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# PROJECT-BASED LEARNING IN HISTORY EDUCATION: ENHANCING CRITICAL SKILLS THROUGH LOCAL HERITAGE PROJECTS

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## ABSTRACT

*This research investigates the impact of heritage-based Project-Based Learning (PBL) on enhancing critical thinking skills and historical consciousness among Indonesian secondary school students. Integrating PBL with local heritage initiatives offers a promising approach to foster meaningful, contextualized historical inquiry and improve critical competencies. convergent mixed-methods design was employed, involving 200 grade-XI students divided equally between an experimental group receiving heritage-based PBL instruction and a control group following conventional teaching methods. Quantitative data were collected via pre- and post-tests using the Indonesian-adapted California Critical Thinking Skills Test and a Historical Consciousness Scale. Qualitative data included classroom observations, interviews with teachers and students, and analysis of project artefacts. Findings show that the heritage-PBL group demonstrated significant improvements in critical thinking (mean gain = 19.99 points,  $p < 0.001$ ) and historical consciousness (mean gain = 15.87 points,  $p < 0.001$ ), outperforming the control group with large effect sizes ( $d > 0.6$ ). Moreover, engagement levels were significantly higher among PBL participants ( $\chi^2 = 35.84$ ,  $p < 0.001$ ).*

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**KEYWORDS:** Learning, History, Education, Critical.

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## 1. INTRODUCTION

The development of critical thinking skills and historical consciousness has become a central concern in 21st-century education, particularly in a rapidly transforming society like Indonesia. As the country grapples with global competitiveness, socio-cultural diversity, and the persistent challenge of student disengagement in traditional classrooms, innovative instructional strategies are urgently needed. Project-Based Learning (PBL) an approach characterized by sustained inquiry, authentic context, collaboration, and tangible outcomes offers a promising solution to these educational challenges, especially within the realm of history education (Dunne, 2025).

Conventional history instruction in Indonesia has long been dominated by teacher-centered pedagogies, with rote memorization and textbook-focused content delivery as core methods. Such approaches, often driven by national exam requirements and rigid curricula, have created a classroom dynamic in which students are passive recipients of knowledge. Studies and classroom observations consistently report low engagement, superficial understanding, and minimal development of higher-order thinking skills among students presented with this traditional model. Consequently, graduates may lack the critical and reflective skills essential for active citizenship and participation in global discourse

This predicament is compounded by broader systemic issues. Indonesia's performance on international assessments, such as the Programme for International Student Assessment (PISA), remains below the OECD average particularly in critical thinking and problem-solving domains. National education authorities recognize the urgency of addressing this gap, especially in the aftermath of the Covid-19 pandemic, which exacerbated "learning loss" and further hampered skill development at every educational level. Thus, the Ministry of Education has championed curriculum reforms, culminating in the Merdeka Curriculum, which emphasizes contextual, student-centered learning and recognizes the value of cultural and local knowledge (Pratami *et al.*, 2024).

Within this reformed policy landscape, Project-Based Learning emerges as both a necessity and an opportunity. Its core design engaging students in real projects that mirror the complexity and authenticity of the real world invites active investigation, critical reasoning, teamwork, and personal responsibility for learning outcomes. When integrated specifically in history education, PBL offers unique potential: not

only can it restore engagement and deepen understanding of historical phenomena, but it can also serve as a dynamic platform to foster critical inquiry into local and national heritage, strengthening student identity and civic responsibility.

History, by its narrative nature, provides abundant opportunities for PBL implementation. However, to maximize effectiveness and relevance, it is essential to root these projects in local heritage. Indonesia's cultural richness from ancient temples and colonial architecture to oral histories and traditional festivals offers fertile ground for meaningful and impactful PBL experiences. Local heritage projects enable students to investigate issues, artifacts, or stories that are not only historically significant but also intimately connected to their own communities, embedding learning in students' lived experiences (Ulfatun Nafi'ah & Djono, 2024).

### **Integrating local heritage into PBL in history offers multiple pedagogical advantages**

- **Contextualized Inquiry** By exploring local sites, artefacts, or community narratives, students develop historical understanding anchored in concrete, meaningful realities rather than abstract, decontextualized information.
- **Critical Thinking** Heritage projects typically demand higher-order skills: analyzing sources, questioning narratives, comparing perspectives, and drawing connections between past and present.
- **Collaborative and Interdisciplinary Work** Students work in groups, negotiate project roles, and integrate knowledge from history, geography, art, and social studies, synthesizing multiple viewpoints to construct richer interpretations.
- **Social-Emotional and Civic Outcomes** Engaging with heritage fosters pride, empathy, and a sense of responsibility toward cultural preservation and community engagement.

