INDONESIAN JOURNAL OF HISTORY EDUCATION
P-ISSN: 2252-6641, E-ISSN: 2549-0354
https://journal.unnes.ac.id/journals/ijhe

UNNES Journals

Research Manuscript

Contextualizing Digital Pedagogy: A Virtual Public History Model for Peace and Reconciliation Education in Central Java, Indonesia

Bain Bain[1]✉, Carolina Santi Muji Utami[1], Rizka Cahyaning Arifin Putri[1]

[1] History Education Programme, Universitas Negeri Semarang, Indonesia

ABSTRACT

This study develops and evaluates a Virtual Public History model for peace education among Central Java high school students. Using Research and Development with the ADDIE model, local narratives of conflict and reconciliation were integrated into an interactive digital platform. Expert validation and limited trials with 25 students revealed a critical paradox: high pedagogical relevance and cultural sensitivity contrasted sharply with infrastructural constraints and low technical feasibility. Findings demonstrate strong demand for contextually resonant peace-oriented content while highlighting persistent digital divides. Contributing to discourse on History Education as Social and Reconciliatory Practice, the study proposes an "offline-first" hybrid implementation strategy. It offers nuanced critique of globally circulating digital pedagogy models, emphasizing necessary adaptation of technological innovations to local socio-material realities in post-colonial societies for sustainable educational impact.

KEYWORDS
Virtual Public History; Peace Education; Digital Pedagogy; Local History; History Education Indonesia

ARTICLE HISTORY
Submitted:
12 March 2025
Revised:
24 July 2025
Accepted:
28 July 2025

ABSTRAK

Studi ini mengembangkan dan mengevaluasi model Sejarah Publik Virtual untuk pendidikan perdamaian di kalangan siswa SMA di Jawa Tengah. Dengan menggunakan Penelitian dan Pengembangan dengan model ADDIE, narasi lokal tentang konflik dan rekonsiliasi diintegrasikan ke dalam platform digital interaktif. Temuan menunjukkan permintaan yang kuat untuk konten berorientasi perdamaian yang beresonansi secara kontekstual sekaligus menyoroti kesenjangan digital yang terus berlanjut. Berkontribusi pada wacana tentang Pendidikan Sejarah sebagai Praktik Sosial dan Rekonsiliasi, studi ini mengusulkan strategi implementasi hibrida "offline-first". Studi ini menawarkan kritik yang bernuansa terhadap model pedagogi digital yang beredar secara global, menekankan perlunya adaptasi inovasi teknologi terhadap realitas sosial-material lokal di masyarakat pasca-kolonial untuk dampak pendidikan yang berkelanjutan.

KATA KUNCI
Model Inkuiri; Kecerdasan Buatan; Arsip Digital; Materi Pengajaran Sejarah Lokal

SEJARAH ARTIKEL
Submit:
12 Maret 2025
Revisi:
24 Juli 2025
Diterima:
29 Juli 2025

CONTACT Bain Bain ✉ bain@mail.unnes.ac.id, Universitas Negeri Semarang, 50229 Semarang, Indonesia

Introduction

Peace education in Indonesia, particularly at the senior high school level, continues to face various challenges, especially in integrating peace values into instructional practices that are relevant and engaging for students (Saleh et al., 2025; Sugiyanto et al., 2025). In the field of history education, conventional pedagogical approaches often fail to provide sufficient opportunities for students to understand the importance of peace values in everyday life as well as in global historical contexts (Hoggan-Kloubert et al., 2025; Rowan & Wansink, 2025; Valdman & Cohen, 2025). Consequently, students frequently demonstrate a superficial understanding of peace-related issues, tolerance, and conflict resolution, an important challenge in developing a young generation capable of contributing to peaceful and inclusive societies (Ndwandwe, 2024; Pop & Morales, 2023). Furthermore, SDG 4.7 emphasizes the importance of education that promotes a culture of peace, sustainability, and respect for cultural diversity as part of a quality education curriculum (Brossard Børhaug & Kezaride Dansholm, 2025; Mochizuki & Vickers, 2024a; Utami et al., 2025). The lack of technological innovation in history learning also hampers effective introduction of peace values to digitally oriented students (Kampf & Nicolaidou, 2024; Marchuk et al., 2024; Möller & Bellmer, 2023).

Additionally, the suboptimal use of technology in peace education remains a significant issue. Students in the digital era tend to prefer interactive and technology-based learning methods, yet most peace education materials are still delivered passively through traditional face-to-face approaches (Kester & Misiaszek, 2025; Kondor et al., 2024; Möller & Bellmer, 2023). This limits student engagement and may reduce the impact of peace learning. Virtual Public History, which uses digital technology to present historical content to the public, offers an innovative solution supporting SDG 16, which aims to build peaceful and inclusive societies by providing technology-based education to prevent violence and strengthen social cohesion (Gordon et al., 2024; Manz & Long, 2025; Sotelo-Castro & Shapiro-Phim, 2023). Through Virtual Public History, students can learn from local and global historical narratives relevant to peace, improving their awareness of conflict resolution and tolerance in society.

The purpose of this research is to develop an effective Virtual Public History model to promote peace education among high school students in Central Java through interactive and contextual technology-based approaches. This research contributes to achieving SDG 4 (Quality Education) by providing innovative learning methods that integrate peace, sustainability, and cultural diversity values in line with target 4.7 (Mochizuki & Vickers, 2024b; Zeng et al., 2025). It also supports SDG 16 (Peace, Justice, and Strong Institutions) by offering educational tools that promote a culture of peace and strengthen social cohesion among youth (Nesterova et al., 2022; Pop & Morales, 2023). Within the framework of conservation-oriented vision, the model is expected to build student awareness regarding the importance of social and environmental sustainability through history learning rooted in local and global values, fostering a generation that is sensitive to peace issues and responsible for preserving cultural and environmental heritage as part of historical legacy.

