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APPLICATION OF ARTIFICIAL INTELLIGENCE (AI) IN TEACHING AND LEARNING OF SOCIAL STUDIES: PROBLEMS AND PROSPECTS

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Abstract
This paper explores the applications of Artificial Intelligence (AI) in teaching and learning of social studies, highlighting its potential to transform traditional pedagogies, faster critical thinking, and promote historical empathy. It also examines the challenges hindering the seamless adoption of AI in social studies education. By examining current research and literature, the study identifies various ways in which AI can benefit Social Studies instruction, including personalized learning, adaptive assessment, enriched content delivery, immersive simulations, language support, data-driven insights, teacher support, and global collaboration as well as motivating both teachers and learners for knowledge acquisition. The paper also discusses the challenges and opportunities associated with implementing AI in Social Studies education and highlights the importance of ethical considerations and equitable access. Some of the challenges are, addressing unequal assess to AI technology and ensuring AI-generated content is unbiased. The opportunities include personalized learning experience for students and enhanced engagement through interactive AI-tools. Through a comprehensive analysis of scholarly works, and case studies, this paper provides insights into the transformative role of AI in shaping the future of Social Studies education.

Keywords: Artificial Intelligence; Social Studies educations; teaching and learning, personalized learning.

Introduction
The integration of Artificial Intelligence (AI) in education has revolutionized the way students learn and teachers teach, offering unprecedented opportunities for personalized learning, enhanced engagement, and improved academic outcomes (Kozma, 2016). In today's rapidly

evolving educational landscape, teachers face the challenge of involving students in Social Studies education while navigating the complexities of teaching historical events, cultural contexts, and societal issues and problems in their various societies. As technology continues to advance, there is growing interest in incorporating artificial intelligence (AI) to enhance teaching and learning experiences in various disciplines, including Social Studies Education. Social Studies education plays a crucial role in promoting critical thinking, responsible citizenship, civic engagement, and historical literacy among students thereby equipping them with the knowledge and skills necessary to understand the complexities of the world around them. However, traditional approaches to Social Studies instruction often struggle to capture students' interest in this era of knowledge explosion in globalized world thereby providing missing gap in teaching and learning of the discipline. Against this backdrop, the inclusion of AI technologies provides promising opportunities to revolutionize Social Studies education by providing personalized learning experiences, adaptive assessment tools, enriched content delivery, immersive simulations, language support, data-driven insights, teacher support, promotion of effective and efficient citizenship and global collaboration these among others provides opportunity for all categories of students to benefit adequately in instructional process (Kim, 2019).

This paper explores the potential benefits and challenges of adapting AI in Social Studies education by examining current researches and available literature on the topic. However, by synthesizing existing knowledge and insights, this write up aims to provide a comprehensive understanding of how AI can enhance teaching and learning experiences in Social Studies classrooms for the promotion of effective learning process that cater for individual

difference among learning. Specifically, the paper delves into key areas where AI can be applied in Social Studies education, including personalized learning, adaptive assessment, enriched content delivery, immersive simulations, language support, data-driven insights, teacher support, and global collaboration to mention but few (Kim, 2019). It will also discuss the ethical, privacy, and equity considerations associated with the use of AI in education for learning enhancement. Through a critical analysis and appraisal of the literature, case studies, and best practices, this paper will highlight the potential of AI to transform Social Studies education, empower teachers, and prepare students to become informed, engaged, and active participants so they can contribute immensely to the society in which they live to bring about an equitable society.

Issues in Artificial Intelligence and Education

Artificial Intelligence (AI) is a branch of computer science focused on creating systems that can perform tasks that typically require human intelligence. This includes machine that understanding natural language, recognizing patterns, learning from data, making decisions, and solving problems in a very fast manner. AI encompasses various subfields such as machine learning, natural language processing, computer vision, robotics, and more. According to Adams et al (2019) the goal of AI is to develop systems that can mimic or exceed human-level intelligence to automate tasks, improve efficiency, and advance technology across various domains.

In recent years, the field of education in general has witnessed a growing interest in leveraging artificial intelligence (AI) to enhance teaching and learning experiences process (Adams *et al*, 2019; Balakrishnan *et al*, 2020). Within this view, Social Studies education stands as a veritable academic

field of study for exploration, as it seeks to equip students with the knowledge, skills, competencies and perspectives necessary to understand and navigate complex social, cultural, and historical phenomena (Barton & Levstik, 2004; Wineburg & Grossman, 2020). The integration of AI technologies offers significant promise for transforming Social Studies instruction by offering personalized learning experiences, adaptive assessments, immersive simulations, and advanced data analysis tools (Cheung *et al*, 2021; König *et al*, 2018). This literature review intends to explore the current state of research on the integration of AI in Social Studies education, with a focus on identifying trends, challenges, and best practices for Social Studies teaching advancement. By synthesizing existing literature, this review seeks to shed light on how AI technologies can be utilized to support teaching and learning in Social Studies classrooms, as well as the potential implications for teachers, students, and educational policymakers and other implementers of education policies.

