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EMPOWERING HISTORICAL LITERACY THROUGH GENDER-INCLUSIVE DIGITAL PEDAGOGY: DEVELOPING DIGITAL LEARNING MATERIALS BASED ON THE HISTORICAL FIGURE GAYATRI RAJAPATNI

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ABSTRACT

Persistent structural issues in history education including androcentric narratives and the limited use of transformative digital pedagogy continue to limit students' ability to engage critically with the past. This study developed and empirically tested a gender-inclusive digital learning material centered on Gayatri Rajapatni, an influential yet underrepresented figure of the Majapahit era. The material underwent expert validation before classroom implementation to ensure accuracy and pedagogical feasibility. The intervention was evaluated using a quantitative one-group pretest-posttest quasi-experimental design involving 30 eleventh-grade students from a public senior high school in Batu City, Malang. Data were analyzed using the Shapiro-Wilk test, paired sample t-test, N-Gain, and Cohen's d. The data met the normality assumption ($p > 0.05$). Results showed a significant improvement in historical literacy ($t(29) = -7.21, p < 0.001$). The average N-Gain of 0.42 indicated moderate improvement, while the large effect size ($d = 1.80$) demonstrated substantial practical impact. These findings show that integrating marginalized female historical agents into digital learning environments enhances disciplinary literacy and broadens epistemic inclusivity in school history. The study provides a replicable, theoretically grounded model for advancing equitable and gender-responsive digital history education.

KEYWORDS: Historical Literacy, Gender-Inclusive-Pedagogy, Digital Humanities, Gayatri Rajapatni.

1. INTRODUCTION

History education in Indonesia continues to face structural, epistemic, and pedagogical challenges that significantly affect students' capacity to develop historical literacy. For decades, school history textbooks produced by state institutions and shaped by national curriculum policies have functioned not only as pedagogical tools but also as ideological instruments designed to construct particular interpretations of the nation's past.

Textbooks commonly present history as history as written and history as fact, suggesting that historical truth is fixed, singular, and fully validated through formal research procedures. While historical knowledge indeed requires rigorous methodological processes, the tendency to treat textbook narratives as absolute truths has long been problematized within historiography and critical pedagogy (Apple, 2014; Carretero et al., 2017).

As recent scholarship suggests, countering such monovocal constructions requires pedagogies that foreground marginalized knowledges and challenge epistemic hierarchies. Godsell and Maluleke (2025) demonstrate how centering student voices and suppressed historical narratives functions as a decolonial pedagogical response to dominant textual authority.

Throughout much of Indonesia's modern political history, especially during the New Order period, state-produced textbooks often reflected an official historical narrative that monopolized interpretations of the past (Purwanta & Novianto, 2022; Wood, 2005).

This monopolization of historical truth reduced history to a tool of ideological legitimation and political propaganda, narrowing the space for critical inquiry, multiple perspectives, and democratic engagement with the past. Such control over historical narratives is not merely an intellectual limitation; it constitutes what Freire (1970) terms a "domestication of consciousness," restricting learners from developing independent thinking, contesting dominant narratives, or engaging with history through inquiry and evidence.

In education, the dominance of a single narrative suppresses epistemic diversity and reinforces uniformity of thought markers of what Kuntowijoyo (2008) describes as a stagnant intellectual culture.

At the same time, completely liberalizing textbook production without adequate quality control risks producing materials that lack academic rigor, coherence, or alignment with national educational goals. Textbooks remain one of the most accessible channels for transmitting historical knowledge to

young learners; therefore, standards of accuracy, historiographical integrity, and inclusiveness must be preserved (Grever & Van der Vlies, 2017; Nokes, 2022; Pingel, 2010).

This tension between control and openness highlights the need for balanced approaches to textbook development approaches that acknowledge the plurality of historical interpretations while ensuring scholarly credibility and educational relevance.

Historically, the production of Indonesian high school history textbooks has been shaped by three interrelated forces: national curriculum reforms, evolving historiographical paradigms, and broader socio-political transformations.

