

STUDENTS' PERCEPTION OF ARTIFICIAL INTELLIGENCE IN THE LEARNING OF SOCIAL STUDIES

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Abstract

Artificial Intelligence offers transformative potential for Social Studies education by creating interactive, adaptive, and learner-centered learning environments. AI-powered tools such as intelligent tutoring systems, educational chatbots, learning analytics, and simulations enhance students' understanding of complex social concepts, encourage critical thinking, and foster active engagement. When students perceive these technologies as useful, accessible, and relevant, they are more likely to adopt and benefit from them, improving academic outcomes and promoting self-directed and collaborative learning. Students' perceptions are influenced by digital literacy, access to technological resources, instructional support, and the perceived relevance of AI tools to learning objectives. Conversely, challenges such as inadequate digital infrastructure, limited teacher competence, financial constraints, ethical concerns, and resistance to technological change can hinder effective AI adoption. These barriers are especially significant in developing countries like Nigeria, where schools may struggle with insufficient resources and training. To maximize AI's impact on Social Studies learning, policymakers and educators must ensure equitable access to technology, provide professional development for teachers, and establish ethical guidelines for data privacy and responsible AI use. Addressing these factors will enable the successful integration of AI into educational practices. Overall, AI can enhance Social Studies education by developing digitally competent, critically minded, and socially responsible citizens ready to participate meaningfully in contemporary society.

Keywords: Artificial Intelligence, Social Studies Education, Students' Perception, Digital Literacy, Educational Technology, Learning Analytics.

Introduction

Technological advancement has significantly influenced modern educational systems across the world. The emergence of digital technologies has created new opportunities for improving teaching and learning processes. Among the most influential technological innovations is Artificial Intelligence (AI), which has the capacity to simulate human intelligence and perform tasks such as learning, reasoning, pattern recognition, and decision-making (Russell & Norvig, 2021). AI technologies are increasingly being applied in various sectors, including healthcare, finance, agriculture, governance, and education.

The integration of Artificial Intelligence in education has attracted considerable attention from researchers and policymakers because of its potential to transform traditional learning environments. AI-powered educational technologies enable personalized learning experiences, provide instant feedback to learners, and support teachers in monitoring students' academic progress (Holmes, Bialik & Fadel, 2019). These technologies allow learners to interact with educational content in innovative ways that enhance engagement and understanding.

Social Studies education occupies an important position within the school curriculum because of its role in preparing students for responsible citizenship and active participation in society. The subject integrates knowledge from disciplines such as history, geography, economics, political science, and sociology in order to help learners understand social relationships and societal problems (Banks, 2017). Through Social Studies education, students develop civic competence, critical thinking skills, and an appreciation of cultural diversity.

Despite the growing adoption of Artificial Intelligence technologies in education, their effectiveness largely depends on students' acceptance and perception of these tools in some areas. In developing countries such as Nigeria, the integration of these tools in education is still evolving, it is against this background that this paper examines students' perception of Artificial Intelligence in the learning of Social Studies.

Artificial Intelligence in Education

Artificial Intelligence (AI) refers to the development of computer systems capable of performing tasks that traditionally require human intelligence, such as reasoning, learning, problem-solving, pattern recognition, and decision-making. These systems operate through computational models that analyze data, recognize relationships, and generate intelligent responses to complex situations. According to Russell and Norvig (2021), Artificial Intelligence involves the design of intelligent agents that perceive their environment and take actions that maximize the probability of achieving defined goals. Similarly, Rich and Knight (1991) describe AI as the study of how to make computers perform tasks that, at present, people do better. These definitions emphasize the ability of AI systems to simulate aspects of human cognitive functioning.

The growing development of Artificial Intelligence technologies has significantly influenced various sectors of society, including healthcare, finance, transportation, governance, and education. In the educational sector, AI technologies are increasingly being adopted to improve teaching effectiveness, enhance learning experiences, and support educational management (Chen, & Lin, 2020). The integration of AI into educational systems has given rise to a specialized research area known as Artificial Intelligence in Education (AIED). According to Luckin,., Holmes,., Griffiths,., and Forcier, (2016), Artificial Intelligence in Education focuses on the use of intelligent computational systems to support learners, teachers, and educational institutions in achieving improved educational outcomes. These systems are designed to create adaptive learning environments that respond to the needs and abilities of individual learners.

