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Exploring the extent and effectiveness of AI platform usage in learning: A case study of history students at Thai Nguyen University of Education

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Abstract

This study explores the extent and effectiveness of AI platform usage in enhancing the learning experience of History students at Thai Nguyen University of Education. With the rise of artificial intelligence technologies, platforms such as Chat GPT, Gemini, and Grok have become integral tools in academic settings, particularly in research and learning complex subjects like History. This research assesses how often and in what ways these AI tools are used by History students, evaluate their perceived effectiveness in helping students understand historical events, and identifies the challenges students face in utilizing AI. The study uses a combination of quantitative and qualitative methods, including a survey of 48 History students, to capture their experiences. Findings suggest that while AI platforms are widely used and highly regarded for their ability to clarify historical concepts and assist in exam preparation, concerns remain regarding the reliability of AI-generated content and the potential for over-reliance on technology. The study concludes by discussing the implications of AI in History education and offering recommendations for improving its integration.

Keywords:

Artificial Intelligence, History Education, Chat GPT, Grok, Gemini, Educational Technology.

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1. Introduction

The integration of Artificial Intelligence (AI) in education has gained significant attention in recent years, as technological advancements continue to reshape various aspects of academic life. AI platforms such as Chat GPT, Gemini, and Grok are particularly transforming the way students access, process, and engage with information, offering new avenues for personalized learning and academic support. In the context of higher education, these AI tools present both challenges and opportunities, particularly within disciplines that require the comprehension of complex concepts and historical narratives. History, as a field of study, involves intricate processes of analysis and interpretation, making the potential for AI applications in this domain particularly noteworthy.

In Vietnam, the application of AI in the teaching and learning of History, especially within the context of teacher training programs, has not been extensively explored. Vietnamese students in teacher training programs, particularly those studying History at universities such as Thai Nguyen University of Education, face unique challenges due to the demanding nature of the subject. The integration of AI could provide a significant support structure, offering students access to diverse perspectives and aiding them in simplifying complex historical events. Given the importance of History education in shaping future educators, understanding how AI tools can be used effectively to assist students in mastering both the content and the analytical skills required in the field is vital.

This study seeks to explore how History students at Thai Nguyen University of Education engage with AI platforms in their academic activities. Specifically, it aims to examine the extent to which these students utilize AI tools such as Chat GPT, Gemini, and Grok in their study of History, and how they perceive the effectiveness of these tools in enhancing their learning experience. By focusing on this group of students, the study hopes to uncover both the benefits and challenges associated with the use of AI in the study of History within the specific context of Vietnam's teacher training institutions.

The research objectives are threefold: first, to assess the frequency and nature of AI usage among History students at Thai Nguyen University of Education; second, to evaluate the perceived effectiveness of these AI tools in aiding the students' comprehension and application of historical knowledge; and third, to identify the challenges that students face when using AI platforms in their studies. Through a combination of quantitative and qualitative data gathered from an online survey, this study aims to provide valuable insights into the role of AI in History education, particularly within the teacher training context, and suggest recommendations for enhancing its application in this field.

2. Literature Review

The integration of Artificial Intelligence (AI) into higher education has garnered considerable attention in recent years, primarily due to its potential to enhance learning experiences and academic outcomes. AI tools, including intelligent tutoring systems, natural language processing platforms, and personalized learning systems, have demonstrated promising results in supporting students' learning across various academic disciplines (Labadze,

Grigolia, & Machaidze, 2023). These AI platforms facilitate personalized educational experiences by delivering content that aligns with individual student needs and learning preferences (Holmes et al., 2019). For university students, particularly in research-intensive fields like History, AI tools provide instant access to vast amounts of information, thus improving academic skills and critical thinking capabilities (Chen et al., 2020).

AI platforms, such as Chat GPT, Gemini, and Grok, have found increasing popularity in History education, as they allow students to gather data, explore different historical perspectives, and analyze complex topics. This is particularly valuable in History education, which demands intricate analysis and interpretation of events and narratives. In this regard, AI platforms help students generate ideas, clarify concepts, and enhance writing skills, essential for the study of historical content (Chaves & Gerosa, 2021; Smutny & Schreiberova, 2020). Moreover, research indicates that AI can improve students' ability to engage interactively with the material, thereby making learning more engaging and effective (Colace et al., 2018).