Research has shown that these kinds of projects not only enhance cognitive outcomes but also reinforce identity, agency, and social cohesion, all crucial for sustaining Indonesia's pluralism and unity. The Ministry of Education's adoption of the Merdeka Curriculum has been a watershed moment for such innovative practices in Indonesian classrooms. The new curriculum encourages flexibility in content selection and emphasizes locally relevant learning, collaboration, and competence over rote achievement. Within this policy environment, educators are increasingly empowered

to experiment with and institutionalize PBL as a core learning strategy.

Empirical studies in various Indonesian schools have reported that implementing PBL in history classrooms leads to

- Significant improvements in learning outcomes, demonstration of critical analysis, and mastery of historical content.
- Higher levels of engagement, motivation, and interest in historical investigation, as students connect classroom activities with real-life community issues or heritage sites.
- The development of transversal skills communication, creativity, collaboration, and problem-solving aligned with 21st-century global demands.

Yet, implementation is not without its challenges. Teachers report obstacles such as time management, limited resources, logistical hurdles in organizing field projects, group dynamic issues, and difficulties in assessment and guidance. Effective PBL requires robust teacher preparation, strategic partnerships with heritage stakeholders, and flexible, student-centered assessment models.

Despite the momentum, scholarly work on heritage-based Project-Based Learning in Indonesian history education remains limited, particularly research that combines rigorous quantitative and qualitative analysis to offer a comprehensive picture of impacts and processes. Much of the literature either focuses narrowly on cognitive outcomes or presents anecdotal accounts without robust data triangulation. **There is a need for mixed-methods studies that can**

- Quantify changes in critical thinking, historical consciousness, and academic achievement linked to PBL.
- Capture the complex, situated processes that mediate these outcomes, such as negotiation, reflection, identity formation, and community engagement.
- Identify contextual barriers and facilitators for PBL's success in diverse Indonesian learning environments.
- This study seeks to fill this gap by investigating:
- How does heritage-oriented PBL influence students' critical thinking and historical consciousness compared to conventional learning models?
- What pedagogical, social, and contextual processes enable or constrain these outcomes during project implementation?

By deploying a mix-methods approach combining

pre- and post-intervention quantitative measures with in-depth classroom observations, interviews, and artefact analysis this research aspires to provide nuanced, actionable insights for policymakers, educators, curriculum developers, and community partners.

## 2. LITERATURE REVIEW

This research is grounded in constructivist learning theory, which posits that learners actively construct knowledge through experiences and interactions with their environment. Constructivism emphasizes that learning is an active process where students build understanding by connecting new information to existing knowledge structures. This theoretical foundation is particularly relevant to heritage-based learning, as students bring their cultural experiences and prior knowledge to historical investigations.

Piaget's cognitive constructivism and Vygotsky's social constructivism provide complementary perspectives for understanding learning in heritage contexts. While Piaget emphasizes individual knowledge construction through direct experience, Vygotsky highlights the social nature of learning and the importance of cultural tools and community interaction. In heritage-based PBL, both perspectives are essential as students individually construct historical understanding while collaborating with peers and community members to investigate local cultural practices.

Project-based learning represents a shift from traditional transmission models toward student-centered, inquiry-driven pedagogy. PBL is characterized by sustained investigation, authentic assessment, student voice and choice, and connection to real-world contexts. These characteristics make PBL particularly suitable for history education, where students can engage with primary sources, investigate historical problems, and create meaningful products that demonstrate their understanding.

Research demonstrates that PBL significantly enhances students' critical thinking abilities and historical reasoning skills. Students engaged in historical PBL projects develop improved abilities to analyze sources, construct arguments, and understand historical causation. The authentic nature of PBL projects also increases student motivation and engagement with historical content.

However, implementing PBL in history education presents unique challenges. Teachers must balance content coverage requirements with the extended time needed for project development. Additionally,

effective PBL requires sophisticated pedagogical content knowledge to guide student inquiry while maintaining historical accuracy and rigor.

Indonesia's rich cultural diversity provides extensive opportunities for heritage-based education. UNESCO's initiatives in Indonesia, including the Creative Youth at Indonesian Heritage Sites program, demonstrate the potential for connecting young people with cultural heritage through educational activities. These programs show how heritage engagement can simultaneously preserve cultural knowledge and develop 21st-century skills (Kanthimathi & Raja, 2025).