Research Questions

Based on the above description, the research questions are as follows:

1. How can a Virtual Public History model be designed to effectively promote peace values to senior high school students in Central Java?
2. To what extent does the implementation of the Virtual Public History model influence the improvement of students' understanding of peace values, tolerance, and conflict resolution in supporting SDG 4.7 and SDG 16?

Theoretical Framework

The theoretical foundation of the Virtual Public History model begins with reimagining who constructs historical narratives. Drawing on Frisch's (1990) concept of shared authority, the model deliberately moves beyond expert-driven historical interpretation to embrace participatory co-creation involving students and local communities (Basaraba & Cauvin, 2023; Nilsson Mohammadi & Wolgast, 2023; Skilton, 2024). This approach aligns with Smith's (2006) conceptualization of heritage not as static objects but as dynamic cultural processes involving negotiation of meaning and identity (Desille & Nikielska-Sekuła, 2024; Hill, 2024; Thouki & Skrede, 2025). By positioning students as active contributors rather than passive recipients, the model ensures that historical content resonates with local experiences, memories, and perspectives. This participatory foundation is particularly significant in post-colonial Indonesian contexts where official historical narratives have historically marginalized community voices. The model thus creates pedagogical spaces where students encounter history as living dialogue between past and present, fostering deeper connection to local heritage.

The technical and pedagogical architecture translates these participatory principles into functional design. Addressing challenges identified in digital public history scholarship (Basaraba & Cauvin, 2023; Jones & Piper, 2024), the model prioritizes readability, engagement, and accessibility while acknowledging the persistent digital divide in Indonesian educational settings. Following Warschauer's (2004) analysis of technology and social inclusion, the architecture incorporates offline-first capabilities enabling functionality without continuous internet connectivity. Instructional design draws on Mayer's (2001) multimedia learning principles and Sweller's (1988) cognitive load theory, combining visual and textual narratives with clear scaffolding to prevent information overload (Disch et al., 2024; Evans & Martin, 2023). This dual attention to technical feasibility and cognitive accessibility ensures that the model serves diverse learners across varied infrastructural contexts, addressing the critical paradox identified during validation trials.

The content framework and pedagogical orientation embed specific educational commitments derived from peace education scholarship. Aligned with constructivist learning theories emphasizing active meaning-making through experience and social interaction (Vygotsky, 1978; Dewey, 1938), the model structures opportunities for students to engage with historical narratives of conflict and reconciliation reflectively (Keynes, 2024; Manning & Paulson, 2024; Shapira & Kapshuk, 2023). Galtung's (1969) foundational distinction between negative peace (absence of violence) and positive peace (presence of just social

structures) informs content selection, while Reardon's (1988) comprehensive peace education framework guides the development of competencies including conflict resolution, tolerance, and empathy (Brantmeier et al., 2024; Kester, 2025; Nesterova & Kim, 2024). This theoretical synthesis ensures that the Virtual Public History model functions not merely as a digital archive but as a structured educational intervention deliberately designed to cultivate historical consciousness and peace-building capacities relevant to Indonesia's diverse, post-colonial society.

Method

This study employed a Research and Development (R&D) approach by adapting the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation). The first stage, needs analysis, involved data collection through interviews with high school history teachers, questionnaires for students, and literature review to identify needs related to peace education and the use of technology in history learning. The second stage, design, involved formulating the Virtual Public History model by integrating local and global historical narratives relevant to peace values. The design included interactive technological elements, such as digital simulations and digital storytelling, to ensure student engagement. The model was then validated by experts in history, education, and technology to ensure pedagogical and technical feasibility.

The third stage consisted of developing and implementing the model through pilot testing in several senior high schools in Central Java. The selected pilot schools were SMA N 1 Semarang, SMA N 1 Surakarta, and SMA N 2 Boyolali. The implementation process involved classroom observation, interviews with teachers and students, and documentation analysis. The results were evaluated using mixed methods, including qualitative data from interviews and observations, and quantitative data from pre-test and post-test questionnaires to measure the model’s effectiveness in enhancing students’ understanding of peace values. The evaluation aimed to identify strengths and weaknesses of the model, which would then be revised prior to wider dissemination. This method followed the R&D approach as described by Gall, Gall, and Borg (2003), as well as the flexible ADDIE model for digital education needs.