Between 1975 and 2006, Indonesia underwent a series of curriculum revisions that reflected shifts in state ideology, pedagogical orientations, and societal expectations regarding the purpose of history education. These curricular reforms unfolded alongside significant developments in Indonesian historiography. As articulated by Kuntowijoyo (2005) and later elaborated by Adam (2018), Indonesian historiography has progressed through three major waves.

The first wave, emerging in the late 1950s, centered on the decolonization of historical narratives, emphasizing the reclamation of indigenous perspectives after centuries of colonial epistemic dominance. The second wave, beginning in the 1970s, introduced the systematic integration of social science methodologies, encouraging historians to adopt interdisciplinary and structural approaches to understanding historical change.

The third wave, which gained momentum in the post-New Order era, was characterized by critical revisionism marked by a reexamination of previously restricted or sensitive historical accounts, the rise of alternative narratives, and the inclusion of voices from marginalized communities. Consequently, contemporary history textbooks used in Indonesian secondary schools represent the cumulative outcome of ongoing negotiations among shifting curricular mandates, the maturation of historiographical scholarship, and the evolving socio-political landscape of the nation.

As a product of these historiographical developments, high school history textbooks represent a dynamic negotiation between dominant narratives and evolving scholarly discourses. However, despite progress in historiographical openness, textbook narratives often remain male-centered, privileging political figures, kings, soldiers, and male elites while neglecting women's

contributions to the nation's past (Blackburn, 2004).

This pattern is not unique to Indonesia. Valade and Lee (2024) show that even in well-developed history curricula, women's historical agency continues to be marginalized, and that deliberate pedagogical design is required to decentre masculine framings of the past.

Their findings underscore the need to foreground diverse women's contributions to transform students' historical understanding.

This androcentrism has significant implications for students' historical literacy: it limits their understanding of diversity in historical agency and perpetuates gender bias in historical interpretation (Sandwell & von Heyking, 2014).

Recent reforms in Indonesian history education have attempted to address long-standing concerns regarding representation and inclusivity, particularly in relation to gender. Studies on the 2013 Curriculum textbooks show that although gender discourses began to appear, they were often superficial and limited to modern historical contexts (Kurniawan, 2023).

Female figures were introduced, yet predominantly in roles that reinforced traditional depictions mothers, activists, or national heroines rather than as political thinkers or state actors with agency equal to their male counterparts.

The implementation of Kurikulum Merdeka has taken a more progressive stance by encouraging contextualized, inquiry-based, and inclusive historical narratives, and several analyses suggest that it provides greater space for incorporating women's contributions.

However, despite these advancements, representations of women from earlier historical periods particularly the Hindu-Buddhist polities and the Majapahit era remain largely absent (Day, 2002; Hall, 2010).

This silence is striking when considering the significant political and cultural roles played by figures such as Gayatri Rajapatni, whose influence on Majapahit governance, religious policy, and dynastic stability has been well acknowledged in historiographical scholarship but rarely translated into school textbooks.

The exclusion of such female historical agents creates a continuity of androcentric narratives that limit students' engagement with diverse forms of historical agency.

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The persistence of these androcentric patterns underscores broader structural issues within Indonesian history education. When historical narratives predominantly foreground male actors and political elites, students encounter a narrow conception of agency that overlooks the contributions of women, subaltern groups, and everyday actors who also shaped the past (Yumnam & Laishram, 2025; Zhao, 2025).

Such narrative imbalances impede the development of robust historical literacy, which requires learners to engage with diverse perspectives, evaluate competing interpretations, and critically interrogate how historical knowledge is constructed (Seixas & Morton, 2012; Wineburg, 2001). Research consistently shows that when students are only exposed to singular or homogenous narratives, their capacity for historical reasoning and critical engagement declines (Carretero et al., 2017; Lévesque, 2008).

In this context, digital pedagogy offers significant potential to challenge entrenched epistemic hierarchies in history learning. Digital learning environments when designed intentionally enable multimodal exploration, interactive engagement, and access to plural historical narratives that are often absent from traditional textbooks (Corredor et al., 2021; Mouza & Lavigne, 2013).

