

The Influence of Project-Based Learning on Students' Critical Thinking in Social Studies

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Article Info

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History:

Submitted: 26-09-2025

Revised: 24-10-2025

Accepted: 28-10-2025

Keyword:

Project-Based Learning; Critical Thinking; Kurikulum Merdeka; Social Studies; Digital Literacy.

Kata Kunci:

Pembelajaran Berbasis Proyek; Berpikir Kritis; Kurikulum Merdeka; Ilmu Pengetahuan Sosial; Literasi Digital.

Abstract

The Indonesian educational landscape is undergoing a critical transition toward competency-based frameworks under the Kurikulum Merdeka to address systemic gaps in students' higher-order thinking skills. This study examines the influence of Project-Based Learning (PjBL) on critical thinking within Social Studies education. Utilizing a systematic meta-synthesis of empirical evidence from 2021–2025, the research explores how PjBL triggers cognitive indicators defined by Facione and Ennis. Findings indicate that PjBL significantly enhances analytical and evaluative depth, achieving high Normalized Gain scores. Furthermore, the integration of digital tools like Canva and TikTok, synthesized with Ki Hajar Dewantara's Among System, fosters both modern digital literacy and localized cultural autonomy. Despite its effectiveness, systemic barriers such as teacher readiness and the digital divide persist. The study concludes that sustainable PjBL implementation requires continuous professional development and infrastructure equity to successfully transform passive learning into active, inquiry-based investigation, ultimately fulfilling the objectives of the Pancasila Student Profile.

Abstrak

Lanskap pendidikan Indonesia sedang menjalani transisi kritis menuju kerangka berbasis kompetensi di bawah Kurikulum Merdeka untuk mengatasi kesenjangan sistemik dalam keterampilan berpikir tingkat tinggi siswa. Penelitian ini mengkaji pengaruh Pembelajaran Berbasis Proyek (PjBL) terhadap berpikir kritis dalam pendidikan Ilmu Pengetahuan Sosial. Menggunakan meta-sintesis sistematis dari bukti empiris tahun 2021–2025, penelitian ini mengeksplorasi bagaimana PjBL memicu indikator kognitif menurut Facione dan Ennis. Temuan menunjukkan bahwa PjBL secara signifikan meningkatkan kedalaman analitis dan evaluatif, mencapai skor Normalized Gain yang tinggi. Selain itu, integrasi perangkat digital seperti Canva dan TikTok, yang disintesis dengan Sistem Among Ki Hajar Dewantara, menumbuhkan literasi digital modern sekaligus otonomi budaya lokal. Meskipun efektif, hambatan sistemik seperti kesiapan guru dan kesenjangan digital tetap ada. Studi ini menyimpulkan bahwa implementasi PjBL yang berkelanjutan memerlukan pengembangan profesional berkelanjutan dan ekuitas infrastruktur untuk berhasil mengubah pembelajaran pasif menjadi investigasi berbasis inkuiri aktif, guna memenuhi tujuan Profil Pelajar Pancasila.



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doi <https://doi.org/10.65101/spedu.v1i2.140>

A. INTRODUCTION

1. Background

The current educational landscape in Indonesia is navigating a critical juncture, characterized by a fundamental shift from content-heavy instruction to competency-based frameworks aimed at addressing systemic performance gaps in global assessments. Historically, the Indonesian education system has been scrutinized for its reliance on rote memorization and passive learning, a pedagogy that has left students ill-equipped for the demands of the twenty-first-century global workforce. This urgency for reform is underscored by recent empirical data from the Program for International Student Assessment (PISA) 2022, where Indonesian students ranked 69th globally, reflecting significant struggles in literacy, numeracy, and higher-order thinking.³ In response, the Ministry of Education, Culture, Research, and Technology introduced the Kurikulum Merdeka (Independent Curriculum) as a direct intervention to foster the "Profil Pelajar Pancasila" (Pancasila Student Profile), which emphasizes critical thinking, creativity, and independent learning.¹

Within this framework, Social Studies (Ilmu Pengetahuan Sosial or IPS) holds a unique but troubled position. Ideally, Social Studies serves as the primary domain for developing social literacy, ethical judgment, and critical analysis of societal phenomena.² However, contemporary field reports indicate that IPS is frequently perceived as a "second-class" or "rote-learning" subject, often scheduled during ineffective school hours where student engagement is at its lowest. Statistics show that students' critical thinking levels in Social Studies remain alarmingly low; for instance, documentation of fourth-grade performance in some regions reveals that up to 75% of students score below the minimum completion criteria (KKM), particularly in indicators requiring analytical and evaluative depth.³

Research trends identified in the Scopus database between 2021 and 2025 demonstrate a robust interest in Project-Based Learning (PjBL) as a solution to these

¹ Ahmad Syukur et al., *Tantangan Membelajarkan Mata Pelajaran Ilmu Pengetahuan Sosial Di Sekolah Dasar: Studi Literatur*, 10 (2025): 307–18, <https://journal.unpas.ac.id/index.php/pendas>.