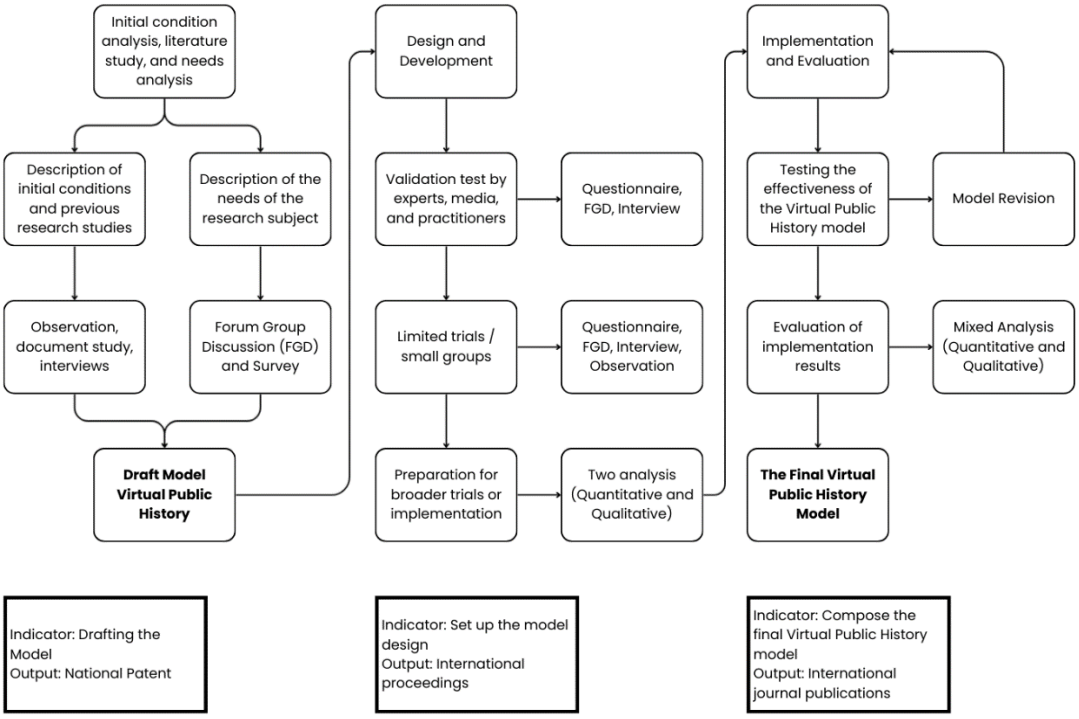

Figure 1. Procedural Framework

The research team operated under a structured division of labor to ensure rigorous implementation to ensure smooth implementation at each stage. The team leader was responsible for strategic planning, overall supervision, and coordination. Members specializing in history education were responsible for developing peace-related historical narratives, while information technology specialists designed and developed the Virtual Public History platform. Field researchers handled data collection through interviews, questionnaires, and observations, ensuring data accuracy and validity. Additionally, data analysts processed and interpreted findings to produce in-depth results. This structured collaboration ensured optimal contributions from all team members toward achieving the research objectives.

This study operated within Technology Readiness Levels (TRL) 1–3, focusing on identifying fundamental needs, concept development, and initial validation of the model. In TRL 1, the team conducted literature exploration, needs analysis, and identification of challenges in technology-based peace education. TRL 2 involved designing the initial prototype of the Virtual Public History model, including local historical narratives, digital simulations, and interactive features. Initial validation was carried out through consultation with experts in education and technology. At TRL 3, the team developed a functional prototype ready for limited testing in selected high schools. Testing involved evaluating effectiveness through mixed methods, including pre-tests, post-tests, interviews, and classroom observations. This approach ensured that each stage progressed systematically and aligned with technological and pedagogical development targets.

Results

The Needs Analysis

A needs assessment was conducted through: (1) a closed survey based on a 1–5 Likert scale (1=Strongly Disagree; 5=Strongly Agree) administered to two categories of respondents, 25 students and 10 history teachers at SMA N 2 Boyolali; and (2) semi-structured interviews with a purposive sample comprising one principal, four teachers (including the history coordinator), and three students active in the Student Council (OSIS) or extracurricular organizations.

The interviews revealed institutional support for virtual-based peace education initiatives; however, limitations regarding budget and IT personnel presented significant obstacles. The principal stated, "We strongly support initiatives that promote peace education, but budget and IT personnel remain limited." Survey findings indicated general agreement with the program's objectives, yet teacher respondents assigned low scores to infrastructure availability and technical support, highlighting a disparity between the vision and implementation capacity.

The needs analysis indicated high student interest in digital history (Mean=4.08) and peace education (Mean=4.44). However, technical readiness remains a barrier, with low scores on device access (Mean=3.64) and connectivity (Mean=3.32). Similarly, teachers strongly supported peace education goals (Mean=4.70) but highlighted significant constraints in time (Mean=2.60) and maintenance capacity (Mean=2.70).

From the teachers' perspective, support for peace education objectives is exceptionally high (mean 4.70), accompanied by a strong recognition of the importance of teacher training (mean 4.50). However, teachers also highlighted constraints regarding instructional time and the school's technical maintenance capacity (means of 2.60 and 2.70 for time and maintenance, respectively). Consequently, the full implementation of the virtual model requires a phased plan encompassing: (1) intensive training modules for teachers; (2) explicit curriculum integration to avoid increasing the teaching load; (3) technical support mechanisms (maintenance contracts or partnerships with government agencies/industry); and (4) mutually agreed-upon ethical and security policies for digital content usage (involving teachers, parents, and the school committee).

Teachers emphasized that the model's success depends on clear pedagogical guidelines and assessment mechanisms: "Digital content is engaging, but teachers need assessment guidelines and training so that virtual material serves as more than just entertainment." Survey data revealed a tendency among teachers to agree on the necessity of specialized training (digital learning, assessment task design, and peace competency measurement), as well as the need for integration tools to ensure virtual materials can be incorporated into the syllabus without imposing a disproportionate burden.

Students demonstrated high enthusiasm for the interactive and locally contextualized format. As one student remarked, "If history is presented interactively and related to stories in Boyolali, I understand it more easily and feel more engaged." Student survey results confirmed an interest in interactive and locally relevant materials. However, several teachers raised operational concerns: without clear time management or a reduction in other duties, the implementation of virtual modules could increase the curriculum burden and complicate daily instructional practices.

