

The Use of Artificial Intelligence in History Learning: A Systematic Literature Review

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Abstract: This systematic literature review synthesizes empirical and conceptual scholarship on the application of AI in history education between 2020 and 2026, interrogating research trends, pedagogical affordances, ethical risks, and policy implications. Employing a PRISMA-guided search across SCOPUS, Web of Science, and ERIC and a PICOC-framed analytic scope, the study screened 312 records (after deduplication) and conducted in-depth analysis of 10 peer-reviewed articles using thematic synthesis, bibliometric mapping, and quality appraisal (CASP). Findings indicate a clear disciplinary trajectory from conceptual explorations toward classroom-embedded uses of generative AI and learning analytics, with demonstrated benefits in student engagement, adaptive feedback, dialogic inquiry, and immersive simulation design that can scaffold elements of historical thinking. However, the corpus reveals persistent limitations: small-scale designs, Western-centric datasets, epistemic misalignments with historical heuristics (sourcing, contextualization, evidentiary weighting), algorithmic bias, opacity, and equity gaps that risk historiographical flattening and the reproduction of structural inequalities. The review concludes that AI's pedagogical value in history depends on three interlocking priorities targeted teacher professional development integrating digital and historiographical literacies, context-sensitive governance ensuring explainability and data justice, and ethical-by-design AI architectures with traceable source attribution to safeguard epistemic rigor and inclusive learning outcomes.

Keywords: artificial intelligence; artificial intelligence in education; artificial intelligence in learning; history education; history learning

Abstrak: Tinjauan literatur sistematis ini mensintesis kajian empiris dan konseptual tentang penerapan AI dalam pendidikan sejarah antara tahun 2020 dan 2026, mengkaji tren penelitian, peluang pedagogis, risiko etis, dan implikasi kebijakan. Dengan menggunakan pencarian berbasis PRISMA di SCOPUS, Web of Science, dan ERIC serta cakupan analitik berbingkai PICOC, studi ini menyaring 312 catatan (setelah penghapusan duplikasi) dan melakukan analisis mendalam terhadap 10 artikel yang ditinjau sejawat menggunakan sintesis tematik, pemetaan bibliometrik, dan penilaian kualitas (CASP). Temuan menunjukkan lintasan disiplin ilmu yang jelas dari eksplorasi konseptual menuju penggunaan AI generatif dan analitik pembelajaran yang terintegrasi di kelas, dengan manfaat yang terbukti dalam keterlibatan siswa, umpan balik adaptif, penyelidikan dialogis, dan desain simulasi imersif yang dapat mendukung elemen pemikiran historis. Namun, korpus tersebut mengungkapkan keterbatasan yang terus-menerus: desain skala kecil, kumpulan data yang berpusat pada Barat, ketidaksesuaian epistemik dengan heuristik historis (sumber, kontekstualisasi, pembobotan bukti), bias algoritmik, ketidaktransparanan, dan kesenjangan kesetaraan yang berisiko meratakan historiografi dan mereproduksi ketidaksetaraan struktural. Tinjauan ini menyimpulkan bahwa

nilai pedagogis AI dalam sejarah bergantung pada tiga prioritas yang saling terkait: pengembangan profesional guru yang ditargetkan yang mengintegrasikan literasi digital dan historiografi, tata kelola yang peka terhadap konteks yang memastikan penjelasan dan keadilan data, dan arsitektur AI yang etis sejak awal dengan atribusi sumber yang dapat dilacak untuk menjaga ketelitian epistemik dan hasil pembelajaran yang inklusif.

Kata Kunci: kecerdasan buatan; kecerdasan buatan dalam pendidikan; kecerdasan buatan dalam pembelajaran; pembelajaran Sejarah; pendidikan sejarah



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Introduction

Artificial Intelligence (AI) has become one of the defining forces of the twenty-first-century educational transformation, fundamentally altering the production, dissemination, and reconstruction of knowledge within contemporary pedagogical practices. No longer confined to administrative support functions, AI has evolved into an epistemic technology capable of facilitating personalized learning, simulating complex historical phenomena, and processing large-scale educational data with unprecedented analytical precision (Farhood et al., 2025). Consequently, the incorporation of AI into history education has accelerated worldwide due to its capacity to create contextualized, multimodal, and interactive learning environments that promote deeper historical understanding and more meaningful engagement with the past (Bazanis et al., 2025; Kindenberg, 2025).

Despite these developments, history education has long been criticized for its overreliance on the memorization of facts and chronological sequences, frequently neglecting interpretation, critical reflection, and historical reasoning. From a constructivist perspective, transmissive instructional approaches limit students' opportunities to actively construct historical meaning and develop higher-order historical thinking skills. In response to these limitations, AI offers transformative pedagogical possibilities through experiential learning environments, including virtual museum experiences, historical conversational agents, and machine learning-assisted analyses of digital archives (Gangwar, 2025; Kiourexidou & Stamou, 2025). These innovations encourage inquiry, interpretation, and contextualization fundamental dimensions of historical thinking thereby repositioning learners as active constructors of historical knowledge rather than passive recipients of information.