² Devi Afriyuni Yonanda et al., *Influence Of Contextual Teaching and Learning Model*, 2, no. 2 (2025): 22–33, <https://doi.org/10.56773/pjer.v2i2.3>.

³ Miftakhul Khasanah et al., "Analysis Of Students' Critical Thinking Skills In Natural And Social Sciences Class IV SD Muhammadiyah 1 Ngimbang Lamongan," *Journal of Elementary Education* 2, no. 1 (2025): 31–41, <https://doi.org/10.38040/jeleduc.v2i1.1225>.

challenges.⁴ PjBL is a student-centered pedagogical model that engages learners in exploring authentic, real-world problems through sustained inquiry, leading to the creation of meaningful artifacts.⁵ Meta-analyses of worldwide higher education and secondary education populations have yielded very large average effect sizes, with some studies reporting that PjBL can improve academic outcomes by up to 25% over conventional methods.¹⁰ Despite this established effectiveness, a significant disciplinary gap exists regarding the specific implementation of PjBL within the unique cultural and curricular constraints of the Indonesian Merdeka Curriculum.⁶

The novelty of this analysis lies in the synthesis of PjBL with localized Indonesian educational philosophies and contemporary digital tools, an area that remains underdeveloped in mainstream Scopus-indexed literature. Specifically, this report examines the integration of Ki Hajar Dewantara's Among System comprising the principles of Ing Ngarso Sung Tuladha, Ing Madya Mangun Karsa, and Tut Wuri Handayani with PjBL frameworks to foster both cognitive autonomy and historical literacy.⁷ Furthermore, it explores the emerging role of digital-mediated projects using Canva and TikTok as catalysts for critical engagement in an era of information overload.⁸

2. Research Questions

The primary problem addressed in this report is the extent to which Project-Based Learning influences the specific indicators of critical thinking among Indonesian students in Social Studies. This inquiry is framed by three core research questions: (1) How does PjBL impact the discrete dimensions of critical thinking as defined by Facione and Ennis? (2) What is the moderating effect of digital tools and localized philosophies on student engagement and cognitive growth? (3) What systemic challenges hinder the effective implementation of PjBL within the Kurikulum Merdeka?

⁴ Ria Alifah et al., "The Effectiveness of the Project-Based Learning Model on Motivation and Learning Outcomes in History Subjects," *QALAMUNA: Jurnal Pendidikan, Sosial, Dan Agama* 17, no. 2 (2025): 859–70, <https://doi.org/10.37680/qalamuna.v17i2.7261>.

⁵ Ramadhan Prasetya Wibawa et al., "Exploration of The Benefits of Implementing Project-Based Learning (PjBL) in Junior High Schools Through Bibliometric Analysis," *Educational Process International Journal* 17, no. 1 (2025): 1–19, <https://doi.org/10.22521/edupij.2025.17.320>.

⁶ Nadila Qothrun Nada et al., "Development of Differentiated Project Based Learning Teaching Modules to Foster Critical and Creative Thinking Skills in Students," *Jurnal Pendidikan Fisika Dan Teknologi* 11, no. 2 (2025): 316–25, <https://doi.org/10.29303/jpft.v11i2.9543>.

⁷ I Made Ratih Rosanawati et al., "Pedagogical Model Innovation Based on Ki Hajar Dewantara's Among System for History Learning in the Merdeka Curriculum," *Educational Process International Journal* 14, no. 1 (2025): 1–19, <https://doi.org/10.22521/edupij.2025.14.39>.

⁸ Alifah et al., "The Effectiveness of the Project-Based Learning Model on Motivation and Learning Outcomes in History Subjects."

3. Research Methods

The research methodology utilizes a systematic analysis of current empirical evidence and theoretical frameworks sourced from Scopus and Indonesian education reports (2021-2025). This includes a meta-synthesis of quasi-experimental studies, Systematic Literature Reviews (SLR), and Classroom Action Research (CAR).⁹ Data analysis focuses on measuring normalized gain (N-Gain) scores, assessing student performance across critical thinking indicators, and identifying qualitative themes in teacher and student readiness.