In synthesis, the needs analysis indicates a strong demand for interactive content that is locally contextualized and capable of supporting peace education goals, accompanied by a tangible need for: (1) infrastructure improvement and technical support; (2) a teacher training package covering assessment and curriculum integration; (3) material design that considers learning time constraints; and (4) a phased pilot mechanism with monitoring and evaluation at SMA N 2 Boyolali. Initial operational recommendations include the development of a limited pilot module, a blended training program for teachers, and a plan to strengthen technical resources through partnerships or phased budget allocation.

Model Design and Prototype

The Virtual Public History model for promoting peace education is grounded in the concepts of public/digital public history and the practice of utilizing virtual media to present participatory and contextual historical experiences. Digital public history focuses on engaging broad audiences through digital mediums; similar concepts emphasizing the use of virtual environments (e.g., VR/AR) to comprehend historical spaces inform the design of this model. The virtual public history approach is also emphasized as a means to deliver narrative experiences that facilitate social reflection. These sources underpin the initial hypothesis that virtual media can enhance engagement, local contextualization, and the potential for peace education when developed in accordance with school needs and local contexts.

The learning framework combines a project-based learning approach with explicit learning activities that develop peace competencies (e.g., empathy, conflict resolution, critical thinking). Each project-based learning unit begins with a local case study, for example, a historical event or location in Boyolali, which is processed through phases of identification, field research, source analysis, and digital artifact production. The module curriculum is structured to be easily integrated into history classes without adding a disproportionately large curricular load: each module has clear learning objectives, formative and summative assessment tools, a character assessment rubric, and differentiation guidelines for various student ability levels.

Functionally, the development priorities for the model are: (a) interactive content featuring local case studies on conflict and resolution (to support peace education); (b) formative evaluation features aligned with curriculum competencies; and (c) teacher training modules focused on digital pedagogy, the moderation of sensitive discussions, and the utilization of assessment instruments. Local community engagement also emerged as a critical requirement for ensuring historical validity and reinforcing peace values, presenting an opportunity for collaboration between the school, the education department, and societal stakeholders.

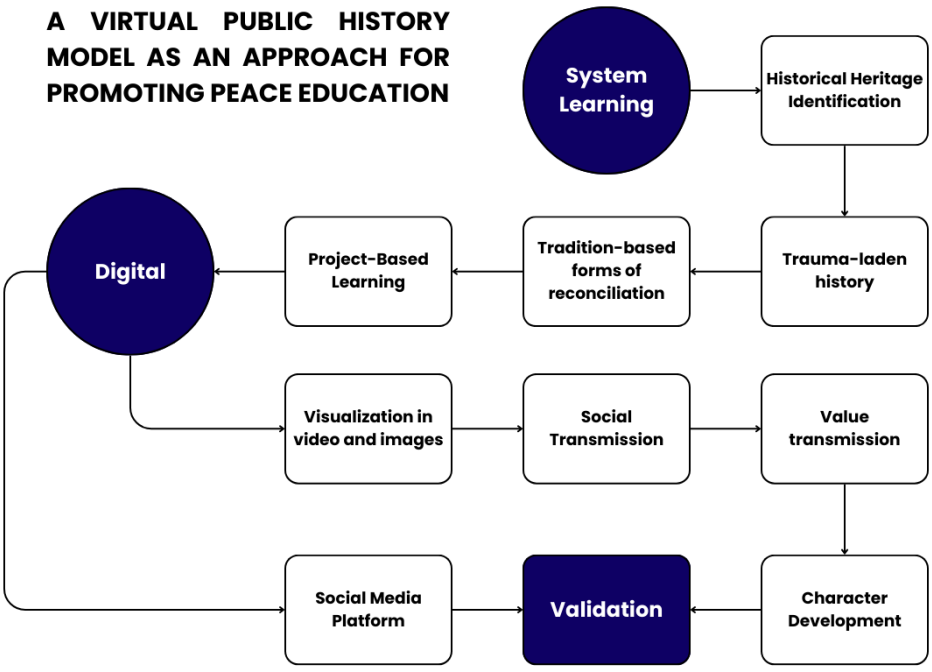

Figure 2. Model Design

Model Design and Implementation Strategy

The model integrates interactive video narratives and community story-sharing platforms to strengthen the public dimension of history. Validation targets two trajectories: pedagogical suitability for peace competencies and socio-cultural sensitivity. To ensure impact, the design includes cognitive, affective, and conative indicators, with character development supported by reflective digital portfolios. Implementation is recommended in three stages: preparation, limited pilot, and scaling, reliant on multi-stakeholder partnerships and mixed funding strategies to create a sustainable, trauma-informed learning ecosystem.

Expert Validation and Limited Trial Results

Validation by a 12-person expert panel (ed-tech and historians) and a limited trial (N=25) revealed a consistent dual pattern. The model received strong endorsement for its pedagogical relevance (Mean = 4.50), student engagement potential (Mean = 4.42), and cultural sensitivity (Mean = 4.17). Conversely, technical feasibility and offline accessibility received the lowest scores across both groups (Mean < 3.3).

Effectiveness Test

Table 1 presents the normality and effectiveness tests (difference against neutral value 3.0) for the 15 instrument items.