Nevertheless, the integration of AI into history education remains highly uneven, particularly in developing contexts such as Indonesia. The adoption of AI technologies continues to be constrained by inadequate technological infrastructure, insufficient teacher preparedness, and fragmented educational policy frameworks (Ng et al., 2021; Taheri et al., 2025). From the perspectives of educational equity and the digital divide, these challenges represent systemic rather than merely technical barriers because they mediate differential access to pedagogical innovation. Consequently, instructional practices in many schools remain dominated by lecture-oriented and textbook-centered approaches, resulting in relatively homogeneous and pedagogically stagnant learning experiences. Moreover, unequal access to advanced technologies exacerbates disparities between urban and rural educational settings, reinforcing socioeconomic and spatial inequalities in learning opportunities and undermining the principle of equitable education (J. Kim & Wargo, 2025; Mac Fadden et al., 2024). Without deliberate policy interventions and sustained capacity-building initiatives, the integration of AI risks reproducing existing structural inequalities rather than mitigating them.

Another important concern is the uneven development of scholarly inquiry into AI-in education. Existing research has predominantly concentrated on STEM disciplines, while investigations within the humanities, particularly history education, remain relatively limited (Mustafa et al., 2024; Parviz, 2024). This imbalance constitutes a significant conceptual gap because it constrains scholarly understanding of how AI may facilitate source interpretation, contextual analysis, and critical interrogation of historical representations. In Indonesia, empirical studies examining the pedagogical, ethical, and epistemological dimensions of AI-in history learning are especially scarce. Consequently, there is limited systematic evidence explaining how AI functions as an epistemic mediator capable of fostering historical literacy and critical historical consciousness among learners. This gap underscores the need to conceptualize AI not merely as a technological instrument but as a constitutive element in the production, interpretation, and contestation of historical knowledge itself (Alaali et al., 2025).

Beyond these pedagogical and empirical limitations, ethical concerns and algorithmic biases associated with AI-deployment in history education remain insufficiently theorized. Critical data studies demonstrate that algorithmic systems are not neutral technologies but sociotechnical assemblages shaped by the assumptions embedded within their datasets, design architectures, and institutional contexts (D'Ignazio & F. Klein, 2020; Vera et al., 2025). Empirical evidence further indicates that historically biased datasets may generate distorted representations of the past by privileging dominant or colonial epistemologies while marginalizing subaltern, indigenous, or gendered perspectives (Foka et al., 2025; Jarrahi et al., 2026). From a postcolonial historiographical standpoint, these distortions threaten the epistemic integrity and plurality of historical narratives because they risk re-inscribing hegemonic interpretations under the appearance of technological objectivity (Fischbach et al., 2025; Lewis et al., 2025).

Accordingly, the educational use of AI-in history learning necessitates the integration of digital ethics, critical data literacy, and reflexive historiographical practices that enable learners to critically examine how historical knowledge is algorithmically curated, represented, and legitimized (Wiese et al., 2025a; Y. Yan et al., 2025). Pedagogical applications of AI therefore require explicit instructional strategies emphasizing transparency, accountability, and epistemic justice. At the policy level, this imperative demands ethical oversight mechanisms, inclusive data curation practices, and sustained professional development initiatives for educators to ensure that AI serves as a means of democratizing historical understanding rather than perpetuating structural inequalities (Alfiras et al., 2025; Li et al., 2025).

Previous scholarship provides important foundations for understanding the educational potential of AI. Bertram et al (2021) demonstrated that computational linguistic analysis can effectively evaluate students' historical thinking by predicting task complexity and generating assessments that closely approximate human rubric-based evaluations. Similarly, Carretero & Gartner (2024) identified ChatGPT as a dialogic pedagogical tool capable of strengthening contextualization, critical interpretation, evidence-based reasoning, and multiperspectivity through iterative human AI-interactions. Complementing these studies, Matos et al (2025) synthesized recent evidence on AI adoption across educational settings and highlighted the increasing prominence of generative AI-technologies, particularly ChatGPT, in promoting personalized learning and critical thinking while simultaneously revealing persistent concerns regarding data privacy, algorithmic bias, and teacher readiness. Collectively, these studies illustrate the transformative potential of AI-in educational practice. However, relatively limited research has proposed an integrated framework specifically designed to systematically foster historical thinking within history education.

The urgency of this study is reinforced by the accelerating digital transformation of history education and growing evidence that appropriately implemented AI can strengthen national identity awareness, foster historical empathy, and promote intercultural understanding (Finkelstein & Soffer-Vital, 2025; S. W. Kim & Lee, 2024). However, without clearly articulated ethical and pedagogical frameworks, AI-integration may compromise historical values, interpretive rigor, and source objectivity. Therefore, this study seeks to establish an evidence-based academic foundation for the responsible and pedagogically sound integration of AI into history education. More specifically, the study aims to identify prevailing trends in the application of AI in history learning, critically examine its educational benefits and emerging challenges, and formulate ethically grounded and pedagogically informed recommendations for the future development of technology-enhanced history education. Through this comprehensive systematic review, the study aspires to advance scholarly discourse while providing practical guidance for educators, curriculum developers, and policymakers in developing forms of history pedagogy that are technologically adaptive, critically reflective, and firmly committed to the principles of digital equity.

Against this background, the present study employs a PRISMA-guided Systematic Literature Review (SLR) to investigate the trends, challenges, and educational implications of AI in history learning. Unlike previous studies that have largely remained descriptive or conceptual, this research adopts a systematic and replicable methodological approach through the critical analysis of peer-reviewed publications indexed in SCOPUS, Web of Science, and ERIC between 2020-2026. This design provides a comprehensive mapping of global developments in AI-supported history education while simultaneously clarifying their implications for the Indonesian educational context.