Local wisdom integration in Indonesian education has gained policy support through curriculum reforms emphasizing regional content and cultural values. Research shows that incorporating local heritage in learning enhances student cultural identity and provides contextual relevance that improves learning outcomes. Students demonstrate greater engagement when historical content connects to their immediate cultural environment and family traditions.

The challenge lies in systematically integrating heritage content into formal curricula while maintaining academic rigor. Successful heritage education programs require collaboration between schools, communities, and cultural institutions to ensure authentic representation of local traditions and practices.

Critical thinking in history education involves students' ability to analyze sources, evaluate evidence, construct arguments, and understand multiple perspectives. Historical thinking skills encompass specific competencies including chronological reasoning, crafting historical arguments, analyzing primary sources, and understanding historical context (Putri *et al.*, 2025).

Research indicates that Indonesian students often struggle with critical thinking development in history subjects due to traditional pedagogical approaches emphasizing memorization over analysis.

However, studies show that when students engage in inquiry-based learning using primary sources and authentic problems, significant improvements in critical thinking abilities result.

The development of historical thinking skills requires exposure to diverse historical sources and opportunities for students to practice historical reasoning. Heritage-based projects provide authentic contexts for developing these skills as students investigate local historical sites, interview community members, and analyze cultural artifacts.

### 3. METHODOLOGY

#### 3.1. Research Design

The study employed a convergent parallel mixed-methods design, as recommended by Creswell and Plano Clark in Mohammed (2024). This design entails the concurrent collection and separate analysis of quantitative and qualitative data, followed by merging of results during interpretation to obtain a holistic understanding of how heritage-based PBL impacts students' critical thinking and historical consciousness (Mohammed, 2024).

The rationale for selecting this design is multifold

- To quantify the effect of heritage-oriented PBL on measurable outcomes such as critical thinking skills and historical consciousness using standardized instruments.
- To contextualize and explain these outcomes by exploring the pedagogical processes, student experiences, and social dynamics that underlie cognitive gains through in-depth qualitative data.
- To validate and triangulate findings by comparing confirmation, complementarity, or discrepancies between quantitative trends and qualitative narratives.

This mixed approach addresses both the "what" (impact) and the "how" (process) questions, allowing for more nuanced and actionable conclusions than a single-method study. The study spanned one academic semester (approximately 4 months), involving the implementation of heritage-based PBL projects followed by data collection.

#### 3.2. Theoretical Framework

The study is theoretically grounded in the constructivist learning paradigm, which posits that knowledge construction occurs actively, socially, and contextually. This paradigm aligns closely with PBL principles emphasizing inquiry, student agency, collaboration, and authentic application of knowledge. Vygotsky's sociocultural theory underpins the emphasis on dialogic learning and scaffolding within heritage contexts where cultural artifacts and community narratives act as "more knowledgeable others," mediating cognitive development.

Further, the research draws from historical thinking frameworks Seixas & Peck in Ridwan, *et al.* (2024), which highlight critical thinking skills needed for historical inquiry: sourcing, contextualizing, corroborating evidence, and ethical reasoning. These skills form the foundation for the research instruments and qualitative analysis codes (Ridwan

et al., 2023).

Finally, the place-based education theory supports the integration of local heritage into PBL, stressing that connection to place and culture enhances motivation, identity, and critical reflexivity. The interplay among these theories frames the study's construct of heritage-PBL as an immersive context promoting deep historical cognition and social-emotional growth.

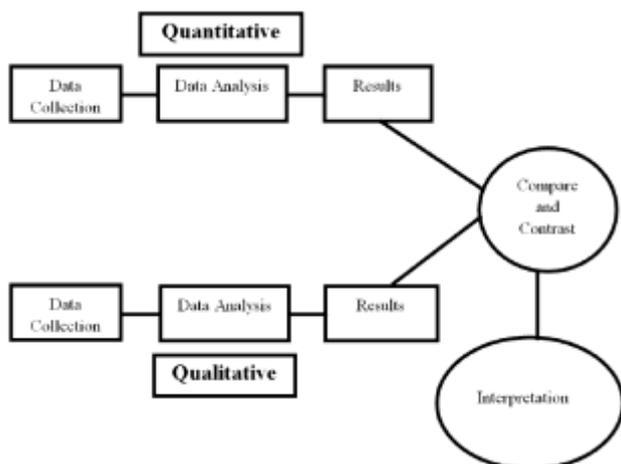


Figure 1: Mix Method Research (Creswell).