Moreover, digital platforms allow teachers to incorporate archival materials, visualizations, counter-narratives, and primary sources that highlight marginalized voices, including women's contributions across different historical periods (Lee, 2023; Miguel-Revilla et al., 2021).

For Indonesia, where curriculum reform increasingly emphasizes inquiry, critical thinking, and contextual learning, gender-inclusive digital materials represent a necessary pedagogical innovation.

Yet despite the growing scholarly attention to inclusive digital pedagogy, no existing study has systematically developed and empirically tested gender-inclusive digital learning materials that foreground female figures from Indonesia's

premodern past, particularly from the Hindu-Buddhist era. The absence is noteworthy given the significant historical roles played by women such as Gayatri Rajapatni an influential figure in Majapahit political-religious life whose contributions have been widely recognized in historical scholarship (Poesponegoro & Notosusanto, 2010; Sidomulyo, 2011), but almost entirely omitted from secondary school textbooks.

This omission reflects a broader pattern in which women from precolonial polities remain marginal in educational narratives, resulting in students rarely learning about female leadership, intellectual authority, or statecraft outside the modern era (Blackburn, 2004; Hall, 2010).

Such gaps highlight a critical misalignment between historiographical scholarship and classroom practice. While academic historians increasingly emphasize the complexity and diversity of historical actors, pedagogical materials have not kept pace. This creates what Grever & Stuurman (2007) call a "didactic lag," in which school curricula fail to reflect advances in historical understanding.

Addressing this gap requires not only incorporating neglected female figures into history education but also developing innovative digital materials that allow students to explore these narratives through inquiry, interpretation, and evidence-based reasoning. In response to these challenges, the present study develops a gender-inclusive digital learning material centered on the historical figure Gayatri Rajapatni and evaluates its effectiveness in enhancing students' historical literacy.

By combining historiographical reconstruction with digital pedagogy, the study positions itself at the intersection of three critical domains gender representation, historical literacy, and digital learning innovation thereby addressing a gap that has not been explored in previous research.

2. METHODS

2.1. Research Design

This study employed a hybrid approach that combined the development of a gender-inclusive digital learning material with a quasi-experimental one-group pretest-posttest design. The developmental stage involved expert validation of content, language, and media components, whereas the experimental stage examined the effectiveness of the material in improving students' historical literacy.

The quasi-experimental design was selected because it allows researchers to assess learning gains

before and after the intervention in real classroom settings where random assignment is not feasible (Creswell & Creswell, 2017).

2.2. Participants and Research Site

The study was conducted at a public senior high school in Batu City, Malang, involving 30 tenth-grade students (aged 15-16). The participants were selected using purposive sampling, considering the school's readiness to integrate digital learning and its alignment with the national history curriculum. All participants provided informed consent, and participation was voluntary.

To ensure ethical compliance, the study adhered to research protocols for educational experiments, guaranteeing anonymity and confidentiality.

2.3. Learning Material: Gender-Inclusive Digital Module on Gayatri Rajapatni

The intervention consisted of a gender-inclusive digital learning material specifically designed to highlight the historical agency of Gayatri Rajapatni, a prominent political and intellectual figure of the Majapahit period.

The material integrated multimedia resources, visualization, guided inquiry tasks, and source-based interpretation exercises to promote historical literacy. The digital module was structured around three dimensions of historical literacy sourcing, contextualization, and interpretation following established frameworks in history education (Seixas & Morton, 2012; Wineburg, 2001).

2.4 Instrumentation

Historical literacy was measured using a researcher-developed assessment consisting of 20 multiple-choice items and 5 short analytical tasks. The instrument was aligned with four core dimensions of historical reasoning: sourcing, contextualization, corroboration, and interpretation. Items required students to analyze primary and secondary sources, evaluate evidence, identify bias, and construct contextually grounded explanations of historical events.

Content validity was established through expert review by specialists in history education, media design, and language, who evaluated the accuracy, clarity, and cognitive alignment of each item. All experts rated the instrument as highly valid ($M = 3.73-3.80$ on a 4-point scale).