Research Methods

This study adopts a Systematic Literature Review (SLR) approach to critically examine and synthesize empirical findings on the implementation of AI in history education over the period 2020-2026. This methodological approach was selected due to its strong capacity to systematically structure analysis and generate robust, reliable insights to generate a comprehensive mapping of existing knowledge, identify research gaps, and evaluate the evolving trajectories of AI-related scholarship within history education. The SLR was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which emphasize methodological transparency, replicability, and the validity of research outcomes, and which are widely recognized and applied in educational and social science research to structure the processes of literature identification, screening, and reporting. To ensure analytical focus and conceptual coherence, the research questions were formulated using the PICOC framework Population, Intervention, Comparison, Outcome, and Context thereby enhancing the relevance and rigor of the review. The specific components of the PICOC framework and their corresponding descriptions are presented as follows:

Table 1. Components of PICOC analysis

PICOC Components	Description
Population (P)	Participants in formal education (teacher, students, university students) in field of history.
Intervention (I)	Application of Artificial Intelligence (AI) technology in the history learning process.
Comparison (C)	Traditional learning approaches without Artificial Intelligence (AI).
Outcome (O)	Impact on engagement, critical thinking, and historical literacy.

Contesxt (C)	21st-century educational environments (formal and non formal).
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Source: Research Data, 2026

Based on the PICOC framework, this study systematically formulates three core research questions to guide the review process. These research questions are designed to ensure analytical coherence, methodological rigor, and alignment with the study’s objectives, thereby enabling a focused and comprehensive examination of the selected literature. Accordingly, the three research questions (RQ) addressed in this study are as follows:

Table 2. Research Questions

Research Questions	
RQ 1	What are the research trends regarding the application of Artificial Intelligence (AI) in history learning for the period 2020-2026?
RQ 2	What are the benefits, challenges, and learning outcomes resulting from the application of Artificial Intelligence (AI)?
RQ 3	How do ethical aspects, algorithmic bias and educational policy influence the integration of Artificial Intelligence (AI) in historical contexts?

Source: Research Data, 2026

The literature search was conducted using three internationally recognized academic databases SCOPUS (Elsevier), Web of Science (WoS), and ERIC (Education Resources Information Center) to ensure broad disciplinary coverage and scholarly rigor. A systematically constructed set of Boolean search terms, including “Artificial Intelligence,” “Machine Learning,” “ChatGPT,” “History Education,” “History Learning,” and “Digital Pedagogy in History,” was employed to enable comprehensive retrieval of relevant studies. The search was limited to peer-reviewed journal articles published in English between 1 January 2020 and 1 January 2026 in order to capture recent developments in the field, yielding 312 initial records. These records were subsequently subjected to a rigorous screening and selection process based on predefined inclusion and exclusion criteria, as outlined in Table 3, to ensure the relevance and quality of the final body of literature:

Table 3. Inclusion Criteria and Exclusion Criteria

Category	Inclusion Criteria	Exclusion Criteria
Type of publications	Peer reviewed scientific journal articles are indexed by SCOPUS, WoS, or ERIC.	Non peer reviewed reports, proceedings books, or theses.
Language	Language English.	Non English language without translation.
Topic	The main focus is on the application of Artificial Intelligence (AI) in learning types of historical publications.	Artificial Intelligence (AI) research in the field of non-humanities.
Publications period	2020-2026.	Before 2020.
Methodological Quality	Have a clear research design and empirical data.	Opinion, editorial, or description articles without methods.

Source: Research Data, 2026

In this study, the systematic review process was conducted through four principal stages in alignment with the PRISMA-framework, as prescribed for Systematic Literature Review methodology. These stages were designed to ensure methodological rigor, transparency, and

consistency throughout the review process. The specific phases of the PRISMA-guided procedure applied in this research are outlined as follows:

Table 4. PRISMA Stages

PRISMA Stages	
Identification	A total of 312 articles were collected from SCOPUS (178), WoS (94), and ERIC (40) using a combination of keywords.
Screening	After removing duplication (82 articles), there are 230 articles left to review by title and abstract.
Eligibility	A total of 38 articles were reviewed in full text to assess the suitability of topics and the quality of the methodology.
Inclusion	Thus, 10 articles met the final criteria and were analyzed in depth using thematic synthesis and bibliometric mapping.

Source: Research Data, 2026

Following the presentation of the PRISMA framework and its corresponding stages, the study advances to the implementation of the Systematic Literature Review (SLR) methodology. This phase systematically describes the methodological procedures undertaken to conduct the SLR, providing a structured account of each step employed throughout the review process. The detailed procedures are presented as follows:

