



The Proper Utilization of Artificial Intelligence in History Education

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Abstract. This research aims to explore the correct application of artificial intelligence in history education to promote the modernization reform of history education. The research uses the literature analysis method to sort out the widespread application of AI in the field of education, and combines the characteristics of history education to deeply analyze its application status, facing problems and potential solutions. The study finds that AI has been applied in history education in aspects such as intelligent assisted learning tools, construction of virtual historical scenes, and excavation and analysis of historical materials. However, its application also faces challenges such as technical accuracy and reliability, conflicts in educational concepts, and the adaptability of teachers and students. This paper proposes strategies such as technological improvement, integration of educational concepts, and training of teachers and students, providing theoretical and practical references for the correct use of AI in history education.

Keywords: History Education; AI Technology; Teaching Application; Educational Challenges

1 Introduction

With the rapid advancement of AI across fields, its profound impact on social production, lifestyles and education has grown increasingly obvious. AI has boosted scientific research and revitalized education via big data analytics, machine learning and natural language processing. As a key humanities discipline, history education has long relied on traditional teacher-led classroom teaching with limited resources, which falls short in information efficiency, personalized learning and teaching interactivity. Thus, integrating AI into history education has become an inevitable trend. [1]

Moreover, Introducing AI to history education represents both technological progress and innovation for traditional teaching, meeting modern society's demands: stimulating students' learning interest via technology and cultivating their critical and innovative thinking to adapt to rapid social changes.[2][3]

2 Related Studies

2.1 The Traditional Teaching Model in History Education

In traditional teaching model of history education, teachers usually use linear narration to explain historical events, figures and backgrounds, and guide students to study classic documents to improve their primary source analysis ability. Teacher-student interaction is limited to in-class questions, after-class consultations and thesis supervision. Despite certain benefits, this model has obvious limitations: it relies too much on teachers' personal experience, lacks flexibility and personalized support, failing to meet diverse student needs. Besides, pure lecture-based teaching makes it hard for students to grasp abstract historical concepts and complex phenomena.[4]

2.2 Current Application Status of AI Technology in Education

In recent years, the wide application of AI in education has boosted teaching reform with great transformative potential. As a key AI application, intelligent tutoring systems offer real-time targeted feedback and personalized learning plans via natural language processing, improving learning efficiency. Besides, AI optimizes teaching resource allocation by screening high-quality materials based on educational big data and teaching needs. Nevertheless, AI application in education still faces challenges including technical reliability, ethical disputes, and possible negative impacts on students' autonomous learning abilities.[4][5]

2.3 Relevant Research on AI Technology in History Education

Current research on AI in history education centers on intelligent learning tools, virtual historical scenario construction, and historical data mining, offering valuable references for educational innovation. However, existing studies have notable gaps: most focus on technical functions but ignore teaching applicability and long-term effects, limiting practical value; research on integrating AI with traditional history education philosophies is scarce, especially regarding balance between technology and history's humanistic essence; and little attention is paid to teacher-student adaptability, failing to address teachers' technical skill gaps and students' learning method challenges.[4][5]

2.4 The Application of AI in History Education

Intelligent Induction and Summary of Knowledge. AI can intelligently summarize and organize historical knowledge points, helping students quickly build knowledge frameworks and boost learning efficiency.

Personalized Learning Recommendation. AI can offer personalized learning resources and plans for students by analyzing their learning behaviors, interests and knowledge mastery, meeting diverse learning needs.[5]

Virtual Historical Scene Construction. Generative AI can build highly realistic virtual historical scenes, enabling students to experience history immersively and enhance their intuitive understanding of historical events and figures.

Cultivation of Historical Thinking. AI-built virtual historical scenes boost students' intuitive experience, and cultivate their historical and innovative thinking via multi-perspective reflection on historical issues.

Historical Data Mining and Analysis. AI boasts remarkable advantages in handling massive historical materials, helping students efficiently retrieve targeted content from vast databases and drastically cutting down data-searching time.

3 Challenges in the Integration of AI into History Education

3.1 Technical Accuracy Issues

AI applications in history education, especially in historical material analysis and knowledge induction, often suffer from insufficient accuracy. On one hand, AI algorithms and training data quality limit its ability to interpret historical texts. Given history's wide spatiotemporal and cultural complexity, current AI fails to fully grasp hidden metaphors, symbols and contextual details, resulting in flawed analysis. On the other hand, relying too much on pattern recognition, AI overlooks deep causal and logical links between historical events when summarizing knowledge, misleading students. For instance, AI-generated timelines or period summaries may not reflect history's dynamic and diverse nature, distorting students' historical cognition. Moreover, AI lacks professional expertise to handle interdisciplinary historical materials, making wrong judgments easily and worsening accuracy issues.[4][6]