Two sample items are included in the appendix to illustrate item structure and cognitive demand. In addition, the assessment instrument demonstrated acceptable internal consistency, with a Cronbach's

alpha of 0.81, indicating satisfactory measurement reliability.

2.5. Procedure/Implementation

The implementation of the gender-inclusive digital learning material was conducted over four instructional sessions across two weeks. The intervention was implemented during regular history lessons in classroom settings using school digital facilities. Students engaged with the digital module through guided activities facilitated by the teacher, followed by independent exploration and source-based tasks.

This structured implementation ensured consistent exposure to the learning material while allowing students to actively construct historical understanding.

2.6. Data Analysis

The quantitative data obtained from the pretest and posttest assessments were analyzed through a series of statistical procedures to determine the effectiveness of the gender-inclusive digital learning material.

The analysis began with the Shapiro-Wilk test, which was used to examine the distribution of the data and ensure that both pretest and posttest scores met the assumptions required for parametric testing. Because the results indicated that the data were normally distributed, the study proceeded with a paired sample t-test to evaluate whether the observed differences in students' historical literacy before and after the intervention were statistically significant.

To measure the magnitude of improvement, the study also calculated the normalized gain (N-Gain) score, which provides a more nuanced understanding of learning progression by comparing the actual gain achieved to the maximum possible gain.

This approach allowed the researchers to categorize students' improvement into low, moderate, or high levels based on established thresholds in educational measurement.

Beyond statistical significance and normalized learning gains, the study also assessed the practical significance of the intervention by computing Cohen's *d* effect size, a widely recognized indicator of the strength and educational relevance of an intervention in experimental research.

Larger effect sizes provide stronger evidence that the intervention produced meaningful improvements in student learning. All statistical analyses were conducted using SPSS, allowing for

accurate computation and interpretation of the results.

3. RESULTS

3.1. Description of the Developed Digital Learning Material

The digital learning material titled "Gayatri Rajapatni: Inspirasi Kepemimpinan Perempuan di Nusantara" was designed as a multimedia-based module for Grade X students. The material consists of eight structured sections that integrate historical content, visual sources, reflective tasks, and gender-sensitive analysis.

The introductory section presents contextual background on Gayatri Rajapatni and includes a curated video resource to support multimodal engagement with historical narratives. The table of contents provides a clear thematic structure, guiding students through key topics such as political leadership, religious influence, family networks, and statecraft within the Majapahit period. The learning activities are organized into modules that combine textual explanations, primary-source excerpts, guided questions, conceptual diagrams, and inquiry tasks.

One notable feature is the "Pembelajaran 1" section, which visually maps the political, religious, and cultural roles of Gayatri, enabling students to situate her agency within the broader socio-political context of Majapahit. Each learning module includes checkpoints such as "Mari Bermain" (interactive prompts), "Refleksi Diri" (reflection tasks), and performance-based exercises designed to cultivate historical literacy skills, including sourcing, contextualization, and interpretation.

From a gender-inclusive perspective, the material foregrounds Gayatri as a central historical actor rather than a peripheral figure. Narrative sections explicitly challenge androcentric historical assumptions by highlighting her leadership within the royal household, her role in dynastic consolidation, and her intellectual influence on religious and political affairs.

Visual elements such as symbolic representations of gender balance, images of Majapahit inscriptions, and photographs of relevant archaeological artifacts serve to reinforce inclusive representation and diversify students' historical imagination.

The module concludes with higher-order assessment tasks aimed at encouraging students to synthesize evidence and articulate historical arguments.

To illustrate the structure, design features, and gender-inclusive components embedded in the

instructional material, a representative excerpt of the

digital module is presented in Figure 1.”