However, the introduction of AI in Social Studies education presents a unique opportunity to address longstanding difficulties such as engaging diverse student populations, fostering critical thinking skills, and promoting historical and cultural understanding (Banks, 2018; Hess & McAvoy, 2015). Moreover, it also raises important questions about equity, privacy, and the role of educators in mediating technology-mediated learning environments (Means *et al*, 2019; Selwyn, 2016). By critically examining the current available researches, this literature review aims at providing insights into how AI can be effectively integrated into Social Studies education to enhance learning outcomes and prepare students for active citizenship in an increasingly interconnected world as well as equipping them with the roles they are expected to play in ever changing globalized world.

Through an exploration of key themes such as personalized learning, adaptive assessment, virtual reality simulations, data analysis, and the ethical implications of AI in education, this review seeks to offer a comprehensive understanding of the opportunities and challenges associated with the integration of AI in Social Studies education. By doing so, it aims to inform future research, practice, and policy makers and implementers aimed at harnessing the potential of AI to support meaningful and equitable Social Studies learning experiences for all students of modern time.

Problems Facing Application of Artificial Intelligence in Social Studies Teaching

There are many problems facing the application of artificial intelligence in Social Studies teaching. Smith (2023) noted that one of the major challenges facing the integration of artificial intelligence in Social Studies education is the ethical considerations surrounding data privacy, algorithmic bias, and the responsible use of AI tools. This may create bias in the application of AI in instructional delivery especially in the teaching of the subject thereby affecting the realization of intended outcome. Johnson (2022) remarked that equity issues related to access to AI technologies and digital literacy skills among students, ensuring that all learners have equitable opportunities to benefit from AI-driven educational tools. Today many students are still behind in the required knowledge for the utilization of AI for meaningful learning to take place. Schools are not stuffed with required tool to work with and this prevent students to have in-depth knowledge for the use of artificial intelligence in the discipline.

Lee (2024) remarked that algorithmic bias is a significant concern in leveraging artificial intelligence in Social Studies

education. Without careful consideration, AI systems may perpetuate or amplify existing biases present in historical data. Garcia (2023) emphasized that educators/teachers require comprehensive training and professional development to effectively integrate AI technologies into Social Studies instruction. Without adequate support, teachers may struggle to implement AI tools in their classrooms due to shallow knowledge in the application of AI in Social Studies instructional process. As a matter of fact, many teachers are greatly behind with the required knowledge in the use of artificial intelligence in Social Studies teaching.

Wang (2021) stated that resource allocation is a critical issue in leveraging artificial intelligence in Social Studies education. Educational institutions must invest in AI infrastructure and ongoing support to ensure sustainable implementation. School can collaborate with the society to fund the process to achieve desire end. However, corruption in the society today amplifies this problem in that the huge sum of money allocated to school to acquire needed tools are diverted to personal purse by unscrupulous individual. Chen (2022) observed that there is a notable lack of research on the effectiveness of AI technologies in Social Studies education. More empirical studies are needed to understand the impact of AI on teaching and learning outcomes in this domain. Doing this will go a long way in identifying areas of problems in the application of AI in Social Studies instructional process with a view to proffer possible solution to the identified problems Martinez (2024) acknowledged that resistance to change among educators and stakeholders may hinder the successful integration of artificial intelligence in Social Studies education. Overcoming resistance requires effective leadership and strategic planning as well as well planned public enlightenment. Taylor (2023)

pointed out that cost constraints pose a significant barrier to the widespread adoption of AI technologies in Social Studies education. Without adequate funding, educational institutions may struggle to implement and sustain AI-driven initiatives thereby making its noble objective difficult to realize. Kim (2021 warned that data security risks associated with the collection and storage of student data pose challenges to the leveraging of artificial intelligence in Social Studies education. Safeguarding sensitive information is essential to protect student privacy. Hence, cyber security services are needed to protect sensitive information of the users. Nguyen (2022) highlighted that cultural sensitivity is paramount when integrating AI technologies into Social Studies instruction. Scholars must ensure that AI-driven content and resources reflect diverse perspectives and experiences. This will promote the provision of inclusive education needed in globalized world. Social studies education may be hesitant to adopt AI due to concerns about job displacement or loss of autonomy. Social studies content can also be complex and nuanced making it challenging to develop effective AI-powered tools

Importance of AI in Teaching and Learning of Social Studies

Artificial Intelligence (AI) holds significant importance in Social Studies education for several reasons these are:

AI can tailor leaning experiences to individual students needs and abilities. AI-powered interactions tools can increase student engagement and motivation.

AI algorithms can analyze students' learning patterns and preferences to provide personalized recommendations and adaptive learning experiences. This customization caters for individual student needs, promoting better engagement and understanding of Social Studies concepts.