Table 1. Results of Normality Test and Effectiveness Test

Item	Short Statement	Mean	SD	Shapiro	Test	P-value	Effect (r or d)	Short Interpretation
1	Relevance to peace education.	4.64	0.57	0.000	Wilcoxon	0.0000	-0.857	Significant; score > 3 (very positive)
2	Local contextualization (Boyolali context).	4.32	0.85	0.000	Wilcoxon	0.0000	-0.789	Significant; score > 3 (large)
3	Pedagogical clarity of the module.	3.96	0.93	0.002	Wilcoxon	0.0004	-0.687	Significant; score > 3 (large)
4	Scope of the assessment guide.	3.68	1.14	0.011	Wilcoxon	0.0106	-0.495	Significant; score > 3 (middle-large)
5	Teacher training needs.	3.36	1.22	0.035	Wilcoxon	0.1559	-0.274	Insignificant (p>0.05);
6	Technical feasibility (school infrastructure)	2.72	1.24	0.039	Wilcoxon	0.2507	-0.222	Not significant; mean < 3 but high variability
7	Interface/usabilit y for teachers.	4.04	0.89	0.001	Wilcoxon	0.0002	-0.720	Significant; score > 3 (large)
8	Offline / low-bandwidth accessibility.	3.04	1.21	0.061	t-test	0.8698	0.033	Not significant (p≫0.05); average ≈ 3 (neutral)
9	Cultural sensitivity & trauma-informed.	4.44	0.65	0.000	Wilcoxon	0.0000	-0.839	Significant; score > 3 (very positive)
10	Community participation mechanisms.	4.00	0.96	0.001	Wilcoxon	0.0003	-0.694	Significant; score > 3 (large)
11	Potential for student engagement.	4.60	0.58	0.000	Wilcoxon	0.0000	-0.857	Significant; score > 3 (very positive)
12	Scalability to other schools.	3.44	1.27	0.007	Wilcoxon	0.0083	-0.441	Signifikan; skor > 3 (sedang)
13	Data protection and ethical content sharing	4.22	0.85	0.000	Wilcoxon	0.0022	-0.766	Significant; score > 3 (large)
14	Sustainability & funding models	3.52	1.12	0.014	Wilcoxon	0.0221	-0.418	Significant; score > 3 (medium)
15	Monitoring and evaluation framework	4.24	0.83	0.000	Wilcoxon	0.0003	-0.748	Significant; score > 3 (large)

The results of the limited pilot test (N = 25) reveal a dual pattern: certain pedagogical and value-based aspects (e.g., the relevance of peace education, cultural sensitivity, potential

student engagement, and M&E frameworks) obtained high means and were relatively consistent across respondents, whereas technical and accessibility aspects (infrastructure readiness and offline access) obtained low means with greater variability. Normality testing (Shapiro–Wilk) indicated that the data were not normally distributed; thus, non-parametric analysis (Wilcoxon signed-rank test) was employed. From this testing, only one item such as the scope of assessment guidelines demonstrated statistical significance against the test median ($p < 0.05$). However, many items still showed practical tendencies or relevant effects, despite not consistently achieving significance in this small sample.

Discussion

The findings of this study present a compelling paradox regarding the implementation of digital history in developing contexts. While the pedagogical framework of the Virtual Public History model proved highly effective in fostering peace values and student engagement through local narratives, its operational viability was significantly hampered by infrastructural limitations. This section discusses these contrasting outcomes, analyzing how local content drives empathy while highlighting the urgent need for 'offline-first' technical adaptations to bridge the digital divide.

Contextualizing the Findings

The Virtual Public History model for promoting peace education is formulated as an integrated framework that bridges local historical sources with contemporary pedagogical practices. This model views "sources" not only as artifacts or documents, but also as collective narratives, including traumatic memories and traditional reconciliation practices identified through historical heritage inventories and the collection of local oral histories. Conceptually, the system is designed to be participatory: students, teachers, and local communities participate in the selection of materials, verification of facts, and production of digital narratives, so that the learning process becomes a medium for intergenerational dialogue that fosters a critical understanding of conflict and peace.

The combined results of quantitative and qualitative data reveal a clear and multifaceted need for the Virtual Public History Model at SMA N 2 Boyolali. From the students' perspective, there is a high level of interest in utilizing digital media for history learning (mean ~4.08) and strong support for an emphasis on peace education as well as content relevant to local history (means of 4.44 and ~4.16, respectively). This finding aligns with qualitative feedback from students who expressed feeling more engaged when the material incorporates local narratives. However, limitations in personal infrastructure and connectivity present tangible obstacles; average scores for device access and internet connectivity indicate a moderate level of readiness (means of 3.64 and 3.32), necessitating hybrid technical strategies (e.g., low-bandwidth content and offline access in school laboratories).

From this data, it can be interpreted as follows: Conceptual acceptance: The majority of core pedagogical and peace education values items (Items 1, 2, 3, 7, 9, 10, 11, 13, 15) showed significant and large differences from the neutral value of 3.0, meaning there was strong support and positive consensus on relevance, student engagement, cultural

sensitivity, participation mechanisms, data protection, and M&E. This strengthens the argument that the model has good pedagogical value and initial acceptance in this sample. Technical and access issues: Item 6 (technical feasibility) had a mean of 2.72 and Item 8 (offline accessibility) had a mean of ≈3.04; neither showed a consistently positive significant difference. This confirms infrastructure concerns and indicates an urgent need for a technical strategy (offline-first, lightweight packages, IT support). Training & Sustainability: Item 5 (training needs) and Item 14 (sustainability) indicate moderate needs, Item 5 is not significant (high variability), while Item 14 is moderately significant. This means that while there is recognition of the need for training, the details vary across respondents; capacity building and funding plans need to be more concretely designed. Scalability: Item 12 is significant (mean 3.44) but with a high SD , there is optimism about the scale, but results vary so field testing is needed in various school contexts (urban/rural).