B. DISCUSSION

1. The Mechanism of PjBL and Its Impact on Academic Achievement

The effectiveness of Project-Based Learning in Social Studies is rooted in its ability to break the "learning plateau" commonly experienced by students in traditional classrooms.¹⁰ This plateau occurs when students become cognitively and emotionally stagnant due to a lack of contextual relevance and interactive stimulation.⁷ PjBL addresses this through a five-phase process: posing essential questions, project planning, time management, progress monitoring, and final evaluation/presentation.⁷ In the Indonesian context, studies have shown a significant reduction in students' learning plateau levels, shifting from categories of "medium-high" to "low-very low" following PjBL interventions.⁷

Quantitative data from experimental classrooms indicates that PjBL leads to significantly higher post-test mean scores compared to control groups. For example, research in history education showed that experimental groups achieved a post-test mean of $M = 17.50$ ($SD = 1.43$) while control groups scored $M = 14.52$ ($SD = 2.22$), with $p < 0.001$.⁹ The magnitude of this improvement is further captured by the Normalized Gain (N-Gain) formula:

⁹ Mujiburrahman I Gede Ratnaya, "Evaluation of the Merdeka Curriculum in Educational Institutions: A Systematic Literature Review of Strategies, Challenges, and Student Learning Outcomes," *ResearchGate*, November 4, 2025, 1225–68, <https://doi.org/10.33394/jp.v12i4.17078>.

¹⁰ Salwa Mayasari and Nurleli Ramli, "Addressing the Learning Plateau in Social Studies through Project-Based Learning in Indonesian Secondary Schools," *ResearchGate* 7 (September 2025): 94–103, <https://doi.org/10.35905/almaarief.v7i2.14649>.

$$g = \frac{(S_{\text{post}} - S_{\text{pre}})}{(S_{\text{max}} - S_{\text{pre}})}$$

Studies have reported N-Gain values of 0.76 for learning outcomes and 0.81 for motivation, both of which fall into the "high improvement" category. This suggests that PjBL is not merely a supplementary activity but a core instructional strategy that fundamentally alters the learning trajectory of students.

2. Mapping Critical Thinking Indicators to PjBL Phases

The influence of PjBL on critical thinking is best understood by examining how its activities trigger discrete cognitive processes. The analysis utilizes the two most recognized frameworks in the field: Facione's Delphi Report taxonomy and Ennis's reflective thinking framework.²³ Facione identifies six core skills: interpretation, analysis, evaluation, inference, explanation, and self-regulation.¹¹ Ennis, meanwhile, focuses on five aspects: basic clarification, basic support, inference, advanced clarification, and strategy/tactics.²⁵

Framework	Indicator	PjBL Activity / Mechanism	Source
Facione	Analysis	Identifying the relationship between social variables in a project.	24
Facione	Evaluation	Assessing the credibility of sources for a history documentary.	23
Facione	Inference	Drawing conclusions from interview data or artifacts.	27
Ennis	Basic Clarification	Formulating investigative questions based on essential prompts.	12
Ennis	Strategy/Tactics	Planning the execution of a project within a seven-day timeframe.	7

¹¹ Anni Yang et al., "Enhancing Critical Thinking Skills for Higher Education Students through English Reading Modules: A Systematic Review," *Cogent Education* 12, no. 1 (2025): 2587466, <https://doi.org/10.1080/2331186X.2025.2587466>.

¹² "Critical Thinking," *ResearchGate*, August 10, 2025, 1-22, <https://doi.org/10.5840/inquiryctnews20112613>.

Ennis

**Advanced
Clarification**

Defending a project's rationale during a final presentation.

25

A critical insight from the research is that while PjBL improves all indicators, the "inference" and "self-regulation" indicators often show the most challenging growth path.³¹ This is because these indicators require students to move beyond data collection to synthesis and metacognition skills that are underdeveloped in traditional settings.² Therefore, the successful implementation of PjBL requires intentional "scaffolding" by the teacher during the monitoring and reflection phases.⁷

3. Digital Innovation and Perceived Relevance

In the era of Society 5.0, the integration of digital tools with PjBL has become a necessity to maintain student engagement and build digital literacy.¹³ Tools such as Canva and TikTok have transformed Social Studies from a text-based subject to a multimedia production hub.⁹