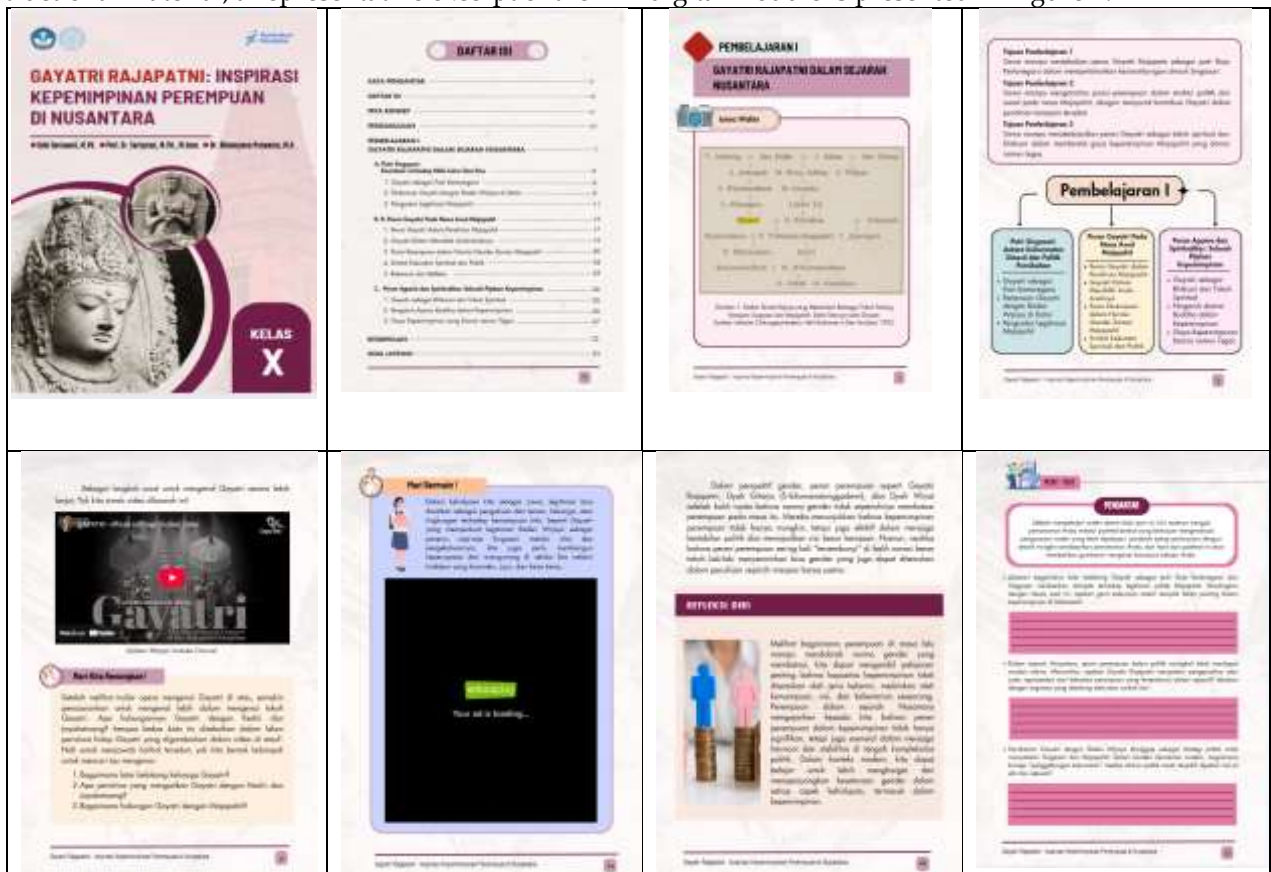


Figure 1. Excerpt from the digital learning material on Gayatri Rajapatni used in the intervention. (Source: Author's documentation).

3.2. Expert Validation of the Digital Learning Material

Before implementation, the digital learning material underwent a comprehensive expert validation process involving three categories of specialists: content experts, media/design experts, and language experts. Each group assessed the material based on structured criteria aligned with content accuracy, pedagogical coherence, visual and technical quality, language clarity, and gender-inclusive representation. The results indicated that the material met high validity standards across all categories. Content experts provided an average score of 3.73, indicating that the historical accuracy, relevance, and alignment with curriculum demands were highly appropriate. Media experts assigned an average score of 3.62, reflecting strong design quality, visual consistency, navigational clarity, and overall usability of the digital module. Language experts rated the material 3.80, demonstrating that the text was clear, readable, culturally appropriate, and consistent with academic Indonesian language norms. Based on these results, the digital learning material was categorized as “Highly Valid” and

deemed suitable for classroom implementation.