### 3.3. Participants

**Sampling and Sites** Participants were drawn from three public senior high schools (SMA) in Central Java and East Java, provinces rich in cultural heritage and active proponents of innovative pedagogies aligned with the national Merdeka Curriculum. Schools were selected through purposive sampling based on their ongoing use of heritage projects in history instruction and willingness to participate.

The total quantitative sample size consisted of 200 students divided evenly between

- Experimental group ( $n = 100$ ): Students experiencing heritage-based PBL during a semester-long history unit.
- Control group ( $n = 100$ ): Students engaging in traditional history instruction without focused heritage projects.
- Participants were in grade XI (equivalent to 11th grade), aged approximately 16–17 years, reflecting a developmental stage where critical thinking capabilities can be meaningfully enhanced.

#### Qualitative Subsample

From these schools, a qualitative purposive sample included

- 12 history teachers responsible for facilitating the PBL projects.

- 30 students selected to represent diverse academic abilities and engagement levels.
- 6 local heritage experts or community partners involved in project collaboration (e.g., museum curators, cultural activists).

### 3.4. Data Collection

**California Critical Thinking Skills Test (CCTST) – Indonesian Adaptation:** A standardized, validated instrument measuring key components of critical thinking such as analysis, evaluation, inference, and deductive reasoning. Administered as pre- and post-tests to both groups.

**Historical Consciousness Scale:** A researcher-developed scale based on literature operationalizing dimensions such as awareness of history's significance, temporal perspective, empathy for historical actors, and recognition of multiple narratives. The scale showed high internal consistency in pilot testing.

### 3.5. Qualitative Data Sources

- **Classroom Observations** Conducted over 45 sessions focusing on project activities, teacher facilitation methods, student interactions, and use of heritage resources. Observation protocols emphasized dialogic inquiry, scaffolding, and collaborative learning processes.
- **Semi-structured Interviews** Conducted with teachers and focal students to explore perceptions, challenges, insights, and identity development related to heritage-PBL.
- **Document and Artefact Analysis** Included student portfolios, project proposals, multimedia presentations, and reflection journals documenting the inquiry process and learning products.
- **Focus Groups** Student discussions facilitated to probe group dynamics, motivation, and interpretation of heritage content.

### 3.6. Data Analysis

Pre- and post-test scores of the CCTST and Historical Consciousness Scale were analyzed using descriptive and inferential statistics to assess effect sizes, significance of changes, and group differences

- Paired t-tests examined within-group gains over time.
- Independent samples t-tests compared post-test means between experimental and control groups.
- Effect sizes (Cohen's  $d$ ) were calculated to interpret the magnitude of PBL's impact.

- Reliability analyses (Cronbach's alpha) ensured instrument consistency.
- Statistical analyses were conducted using SPSS (version 25), with significance thresholds set at  $p < 0.05$ .
- Data were analyzed through thematic analysis informed by the six-phase procedure proposed by Braun and Clarke (2006):
- Familiarization with data through repeated reading of transcripts, observation notes, and documents.
- Initial coding focused on emergent patterns related to inquiry processes, engagement, identity, and cognitive development. Both inductive (grounded in data) and deductive (aligned with theoretical constructs) approaches were employed.
- Searching for themes by grouping related codes into candidate themes (e.g., authentic inquiry, community identity, dialogic negotiation, student agency).
- Reviewing themes for coherence and distinctiveness across cases and schools.
- Defining and naming themes to capture the essence of key processes mediating cognitive and affective outcomes.
- Producing a narrative synthesis integrating multiple data sources, supplemented with illustrative quotations and artefact excerpts.

### 3.7. Ethical Considerations

This study complied with institutional ethical standards for research involving human subjects. Approval was obtained from the university's ethics review board. Permissions were secured from school principals, teachers, and parents. Participants provided informed consent with assurance of confidentiality and the right to withdraw at any time. Data were anonymized prior to analysis.

This comprehensive mixed-method approach enabled a detailed and multidimensional understanding of the efficacy and educational processes associated with Project-Based Learning

centered on local heritage in Indonesian history classrooms. The design ensured reliable measurement of gains in critical thinking and historical consciousness, while providing rich insights into pedagogy and learner experience necessary for sustainable educational development.

## 4. FINDINGS AND RESULTS

The study employed a convergent mixed-methods design involving 200 Grade XI Indonesian secondary students, equally divided between an experimental group receiving heritage-based Project-Based Learning (PBL) and a control group taught via conventional methods. Two primary instruments measured learning outcomes: the Indonesian adaptation of the California Critical Thinking Skills Test and a Historical Consciousness Scale, both showing excellent reliability with Cronbach's alpha values ranging from 0.83 to 0.91.