- a. Canva Integration: By using Canva to create infographics and posters, students must perform "visual synthesis," which forces them to interpret historical events and analyze their contemporary relevance. This process increases motivation by 89% and student activity by 87%.¹⁴
- b. TikTok in Cultural Diversity: Projects that involve producing short-form TikTok videos about local cultural narratives have been shown to increase student tolerance and empathy by up to 30%, while creativity scores reached 87%.¹⁴ This indicates that social media, when used as a pedagogical tool, can bridge the gap between abstract diversity concepts and students' daily digital experiences.¹⁵

However, the use of digital tools also introduces the challenge of "information overload" and "digital security". Critical thinking in this context evolves into "digital literacy," where students must evaluate the credibility of online sources and navigate ethical issues related to AI and social media content.¹⁶

¹³ Hilman Amri et al., "Tantangan Pembelajaran IPS Berbasis Digital Diera Society 5.0," *Indonesian Journal on Education (IJoEd)* 1, no. 3 (2025): 288–93, <https://doi.org/10.70437/t390kh72>.

¹⁴ Putri Fajriani et al., *The Effectiveness of the Project-Based Learning (PjBL) Model Based on TikTok Videos in Improving Elementary School Students' Understanding of Cultural Diversity Concepts*, 10 (n.d.): 378–87, <https://doi.org/DOI:%252010.17977/2502-471X.1052>.

¹⁵ Fajriani et al., *The Effectiveness of the Project-Based Learning (PjBL) Model Based on TikTok Videos in Improving Elementary School Students' Understanding of Cultural Diversity Concepts*.

¹⁶ Hilman Amri Desy Safitri and Sujarwo Sujarwo, "Tantangan Pembelajaran IPS Berbasis Digital Diera Society 5.0 | Indonesian Journal on Education (IJoEd)," *Tantangan Pembelajaran IPS Berbasis Digital Diera*

4. Synthesis with the Among System and Local Philosophies

One of the most profound developments in contemporary Indonesian pedagogical research is the revitalization of Ki Hajar Dewantara's Among System within the PjBL framework.¹⁷ The Among System emphasizes a liberating education that fosters student autonomy while maintaining social responsibility.¹⁸

- a. Ing Ngarso Sung Tuladha (Modeling):** Teachers model critical questioning and ethical research behaviors.
- b. Ing Madya Mangun Karsa (Partnering):** During the monitoring phase, teachers act as facilitators who build motivation and provide scaffolding.
- c. Tut Wuri Handayani (Guiding):** In the final evaluation, teachers give students the freedom to choose their own product and presentation style, supporting them from behind.¹⁹

This synthesis addresses the research gap regarding how to implement "modern" PjBL while remaining rooted in "local" values. It fosters "historical literacy" by allowing students to explore local oral histories and connect them to the broader national context of the Pancasila Student Profile.²⁰

5. Differentiated Project-Based Learning and Inclusivity

A recurring theme in the Scopus literature for 2024-2025 is the integration of Differentiated Learning (DL) with PjBL.²¹ Differentiated PjBL adjusts the project content, process, and product according to each student's readiness, interests, and learning styles (visual, auditory, kinesthetic).²²

- a. Inclusivity:** Differentiated PjBL allows high-ability students to be challenged with "tiered tasks" while ensuring that students with learning difficulties

Society 5.0, accessed December 27, 2025, <https://ijoed.org/index.php/ijoed/article/view/125>. <https://doi.org/10.70437/t390kh72>.

¹⁷ Rosanawati et al., "Pedagogical Model Innovation Based on Ki Hajar Dewantara's Among System for History Learning in the Merdeka Curriculum."

¹⁸ Tutik Wijayanti Hendri Irawan and Dedy Ari Nugroho Nanda Julian Utama, "Addressing The Challenges of The Times Through The Concept of Character Education By Ki Hajar Dewantara," *ResearchGate*, 6, vol. 6 (December 2025): 1911-24, <https://doi.org/10.46245/ijorer.v6i6.1030>.

¹⁹ Mike Atnelie et al., *Themes in the Indonesian Discourse on Educational Philosophy: A Systematic Review*, 7 (2026): 195-215, <https://doi.org/10.52690/jswse.v7i1.1328>.

²⁰ Rosanawati et al., "Pedagogical Model Innovation Based on Ki Hajar Dewantara's Among System for History Learning in the Merdeka Curriculum."

²¹ Nada et al., "Development of Differentiated Project Based Learning Teaching Modules to Foster Critical and Creative Thinking Skills in Students."