One of the most widely recognized advantages of Artificial Intelligence in education is its capacity to facilitate personalized learning. Traditional classroom instruction often adopts a standardized teaching approach in which all students receive the same instructional materials regardless of their individual learning needs. However, learners differ in their cognitive abilities, learning styles, interests, and pace of learning. Artificial Intelligence technologies address these differences by analyzing learners' interactions with digital learning platforms and adapting instructional materials accordingly. According to Chen,., Chen,., and Lin, (2020), AI-powered learning systems are capable of tailoring educational content to match the knowledge level and learning progress of individual students. Similarly, Holmes, Bialik, and Fadel (2019) argue that AI-driven learning environments can provide individualized learning pathways that allow students to progress at their own pace while receiving targeted feedback.

Another important application of Artificial Intelligence in education is learning analytics. Learning analytics refers to the collection, measurement, and analysis of data generated from students'

interactions with digital learning environments in order to improve learning outcomes. According to Siemens and Baker (2012), learning analytics enables educators to identify patterns in students' learning behavior and develop data-driven instructional strategies that enhance academic performance. Artificial Intelligence enhances learning analytics by enabling the processing of large volumes of educational data that may not be easily interpreted through traditional methods. Through predictive modeling and pattern recognition, AI systems can identify students who may be at risk of poor academic performance and recommend appropriate interventions.

Artificial Intelligence also plays a significant role in the development of intelligent tutoring systems (ITS). Intelligent tutoring systems are computer-based instructional programs designed to provide individualized instruction and guidance to learners. These systems simulate the role of human tutors by offering explanations, hints, and feedback based on students' responses to learning tasks. According to Woolf (2010), intelligent tutoring systems improve students' learning outcomes by providing personalized support and immediate feedback during the learning process. Woolf (2010) reveals that students who interact with intelligent tutoring systems often demonstrate improved understanding of complex concepts and higher levels of academic achievement compared to students who rely solely on traditional instructional methods.

In addition to intelligent tutoring systems, Artificial Intelligence has facilitated the development of educational chatbots and virtual learning assistants. These AI-powered tools utilize natural language processing technologies to interact with students through conversational interfaces. Educational chatbots can answer learners' questions, explain difficult concepts, and provide guidance on academic tasks. According to Okonkwo and Ade-Ibijola (2021), AI chatbots in education enhance students' access to learning resources and provide continuous academic support outside classroom hours. These tools therefore extend the learning environment beyond the physical classroom and promote independent learning among students.

Furthermore, Artificial Intelligence technologies have been applied in automated assessment systems that evaluate students' assignments and examinations. Automated grading tools use machine learning algorithms to analyze students' responses and provide immediate feedback on their performance. According to Balfour (2013), automated assessment systems help reduce teachers' workload while ensuring timely feedback that supports students' learning improvement. Advanced AI-based assessment systems are also capable of evaluating written essays by analyzing linguistic structure, coherence, and content relevance.

Social Studies Education in the Digital Age

Social Studies education is an interdisciplinary field concerned with the systematic study of human society, social relationships, and the functioning of social institutions. The subject integrates knowledge from disciplines such as history, geography, economics, political science, sociology, and anthropology in order to help learners develop a comprehensive understanding of social life and societal development. According to Jarolimek and Parker (2018), Social Studies education seeks to equip learners with knowledge and skills that enable them to interpret social realities, understand societal structures, and participate meaningfully in civic life. Through this interdisciplinary approach, students are exposed to diverse perspectives that promote social awareness and informed decision-making.

The fundamental objective of Social Studies education is the development of responsible and informed citizens who possess the knowledge, skills, values, and attitudes required for effective participation in democratic societies. Social Studies serves as a platform for cultivating civic competence by enabling students to understand democratic institutions, human rights, rule of law, and social justice principles. According to Banks (2017), Social Studies education plays a crucial role in preparing students to become active participants in democratic governance by developing

their critical thinking skills, civic knowledge, and commitment to societal values. In addition, Social Studies encourages learners to appreciate cultural diversity and develop respect for different perspectives within multicultural societies.

In the contemporary world, rapid technological advancement has significantly transformed the ways in which knowledge is created, accessed, and disseminated. The emergence of digital technologies has reshaped communication patterns, information sharing, and learning processes across educational systems. As a result, traditional teaching methods that rely primarily on teacher-centered instruction are gradually being replaced by more interactive and technology-supported learning approaches. According to Selwyn (2016), digital technologies have become central to modern educational practices because they provide new opportunities for enhancing student engagement, collaboration, and knowledge construction.