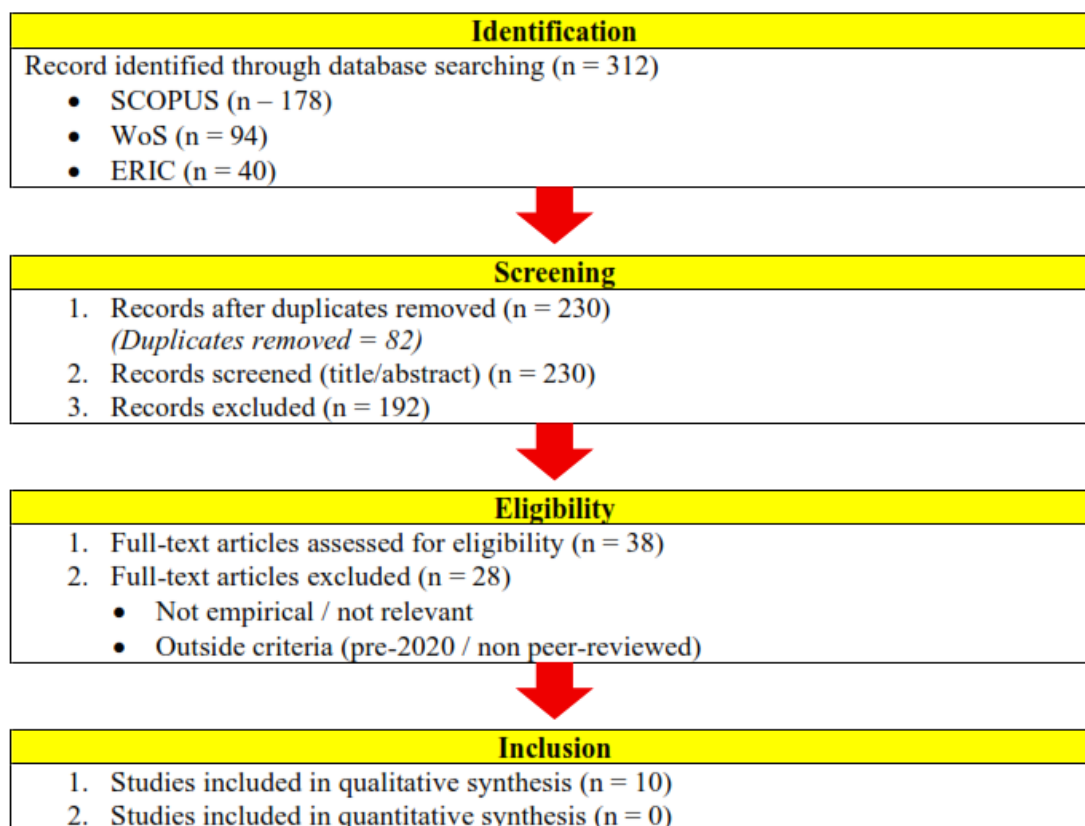


Figure 1. PRISMA Flow Diagram

Source: Research Data, 2026

The subsequent stage involved a rigorous quality appraisal using the Critical-Appraisal Skills-Programme (CASP) instrument in conjunction with the PRISMA Checklist to ensure the

methodological soundness and credibility of the selected studies. This evaluation encompassed multiple dimensions, including the clarity of research objectives and methodological design, the relevance of findings to the formulated research questions, the validity of empirical data, the acknowledgment of study limitations, and the overall scholarly contribution to the field of history pedagogy. Data analysis was undertaken through two complementary approaches, namely thematic synthesis and bibliometric analysis, to capture both conceptual patterns and publication trends within the literature. Three overarching themes emerged from the thematic analysis: AI-as a Pedagogical Innovator, highlighting its role in enhancing creativity and interactivity in history learning; AI-as an Ethical Challenge, addressing issues of data bias and privacy within digital history contexts; and AI-as a Catalyst for Reflective Learning, emphasizing its capacity to promote critical engagement with historical narratives. Following the application of these analytical procedures, a total of ten journal articles met the inclusion criteria and demonstrated alignment with the research topic and corresponding research questions. These articles were sourced from SCOPUS (Elsevier), Web of Science (WoS), and ERIC (Education Resources Information Center) and are presented as follows:

Table 6. Findings of the article and CASP Score

Author and Year	Article Title	Journal	Results and Discussion	CASP Score
Suiçmez et al (2025)	Artificial Intelligence Application For Museum To Experiential Transformation Of Cultural Heritage And Learning	Smart Learning Environments	This study critically examines the integration of AI-in museum contexts, focusing on how AI-supported applications enhance access to cultural heritage, enrich visitor experiences across diverse cultural backgrounds, and promote more interactive and engaging forms of engagement. It also explores the implications of digitizing cultural identity and heritage, alongside the innovations introduced by AI-in museum education and information management. The primary aim is to raise awareness of AI-driven museum applications and to underscore the essential relationship between technological development and cultural heritage, particularly in relation to the preservation and intergenerational transmission of cultural assets. In this regard, the study anticipates that future research will further advance the integration of AI-based technologies in museums, thereby strengthening strategies for the sustainable preservation and dissemination of cultural heritage.	9
Tirado-Olivares et al (2023)	From Human To Machine: Investigating The Effectiveness Of	Education Sciences	The results demonstrate that participants evaluated AI-generated texts more positively with respect to historical thinking competencies; however, they simultaneously	8

	The Conversational AI ChatGPT In Historical Thinking		questioned AI's ability to independently produce comparable narratives, largely due to the perception that AI-lacks the capacity for personal judgment and reflective expression. This contrast underscores the critical need for targeted pedagogical guidance that clarifies the appropriate use, limitations, and educational potential of AI-in future history instruction	
Bazanis et al (2025)	The Contribution Of Artificial Intelligence To The Learning And Teaching Of History In Secondary Education	European Journal of Education Studies	The study subsequently outlines its methodological framework and analyzes a case study involving the implementation of an AI-supported instructional scenario in second-grade secondary school classrooms, with particular emphasis on the use of AI-tools to construct first-person historical narratives. The findings are then presented and critically compared with international practices, underscoring the potential for a pedagogically sound and creatively informed integration of information technology in history education.	8
Mierwald (2024)	Chatting About The Past With Artificial Intelligence A Case Study Of Pupils' Interaction With ChatGPT While Completing a History- Learning Task	Journal of Educational Media, Memory, and Society	The resulting chat transcripts were examined through a grounded theory approach, informed by sociocultural perspectives in history education and conceptual frameworks from human machine communication (HMC). The analysis indicates that students' engagement with AI-constitutes a distinct form of human-machine interaction, characterized by specific history-oriented prompts and corresponding AI-generated responses. On this basis, the study articulates key implications for future research and pedagogical practice.	8
Sheng (2023)	The Role Of Artificial Intelligence In History Education Of Chinese High Schools	Journal of Education, Humanities and Social Sciences	Scholars increasingly argue that in a future society shaped by intelligent machines, creativity and independent thinking cultivated through deep learning will be essential for individual adaptability and survival. As AI is progressively incorporated into history education, critical questions emerge regarding its influence on students' perceptions of the discipline. This paper begins with a concise overview of the	8