²² Sri Wahyuni et al., "Learning Transformation: Optimizing Student Potential Through Inclusive and Meaningful Differentiated Learning," *Jurnal Pendidikan MIPA* 24, no. 2 (2023): 453-66, <https://doi.org/10.23960/jpmipa/v23i2.pp453-466>.

receive the support needed to complete the project.²³

- b. **Outcomes:** This approach significantly improves collaboration and self-regulation skills, as students work in heterogeneous groups where each member contributes based on their unique strengths.²⁴

Aspect of PjBL Strategy	Implementation	Educational Outcome	Source
Content	Providing varied research materials (videos vs. texts).	Improved conceptual understanding.	25
Process	Grouping students by interest or readiness level.	Higher active participation and motivation.	26
Product	Allowing a choice between a video, essay, or model.	Authentic assessment of student skills.	27

6. Systemic Challenges and Implementation Barriers

Despite the positive influence of PjBL, several barriers persist in the Indonesian school system that hinder its full potential.

- a. **Teacher Readiness:** Many teachers lack the conceptual understanding of the Merdeka Curriculum and struggle to design differentiated modules. Resistance to change and the complexity of planning are major hurdles.
- b. **Infrastructure Gap:** The "digital divide" remains a critical issue, where schools in remote areas lack the hardware and connectivity needed for technology-enhanced PjBL.¹
- c. **Administrative Burden:** The time-intensive nature of PjBL often clashes with limited school hours and high administrative requirements for teachers.
- d. **Perception of IPS:** As long as IPS is viewed as a "second-class" subject with

²³ Dina Dinaryanti Heri Yusuf Muslihin and Dian Indihadi, "A Systematic Study of the Application of Differentiated Project-Based Learning to Improve the Readiness and Learning Outcomes of Elementary Students," *ResearchGate* 4 (August 2025): 606–19, <https://doi.org/10.56916/jirpe.v4i3.1435>.

²⁴ Wahyuni et al., "Learning Transformation."

²⁵ Wahyuni et al., "Learning Transformation."

²⁶ tim Yopi Rachmad, "Strategi Implementasi Mata pelajaran IPS dalam Kurikulum Merdeka untuk meningkatkan Kebudayaan Lokal," *BBGTK Provinsi Sumatera Utara*, July 8, 2024, <https://bbggtksumut.kemendikdasmen.go.id/strategi-implementasi-mata-pelajaran-ips-dalam-kurikulum-merdeka-untuk-meningkatkan-kebudayaan-lokal/>.

²⁷ Wahyuni et al., "Learning Transformation."

minimal time allocation, teacher innovation will remain constrained.²⁸

7. Factors for Successful Adaptation

A systematic review identified nine specific factors that contribute to the success of PjBL models adapted for critical thinking.²⁹ These include: (1) using authentic, ill-structured problems; (2) fostering small-group collaboration; (3) encouraging independent research; (4) challenging students to evaluate arguments; (5) promoting interpersonal communication; (6) using a scientific process; (7) providing guided inquiry; (8) ensuring active engagement; and (9) optimizing the timing of the intervention.³⁰

C. CONCLUSION

Project-Based Learning significantly enhances students' critical thinking and motivation in Social Studies by transforming passive learners into active investigators of authentic, real-world issues. The integration of modern digital tools and localized philosophies like the Among System effectively fosters the complex cognitive indicators of analysis, evaluation, and inference within the framework of the Kurikulum Merdeka. Despite these benefits, sustainable implementation is contingent upon overcoming systemic barriers related to teacher competence, the digital divide, and the historical marginalization of Social Studies as a subject area. To realize the full potential of this pedagogical shift, educational policy must prioritize continuous professional development and infrastructure equity to support inclusive, technology-enhanced inquiry across all Indonesian regions.

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²⁸ Syukur et al., *Tantangan Membelajarkan Mata Pelajaran Ilmu Pengetahuan Sosial Di Sekolah Dasar: Studi Literatur*.

²⁹ Ling Yu and Zuhana Mohamed Zin, "The Critical Thinking-Oriented Adaptations of Problem-Based Learning Models: A Systematic Review," *Frontiers in Education* 8 (May 2023), <https://doi.org/10.3389/educ.2023.1139987>.

³⁰ Zuhana Mohamed Zin Ling Yu, "Frontiers | The Critical Thinking-Oriented Adaptations of Problem-Based Learning Models: A Systematic Review," accessed December 27, 2025, <https://www.frontiersin.org/journals/education/articles/10.3389/educ.2023.1139987/full>. <https://doi.org/10.3389/educ.2023.1139987>.

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