However, the adoption of AI in higher education comes with its own set of challenges. One of the significant concerns is the reliability and quality of AI-generated content, particularly in disciplines like History, where the accuracy of information is critical. AI platforms have been criticized for providing oversimplified or inaccurate data, especially when the algorithms powering them are not specifically tailored to the needs of a particular subject (Muller, 2021). In History, context, interpretation, and source analysis are vital components of academic discourse, and the over-reliance on AI-generated responses might impede the development of students' critical thinking skills (Awgichew & Ademe, 2022).

Furthermore, AI-generated responses may not always align with the nuanced interpretations that are essential in the study of History (Issar, 2021). AI tools like ChatGPT, for instance, can assist in clarifying concepts and improving writing, but their ability to offer contextually rich, accurate, and complex historical interpretations remains limited (Exintaris, Karunaratne, & Yuriev, 2023). These concerns have led to discussions on the need for a balanced approach to integrating AI in education, where these tools serve as complements to, rather than replacements for, traditional teaching methods (Fisseha, 1992).

In the context of Vietnam, AI in education, particularly in History teaching, remains an emerging practice. While AI adoption in universities is still in its early stages, some studies suggest that AI has the potential to improve the quality of education, providing students with enhanced access to resources and diverse learning methods (Nguyen et al., 2020). However, challenges such as limited awareness of AI's capabilities, insufficient infrastructure, and lack of training for both students and faculty still hinder its widespread implementation (Awgichew & Ademe, 2022).

In summary, while AI presents significant opportunities to enhance the educational experience, its implementation in History education must be approached carefully. Educators must ensure that students are equipped with the necessary skills to critically evaluate AI-

generated content, ensuring that AI supports, rather than replaces, critical engagement with historical narratives (Yao, 2022). Moreover, continuous research is needed to refine the role of AI in education and overcome the ethical and practical challenges associated with its use (King, 2023).

3. Research Methodology

This study employs a case study approach to explore the use of Artificial Intelligence (AI) platforms in History education among students at Thai Nguyen University of Education. A quantitative research design was chosen to examine the frequency of AI usage, its effectiveness in supporting learning, and the challenges students face in utilizing these tools. Data was collected through an online survey, designed to capture both quantitative and qualitative information, allowing for a comprehensive understanding of students' experiences and perspectives.

The participants in this study consisted of 48 undergraduate students enrolled in the History program at Thai Nguyen University of Education. These students were selected using convenience sampling, which allowed for easy access to participants within the university. The sample included students from various academic years (first-year, second-year, and third-year), providing a diverse range of perspectives on the use of AI in History studies. This diverse sample is particularly important as it allows for a broader understanding of how AI tools are utilized by students at different stages of their academic journey.

The survey was distributed via Zalo, a widely used messaging application in Vietnam, which facilitated efficient communication and participation. The survey included three main sections: demographic information, AI usage in History studies, and students' perceptions of AI's effectiveness and challenges. The demographic section collected basic information such as age, gender, and academic year. The second section focused on the frequency and nature of AI usage, asking students how often they use AI platforms like Chat GPT, Gemini, and Grok for various academic tasks such as research, exam preparation, and clarifying historical concepts. The third section aimed to assess the perceived effectiveness of AI in supporting students' learning and identify any difficulties they encountered while using these tools.

The data was analyzed using SPSS 20.0 software. Descriptive statistics, including frequency distributions, means, and standard deviations, were used to quantify the students' responses and provide a clear picture of AI usage patterns and its perceived effectiveness. Additionally, thematic analysis was applied to open-ended responses, allowing for the identification of recurring themes and insights into the challenges and opportunities students associate with AI in History education.

Ethical considerations were adhered to throughout the study. Participants were fully informed of the purpose of the research and assured of the confidentiality of their responses. Participation was voluntary, and students had the option to withdraw at any time without

penalty. The study complied with ethical guidelines for research involving human participants, ensuring that students' privacy and data security were maintained.