			developmental stages of AI and its current status in China, followed by an examination of its applications in history teaching. It then compares perspectives on high school history education between the Millennial generation and the post-1970s generation, drawing on interview data in which participants were encouraged to articulate their views on the role of AI-in teaching and learning history. Collectively, this evidence elucidates both the potential benefits and inherent limitations of integrating artificial intelligence into history education.	
Santamaría-Velasco et al (2025)	Critical Thinking And AI: Enhancing History Teaching Through ChatGPT simulations	International Journal of Innovative Research and Scientific Studies	The findings reveal that students demonstrated strengthened analytical skills and a more nuanced understanding of historical events, particularly in relation to sustainable development concepts. The results further suggest that ChatGPT functions as an effective pedagogical resource in history education by fostering critical thinking, active engagement, and learner participation, thereby supporting the creation of more creative and inclusive learning environments. Overall, the study underscores the educational potential of AI-to transform traditional history teaching practices and to equip students with the competencies required to address complex global challenges.	9
Chimbunde & Moreeng (2025)	Reconfiguring History Teachers' Assessment Practices in the Context of ChatGPT: Charting the New Terrain	TechTrends	This conceptual paper examines the challenges posed by ChatGPT in the assessment of history students and explores how history teachers' assessment practices may be reconfigured to respond to these AI-driven disruptions. Drawing on publicly available documents and existing literature, and informed by Christensen's theory of disruptive innovation, the study addresses two guiding questions: the challenges associated with using ChatGPT in history assessment and the strategies through which teachers can adapt their assessment practices accordingly. The findings indicate that although	9

			ChatGPT enables students to generate and outsource responses for written assignments, it also offers pedagogical advantages that warrant careful consideration. Consequently, the study argues that history educators must critically rethink and redesign assessment approaches to mitigate the potentially detrimental effects of ChatGPT while leveraging its constructive potential. It further recommends that educational institutions systematically examine both the opportunities and limitations of ChatGPT across subject areas and develop context-sensitive implementation strategies to promote more equitable and effective learning environments.	
Issayev & Apendiyev (2025)	Teaching history with the help of information and digital technologies	E-Learning and Digital Media	The study demonstrates that information and digital technologies play an increasingly pivotal role in the educational process, including the teaching of history. Commonly employed tools in history instruction encompass presentation software, interactive and video-based historical maps, as well as virtual and augmented reality technologies that enable students to explore historical sites and events in immersive ways. Additional pedagogical resources include history-oriented digital games and emerging applications of AI. Despite their pedagogical potential, the broader adoption of these technologies remains constrained by limited technological literacy among many educators, who often lack sufficient skills and practical experience to effectively integrate digital tools into history teaching.	8
Ubodiom (2025)	Challenges Associated with The Use of Artificial Intelligence in History Teaching in Bayelsa State	International Journal of History and Philosophical Research	Moreover, the study identifies significant cultural and contextual challenges associated with the use of AI-in history education, including the risks of historical misrepresentation, excessive reliance on algorithmic outputs, and the marginalization of indigenous and local historical narratives. It also underscores pressing ethical concerns related to data privacy, academic integrity, and	8

Kindenberg (2025)	The Role of AI in Historical Simulation Design: A TPACK Perspective on a French Revolution Simulation Design Experience	Education Science	persistent digital inequalities between urban and rural educational settings. Collectively, these issues are shown to constrain the effective deployment of AI as a means of enhancing the teaching and learning of history. The simulation employed faction-based role-playing to actively involve students in historically grounded decision-making shaped by both pre-revolutionary and revolutionary contexts. Generative AI-assumed multiple collaborative functions in the design process acting as a subject-matter resource, a game mechanics designer, and a content facilitator thereby enhancing both efficiency and creative output. Nonetheless, limitations such as unverifiable information, anachronistic representations, and embedded biases required careful mediation through disciplinary expertise and contextual knowledge of the curriculum and classroom. The findings suggest that the effective use of generative AI-in supporting simulation design depends on a coherent integration of content knowledge, technological competence, and pedagogical strategies within the TPACK framework.	9
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Notes CASP Score: 8-10 = High quality, 6-7 = Medium quality
Source: Research Data, 2026

Research Result

Artificial Intelligence Research Trends in History Learning (2020-2026)

Research on Artificial Intelligence (AI) in history education has expanded markedly since 2020, reflecting the broader digital transformation of education. Early AI-scholarship, however, focused predominantly on STEM disciplines, while history and other humanities received comparatively limited attention because their interpretive, contextual, and narrative epistemologies are less amenable to procedural algorithmic modelling (Alenezi & Alenezi, 2025; Frontoni et al., 2024; Joyeux-Prunel, 2024). From the perspectives of historical thinking and digital historiography, this imbalance has constrained theoretical understanding of how AI-can strengthen disciplinary competencies, including sourcing, contextualization, interpretation, and historical narrative construction, beyond purely instrumental applications (Seixas & Morton, 2013; Tirado-Olivares et al., 2023; Wineburg, 2001). Although the COVID-19 pandemic accelerated interdisciplinary experimentation with AI-supported history instruction through narrative learning, source analysis, and historical visualization (Hariyanto et al., 2025; Nurhasan et al., 2022; Wang et al., 2024). Existing evidence remains fragmented and insufficiently integrated with established historiographical frameworks. Consequently,

substantial gaps persist regarding the pedagogical, epistemic, and contextual conditions under which AI-can systematically enhance historical literacy and critical historical consciousness, particularly within Global South and non-Western settings.

