

ETHICAL CONSIDERATIONS IN THE ADOPTION OF AI FOR EDUCATION: A SOCIAL SCIENCE PERSPECTIVE

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ABSTRACT

Artificial Intelligence (AI) is transforming educational and research environments through innovative tools and methodologies. However, these advances are accompanied by ethical concerns regarding bias, privacy, and fairness. This article explores the implications of AI integration in social science education and research, identifies emerging ethical challenges, and proposes strategies for responsible and equitable AI use from the Fulbright lens.

Keywords: Artificial Intelligence • Digital divide • Education • Ethics • Innovation.



Artificial Intelligence (AI) is described as the ability of a digital computer or computer-controlled robot to perform tasks that are ordinarily associated with intelligent beings. The term is commonly applied to systems endowed with the intellectual processes characteristic of humans, such as meaning, generalization, or learning from experience. Since the inception of AI in the 1940s, digitalized computers have been programmed to carry out many convoluted tasks such as discovering proofs for statistical and mathematical theorems. From the early focus on simulating human intelligence and expert systems, AI has moved toward data-driven approaches that leverage machine learning, neural networking, and deep learning. The use of AI in social science educational research is embedded in two main strands: (1) the development of AI-based tools for classroom teaching and (2) the use of AI to measure and assess growth in learning. Some of the examples of AI learning include, GPT-4 and adaptive learning platforms like Khanmigo, which support both educational practices and policy analysis.

AI holds important promise for social science education as it offers innovative tools and approaches to improve teaching and learning. Educators and researchers that leverage the advantages offered by AI can personalize instructions, provide real-time feedback and develop adaptive learning ecosystem. When AI-driven platforms personalize learning experiences, they effectively address the diverse needs of students and reduce inequalities. AI tools can analyze social media posts, enabling policy makers to track and digest public sentiments regarding topical issues like climate change or public health interventions. For example, researchers can make use of machine learning to predict areas at high risk of homelessness, guiding resource allocations and intervention strategies. In disaster response, AI algorithms may be used

to analyze data from various sources, thereby optimizing responses during natural disaster, enhancing response time and reducing harm and destruction. AI chatbots provides mental health support, which allows users to access assistance at any time while collecting data to improve services.

ETHICAL ISSUES RELATED TO AI IN SOCIAL SCIENCE EDUCATION AND RESEARCH

AI offers exciting possibilities in education, but its applications come with obvious limitations. AI in education and research presents numerous ethical issues, as these technologies can have great influence on both processes and outcomes. AI system can perpetuate biases, which ultimately leads to unfair outcomes. For instance, there are apprehensions that the use of AI in marking assessments may be discriminatory towards students from less privileged or marginalized backgrounds. There is an ongoing digital divide that affects student access to technological devices, which varies significantly from one region to another and from different socioeconomic backgrounds. This raises critical concerns regarding the fairness and inclusiveness of educational outcomes driven by AI systems.

The integration of AI technologies in social science educational research had broadened the existing inequalities in data collection, as institutions with a large financial base can leverage their financial strength to secure more data than their counterparts with less financial capacity. Underfunded institutions struggle to measure up, which further exacerbates disparities in research quality and access. AI models often seek to find patterns across large datasets which ultimately leads to overgeneralization. This puts at risk oversimplifying of complex social dynamics and neglecting unique local factors that are very relevant to understanding specific communities or certain populations.

AI always relies on massive datasets, which includes personal data to drive insights. This raises questions about individual privacy and the potential for abuse of sensitive information. The ethical burden lies in balancing the need for data collection against individual rights for privacy. AI systems have the capability to operate as something whose internal workings are unknown or hidden, while its inputs and outputs are known. This makes it difficult to understand how decisions or postulations are made, and lack of transparency can hinder accountability for research outcomes.

Obtaining informed consent can result in a cumbersome process when AI systems analyze data not initially intended for research purposes. This impedes on informed consent. AI applications in educational research also manipulate or impede the autonomy of participants, especially if they are not fully aware of their engagement in research process.

AI tends to focus on quantifiable aspects of social phenomena, potentially overlooking qualitative dimensions that are crucial in social science research. Reductive methodologies might ignore the complexities of human behaviors, cultural contexts, and social nuances which ultimately lead to incomplete or misleading interpretations. An overreliance on AI can diminish critical thinking skills among researchers and may lead to devaluation of traditional research methods. Scholars may become dependent on AI assistant tools for data analysis which could stifle innovations in qualitative research and human-based solutions. There is also long-term societal impact of AI. The development of AI in social science research offers the promise of efficiency but might lead to societal changes that may affect employment, societal dynamics, and governance structures.

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STRATEGIES TO MITIGATE ETHICAL CONCERNS IN THE APPLICATIONS OF AI IN SOCIAL SCIENCE EDUCATION AND RESEARCH

There are several ways to mitigate some of the ethical issues that plague the application of AI in social science research.

Explainable AI: There should be detailed explanation of AI systems in understandable and transparent ways. Implementing explainable AI techniques and AI decisions in education and research allows social scientists to articulate the rationale behind AI decisions.

Data Privacy: Privacy protection helps to enforce strong data governance and compliance. For instance, federated learning enables AI model to learn from data without transforming sensitive data or pieces of information while protecting participant's privacy. Data protection and data security practices such as data encryption will ensure that sensitive information collected in social science research is properly and carefully stored and transmitted. This helps in protecting participant's identities and personal information against attacks and unauthorized access.