4. Research results and discussion

4.1. Demographic Data Analysis

Table 1. Statistics of survey subjects by gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	16	33.3	33.3	33.3
	Female	32	66.7	66.7	100.0
	Total	48	100.0	100.0	

Based on Table 1, the demographic data on gender distribution of the survey participants reveals that 66.7% of the 48 students are female, while 33.3% are male. This gender distribution reflects the reality that there are generally more female students in the History education program, which is consistent with the actual demographic trends in teacher training programs for History at Thai Nguyen University of Education. This disparity provides useful insights into how gender may influence the use and effectiveness of AI platforms in learning. Although the sample size is limited, the findings align with the broader trend within the field. Therefore, the gender distribution in this study is a valid representation of the population being studied. Further research could explore how gender-specific factors might affect students' engagement with AI tools in the context of History education.

Table 2. Classify subjects according to the number of years students have been in college

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1st year	17	35.4	35.4	35.4
	2nd year	21	43.8	43.8	79.2
	3th year	10	20.8	20.8	100.0
	Total	48	100.0	100.0	

Table 2, the distribution of survey participants according to their academic year shows that 35.4% of the students are in their first year, 43.8% are in their second year, and 20.8% are in their third year. This distribution is reflective of the general composition of students enrolled in the History program at Thai Nguyen University of Education, with a higher proportion of second-year students participating in the survey. The inclusion of students from different academic years offers a comprehensive view of how AI tools are used across various stages of the academic journey. First-year students may be more focused on foundational knowledge, while second- and third-year students, having deeper academic experience, might engage more critically with AI platforms to support complex assignments and exam preparation. This distribution allows for a nuanced understanding of the different ways

students at various levels utilize AI in their studies, shedding light on how AI can adapt to students' evolving academic needs.

4.2. Reliability Analysis

Table 3. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.736	.736	9

Table 3 presents the reliability statistics of the survey, with a Cronbach's Alpha value of 0.736. This indicates that the survey has acceptable internal consistency, suggesting that the items within the survey are reliably measuring the intended constructs. The reliability coefficient supports the validity of the data collected and the robustness of the conclusions drawn from the study.

Table 4. Item Statistics

	Mean	Std. Deviation	N
Q1	4.1250	.91384	48
Q2	4.0417	.82406	48
Q3	4.0208	.75764	48
Q4	4.0417	.89819	48
Q5	4.1875	.86679	48
Q6	3.8958	1.11545	48
Q7	3.8125	1.17882	48
Q8	4.1667	.90703	48
Q9	3.8125	1.06504	48

Table 4 presents the item statistics, showing the mean and standard deviation for each survey question. The mean values range from 3.81 to 4.19, indicating that students generally agree with the statements related to the use of AI platforms in their learning. Questions regarding the usefulness of AI in understanding historical concepts and assisting with assignments (Q1, Q2, Q3) have higher mean values (around 4.0), suggesting that students find these platforms valuable for research and clarification of historical events. The standard deviations vary between 0.76 and 1.18, indicating a moderate level of agreement among students, with some variance in their experiences and perceptions.

Table 5. Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q1	31.9792	19.595	.421	.538	.711
Q2	32.0625	19.805	.458	.466	.707
Q3	32.0833	19.312	.594	.580	.689
Q4	32.0625	18.953	.522	.506	.695
Q5	31.9167	19.823	.423	.395	.711
Q6	32.2083	19.615	.302	.218	.735
Q7	32.2917	18.339	.407	.575	.716
Q8	31.9375	19.677	.415	.335	.712
Q9	32.2917	19.998	.284	.562	.737

Table 5 presents the item-total statistics, which further assess the reliability of the survey items by measuring the correlation between each item and the overall scale. The corrected item-total correlations are all positive, ranging from 0.284 to 0.594, suggesting that each item is contributing meaningfully to the overall scale. Items with higher correlations (Q3, Q4) show a stronger alignment with the overall survey construct, while those with lower correlations (Q9) indicate more variability in responses. The Cronbach's Alpha values, ranging from 0.689 to 0.737 if items are deleted, suggest that removing any single item would not significantly improve the reliability of the survey. Overall, these tables confirm the reliability and internal consistency of the survey instrument used in this study.