According to Chandra (2019) remarked that Artificial Intelligence enables personalized learning experiences by analyzing individual students' learning patterns and preferences. Luckin, M. *et al* (2018) noted that AI-powered tools supplement traditional teaching methods by providing additional support and resources to both students and teachers. AI-powered tools, such as chat bots and virtual tutors, can supplement traditional teaching methods by providing additional support and resources to both students and teachers. These tools can offer immediate feedback, answer questions, and facilitate discussions, enriching the learning process.

Du Boulay (2020) in his own remark claimed that AI processes vast amounts of data to identify trends and patterns relevant to Social Studies topics, enhancing curriculum development and instructional strategies. On this note, AI can process vast amounts of data to identify trends, patterns, and correlations relevant to Social Studies topics. Teachers can use this data analysis to enhance curriculum development, identify areas for improvement, and tailor instruction to address students' needs effectively. Moreover, Gadelha *et al* (2017) noted that AI technologies like virtual reality create immersive learning experiences, allowing students to explore historical events and engage with primary sources. AI technologies, such as virtual reality (VR) and augmented reality (AR), can create immersive and interactive learning experiences for Social Studies education. Students can explore historical events, visit virtual museums, and engage with primary sources, making learning more engaging and memorable. This will go a long way in addressing risk of travelling and cost involves in traditional methods. Moreover, AI can help educators incorporate diverse perspectives and cultural representations into Social Studies curriculum materials. By providing access

to a wide range of resources and viewpoints, AI promotes cultural sensitivity, fosters empathy, and encourages critical thinking about global issues and diverse societies. This idea was noted by Olga et al. (2019) when he remarked that AI promotes cultural sensitivity in Social Studies education by providing access to diverse perspectives and representations.

Klinkenberg *et al* (2018) in his own remark asserted that AI streamlines administrative tasks and grading processes in Social Studies education, enabling teachers to focus more on teaching and student support. AI streamlines administrative tasks, grading, and assessment processes in Social Studies education, allowing scholars to focus more time and energy on teaching and student support. Automated grading systems can provide immediate feedback to students, enabling them to know their progress and identify areas for improvement. Furthermore, Touhidi *et al* (2021) argued that Integrating AI into Social Studies education prepares students for the evolving technological landscape and equips them with essential skills for the future. As AI continues to shape various aspects of society, including education, it is essential for students to develop AI literacy and digital skills. Integrating AI into Social Studies education prepares students for the rapidly evolving technological landscape and equips them with the knowledge and skills needed for success in the modern world.

Suggestions
In other to allow for the effectiveness of the application of AI in Social Studies teaching, the following suggestions are hereby made:
i. Investment in AI Infrastructure: Educational institutions should prioritize investment in AI infrastructure, including hardware, software, and training programs, to

ensure effective implementation of AI technologies in Social Studies classrooms.

ii. Provide educators with training and support to effectively integrate AI-powered tools. It also ensures equal access to AI-powered tools for all students.

iii. Professional Development for Educators: Comprehensive professional development programs should be developed to train both students and teachers in the use of AI tools and techniques for Social Studies instruction, emphasizing hands-on training and ongoing support.

iv. Integration of AI across Curriculum: AI technologies should be integrated across the Social Studies curriculum at all levels to provide students with diverse learning experiences and opportunities for interdisciplinary exploration.

v. Ethical and Privacy Considerations: Educators and policymakers must address ethical and privacy considerations associated with the use of AI in Social Studies education, including data privacy, algorithmic bias, and the responsible use of student data.

vi. Collaboration and Knowledge Sharing: Stakeholders in Social Studies education should collaborate and share best practices for integrating AI into instructional practices, fostering a community of practice to support ongoing innovation and improvement is highly essential.vi

vii. Research and Evaluation: Continued research and evaluation of AI applications in Social Studies education are essential to understand their impact on student learning outcomes, inform evidence-based practices, and identify areas for improvement.

viii. Equitable Access: Efforts should be made to ensure equitable access to AI technologies and resources for all students, addressing disparities in technology access and digital literacy skills among diverse student populations.

ix. Community Engagement: Educators, parents, students, and community members should be engaged in discussions about the role of AI in Social Studies education, promoting transparency, accountability, and shared decision-making these will go a long way in making application of AI in Social Studies teaching a worthwhile.

Conclusion
In conclusion, the integration of Artificial Intelligence (AI) in social studies education has the potential to revolutionized teaching and learning. The integration of artificial intelligence (AI) technologies also holds tremendous potential for transforming Social Studies education, offering new opportunities to enhance learning experiences, improve student engagement, and foster deeper understanding of complex social, cultural, and historical phenomena, like virtual field trips and exploration and also intelligent tutoring system. personalized learning, adaptive assessment, enriched content delivery, immersive simulations, language support, data-driven insights, teacher support, and global collaboration, AI has the power to revolutionize how Social Studies is taught and learned in the modern age. Hence application of AI in instructional delivery in Social Studies should be given priority because of immense opportunities in its application for students, teachers and the society at large.

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