Pedagogical Potential and Technical Realities

The empirical findings reveal a distinct dichotomy between pedagogical potential and technical readiness. Statistically, the significant scores on relevance, engagement, and cultural sensitivity (Items 1, 9, 11) align with Archer et al., (2023), confirming that peace education rooted in local context facilitates the internalization of values like tolerance. The high student engagement observed corroborates (Malysheva et al., 2022), suggesting that interactive digital history effectively bridges the gap between students and historical narratives. Furthermore, the strong endorsement of ethical data protection supports Kruger & Zembylas (2024) emphasis on trauma-informed approaches in peace education, validating the model's design in handling sensitive local histories.

However, the lack of statistical significance and low mean scores for technical feasibility and offline accessibility (Items 6 & 8) serve as a critical reality check. This echoes the "digital divide" concerns raised by UNESCO, highlighting that optimistic ed-tech literature must be balanced against the material realities of school infrastructure. The data implies that without an "offline-first" strategy, the model's potential cannot be equitably realized. Additionally, the significant demand for assessment guidelines underscores findings by Kyambade & Namatovu (2025), indicating that digital tools alone are insufficient; they require explicit pedagogical scaffolding and teacher training to function effectively.

Operational aspects, such as teacher training and assessment guidelines, scored in the intermediate range, indicating a need for structured support. Consequently, while the model is pedagogically and culturally sound, the data necessitates a pivot toward "offline-first" technical solutions, assessment rubrics, and explicit data protection SOPs before broader scaling.

Implication and Future Direction

Ultimately, while the model serves as a promising proof-of-concept for contextual peace education, the variability in scalability and sustainability scores suggests that widespread implementation requires a shift from purely digital expansion to a hybrid support system involving printed alternatives, structured teacher financing, and institutional partnerships.

Based on comparisons with previous research and these empirical results, the primary recommendations are: (1) develop an offline-first version and print package to address technical constraints; (2) prepare teacher training modules and tested assessment rubrics (given the statistical prominence of the assessment item); (3) include ethical SOPs and data protection measures; (4) design a follow-up pilot with a larger sample, urban/rural stratification, and appropriate non-parametric analysis; and (5) measure behavioral outcomes (not just perceptions) in future studies to assess program effectiveness regarding tolerance/empathy/conflict resolution as encouraged by prior literature. With these steps, a model integrating local historical narratives and technology has the opportunity to realize the benefits identified by previous research, certainly with realistic technical and pedagogical adjustments.

Limitations

This research has analytical limitations in the form of: Small sample (N = 25) to results are indicative/exploratory, not a generalization of the wider population. Likert 1–5 data are treated as an interval scale for some calculations; should be cautious for making any interpretation. Non-normal distribution from many items forces the use of non-parametric tests to p-values and effect sizes have different technical meanings than parametric tests. There is no per-group analysis (e.g., teachers vs. students vs. educational staff). If desired, I could separate and test per-subgroup.

Conclusion

Critically, the initial pilot findings indicate that a learning model integrating local historical narratives with digital technology possesses tangible potential to enhance engagement and support peace education objectives, respondents rated relevance and cultural sensitivity relatively high, yet current evidence remains preliminary and limited. Methodological limitations (small sample size N=25, predominantly non-normal data distribution, reliance on perceptions rather than behavioral outcomes, and indications of technical access/infrastructure issues) demand caution: only certain aspects demonstrated statistical significance; thus, claims of comprehensive effectiveness cannot be sustained without more robust follow-up studies. In other words, this serves more as a promising proof-of-concept than a definitive confirmation.

Prioritize steps that improve validity, reliability, and accessibility before scaling: (1) conduct a follow-up pilot with a larger sample, urban/rural stratification, power analysis, and a pre-registered analysis plan; (2) measure behavioral outcomes (e.g., tolerance observations, conflict resolution tasks) and report effect sizes, rather than relying solely on perceptions; (3) develop offline-first/low-bandwidth variants and print packages to address infrastructure limitations; (4) design teacher training modules and standardized assessment rubrics tested for reliability, alongside fidelity monitoring mechanisms; (5) implement ethical SOPs, data protection measures, and community/heritage owner engagement through co-design; and (6) conduct a cost-benefit analysis and sustainability plan (school partnerships, Education Department support, or financing models). Critically, avoid broad scaling before concrete evidence of outcomes and a realistic operational plan

are available, it is preferable to iterate based on small-scale evidence that is rapidly refined rather than pursue premature expansion that risks resource wastage or unintended social impacts.