4.3. Analysis of Survey Results by Group

The results for this group show that students frequently use AI platforms to support their learning in History. The mean values for questions Q1 (searching for historical information), Q2 (clarifying historical concepts), and Q3 (assisting with assignments and exam preparation) range from 4.02 to 4.19, indicating that the majority of students utilize AI platforms regularly for these academic tasks. This suggests that AI tools, such as Chat GPT, Gemini, and Grok, are seen as valuable resources for students to enhance their understanding of historical events, improve their conceptual clarity, and streamline their study efforts, particularly for assignments and exam preparation.

The second group of questions focused on the perceived effectiveness of AI in enhancing students' learning. The results show that students generally agree with the statements regarding the positive impact of AI on their understanding of historical content, saving time in research, and providing reliable information. The mean values for Q4 (clarifying historical events), Q5 (saving time in research), and Q6 (accuracy and reliability of AI information) range from 4.02 to 4.19. This indicates that students find AI platforms effective in making historical concepts more comprehensible, improving their efficiency in research, and assisting in the accuracy of their information. However, there is a slight variation in responses, suggesting some concerns about the reliability of the information provided by AI platforms.

The final group of questions addresses the challenges students face when using AI in their studies. The responses show moderate levels of concern, with mean values ranging from 3.81 to 3.90. Students reported some difficulties in using AI platforms to find accurate historical information (Q7), understanding the results generated by AI (Q8), and the potential dependency on technology (Q9). These findings suggest that while students acknowledge the benefits of AI tools, there are notable challenges related to the quality of AI-generated content, its interpretability, and the risk of over-reliance on technology, which could hinder independent research skills.

4.4. Discussion

The results of this study provide valuable insights into the integration of AI platforms in History education at Thai Nguyen University of Education. The findings highlight both the positive aspects and challenges of using AI tools in the academic environment, particularly in the study of History.

First, the frequent usage of AI platforms by students, as shown in the survey, indicates that AI is becoming a useful tool for enhancing learning in History. Most students reported using AI to search for historical information, clarify complex historical concepts, and assist with assignments and exam preparation. This suggests that AI platforms, such as Chat GPT, Gemini, and Grok, are seen as effective resources for students to deepen their understanding of historical events, improve their analytical skills, and streamline their study processes. These findings align with previous research that suggests AI can provide personalized learning experiences and support self-directed study, particularly in research-intensive subjects like History.

Despite the clear benefits, students also expressed some concerns regarding the challenges of using AI in their studies. While AI platforms are considered useful for saving time and offering quick access to information, students voiced concerns about the reliability and accuracy of AI-generated content. This issue is particularly critical in the study of History, where context and interpretation are vital. The occasional inaccuracy of AI-generated information could lead to misunderstandings of historical events, making it important for students to critically evaluate the sources and data provided by AI platforms.

Another key concern raised in the survey was the potential for over-reliance on AI tools, which could hinder students' ability to engage in independent research. Some students expressed difficulty in interpreting AI-generated results, while others feared that frequent use of AI might diminish their research skills and critical thinking abilities. This highlights a fundamental challenge in integrating AI into education—finding a balance between using AI as a supplementary tool and ensuring students retain their ability to think critically, conduct independent research, and engage deeply with the subject matter.

In conclusion, while the use of AI platforms in History education offers significant potential benefits, it is important to recognize the challenges that come with it. These findings suggest that while AI can serve as a valuable aid in understanding historical content and enhancing

learning efficiency, careful consideration should be given to the limitations and risks associated with its use. To maximize the benefits of AI in History education, it is essential for both students and educators to develop strategies that integrate AI effectively while maintaining the integrity of independent learning and critical thinking skills.