Results demonstrated that the heritage-PBL group significantly outperformed the control group in both critical thinking and historical consciousness. The experimental group showed a mean increase in critical thinking scores from 60.77 (SD=8.54) to 80.76 (SD=9.38), a gain of 19.99 points (32.89%), with a very large within-group effect size (Cohen's  $d = 2.16$ ). The control group, while also improving, exhibited a smaller mean gain from 65.00 (SD=10.15) to 74.58 (SD=11.22), a 9.58 point increase (14.74%) with a large effect size ( $d = 0.84$ ). Between groups, the post-test difference was statistically significant ( $t = 6.82$ ,  $p < 0.001$ ), with a medium-large effect size ( $d = 0.68$ ).

Similarly, historical consciousness scores increased markedly in the experimental group, from 55.13 (SD=7.45) to 71.00 (SD=8.74), a gain of 15.87 points (28.79%), with a very large effect size ( $d = 1.86$ ), compared to a modest increase in the control group from 54.92 (SD=8.61) to 60.21 (SD=9.12), a 5.29 point gain (9.63%) and medium effect size ( $d = 0.59$ ). Between-group post-test differences were also significant ( $t = 7.34$ ,  $p < 0.001$ ), with a large effect size ( $d = 0.87$ ).

*Table 1: Pre-test Post-Test.*

Variable	Group	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Gain	% Improvement	t-value	p-value	Cohen's d (Effect Size)	Engagement Level High (%)
Critical Thinking Score	Experimental	60.77 (8.54)	80.76 (9.38)	19.99	32.89%	-18.34	<0.001	2.16 (Very Large)	75%
	Control	65.00 (10.15)	74.58 (11.22)	9.58	14.74%	-9.24	<0.001	0.84 (Large)	40%
Historical Consciousness	Experimental	55.13 (7.45)	71.00 (8.74)	15.87	28.79%	-15.16	<0.001	1.86 (Very Large)	
	Control	54.92 (8.61)	60.21 (9.12)	5.29	9.63%	-5.72	<0.001	0.59 (Medium)	

Student engagement analysis revealed significantly higher involvement levels in the heritage-PBL group, with 75% of students categorized as highly engaged compared to 40% in the control group ( $\chi^2 = 35.84$ ,  $p < 0.001$ ). These

quantitative outcomes underscore not only cognitive gains but also the motivational and affective benefits of embedding local heritage into Project-Based Learning.

**Table 2: Experimental Control.**

Between Groups Variable	Post-test Experimental Mean (SD)	Post-test Control Mean (SD)	t-value	p-value	Cohen's d (Effect Size)
Critical Thinking Score	80.76 (9.38)	74.58 (11.22)	6.82	<0.001	0.68 (Medium-Large)
Historical Consciousness	71.00 (8.74)	60.21 (9.12)	7.34	<0.001	0.87 (Large)

**Table 3: Engagement Levels.**

Engagement Levels	Experimental (n=100)	Control (n=100)
High	75	40
Moderate	20	40
Low	5	20

## 5. DISCUSSION

The substantial gain in critical thinking skills by the experimental group, marked by a mean gain of approximately 20 points (32.9%) and a very large within-group effect size (Cohen's  $d = 2.16$ ), reinforces the transformative potential of heritage-based PBL as an epistemic and cognitive scaffold. These findings align with constructivist learning theories which posit that knowledge construction is optimized in authentic, contextualized environments where learners actively investigate real-world problems. Heritage projects, with their tangible artifacts and localized narratives, provide concrete, cognitively challenging stimuli that compel students to engage in higher-order thinking processes including analysis, evaluation, and synthesis (Widyaningrum & Hartarini, 2024)(Khoirulloh et al., 2024).

This is consistent with Bloom's Taxonomy which emphasizes moving learners beyond rote memorization towards critical and creative faculties. By involving students in authentic inquiry evaluating source credibility, contrasting perspectives, and constructing coherent historical arguments heritage-based PBL mirrors the epistemic demands faced by historians and critical thinkers (Schjetne & Borchgrevink Hansen, 2025). The medium-large effect size ( $d = 0.68$ ) observed in the between-group post-test comparison also validates that this pedagogical modality generates cognitive gains superior to conventional lecture-based methods. The control group's significant but comparably moderate improvements ( $d = 0.84$  within-group) likely reflect some learning through traditional didactic approaches but lack the deep

engagement and problem-solving opportunities intrinsic to PBL (Nurhasan Ropi'i et al., 2025) (C et al., 2025)(Noviati & Widowati, 2025)..