References

Archer, D. T., Hajir, B., & McInerney, W. W. (2023). *Innovations in Peace and Education Praxis*. Routledge. https://doi.org/10.4324/9781003263111

Basaraba, N., & Cauvin, T. (2023). Public history and transmedia storytelling for conflicting narratives. *Rethinking History*, *27*(2), 221–247. https://doi.org/10.1080/13642529.2023.2184969

Brantmeier, E. J., Gerson, J., Imoh, C., Kester, K., Lee Morrison, M., Snauwaert, D. T., & Wintersteiner, W. (2024). Honoring the Peacebuilders: In Memory of Betty A. Reardon and Ian Harris. *Journal of Peace Education*, *21*(1), 1–15. https://doi.org/10.1080/17400201.2024.2320516

Brossard Børhaug, F., & Kezaride Dansholm, K. (2025). Intercultural teaching practices and sustainability – a case study from Norway. *Intercultural Education*, *36*(4), 513–530. https://doi.org/10.1080/14675986.2025.2484516

Desille, A., & Nikielska-Sekuła, K. (2024). (Inter)Cultural Heritage and Inclusion for Migrants – Bridging the Gap. *Journal of Intercultural Studies*, *45*(1), 1–12. https://doi.org/10.1080/07256868.2023.2295582

Dewey, J. (1938). *Experience and Education*. New York: Macmillan

Disch, L., Fessl, A., Franza, S., Kimmerle, J., & Pammer-Schindler, V. (2024). Using Knowledge Construction Theory to Evaluate Learning Processes: A Randomized Controlled Trial on Showing Gradually Built-up Concept Maps Alongside a Scientific Text. *International Journal of Human–Computer Interaction*, *40*(24), 8764–8780. https://doi.org/10.1080/10447318.2023.2289296

Evans, P., & Martin, A. J. (2023). Load reduction instruction: multilevel effects for motivation, engagement, and achievement in mathematics. *Educational Psychology*, *43*(10), 1125–1143. https://doi.org/10.1080/01443410.2023.2290442

Frisch, M. H. (1990). *A Shared Authority: Essays on the Craft and Meaning of Oral and Public History*. Albany: State University of New York Press

Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: An introduction* (7th ed.). Pearson Education.

Galtung, J. (1969). Violence, peace, and peace research. *Journal of Peace Research, 6*(3), 167–191.

Gordon, E., Gardner, R., Chéry, C., Sacks, C., & Masiakos, P. T. (2024). Collaborative critical making in higher education: a case study of a community-centred storytelling effort to transform harmful narratives of gun violence in Boston. *CoDesign*, *20*(3), 461–480. https://doi.org/10.1080/15710882.2024.2329559

Hill, C. (2024). Cultural dissonance: heritage protests and their implications for heritage-making in settler colonial cities. *International Journal of Heritage Studies*, *30*(9), 1049–1067. https://doi.org/10.1080/13527258.2024.2369558

Hoggan-Kloubert, T., Brandi, U., Hodge, S., Milana, M., & Morris, T. H. (2025). Peace education in times of war. *International Journal of Lifelong Education*, *44*(6), 623–630. https://doi.org/10.1080/02601370.2025.2582942

Jones, M., & Piper, A. (2024). Digital History. *Australian Historical Studies*, *55*(1), 178–203. https://doi.org/10.1080/1031461X.2023.2267586

Kampf, R., & Nicolaidou, I. (2024). Using social impact games to overcome intractable conflicts: the case of Fact Finders and PeaceMaker. *Information, Communication & Society*, 1–16. https://doi.org/10.1080/1369118X.2024.2331770

Kester, K. (2025). Peace education as a form of global citizenship education in universities in divided settings: challenges and prospects. *Discourse: Studies in the Cultural Politics of Education*, 1–16. https://doi.org/10.1080/01596306.2025.2574974

Kester, K., & Misiaszek, G. W. (2025). Four questions for teaching conflict for peace, justice, and sustainability: higher education roles and responsibilities. *Teaching in Higher Education*, *30*(1), 277–292. https://doi.org/10.1080/13562517.2024.2443982

Keynes, M. (2024). From apology to truth? Settler colonial injustice and curricular reform in Australia since 2008. *Journal of Curriculum Studies*, *56*(3), 339–354. https://doi.org/10.1080/00220272.2024.2323612

Kondor, R., Agyemang, E., Forkuor, J. B., & Attoh Odongo, D. (2024). Sustainable peace building education: strategies used by Ghana's National Peace Council. *Journal of Peace Education*, *21*(1), 34–53. https://doi.org/10.1080/17400201.2023.2281358

Kruger, F., & Zembylas, M. (2024). Affective Atmospheres of Coloniality and the Decolonisation of Peace Education: Theoretical Insights and Political Possibilities. *Studies in Philosophy and Education*, *43*(6), 691–707. https://doi.org/10.1007/s11217-024-09955-2

Kyambade, M., & Namatovu, A. (2025). Overcoming barriers to eLearning in business education: a qualitative study from Uganda. *Cogent Education*, *12*(1). https://doi.org/10.1080/2331186X.2025.2584924

Malysheva, O., Tokareva, E., Orchakova, L., & Smirnova, Y. (2022). The effect of online learning in modern history education. *Heliyon*, *8*(7), e09965. https://doi.org/10.1016/j.heliyon.2022.e09965

Manning, P., & Paulson, J. (2024). Some contradictions of multiple perspectives approaches to peace and history education: lessons from Cambodia. *Ethics and Education*, *19*(2), 185–200. https://doi.org/10.1080/17449642.2024.2362028

Manz, S., & Long, P. (2025). Internment, immersive technology and historical empathy: Natal's Fort Napier Camp (1914–1919) as a virtual reality experience. *Immigrants & Minorities*, *43*(1), 20–47. https://doi.org/10.1080/02619288.2024.2402047

Marchuk, O., Melnychuk, L., Paguta, T., Pocheniuk, Y., Bates, A., Paez, Y., & Parfitt, A. (2024). Peace education in a time of war: the Museum of Peace in Rivne, Ukraine as a space of memory making and hope. *Journal of Peace Education*, *21*(1), 16–33. https://doi.org/10.1080/17400201.2023.2276417

Mayer, R. E. (2001). *Multimedia Learning*. Cambridge: Cambridge University Press.