Within the context of Social Studies education, the digital age has introduced innovative instructional tools that support experiential and inquiry-based learning. Digital technologies enable students to access vast amounts of information, analyze social issues from multiple perspectives, and engage in collaborative discussions with peers. Online learning platforms, multimedia resources, and interactive digital content allow learners to explore historical events, political systems, and socio-economic issues in more dynamic ways. According to Berson and Berson (2010), the integration of digital technologies in Social Studies education enhances students' ability to investigate social phenomena and develop critical digital literacy skills necessary for navigating the modern information society.

The emergence of Artificial Intelligence technologies has further expanded the possibilities for transforming Social Studies instruction in the digital era. Artificial Intelligence provides intelligent systems capable of analyzing large volumes of data, generating simulations, and facilitating interactive learning experiences. AI-powered educational tools can create immersive learning environments where students explore complex social problems through simulations, virtual reality, and interactive scenarios. According to Holmes, Bialik, and Fadel (2019), AI technologies have the potential to transform traditional classroom instruction by enabling personalized learning, real-time feedback, and adaptive instructional support.

Holmes, Bialik, and Fadel (2019) asserts that AI-powered simulations can enable students to explore historical events and governance systems in interactive digital environments. Through these simulations, learners can assume the roles of historical figures, policymakers, or community leaders, allowing them to analyze social problems from different perspectives and understand the consequences of policy decisions. Such experiential learning approaches help students develop higher-order thinking skills, including critical analysis, problem-solving, and decision-making. Artificial Intelligence technologies also support collaborative learning in Social Studies classrooms. AI-based discussion platforms and intelligent learning systems allow students to participate in online debates, share ideas, and collectively analyze social issues. These platforms facilitate peer-to-peer learning and promote democratic dialogue among students. According to Dede (2014), technology-enhanced learning environments encourage students to engage in inquiry-based learning, which is essential for understanding complex societal challenges. Furthermore, the integration of Artificial Intelligence in Social Studies education can help teachers monitor students' learning progress and identify areas where additional support may be required. AI-driven analytics can provide insights into students' engagement levels, conceptual understanding, and learning difficulties. Such information enables educators to adopt data-driven instructional strategies that improve learning outcomes.

Students' Perception of Artificial Intelligence in Learning

Students' perception of Artificial Intelligence (AI) plays a critical role in determining the effectiveness of AI-based learning technologies within educational environments. Perception

refers to the way individuals interpret, understand, and respond to experiences, which subsequently influences their attitudes, beliefs, and behavioral intentions toward specific innovations (Davis, 1989). In educational settings, students' perceptions of technological tools significantly affect their willingness to adopt and utilize such technologies for learning purposes. The author opines that users' acceptance of technology is largely influenced by their beliefs about the usefulness and ease with which the technology can be used. Consequently, students who perceive Artificial Intelligence technologies as beneficial and user-friendly are more likely to integrate them into their learning activities.

Several studies have examined students' perceptions of Artificial Intelligence in educational contexts. According to Holmes, Bialik, and Fadel (2019), Artificial Intelligence technologies enhance students' learning experiences by enabling personalized instruction, adaptive feedback, and interactive learning activities. The authors assert that these features allow students to engage more actively with educational content and promote deeper understanding of subject matter.

One of the most notable AI-driven tools influencing students' learning experiences is the use of educational chatbots and intelligent virtual assistants. These systems employ natural language processing to interact with students and respond to their academic inquiries in real time (Okonkwo & Ade-Ibijola, 2021). The author maintains that educational chatbots can provide explanations, answer questions, and guide students through learning materials, thereby offering continuous academic support beyond traditional classroom hours. The authors also reveal that the availability of AI chatbots in learning environments enhances students' engagement and facilitates independent learning by providing immediate responses to learners' queries.

Artificial Intelligence-based learning platforms also contribute to flexible learning opportunities for students. Through digital learning environments supported by AI technologies, students can access instructional materials at any time and from any location. This flexibility supports self-paced learning and enables students to revisit difficult concepts until they achieve adequate understanding (Chen, Chen, and Lin, 2020). The authors found that AI-driven learning systems promote self-directed learning by allowing students to control the pace, sequence, and depth of their learning experiences. Such systems therefore empower students to take greater responsibility for their academic progress.