Between 2021 and 2022, scholarship increasingly shifted from conceptual discourse toward empirical investigation. Machine learning and learning analytics were employed to examine students' learning behaviours and historical reasoning, positioning AI-as an augmentative technology that supports instructional decision-making rather than replacing teachers' professional expertise (Alkubaisi, 2025; Holmes et al., 2019). This perspective aligns with sociocultural learning theory, which conceptualizes technology as a mediational tool that extends human agency (Bouakaz & Khalid, 2025; Kozulin et al., 2003; Selwyn, 2019). Within history education, AI-applications analyzed open-ended responses, detected misconceptions, and generated adaptive feedback consistent with formative assessment and feedback-driven learning models (Haroud & Saqri, 2025; Tan et al., 2025). Nevertheless, most studies relied on small-scale institutional samples, limiting generalizability and theoretical transferability. Stronger theory-driven designs integrating learning analytics, historical thinking, and authentic classroom validation therefore remain essential.

Since 2023, generative AI-particularly large language models such as ChatGPT, has transformed research priorities in history education. Studies indexed in Scopus, Web of Science, and ERIC increasingly explore AI-assisted historical narrative construction, dialogic interaction with historical actors, and multiperspectival interpretation of the past (Kindenberg, 2025; Mierwald, 2024; Tirado-Olivares et al., 2023; W. Yan et al., 2025). Interpreted through Seixas & Morton (2013) historical thinking concepts and Wineburg (2001) disciplinary heuristics, generative AI-demonstrates considerable potential to scaffold argumentation, interpretation, evidence-based reasoning, and historical empathy. However, AI-generated responses frequently lack disciplinary rigor, often producing decontextualized narratives, ahistorical generalizations, or uncritical syntheses of conflicting evidence. These limitations reveal a persistent tension between linguistic fluency and historiographical validity, emphasizing that generative AI-should function as a pedagogically mediated support system rather than an autonomous epistemic authority.

Recent scholarship also highlights significant ethical and epistemic challenges. Generative AI-often reproduces dominant historical narratives embedded within global datasets while marginalizing local histories, subaltern perspectives, and non-Western epistemologies (Bollen et al., 2025; Foka & Griffin, 2024). Socio-technical perspectives similarly argue that AI-systems embody assumptions derived from data selection, model architecture, and institutional priorities rather than technological neutrality (Ghosh, 2025; Williamson & Eynon, 2020). Consequently, uncritical reliance on AI-risks reinforcing homogenized and potentially hegemonic interpretations of the past (Alyousef & Omari, 2025; Foka et al., 2025). Ethical AI integration therefore requires transparent data practices, critical pedagogical mediation, and continuous epistemic reflexivity to preserve historiographical integrity, epistemic justice, and critical historical consciousness.

Overall, literature published between 2020 and 2026 demonstrates a clear evolution from exploratory discussions toward theoretically informed empirical implementation. Despite substantial publication growth, important limitations remain, particularly the scarcity of longitudinal investigations, large-scale interventions, and evidence from developing countries. Bertram et al (2021) argue that future progress depends not only on technological advancement but also on pedagogical and governance frameworks capable of safeguarding historical epistemology. Accordingly, future research should integrate technological innovation,

historical thinking theory, digital historiography, and educational ethics to ensure that AI contributes responsibly and sustainably to history education.

Benefits and Challenges of Implementing Artificial Intelligence on History Learning Processes and Outcomes

The evidence indicates that integrating Artificial Intelligence (AI) into history education significantly enhances student engagement, participation, and learning quality, particularly through intelligent tutoring systems and generative chatbots that enable adaptive, interactive, and context-sensitive instruction (Huang et al., 2025; Labadze et al., 2023). Consistent with constructivist learning theory, these AI-supported environments function as cognitive scaffolds that promote reflective inquiry, guided exploration, and narrative simulations, thereby facilitating learners' active construction of historical understanding (Kindenberg, 2025; Ngu et al., 2025; Qian et al., 2026; L. Yan et al., 2025). Within historical thinking frameworks, higher engagement and emotional involvement contribute to the development of interpretation, contextualization, and historical empathy by allowing students to examine multiple perspectives and interact dynamically with representations of the past. These findings corroborate previous research demonstrating increased motivation and sustained interest following the implementation of dialogic AI-systems Tirado-Olivares et al (2023) and Kindenberg (2025) highlighting AI-as a pedagogically supportive rather than substitutive epistemic resource.