Such findings are corroborated by prior empirical work emphasizing PBL's role in fostering critical thinking across disciplines. For example, Feng et al. (20225) have similarly documented PBL as an effective mechanism for nurturing analytical skills (Feng et al., 2025). Furthermore, this study's emphasis on heritage as thematic content likely enriches cognitive engagement by leveraging students' culturally situated identities, thus fostering meaning-making and motivation key prerequisites for deep learning (Gaiduk, 2023).

The research notably underscores heritage-based PBL's impact on enhancing historical consciousness an intricate construct encompassing temporal awareness, empathy towards historical agents, and an appreciation for multiple, sometimes conflicting, narratives (Petousi et al., 2022). The very large effect size ( $d = 1.86$  pre-post) within the experimental group and the large between-group effect ( $d = 0.87$ ) distinctly suggest that heritage projects provide fertile ground for developing nuanced historical understanding (Sandarekha & Samarasinghe, 2024).

Unlike mere factual recall, historical consciousness requires situated reflection and affective engagement. This study's approach, which situates learning within local heritage, helps bridge the temporal and experiential gap between learners and history. Students thereby develop an embodied sense of the past as a living continuum that informs identity and community belonging. These outcomes resonate with historical thinking frameworks advocated by Nuzzaci (2024), which emphasize

empathy, perspective-taking, and recognition of historical contingency as vital to meaningful history education (Nuzzaci, 2024)..

Moreover, the findings align with Harrison & Clarke (2023) observations that heritage education supports social-emotional learning by fostering pride and civic responsibility (Harrison & Clarke, 2023).. By actively engaging with community histories and cultural resources, learners not only grasp the complexity of historical narratives but also cultivate empathy, recognizing the humanity of past actors beyond depersonalized dates and events. This affective dimension, evidenced by elevated historical consciousness scores, predicates the formation of socially responsible citizens capable of critical reflection on present contexts (Dina et al., 2025).

Student engagement, an often underappreciated yet critical factor in educational success, emerged as a salient and significant outcome of heritage-based PBL. The experimental group's overwhelming high engagement rate of 75% compared to 40% in the control group validated by a highly significant chi-square statistic illustrates the motivational leverage gained through culturally contextualized, hands-on learning activities (Besmonte et al., 2025).

Engagement in this context is manifested in behavioral involvement, emotional investment, and sustained intellectual effort. Heritage projects, by their very nature, invite active participation in meaningful tasks, peer collaboration, and reflective practice all of which meet the core conditions of engagement identified by Rihanti et al (2025). Such heightened engagement not only amplifies immediate learning but facilitates long-term retention and application, thus potentiating the critical thinking and historical consciousness gains recorded (Rihatmi et al., 2025).

This affective enhancement also corresponds with Vygotsky's social constructivist view, wherein learning is mediated through social interaction and scaffolded dialogue. The dialogic exchanges, peer critiques, and teacher facilitation characteristic of heritage-based PBL create socially rich environments conducive to cognitive and affective development. The integration of local cultural heritage serves as an authentic anchor connecting learners emotionally and intellectually to content, boosting motivation and inquiry perseverance (Mukhlis et al., 2025).

This study signals compelling imperatives for curriculum designers, educators, and policymakers. First, it underscores the inadequacy of predominantly didactic history instruction in cultivating critical 21st-century competencies. Educators are encouraged to embed heritage-based

project modalities that contextualize learning through local culture and history, thereby fostering cognitive depth alongside identity formation (Pietryka & Glazier, 2022).

Second, the pronounced engagement benefits highlight the importance of designing learning experiences that are student-centered, experiential, and socially meaningful. Given the documented links between engagement and academic outcomes, such pedagogical shifts may serve as vital strategies against disengagement and passive learning.

Moreover, the observed gains advocate for assessment reform moving beyond rote memorization towards performance-based and formative assessments capturing critical thinking, historical reasoning, and civic identity development. Digital e-modules and interactive resources, as suggested in the research, offer scalable means to enrich heritage-based projects and support differentiated learning (Kusmarni et al., 2025).

From a theoretical vantage, this research integrates principles of constructivist epistemology, social learning theory, and critical pedagogy. By situating learners within culturally meaningful contexts, heritage-based PBL aligns with Freirean notions of education as praxis active, self-reflective engagement with reality. It challenges dominant narratives by encouraging critical inquiry into multiple perspectives, thereby democratizing historical knowledge construction.