5. Conclusion and Recommendations

The findings of this study highlight the growing role of AI platforms in enhancing History education at Thai Nguyen University of Education. The study concludes that AI tools, such as Chat GPT, Gemini, and Grok, are widely used by History students, with most students reporting that these platforms are helpful for research, clarifying historical concepts, and assisting in exam preparation. Students perceive AI as an effective tool that enhances their understanding of historical events and saves time in their studies. However, concerns regarding the accuracy of AI-generated content and the potential for over-reliance on these platforms were also evident.

The study emphasizes the importance of using AI as a supplementary resource rather than a replacement for traditional learning methods. To ensure that students develop critical thinking and research skills, it is essential to guide them in using AI effectively while maintaining their ability to analyze and interpret historical sources independently. Educators should provide training on how to critically evaluate AI-generated information and incorporate it into their academic work.

In conclusion, the integration of AI in History education has the potential to significantly improve learning outcomes, but it should be approached with caution. Further research is needed to explore ways to enhance the effective use of AI while addressing the challenges identified in this study.

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7. Appendix: Survey on the Use of AI in History Education

The following survey was designed to assess the usage, effectiveness, and challenges of Artificial Intelligence (AI) platforms in supporting History students at Thai Nguyen University of Education. The survey was distributed via Zalo to 34 students enrolled in the History program.

Survey Sections:

Hello,

My name is **Nguyen Khanh Nhu**, and I am a lecturer at the Faculty of History, Thai Nguyen University of Education. I am conducting a study on the use of Artificial Intelligence (AI) platforms such as Chat GPT, Gemini, and Grok in the learning process of History at our university. The aim of this research is to assess the extent and effectiveness of using these platforms in students' learning.

All the information you provide in this survey will be kept strictly confidential and used solely for research purposes. I kindly ask you to take a moment to answer the following questions. Your responses will help us improve the quality of teaching and learning in History.

Note: This survey is completely voluntary, and there are no right or wrong answers. Please respond truthfully.

Thank you very much!

1- Demographic Information

Gender:

- Male
- Female
- Other

Age:

- Under 20 years old
- 20-22 years old
- 23-25 years old
- Over 25 years old

Academic Year:

- First year
- Second year
- Third year

2 - AI Usage in History Studies Please rate the following statements regarding your use of AI platforms (Chat GPT, Gemini, Grok) in History studies on a scale from 1 to 5 (1 = Never, 5 = Very Frequently):

Q1. I use AI platforms to search for information related to historical events.

- 1 - Never
- 2 - Rarely
- 3 - Sometimes

- 4 - Frequently
- 5 - Very Frequently

Q2. I use AI platforms to clarify historical concepts and events.

- 1 - Never
- 2 - Rarely
- 3 - Sometimes
- 4 - Frequently
- 5 - Very Frequently

Q3. I use AI platforms to assist in completing History assignments or exam preparation.

- 1 - Never
- 2 - Rarely
- 3 - Sometimes
- 4 - Frequently
- 5 - Very Frequently

3- Perceived Effectiveness and Challenges Please rate the following statements on a scale from 1 to 5 (1 = Strongly Disagree, 5 = Strongly Agree):

Q4. AI platforms help me understand historical events and concepts more clearly.

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Neutral
- 4 - Agree
- 5 - Strongly Agree

Q5. AI platforms help me save time in researching and preparing for exams.

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Neutral
- 4 - Agree
- 5 - Strongly Agree

Q6. AI platforms provide accurate and reliable information for studying History.

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Neutral
- 4 - Agree
- 5 - Strongly Agree

4- Challenges and Issues Please rate the following statements on a scale from 1 to 5 (1 = Strongly Disagree, 5 = Strongly Agree):

Q7. I find it difficult to use AI platforms to find accurate historical information.

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Neutral
- 4 - Agree

- 5 - Strongly Agree

Q8. I have difficulty understanding the results or answers generated by AI platforms.

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Neutral
- 4 - Agree
- 5 - Strongly Agree

Q9. Using AI platforms makes me dependent on technology, which hinders my ability to research independently.

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Neutral
- 4 - Agree
- 5 - Strongly Agree

5- Suggestions for Improvement

Do you have any suggestions to improve the use of AI platforms in History education? Please share your thoughts.

- [Open-ended response]