In addition, Artificial Intelligence technologies support collaborative learning among students. Online discussion platforms, intelligent tutoring systems, and AI-supported learning environments enable students to interact with peers and exchange ideas on academic topics. These collaborative opportunities help students develop communication skills, critical thinking abilities, and problem-solving competencies. As noted by Siemens and Baker (2012), technology-enhanced learning environments create opportunities for data-driven insights into student learning behaviors, which can improve instructional design and enhance educational outcomes.

Factors Influencing Students' Perception of AI in Social Studies Learning

Students' perception of Artificial Intelligence (AI) in educational environments is influenced by several factors. The factors that shape students' attitudes, beliefs, and willingness to adopt AI-based learning tools includes the following:

1. **Digital Literacy:** Digital literacy refers to the ability to use digital technologies effectively to access, evaluate, create, and communicate information. Students who possess higher levels of digital competence are more likely to feel confident using AI-based educational tools and digital learning platforms. According to Gilster (1997), digital literacy involves the skills required to understand and utilize information presented through digital technologies. In the context of modern education, these skills include navigating online platforms, interpreting digital information, and interacting with intelligent systems.

Students with strong digital literacy skills are generally more comfortable engaging with Artificial Intelligence technologies such as intelligent tutoring systems, educational chatbots, and AI-powered learning platforms. According to Selwyn (2016), learners who are digitally

competent are more likely to adopt emerging technologies and perceive them as useful tools for enhancing learning experiences. Conversely, students with limited digital skills may perceive AI technologies as complex or difficult to use, which can negatively influence their attitudes toward such innovations.

2. **Accessibility to technological:** The availability of digital devices, reliable internet connectivity, and access to digital learning platforms determines the extent to which students can interact with AI-based learning tools. In many educational contexts, particularly in developing countries, disparities in access to technological infrastructure remain a major challenge.

According to United Nations Educational, Scientific and Cultural Organization (2023), equitable access to digital technologies is essential for ensuring inclusive and effective implementation of Artificial Intelligence in education. Students who have consistent access to computers, tablets, smartphones, and internet services are more likely to develop positive perceptions of AI-based learning tools because they can interact with these technologies regularly. In contrast, limited access to digital devices and unstable internet connectivity may restrict students' exposure to AI technologies and reduce their willingness to adopt them for academic purposes.

3. **Instructional Support:** Teachers play a crucial role in shaping students' attitudes toward the use of Artificial Intelligence in the classroom. Instructional support provided by teachers can influence how students perceive and utilize AI-based learning technologies. When teachers actively integrate AI tools into classroom instruction and provide guidance on how to use them effectively, students are more likely to develop positive perceptions of these technologies.

According to John Hattie (2009), effective teaching practices significantly influence students' engagement and learning outcomes. Teachers who demonstrate confidence in using educational technologies can motivate students to explore and utilize these tools in their learning activities. Furthermore, teachers can help students understand the educational value of AI technologies by demonstrating how they support problem-solving, critical thinking, and knowledge construction in Social Studies learning.

Instructional support also includes the provision of appropriate training and orientation for students on the use of digital learning tools. When students receive adequate support in navigating AI-based platforms, they are more likely to perceive these technologies as beneficial rather than intimidating.

4. **Relevance to Learning:** Students tend to develop positive attitudes toward AI technologies when they observe clear benefits in terms of improved academic performance, better understanding of course content, and increased engagement in learning activities. The concept of perceived usefulness, as emphasized in the Technology Acceptance Model proposed by Davis (1989), suggests that individuals are more likely to adopt a technology when they believe it will enhance their performance. In educational contexts, students are more likely to embrace AI-based learning tools if they perceive that these tools help them understand difficult concepts, complete academic tasks more efficiently, and achieve better learning outcomes.

In Social Studies education, AI technologies can provide interactive learning experiences that make complex social issues easier to understand. For example, AI-powered simulations and data visualization tools can enable students to analyze historical events, governance systems, and socio-economic trends more effectively. When students recognize the practical benefits of these technologies in supporting their learning objectives, their perceptions of Artificial Intelligence become more favorable.