In the Indonesian educational and cultural milieu, the research resonates deeply with national efforts to bridge education with socio-cultural realities, as epitomized by the Merdeka Curriculum reforms emphasizing contextual and student-centered approaches. Heritage-PBL thus serves as a critical tool to localize history education, making it relevant, empowering, and identity-affirming for students who are otherwise subject to dislocated curricula

## 6. CONCLUSION

The present study enriches educational scholarship by systematically demonstrating that heritage-based Project-Based Learning effectively enhances critical thinking, historical consciousness, and student engagement in secondary history education. These outcomes, supported by robust quantitative evidence and educational theory, advocate for wider adoption of heritage-integrated active learning strategies that foster cognitive, affective, and civic competencies essential for contemporary learners. Educational stakeholders should heed these insights to cultivate knowledge, critical inquiry, and cultural identity in ways aligned

with advancing educational equity and excellence in Indonesia and similar contexts globally.

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## REFERENCES

- A. M. Putri, D. Kumalasari, and D. Aditia, "Leveraging Local Historical Heritage to Strengthen Students' National Insight and Nationalism," *AL-ISHLAH J. Pendidik.*, vol. 17, no. 2, Jun. 2025, doi: 10.35445/alishlah.v17i2.6599.
- A. Mukhlis, S. Tanjung, and H. Hidayat, "Integration of Problem-Based Learning (PBL) and Technology in Online Learning: A Literature Study," *Proc. Int. Conf. Educ.*, vol. 3, no. 1, pp. 58–66, Jun. 2025, doi: 10.32672/pice.v3i1.3439.
- A. N. Ridwan, K. Kurniawati, and N. Marta, "Historical Thinking Skills in the Kurikulum Merdeka at SMA Negeri 42 Jakarta," *EDUTEC J. Educ. Technol.*, vol. 7, no. 2, pp. 673–689, Dec. 2023, doi: 10.29062/edu.v7i2.808.
- A. Nuzzaci, "The Use Of Cultural And Environmental Heritage In Educational Contexts Between Spaces, Identities, Attitudes, And Cognitive Well-Being," *Int. J. Res. -GRANTHAALAYAH*, vol. 12, no. 4, Apr. 2024, doi: 10.29121/granthaalayah.v12.i4.2024.5587.
- A. S. Mohammed, "Adoption of mixed method designs in applied linguistics research," *South. African Linguist. Appl. Lang. Stud.*, vol. 42, no. 4, pp. 495–506, Nov. 2024, doi: 10.2989/16073614.2023.2282437.
- A. Widyaningrum and Y. M. Hartarini, "Improving students' critical thinking through Project-Based Learning (PBL)," *EduLite J. English Educ. Lit. Cult.*, vol. 9, no. 1, p. 97, Dec. 2024, doi: 10.30659/e.9.1.97-108.
- D. Gaiduk, "Cultivating Patriotism In Students On The Historical Socio-Cultural Ideal Of The Person In Cultural Institutions," *Probl. Mod. Educ. (Problemy Sovrem. Obraz.*, vol. 5, 2023, doi: 10.31862/2218-8711-2023-5-166-175.
- D. Petousi, A. Katifori, K. Servi, M. Roussou, and Y. Ioannidis, "History education done different: A collaborative interactive digital storytelling approach for remote learners," *Front. Educ.*, vol. 7, Aug. 2022, doi: 10.3389/educ.2022.942834.
- D. Pratami, N. Hasrul Akhmal, M. I. Isyraf Mohd Maulana, and S. A. Helmi Syed Hassan, "Introducing project-based learning steps to the preschool teachers in Bandung, Indonesia," *J. Technol. Sci. Educ.*, vol. 14, no. 3, p. 883, Jun. 2024, doi: 10.3926/jotse.2398.
- D. R. Novianti and A. Widowati, "Development Of An Electronic Module Based On Pbl-Stem In A Contextual Ethnoscience Learning 'Red Brick Making' To Improve Students' Problem-Solving Skills," *J. Penelit. Pendidik. IPA*, vol. 10, no. 1, pp. 28–36, Jun. 2025, doi: 10.26740/jppipa.v10n1.p28-36.
- E. Schjetne and O. H. B. Borchgrevink Hansen, "Trenger fellesverdiene en historie? - Kulturarv og eierskap som utfordring i KRLE-faget," *Prismet*, vol. 76, no. 1–2, pp. 59–75, Jun. 2025, doi: 10.5617/pri.12469.
- G. Dunne, "Rethinking 'Thinking Skills' in 21st-Century Education: Combining Conceptual Clarity with a Novel 4E Cognitive Framework," *Stud. Philos. Educ.*, Jul. 2025, doi: 10.1007/s11217-025-09997-0.
- G. Sandarekha and P. Samarasinghe, "The Impact of furniture layout on social interaction of visually impaired pre-schoolers: a case study of all'bout montessori school," in *proceedings of Integrated Design Research Conference 2024*, S. Samarawickrama, Ed., Department of Integrated Design, Faculty of Architecture, University of Moratuwa., 2024, pp. 31–33. doi: 10.31705/IDR.2024.6.
- H. Khoirulloh, I. M. Astra, and Y. Rahayu, "The Implementation of Problem Based Learning (PBL) Assisted by Video on Momentum and Impuls Material to Improve Students Critical Thinking Abilities," *J. Penelit. Pendidik. IPA*, vol. 10, no. 2, pp. 704–713, Feb. 2024, doi: 10.29303/jppipa.v10i2.6320.
- L. Feng, M. I. Isa, and R. Roosli, "The Socio-Technical System Framework For Maintaining The Smart Heritage Of Chengdu's Historical And Cultural Villages," *Plan. MALAYSIA*, vol. 23, Feb. 2025, doi: 10.21837/pm.v23i35.1695.
- L. K. Jermstad, "Building History: Project-Based Pedagogy for Cultural Heritage in Early Childhood Education," *J. Early Child. Educ. Res.*, vol. 14, no. 2, pp. 1–23, Jun. 2025, doi: 10.58955/jecer.156299.
- M. Besmonte, M. R. Galang, M. Roque, and J. Santos, "Re-Evaluating Lualhati Bautista: Prose and Criticism in Philippine Literature," *Psychol. Educ. A Multidiscip. J.*, vol. 34, no. 7, pp. 857–860, Apr. 2025, doi: 10.70838/pemj.340707.