Nevertheless, the educational benefits of AI-require careful interpretation through the disciplinary perspectives advanced by Seixas & Morton (2013) and Wineburg (2001) Although AI-can facilitate causal reasoning, chronological organization, and multiperspectival analysis by assisting students in structuring historical arguments and comparing competing interpretations (Bazanis et al., 2025; Labadze et al., 2023; Tirado-Olivares et al., 2023; Wambsganss et al., 2022). These gains do not necessarily indicate the internalization of expert historical reasoning. Likewise, AI-driven assessment based on natural language processing demonstrates substantial agreement with human raters in evaluating open-ended historical responses (Gabon et al., 2025; Yaneva & Von Davier, 2023). Yet remains limited in assessing sourcing, contextualization, and evidentiary judgment. Without explicit teacher mediation, automated feedback may privilege linguistic coherence over historiographical rigor, reinforcing the need to position AI-as a complementary assessment instrument rather than a replacement for expert judgment.

From the standpoint of historical thinking frameworks articulated by Wineburg (2001) and by Seixas & Morton (2013) the ethical risks associated with the use of AI-in history education extend beyond technical inaccuracies to the erosion of core disciplinary epistemologies. Ethical concerns are equally significant. Generative AI-frequently produces hallucinated or partially inaccurate historical claims that may weaken students' capacity to evaluate evidence, contextualize sources, and recognize interpretive uncertainty (He et al., 2025; Qian et al., 2026). Moreover, AI-often simplifies historiographical complexity by presenting coherent narratives while obscuring scholarly debate and competing perspectives (Bertram et al., 2021; Foka & Griffin, 2024; Tirado-Olivares et al., 2023). These risks become particularly consequential for learners with limited source literacy, potentially legitimizing oversimplified or hegemonic representations of the past (Wiese et al., 2025b; Williamson & Eynon, 2020; Y. Yan et al., 2025). Accordingly, responsible AI integration requires transparent disclosure of system limitations, systematic triangulation with primary sources, and continuous teacher guidance.

Another persistent challenge concerns excessive student dependence on AI-for historical interpretation and academic writing, potentially undermining critical thinking, epistemic agency, originality, and self-regulated learning. From the perspective of academic integrity, unrestricted AI-use may blur the boundary between legitimate cognitive assistance and inappropriate authorship, particularly in essay-based historical inquiry (Abbas et al., 2024; Eaton, 2023; Gruenhagen et al., 2024). Such dependency may also diminish metacognitive regulation by encouraging students to outsource higher-order cognitive processes (Azevedo et al., 2022; Boekaerts et al., 2000; Liu et al., 2025; Schunk & Zimmerman, 1994). These challenges are compounded by disparities in teachers' digital competence and technological infrastructure, limiting the effective implementation of ethically grounded AI-supported instruction. Consequently, sustained professional development, institutional governance, and explicit ethical guidelines remain essential for ensuring that AI strengthens rather than replaces independent historical reasoning (Issayev & Apendiyev, 2025; Williamson & Eynon, 2020).

Overall, the educational value of AI-in history education is inherently contextual. When aligned with sound pedagogy, historiographical principles, and coherent instructional design, AI-can substantially improve learning processes and outcomes. Conversely, uncritical adoption may generate epistemological distortions and diminish educational quality. As emphasized by Luckin et al (2022) effective AI-integration depends upon the balanced interplay of technology, pedagogy, and content knowledge within the TPACK framework. Therefore, the principal challenges surrounding AI-implementation should be viewed not merely as barriers but as opportunities to design reflective, ethically responsible, and critically oriented history education capable of fostering twenty-first-century competencies.

Ethical Issues, Algorithmic Bias, and Policy Implications in the Use of Artificial Intelligence for History Learning

Ethical considerations surrounding the use of AI-in history education are inseparable from concerns raised within critical historiography and epistemic justice theory, given the discipline's inherent engagement with power, representation, and contested meanings of the past. History education, unlike procedurally oriented domains, demands attentiveness to contextual nuance, plural perspectives, and the equitable recognition of marginalized voices, all of which are vulnerable to distortion through algorithmic mediation. As socio-technical systems, AI-technologies inevitably reflect the epistemic priorities, cultural assumptions, and structural biases embedded within their training data and design processes, thereby challenging claims of neutrality (Ferrara, 2024; Foka et al., 2025; Shukla, 2025). From the standpoint of epistemic justice, the uncritical deployment of AI-risks reproducing testimonial and hermeneutical injustices by privileging dominant historiographical narratives while rendering subaltern or locally grounded histories less visible (Milano & Prunkl, 2025; Shin, 2025). Accordingly, ethical frameworks for AI-in history education must operationalize principles of fairness, transparency, and accountability by ensuring the traceability of AI-generated historical claims, the explicit disclosure of algorithmic limitations, and the sustained involvement of educators as epistemic gatekeepers. Recent scholarship underscores that such principles are essential not only for mitigating representational harm but also for preserving the historiographical integrity of history education in digitally mediated learning environments (Alyousef & Omari, 2025; Williamson & Eynon, 2020).

A critical ethical limitation of AI-in history education lies in the persistence of algorithmic bias rooted in asymmetrical training datasets, which, from the perspective of postcolonial historiography and epistemic injustice theory, risks reproducing testimonial and hermeneutical exclusions within historical representation. Empirical studies demonstrate that AI-systems

disproportionately amplify Western, English-language historical narratives while marginalizing local histories, colonized perspectives, and subaltern voices, thereby reinforcing historiographical hegemony rather than epistemic plurality (Baresi, 2025; Foka & Griffin, 2024; Gillespie, 2024). The generative capacity of AI-further compounds this risk by creating an illusion of objectivity, despite outputs being derived from structurally imbalanced data regimes that obscure contestation and scholarly debate (Foka et al., 2025; Markus et al., 2025; Ridhoi et al., 2023; Teel, 2024). Within ethical governance frameworks, these conditions challenge core principles of fairness, transparency, and accountability, as opaque model architectures and untraceable source attribution hinder critical scrutiny of AI-generated historical claims. Consequently, ethically responsible deployment of AI-in history classrooms necessitates explicit pedagogical mediation, transparent disclosure of algorithmic limitations, and sustained human oversight to prevent the normalization of inequitable and reductive representations of the past.