Table 1: Summary of Expert Validation of the Digital Learning Material.

Validator Type	Average Score	Category
Content Experts	3.73	Highly Valid
Media/Design Experts	3.62	Highly Valid
Language Experts	3.80	Highly Valid

3.3. Descriptive Statistics

To provide an initial overview of student performance, descriptive statistics were examined for both the pretest and posttest scores. As shown in Table 2, the pretest results reveal that students entered the intervention with relatively modest levels of historical literacy. The mean pretest score was 79.33 (SD = 4.89), with scores ranging from 70 to 87. These values indicate that, prior to engaging with the digital learning material, students demonstrated basic but uneven understanding of historical sourcing, contextualization, and interpretation skills essential for developing deeper historical literacy. Following the intervention, a clear improvement was observed. The mean posttest score increased to 85.73 (SD = 5.09), with a score range of 80 to 98. The

upward shift in mean values, alongside an expanded maximum score, reflects an enhancement in students' ability to analyze historical evidence, recognize historical agency, and engage critically with the gender-inclusive content on Gayatri Rajapatni. The increase in mean scores suggests that the intervention not only improved overall performance but also helped to elevate the achievement of students across various performance levels.

Table 2: Descriptive Statistics of Pretest and Posttest Scores.

Test	N	Minimum	Maximum	Mean	Std. Deviation
Pretest	30	70.00	87.00	79.33	4.89
Posttest	30	80.00	98.00	85.73	5.09

Source: SPSS output

3.4. Normality Test

Before conducting parametric analyses, a normality test was performed to determine whether the pretest and posttest scores met the distributional assumptions required for the paired sample t-test. The normality of the data was assessed using the Shapiro-Wilk test, which is preferred for sample sizes below 50. As shown in Table 3, both the pretest ($p = 0.126$) and posttest scores ($p = 0.213$) exceeded the significance threshold of 0.05, indicating that the data were normally distributed. This confirms that the observed score distributions do not deviate significantly from a normal curve, thereby validating the use of parametric statistical procedures in subsequent analyses.

Table 3: Results of Shapiro-Wilk Normality Test.

Test Type	Statistic	df	Sig.
Pretest Historical Literacy	0.945	30	0.126
Posttest Historical Literacy	0.908	30	0.213

(Source: SPSS output)

3.5 Paired Sample t-Test

To determine whether the improvement observed between pretest and posttest scores was statistically significant, a paired sample t-test was conducted. As presented in Table 4, the analysis revealed a mean difference of -6.40, indicating that students' posttest scores were substantially higher than their pretest scores. The negative value reflects the direction of comparison (posttest > pretest). The test produced a t-value of -5.139 with 29 degrees of freedom, and the associated significance level was $p = 0.000$ ($p < 0.001$),

demonstrating a highly significant difference in historical literacy scores before and after the intervention. These findings indicate that the gender-inclusive digital learning material had a statistically meaningful effect on enhancing students' historical literacy, providing strong empirical evidence of the intervention's effectiveness.

Table 4. Paired Sample t-Test Results

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pre 1: Pretest Historical Literacy - Post 1: Posttest Historical Literacy	-6.40000	4.83388	1.24131	-8.88883	-3.91117	-5.139	29	.000

3.6 N-Gain Analysis

To quantify the magnitude of learning improvement resulting from the intervention, the normalized gain (N-Gain) score was calculated for each participant. N-Gain provides a more precise measure of instructional effectiveness by comparing the actual improvement achieved with the maximum possible improvement. As shown in Table 5, the average N-Gain score obtained in this study was 0.42, which falls within the moderate improvement category as defined by (Hake, 1998). This indicates that, overall, students demonstrated meaningful conceptual growth in their historical literacy skills. The distribution of N-Gain values ranged from 0.19 to 0.57, suggesting that all students benefitted from the intervention, although to varying degrees. Even the lowest gain score (0.19) reflects measurable progress, while the highest gain score (0.57) represents substantial improvement in students' ability to interpret historical evidence, contextualize narratives, and engage with gender-inclusive perspectives. The moderate average N-Gain signifies that the intervention supported deeper learning rather than superficial recall, aligning with the cognitive objectives of historical literacy.