Challenges of AI Adoption in Social Studies Education

Despite the implementation of Artificial Intelligence in education, several challenges, basic among

these are:

1. **Inadequate Technological Infrastructure:** AI-based learning environments require reliable internet connectivity, sufficient digital devices, and stable electricity supply to function effectively. In many developing countries, including Nigeria, educational institutions often face difficulties in providing these essential technological resources. According to United Nations Educational, Scientific and Cultural Organization (2023), limited digital infrastructure remains a major obstacle to the implementation of advanced educational technologies in many parts of the world. Without adequate infrastructure, students and teachers may find it difficult to access AI-powered learning platforms, thereby limiting the potential benefits of these technologies in enhancing educational outcomes.
2. **Limited Teacher Capacity:** Another major challenge associated with the integration of Artificial Intelligence in Social Studies education is the limited technological competence of teachers. Teachers play a critical role in facilitating the effective use of educational technologies; however, many educators lack the necessary skills and training required to integrate AI-based tools into their instructional practices. According to Selwyn (2016), the successful adoption of digital technologies in education depends largely on teachers' digital competence and their willingness to incorporate new technological innovations into classroom instruction. In many educational systems, professional development opportunities related to Artificial Intelligence and digital pedagogy are still limited. As a result, teachers may feel unprepared to utilize AI-powered instructional tools such as intelligent tutoring systems, adaptive learning platforms, and AI-supported assessment tools. Without adequate training and institutional support, teachers may continue to rely on traditional teaching methods that do not fully exploit the capabilities of modern educational technologies.
3. **Financial Constraints:** Financial limitations also constitute a significant barrier to the adoption of Artificial Intelligence technologies in education. The development, implementation, and maintenance of AI-based educational systems require substantial financial investment. Educational institutions must allocate resources for purchasing digital devices, establishing reliable internet infrastructure, acquiring AI-powered learning platforms, and providing technical support services. In many developing countries, educational budgets are often insufficient to support such technological investments. According to World Bank (2020), limited funding for educational technology initiatives remains a major challenge in low- and middle-income countries. Consequently, many schools and universities struggle to implement advanced technological solutions that could improve teaching and learning processes. The financial burden associated with AI adoption therefore restricts the widespread integration of these technologies within educational systems.
4. **Ethical and Data Privacy Concerns:** The increasing use of Artificial Intelligence in education has also raised important ethical concerns related to data privacy and security. AI-based educational systems frequently collect large amounts of data about students' learning behaviors, academic performance, and interactions with digital platforms. While these data can be useful for improving instructional practices and providing personalized learning experiences, they also raise concerns about how such information is stored, analyzed, and protected.

According to United Nations Educational, Scientific and Cultural Organization (2023), ensuring responsible data governance is essential for the ethical use of Artificial Intelligence in educational settings. Educational institutions must implement policies that protect students' personal information and prevent the misuse of educational data. In addition, there is growing concern that algorithmic bias within AI systems could influence the way students' academic performance is assessed. These ethical considerations highlight the importance of establishing clear regulatory frameworks that guide the responsible use of Artificial Intelligence technologies in education.

Resistance to Technological Change

Another challenge that may affect the adoption of Artificial Intelligence in Social Studies

education is resistance to technological change among educators and educational institutions. Some teachers and administrators may be hesitant to adopt AI technologies due to concerns about their complexity, reliability, or potential impact on traditional teaching roles. According to Everett M. Rogers (2003), the adoption of innovations is often influenced by individuals' attitudes toward change and their perception of the risks associated with new technologies. In educational contexts, resistance to innovation may slow the integration of AI-based tools into classroom instruction.

Conclusion

Artificial Intelligence has the potential to transform Social Studies education by improving students' engagement, critical thinking, collaboration, and academic performance through personalized and interactive learning experiences. The study showed that students' perception of AI largely determines their willingness to adopt and use AI-based learning tools effectively. Positive perceptions are influenced by factors such as digital literacy, access to technology, instructional support, and the relevance of AI tools to learning objectives. However, challenges such as inadequate infrastructure, limited teacher competence, financial constraints, ethical concerns, and resistance to technological change may hinder effective AI integration, especially in developing countries like Nigeria. Therefore, adequate technological support, teacher training, and proper policies are necessary to ensure the successful integration of AI in Social Studies education and to prepare students for active participation in the digital society.

Recommendations

Based on the foregoing, the following recommendations were made:

1. Schools should provide reliable internet, digital devices, and stable electricity to ensure students can effectively access AI-based learning tools.
2. Continuous professional development should be provided to teachers to build skills in using AI technologies and integrating them into Social Studies instruction.
3. Programs should be established to strengthen students' ability to use AI tools effectively for personalized, self-directed, and collaborative learning.
4. Clear guidelines should be implemented to protect students' personal data and promote responsible use of AI in educational settings.
5. Educators should actively incorporate AI-powered simulations, chatbots, and learning analytics to enhance engagement, critical thinking, and academic performance in Social Studies.

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