A key ethical limitation in the deployment of AI-in history education concerns persistent deficits in transparency, accountability, and epistemic traceability, which directly challenge the fairness transparency accountability principles articulated in contemporary ethical AI-frameworks. Many educational AI-systems operate as black-box models, restricting teachers' and learners' capacity to interrogate how historical narratives or claims are generated, thereby undermining epistemic trust and source-based verification central to historical inquiry (Holmes et al., 2019; Nazaretsky et al., 2025; Y. Yan et al., 2025). This opacity is particularly problematic in history education, where historiographical critique and evidentiary accountability are foundational disciplinary norms. From a policy perspective, such limitations stand in tension with international ethical AI-standards including UNESCO's emphasis on transparency and human oversight, the OECD's accountability principle, and the EU-AI Act's requirements for explainability and risk governance in high-impact educational technologies (Alfiras et al., 2025; Floridi, 2025; Nguyen et al., 2023; Y. Yan et al., 2025). Consequently, without the systematic integration of explainable AI-mechanisms and clearly defined human-in-the-loop responsibilities, the use of AI-in history classrooms risks compromising both epistemic fairness and pedagogical accountability.

Recent literature underscores that the integration of AI-in history education necessitates clear and context-sensitive policy frameworks, particularly in developing-country and Global South settings where structural inequalities remain pronounced. Scholars argue that explicit regulations governing AI-use encompassing student data protection, ethical safeguards, and pedagogical standards are essential to prevent unregulated adoption that may exacerbate disparities in educational quality and access (Barus et al., 2025; Funa & Gabay, 2025; Williamson & Eynon, 2020). In the context of history education, policy frameworks must ensure that AI-is leveraged to support historiographical plurality and contextualized narratives rather than reinforcing homogenized, Eurocentric interpretations of the past. Moreover, evidence suggests that targeted investment in teachers' digital and historical literacy is a critical policy lever for enabling critical and pedagogically sound AI-integration in resource-constrained environments (Amemasor et al., 2025; Daher, 2025; Macgilchrist et al., 2024; Tan et al., 2025). Absent coherent and enforceable policy guidance, the diffusion of AI-in the Global South risks widening institutional and regional learning gaps, thereby undermining broader commitments to educational equity and inclusive digital transformation.

Overall, ethical concerns, algorithmic bias, and policy considerations surrounding the use of AI-in history education indicate that the central challenge lies in governing the complex interplay between technology, knowledge production, and power relations. While artificial intelligence offers substantial potential to foster innovative and engaging approaches to history

learning, it simultaneously poses risks of epistemological distortion when implemented in an uncritical or unregulated manner. As emphasized by Memarian & Doleck (2023) and then Brey & Dainow (2024) the responsible integration of artificial intelligence must be grounded in an ethical-by-design paradigm, wherein principles of justice, inclusivity, and accountability are embedded within the technological architecture itself. Accordingly, the deployment of AI-in history education should be situated within a robust ethical and policy framework to ensure that it effectively supports the fundamental aims of history education namely, the cultivation of critical awareness and reflective engagement with the past.

Conclusion

This systematic, PRISMA-guided review synthesizes extant empirical and conceptual work on the deployment of AI-in history education from 2020-2026 and concludes that while AI-exhibits substantive pedagogical promise enhancing learner engagement, adaptive feedback, dialogic inquiry, and novel multimodal simulations that can scaffold elements of historical thinking it simultaneously poses profound epistemic, ethical, and equity risks that must be addressed if its benefits are to be realized responsibly. The reviewed corpus indicates a clear trajectory from descriptive and tool-focused studies toward more reflective, classroom-embedded applications of generative models and learning-analytics approaches, yet this momentum is tempered by recurring limitations: small-scale designs, concentration in Western contexts, insufficient alignment with disciplinary heuristics (sourcing, contextualization, evidentiary weighting), and frequent algorithmic tendencies to reproduce dominant, anglophone or Eurocentric narratives. Ethically, the literature foregrounds algorithmic bias, opacity, and the risk of historiographical flattening phenomena that mandate explicable, human-in-the-loop AI-architectures, transparent dataset curation, and explicit pedagogical mediation to safeguard historiographical plurality and epistemic justice. From a policy and practice perspective the review recommends three interlocking priorities for education systems especially in Global South and resource-constrained settings: (1) invest in targeted teacher professional development that integrates digital, historiographical, and assessment literacies within TPACK-informed designs; (2) implement context-sensitive governance that enshrines data protection, explainability, and equitable access; and (3) require that AI-deployments embed ethical-by-design principles and traceable source attribution to prevent the uncritical legitimization of AI-outputs. Methodologically, future research should pursue longitudinal, large-scale, mixed-methods studies that explicitly map AI-affordances onto established historical-thinking frameworks and that evaluate learning outcomes beyond engagement metrics; likewise, cross-regional comparative work is needed to interrogate how sociotechnical and policy differences mediate impacts. In sum, AI-can be a generative pedagogical mediator for history education only if its integration is guided by epistemic rigor, robust ethical safeguards, equitable infrastructure investments, and sustained teacher support otherwise its rapid adoption risks technological amplification of existing historiographical and educational inequities.

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