritis pada Pembelajaran IPA SDN Burujulwetan II. *Jurnal Papeda*, *8*(1), 44-52.

Na'afilah, T.N., Muhamad, N., & Hilman, I. (2023). Penerapan Model Pembelajaran Project Based Learning (PjBL) Untuk Meningkatkan Kemampuan Berpikir Kritis Peserta Didik Pada Mata Pelajarann IPA. *Jurnal PGMI UNIGA (JPU), 02*(01), 22-27.

Nurhayani., *et al.* (2024). Strategi Belajar Mengajar. *Jurnal Pendidikan Sosial Humaniora, 3*(2), 255-266.

Pahru, S., *et al.* (2025). Analisis Hakikat Pembelajaran IPA di Sekolah Dasar. *Jurnal Asimilasi Pendidikan, 3*(3), 144-151.

Pujiono, S., *et al.* (2025). Efektivitas Strategi Pembelajaran Berbasis Proyek (PjBL) dalam Mengembangkan Berpikir Kritis Peserta didik MI Nurul Huda Sukaraja. *Jurnal Pendidikan Guru Madrasah Ibtidaiyah Edu-MI, 1*(2), 10-16.

Rahmawati, M., Wahyudi., & Chamdani, M. (2025). Penerapan Model Project Based Learning (PjBL) untuk Meningkatkan Kemampuan Berpikir Kritis dan Hasil Belajar IPAS tentang Cara Memenuhi Kebutuhanku pada Peserta didik Kelas IV SD Negeri Karanganyar 2 Plupuh Tahun Ajaran 2023/2024. *Jurnal Ilmiah Kependidikan, 13*(1), 362-371.

Rahmawati, S., & Airlanda, G. S. (2023). Efektivitas Model Problem Based Learning dan Project Based Learning Terhadap Kemampuan Berpikir Kritis Peserta didik. *Jurnal Basicedu, 7*(6), 3450-3456.

Ringo, S. S. (2025). Systematic Literature Review dengan Metode Prisma: Pembeajaran Berdiferensiasi pada Pendidikan Dasar. *Jurnal Didaktika Pendidikan Dasar, 9*(1), 209-226.

Sembiring, R.S. (2025). Pembelajaran IPA Berbasis STEM–PjBL: Tinjauan Kritis Implementasi dan Integrasi Teknologi Deep Learning untuk Meningkatkan Keterampilan Berpikir Kritis dan Kreatif Peserta didik . *Ibtida'i: Jurnal Kependidikan Dasar, 12*(2), 233- 248.

Septianingsih, S., Aulia, E. V., & Mahdiannur, M. A. (2026). Efektivitas Project-Based Learning dalam meningkatkan hasil belajar IPA: Systematic review. *Pensa E-Jurnal: Pendidikan Sains, 14*(1), 47–51.

Sholeh, M. I., et al. (2024). Penerapan Pembelajaran Berbasis Proyek (PjBL) Dalam Meningkatkan Kemampuan Berpikir Kritis Peserta didik. *Jurnal Tinta, 6*(2), 158-176.

Sopiah, S., Yulianti, Y., & Yanto, A. (2025). Pengaruh Model Project Based Learning (PjBL) Terhadap Keterampilan Berpikir Kritis Peserta didik pada Materi IPAS Kelas IV SD. *Pendas : Jurnal Ilmiah Pendidikan Dasar, 10*(3), 240-252.

Thursina, A., *et al.* (2025). Analisis Penelitian Tentang Efektivitas Model Project Based Learning Terhadap Keterampilan Berpikir Kritis Peserta didik Sekolah Dasar: Sebuah Kajian SYstematic Literature Review. *Jurnal Kolaboratif Sains, 8*(12), 8198-8213.

Widyastika, D., Dekar, M., & Misykah. (2025). Penerapan Model Project Based Learning Berbasis Platfrom Quizizz untuk Meningkatkan Pemahaman Konsep dan Kemampuan Berpikir Kritis Peserta didik Sekolah Dasar. *Jurnal Genta Mulia, 15*(2), 57-63.

Wiraguna, A. P., & Awalya. (2025).Peran Project Based Learning terhadap Critical Thinking Peserta didik. *JIIP (Jurnal Ilmiah Ilmu Pendidikan), 8*(6), 5778-5781.

Yusniah, Y., Aldyza, N., & Danil, M. (2025). Implementasi model Project Based Learning dalam meningkatkan keterampilan berpikir kritis peserta didik pada materi IPA di kelas V SDN 28 Bandar Baru. *Jurnal Ilmiah Pendidikan Dasar (JIPDAS), 5*(2).

Zahara, D. (2024). Pengaruh Model Pembelajaran Project Based Learning Terhadap Kemampuan Berpikir Kritis Peserta didik pada Pembelajaran IPA di Kelas V Sekolah Dasar. J*urnal Pendidikan Tambusai*, *8*(3), 39703-39707.