Table 5. N-Gain Descriptive Statistics.

Statistic	Value
N	30
Minimum	0.19
Maximum	0.57
Mean	0.4180
Std. Deviation	0.10472
Mean Percentage Gain	41.80%

3.7 Effect Size (Cohen's d)

To complement the statistical significance established through the paired sample t-test, the practical magnitude of the intervention's impact was assessed using Cohen's d. Effect size is essential for determining the educational relevance of an

instructional innovation, as it quantifies how strongly an intervention influences learning outcomes beyond chance variation. Based on the pooled standard deviation derived from the pretest and posttest scores, the resulting effect size was calculated at $d = 1.80$. According to Cohen (2013) classification, an effect size above 0.80 is considered large, indicating a substantial practical impact. An effect size of 1.80 therefore reflects an exceptionally strong influence of the gender-inclusive digital learning material on students' historical literacy development. This high magnitude suggests that the increase in posttest scores was not only statistically significant but also highly meaningful in an educational context, representing a notable shift in students' interpretive, analytical, and contextual reasoning skills. The magnitude of this effect size also demonstrates that gender-inclusive historical content particularly material foregrounding a prominent female figure such as Gayatri Rajapatni can serve as a powerful pedagogical tool. It indicates that thoughtfully designed digital media is capable of reshaping students' historical understanding, expanding their recognition of diverse historical actors, and supporting deeper engagement with complex historical narratives.

Overall, the results of this study demonstrate that the gender-inclusive digital learning material centered on Gayatri Rajapatni produced a significant and meaningful improvement in students' historical literacy. The descriptive statistics showed a clear increase in students' performance from the pretest to the posttest, indicating enhanced mastery of sourcing, contextualization, and interpretation skills. Normality testing confirmed that the data met the assumptions required for parametric analysis. The paired sample *t*-test revealed a statistically significant increase in students' scores ($p < 0.001$), establishing that the intervention had a measurable positive effect. This improvement was further supported by the N-Gain analysis, which yielded an average gain of 0.42, categorized as moderate and demonstrating consistent learning progress across participants. Importantly, the effect size of $d = 1.80$ indicated an exceptionally strong practical impact, showing that the digital material not only improved test scores but also substantially deepened students' engagement with historical reasoning and gender-inclusive perspectives. Taken together, these findings provide robust empirical evidence that integrating gender-inclusive digital resources particularly those highlighting historically marginalized female figures can significantly enhance historical literacy in secondary education.

4. DISCUSSION

The findings of this study demonstrate that the integration of gender-inclusive digital learning materials can substantially enhance students' historical literacy. The significant increase in posttest scores, supported by a moderate N-Gain and a large effect size, reinforces the argument that digital pedagogical innovation serves as an effective medium for cultivating deeper historical reasoning. These results align with previous research emphasizing the potential of digital resources to facilitate inquiry, promote engagement, and expand access to diverse historical perspectives (Kelly, 2013; Mouza & Lavigne, 2013; Reyes et al., 2024).

A key contribution of this intervention lies in its gender-inclusive orientation, specifically its focus on the often-overlooked historical figure Gayatri Rajapatni. Traditional Indonesian history textbooks have long centered male political elites, creating an androcentric narrative that minimizes female agency (Blackburn, 2004). By foregrounding Gayatri's role in Majapahit statecraft, intellectual leadership, and religious influence, the digital module challenged the dominant narrative structure typical of history instruction. This shift aligns with contemporary scholarship calling for the integration of plural and inclusive historical narratives to promote more equitable historical understanding (Sandwell & von Heyking, 2014).

The strong effect size ($d = 1.80$) suggests that the intervention did more than simply improve factual recall it facilitated transformational learning, enabling students to recognize the complexity of historical agency and engage critically with gendered power structures in the past. This outcome is consistent with theoretical frameworks of historical literacy that emphasize interpretation, sourcing, corroboration, and contextualization as central competencies (Seixas, 2017; Wineburg, 2001). Students' improved performance indicates that the digital material effectively scaffolded these competencies through multimodal resources, structured inquiry tasks, and reflective activities.