Mochizuki, Y., & Vickers, E. (2024a). Still 'the conscience of humanity'? UNESCO's vision of education for peace, sustainable development and global citizenship. *Compare: A Journal of Comparative and International Education*, *54*(5), 721–730. https://doi.org/10.1080/03057925.2024.2371259

Mochizuki, Y., & Vickers, E. (2024b). Still 'the conscience of humanity'? UNESCO's vision of education for peace, sustainable development and global citizenship. *Compare: A Journal of Comparative and International Education*, *54*(5), 721–730. https://doi.org/10.1080/03057925.2024.2371259

Möller, F., & Bellmer, R. (2023). Interactive peace imagery – integrating visual research and peace education. *Journal of Peace Education*, *20*(1), 53–74. https://doi.org/10.1080/17400201.2023.2171374

Ndwandwe, N. D. (2024). Barriers to implementing peace education in secondary schools in South Africa. *Journal of Peace Education*, *21*(2), 164–184. https://doi.org/10.1080/17400201.2024.2367966

Nesterova, Y., & Kim, E.-J. A. (2024). Peace as Social Cohesion, Equity, and Democracy: Local Peacebuilders' Conceptualizations of Peace. *Peace Review*, *36*(3), 531–544. https://doi.org/10.1080/10402659.2024.2377773

Nesterova, Y., Kim, E.-J. A., & Amaglo-Mensah, T. D. (2022). The purposes of education in peacebuilding: Views of local peace actors in diverse (post-)conflict societies. *Global Change, Peace & Security*, *34*(2–3), 103–124. https://doi.org/10.1080/14781158.2024.2382679

Nilsson Mohammadi, R., & Wolgast, S. N. (2023). Learning about Sharing Authority With the Gathered Voices of Malmö. *The Oral History Review*, *50*(2), 206–222. https://doi.org/10.1080/00940798.2023.2234954

Pop, L., & Morales, L. (2023). Education to Navigate Global Power Dynamics and Conflict through the Lens of Caring. *Peace Review*, *35*(4), 724–735. https://doi.org/10.1080/10402659.2023.2263389

Reardon, B. A. (1988). *Comprehensive Peace Education*. Teachers College Press.

Rowan, E., & Wansink, B. (2025). Fostering mutual understanding through multiperspectivity: insights from 14 cross-border history education initiatives in post-conflict societies. *Journal of Curriculum Studies*, *57*(3), 247–270. https://doi.org/10.1080/00220272.2025.2455700

Saleh, M. N. I., Hanum, F., & Rukiyati. (2025). Approaches to implementing peace education in high schools for nonviolent conflict resolution. *Cogent Education*, *12*(1). https://doi.org/10.1080/2331186X.2025.2553004

Shapira, N., & Kapshuk, Y. (2023). Reconciliation during an intractable conflict in a Hebrew mixed (Arabs and Jews) college. *Journal of Peace Education*, *20*(3), 273–290. https://doi.org/10.1080/17400201.2023.2231359

Skilton, L. (2024). Capturing that which is Fleeting: Using History Harvests to Collect Rapid Response Oral Histories of Disaster Experience. *The Oral History Review*, *51*(2), 278–320. https://doi.org/10.1080/00940798.2024.2382902

Smith, L. (2006). *Uses of Heritage*. London: Routledge.

Sotelo-Castro, L. C., & Shapiro-Phim, T. (2023). Listening as common ground: oral history performance for transitional justice. *Research in Drama Education: The Journal of Applied Theatre and Performance*, *28*(1), 1–18. https://doi.org/10.1080/13569783.2023.2184250

Sugiyanto, Arif, A., Hidayat, A., & Prihadi, S. (2025). Cultural knowledge deficiency: a root cause of communication challenges among school-aged youths in Surakarta, Indonesia. *Cogent Education*, *12*(1). https://doi.org/10.1080/2331186X.2025.2544408

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science, 12*(2), 257–285.

Thouki, A., & Skrede, J. (2025). Re-framing authorised heritage discourse (AHD) within a realist explanatory framework: towards a dialectical relationship between discourse

and the extra-discursive. *International Journal of Heritage Studies*, *31*(4), 407–424. https://doi.org/10.1080/13527258.2024.2437356

Utami, N. A. B., Dewi, R., & Kusakabe, T. (2025). Promoting global citizenship through *Kurikulum Merdeka* : Indonesian primary school teachers' perspectives. *Cogent Education*, *12*(1). https://doi.org/10.1080/2331186X.2025.2545328

Valdman, A., & Cohen, O. (2025). Trauma, memory, and dialogic historical education: the case of Israel in 2024. *Journal of Curriculum Studies*, *57*(6), 762–779. https://doi.org/10.1080/00220272.2025.2506433

Vygotsky, L. S. (1978). *Mind in Society*. Harvard University Press.

Warschauer, M. (2004). *Technology and Social Inclusion: Rethinking the Digital Divide*. Cambridge, MA: MIT Press.

Zeng, Y., Hallås, B. O., & Sæle, O. O. (2025). Pupils' reflections on experiences and feelings in meditation in nature: an intercultural ecopedagogical praxis in outdoor education. *Environmental Education Research*, *31*(1), 134–150. https://doi.org/10.1080/13504622.2024.2378356