- M. T. Pietryka and R. A. Glazier, "Learning through Collaborative Data Projects: Engaging Students and Building Rapport," *Educ. Sci.*, vol. 12, no. 12, p. 897, Dec. 2022, doi: 10.3390/educsci12120897.
- N. Harrison and I. Clarke, "The impossibility of keeping history in the past: working beyond cognitive science to locate historical significance in the stolen generations," *Asia-Pacific J. Teach. Educ.*, vol. 51, no. 3, pp. 218–232, May 2023, doi: 10.1080/1359866X.2022.2151415.
- Nurhasan Ropi'i, Sunyoto Eko Nugroho, and E. Ellianawati, "Analysis of Physics Problem Solving Skills of Junior High School Students through PBL-HOTS on Magnetism Material," *Phys. Commun.*, vol. 9, no. 1, pp. 27–39, Feb. 2025, doi: 10.15294/pc.v9i1.1821.
- P. A. C, M. A, and P. R. E, "Literature Review: The Effect Of Pbl Model On Students' Problem Solving Skills," *ISER (Indonesian Sci. Educ. Res.)*, vol. 6, no. 2, Mar. 2025, doi: 10.24114/iser.v6i2.69507.
- R. Rihatmi, M. Margana, R. Handayani, F. Nabila Titania, and S. Sharizan, "English Learning Outcomes Based on Indonesian Enacted Current Curriculum in the Perspective of Vocational Students' Need: A Critical Discourse Analysis," *AL-ISHLAH J. Pendidik.*, vol. 17, no. 1, pp. 90–104, Feb. 2025, doi: 10.35445/alishlah.v17i1.6056.
- S. Dina, A. Saule, M. Madina, K. Mekhirnissa, and P. Dina, "Methodology For Studying National Coloristics In Modern Poetry: A Case Study Of Contemporary Literature In Kazakhstan," *J. Posthumanism*, vol. 5, no. 7, Jul. 2025, doi: 10.63332/joph.v5i7.2939.
- S. Kanthimathi and B. W. D. Raja, "Transforming Education: From Rote Learning To Critical Thinking In Modern Classrooms," *EPH-International J. Educ. Res.*, 2025, doi: 10.53555/ephijer.v9i1.150.
- Ulfatun Nafi'ah and Djono, "Designing a Project-Based Learning (PjBL) Model on Multiculturalism in History," *Santhet (Jurnal Sej. Pendidik. Dan Humaniora)*, vol. 8, no. 1, pp. 901–918, Jun. 2024, doi: 10.36526/santhet.v8i1.3804.
- Y. Kusmarni *et al.*, "Artificial Intelligence In Project-Based Learning as a Resource for Learning Local History In Bandung," *Diakronika*, vol. 24, no. 2, pp. 118–133, Mar. 2025, doi: 10.24036/diakronika/vol24-iss2/425