3.2 Technical Reliability Issues

Besides technical accuracy, AI system reliability is also critical to the smooth progress of history education. For one thing, system stability directly affects teaching continuity and efficiency; algorithm flaws, hardware or network issues may disrupt AI tools, disturbing teaching rhythm and lowering students' trust in AI. For another, data security is equally non-negligible, as a large number of sensitive historical documents and archives involved in history education face risks of leakage, tampering or loss during digitization, with immeasurable losses once misused or damaged. Thus, ensuring AI reliability requires multi-dimensional efforts: optimizing algorithms, strengthening hardware maintenance and building a complete data security system to safeguard stable history teaching.[7]

3.3 Conflicts in Educational Philosophy

The introduction of AI has greatly impacted the traditional educational philosophy of history education, especially regarding teacher-student dynamics and teaching dominance. In the traditional model, teachers serve as knowledge authorities and transmit-

ters, while students remain passive recipients. AI has reshaped this pattern: intelligent learning tools offer personalized resources and real-time feedback, weakening teachers' dominant role in class. It has also redefined teacher-student interaction, as AI-built virtual historical scenes allow immersive learning without full dependence on teachers' explanations. While this shift brings new teaching opportunities, it sparks debates over teachers' role positioning. Some scholars warn that over-reliance on AI may reduce teachers to mere "technical supporters" instead of core educators, posing a major challenge to the traditional value system of history education.

3.4 Deviations in Understanding the Nature of History as a Discipline

Over-reliance on AI can skew students' grasp of history's humanistic and complex essence, weakening the cultivation of their historical thinking. History involves not just fact recording and reconstruction, but also exploring social development laws and values through event analysis. Yet AI relies on quantitative, patterned material processing, ignoring the subjectivity and diversity of historical narratives and leading to one-sided student understanding. Moreover, AI-generated virtual historical scenes boost intuitive experience, but without teacher guidance, students stay at the perceptual level and fail to reflect on underlying social, political and cultural factors. Over time, this erodes their grasp of history's humanistic spirit and critical thinking, contradicting core history education goals. Thus, balancing technical tools and humanistic care in AI application has become an urgent challenge.

4 Solutions to the Problems of AI in History Education

4.1 Improving Technical Accuracy

The application of AI in history education aims to offer reliable teaching and research support, yet technical accuracy severely limits its efficacy. Given history's complexity and humanistic traits, AI systems often generate biases in knowledge sorting and data analysis, even misleading students. To fix this, two core measures are essential: algorithm optimization and professional knowledge base construction. On one hand, AI algorithms should be tailored to history disciplines, with deep learning and natural language processing adopted to boost text comprehension. On the other hand, a specialized historical knowledge base integrating authoritative documents and expert-verified data must be built and updated regularly to align with latest research progress, strengthening the reliability and authority of AI outputs.[6][8]

4.2 Enhancing Technical Reliability

The reliability of AI is crucial for the smooth history education. Technical reliability issues are mainly reflected in two aspects: system stability and data security. On the one hand, the stability of AI directly affects the continuity of the teaching process. Frequent failures or slow operation will seriously disrupt normal teaching activities and reduce

students' trust in AI. On the other hand, data security issues cannot be ignored. In the process of AI-assisted learning, students' personal information and learning records may be stored on cloud servers. Once data leakage occurs, it will pose a serious threat to students' privacy rights. It is necessary to strengthen the security assessment of AI systems, adopt encryption technology to protect sensitive data, and formulate strict data access authority to ensure that technical reliability.[9]

4.3 Balancing Traditional and Innovative Educational

Integrating traditional and innovative philosophies is crucial for modernizing history education. Traditional strengths such as face-to-face interaction and systematic cultivation of historical thinking should be preserved alongside AI-driven innovation, which enhances flexibility through personalized learning and virtual scenes. Rather than simply adding AI to existing teaching, scenarios should be designed to respect history's disciplinary nature, making AI a supportive tool. This approach inherits traditional educational values while leveraging AI's benefits, achieving complementary and coordinated development of educational philosophies.

4.4 Strengthening Education on the Nature of History as a Discipline

Although AI has promising applications in history education, over-reliance may bias students' understanding of history's nature and weaken their historical thinking. They should highlight the multi-dimensionality and complexity of historical interpretation to avoid technological determinism and guard against historical nihilism in AI-generated narratives, which can be oversimplified or stylized. Teachers should encourage critical analysis of AI outputs to foster independent judgment and preserve history's humanistic and ideological character.[10]

5 Conclusion

AI has significantly innovated teaching through intelligent assistance, virtual historical scenes, and data mining, yet faces problems including insufficient accuracy, conflicting educational philosophies, and teacher-student adaptability. This paper proposes strategies involving technological optimization, philosophical integration, and personnel training, with the goal of facilitating the proper use of AI to improve teaching quality and cultivate qualified history talents.

This study leaves room for further research, which may develop discipline-specific AI algorithms for historical data analysis. Philosophically, deeper exploration is needed to integrate AI with the humanistic nature of history and protect students' critical thinking. Empirically, more studies are required to assess training programs for teachers and students. Overall, continuous attention to AI development will provide more systematic guidance for reforming history education.

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Disclosure of Interests

The authors have no competing interests.

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