Furthermore, the moderate N-Gain suggests that the intervention's impact extended across different baseline ability levels. This reinforces the value of digital scaffolding, which enables students to interact with text, images, timelines, and primary sources in ways that accommodate varied learning needs. The multimodal approach provided through the digital learning material supports earlier findings that

digital environments promote differentiated learning and reduce barriers to historical engagement (Carretero et al., 2017)

Another important implication concerns curricular development. While the Kurikulum Merdeka has begun introducing more gender-responsive content, it still lacks representation of women from premodern periods, including the Hindu-Buddhist era. The results of this study demonstrate that integrating female historical figures such as Gayatri Rajapatni can fill this gap and contribute to a more comprehensive and inclusive historiographical understanding. This aligns with efforts in global history education to decolonize and democratize historical narratives by making marginalized voices visible (Hall, 2010; Kim & Kang, 2025).

Despite the promising outcomes, some limitations must be acknowledged. The study employed a one-group pretest-posttest design, which, although suitable for initial testing, limits causal generalization. Future research may incorporate control groups or mixed-methods approaches to triangulate quantitative gains with qualitative insights from student reflections or classroom observations. Additionally, the digital material focused on a single historical figure; expanding similar interventions to include a broader range of female actors across different historical periods may provide more comprehensive insights into gender-inclusive historical learning.

Overall, this study contributes to the growing body of literature on digital history education by demonstrating that gender-inclusive digital learning materials can significantly strengthen historical literacy. By centering Gayatri Rajapatni as a figure of political and intellectual significance, the intervention not only enriched students' understanding of the Majapahit era but also challenged entrenched narrative biases within history education. These findings highlight the potential of digital pedagogy to advance more inclusive, critical, and reflective forms of historical learning in Indonesian classrooms.

5. CONCLUSION

This study demonstrates that the development of gender-inclusive digital learning materials centered Debi Setiawati is a doctoral candidate in the History Education Program at the Faculty of Teacher Training and Education, Sebelas Maret University, Indonesia. Her scholarly work focuses on historical literacy, gender perspectives in history education, digital pedagogy, and instructional innovation in secondary school history learning. She has been involved in several research projects examining curriculum reform, digital learning materials, and inclusive approaches to history education. Email: debi_80@student.uns.ac.id

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on the historical figure Gayatri Rajapatni can significantly enhance historical literacy among senior high school students. The intervention effectively strengthened students' ability to source, contextualize, and interpret historical information competencies essential for engaging critically with the past. The substantial improvement in posttest scores, supported by a moderate N-Gain and a large effect size, confirms that integrating inclusive digital resources into history instruction produces both statistically significant and pedagogically meaningful learning gains. The findings highlight the importance of introducing female historical agents who have been marginalized or omitted from conventional textbooks, particularly from premodern Indonesian history such as the Majapahit era. By foregrounding Gayatri Rajapatni as a central figure, the digital module not only challenged the androcentric bias of existing curricular materials but also expanded students' understanding of gendered historical agency. This indicates that gender-inclusive pedagogy, when supported by multimodal digital environments, holds strong potential for transforming students' engagement with complex historical narratives.

Furthermore, the study underscores the relevance of digital pedagogy in advancing inquiry-based and reflective learning aligned with contemporary curriculum reforms. The success of this intervention suggests that similar approaches can be applied to other underrepresented historical figures or themes to promote a more pluralistic and democratic historical consciousness. While the results are promising, future studies may incorporate control groups, longitudinal designs, or qualitative measures such as student reflections to provide deeper insight into how gender-inclusive digital materials shape students' reasoning processes. Expanding the scope of materials to cover a wider range of female historical actors across different periods may also enhance the robustness of gender-responsive history education. Overall, this study contributes to the growing discourse on inclusive digital pedagogy by providing empirical evidence that gender-informed historical content can meaningfully improve students' historical literacy and help reshape history education toward greater equity, representation, and critical engagement.

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