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Inclusivity: Fairness in the development and use of AI promotes algorithms that reduce bias. For instance, AI based recruitment tools can be adjusted to ensure that a particular population demographic is not favored more than the other group. This helps to achieve fairness during hiring practices. Inclusivity in the development and use of AI helps to engage diverse stakeholders in AI development. This practice obtains in healthcare, involving diverse communities while developing AI system for forecasting health outcomes to engender responsiveness to resolving different cultural needs. Collaborative development of AI also helps to foster collaboration within and across disciplines. A partnership between data scientists and social scientists can improve the growth and development of ethical systems ensuring that diverse community needs are being achieved.

Cybersecurity: Cybersecurity can be of immense help in guarding against ethical anomalies that is associated with AI in education and research using AI smart assistance tools. Cybersecurity can help in auditing and monitoring of AI algorithms for bias. This includes analyzing the datasets used for training AI algorithms to ensure that they are diverse and representative, thus minimizing ethical anomalies in research outcomes. Through regular updates, AI systems can be optimized with the latest security patches. This helps mitigate any biases that may pop up from outdated models or technologies. This ensures that they are aligned with current ethical principles. Security of all AI systems ensures that AI systems are secured against cybersecurity attacks and are prevented from malicious altercations that can lead to unethical research outcomes. Adhering to cybersecurity regulations and standards ensures that ethical principles are followed in data collection and applicability. Embedding cybersecurity practices within methodologies in education and social research helps to uphold ethical standards while at the same time harnessing the potentials of AI technologies.

Accountability: Traceability practices can ensure that all actions taken by AI systems are traceable, and this is vital for accountability. This allows researchers to identify and correct unethical behaviors or biases within AI systems. Compliance helps to guard against the breach of participants rights and helps to increase research integrity.

By adopting these strategies, the potential ethical issues in the use of AI would be greatly minimized, and tasks will be performed with a high level of precision and at a reduced cost.

CONCLUSION

I (JohnBosco Chika Chukwuorji) received funding from Fulbright to conduct my research in the US because the technology and expertise for my proposed psychophysiological research on emotion regulation and depression were not accessible in Nigeria at that time. At Cleveland State University (CSU), I rigorously trained for my research ethics certification. I was also exposed to digital platforms for public presentation, psychometric evaluation, online survey administration, and statistical analysis. This broadened my methodological toolkit in behavioral health research. Immersed in an academic environment that emphasized global collaboration and cutting-edge methods, I was able to publish my papers, as reflected in the 100% increase in my research outputs in 2021, which was sustained, in 2022. Exposure to these emerging technologies reinforced my value for open science, digital ethics, and the use of technology in teaching, research and clinical work (e.g., mobile health tools or AI-assisted diagnostics). Upon my return to Nigeria after the Fulbright program, the gaps in my access to technology were filled by my continued collaborations with researchers in the Western industrialized countries. In sum, my Fulbright journey reinforced my conviction that technological innovation, including AI, must be grounded in ethical responsibility, human dignity, and social justice.

As the Fulbright program often exposes grantees to diverse educational environments, international collaboration, and interdisciplinary perspectives, we have a few recommendations for Fulbright alumni working at the AI-education interface. First, they should champion equity-centered AI in education by leveraging their global connections to advocate for development of, or lend their voice in promoting, AI tools that are inclusive and adaptable to low-resource settings, multilingual classrooms, and culturally diverse learners. Fulbright alumni should partner with local educators and communities to ensure AI applications reflect contextual needs and values. I believe that AI systems will become more meaningful and impactful when its access and use not only becomes more equitable, but also culturally sensitive and contextually informed.

Having recognized that AI could be a double-edged sword, alumni should support or create open-access educational platforms powered by AI that address barriers like language, disability, or connectivity. Second, they should use their networks to strengthen cross-cultural research on the use of AI in teaching and research by conducting comparative studies on the impact of AI tools (e.g., adaptive learning platforms) across educational systems in the Global South and Global North. I worked in two research laboratories at CSU and my contact with other students from different countries broadened my appreciation for global standards in education, student-centered learning, and the importance of cross-cultural understanding in research and teaching.

Third, as educators, policy makers or implementers, it is their responsibility to promote ethical literacy around AI by organizing workshops or webinars for students and educators on digital ethics, algorithmic bias, data privacy, and responsible use of AI. In their courses, alumni who are lecturers should consider embedding AI ethics modules in relevant coursework. Fourth, as many institutions are gradually developing guidelines around the use of AI, Fulbright alumni should get involved in the important work of ethical procurement and implementation of AI tools in schools and universities. Their emphasis should be on promoting frameworks that protect learner autonomy, ensure fairness, and uphold human rights.

AI has become an emerging powerful tool that has the potential of revolutionizing the entire field of education and social research. It offers a promising learning experience, provides individualized instructions, and enhances education research outcomes in the field of social science. However, considerable attention must be given to the ethical implications, potential biases, and the impact AI has on equity and social justice. It is very instructive to navigate these evolving patterns of learning and understanding to ensure that the use of AI in education and social research synchronizes with the objective of engendering creative thinking, nurturing creativity and providing learners with the required tools to excel in a world where AI has become the major catalyst that drives inventions and innovations.

Future studies should focus on how to identify and mitigate bias in data collection and analysis to ensure that research findings are equitable and do not prolong existing inequalities. Also, scholars should strive to develop methodologies for evaluating the social consequences of AI intervention to ensure that they contribute positively to the academic community. Finally, all stakeholders in this field must commit to the ongoing reflection and reassessment of ethical practices as the technology and societal values evolve.

FURTHER READING

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JohnBosco Chukwuorji fixing up a research participant in MER Lab at CSU while Dr Yaroslavsky directs him.

BIOGRAPHIES

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Dr JohnBosco Chika Chukwuorji was a visiting Fulbright scholar at Cleveland State University for his predoctoral research in 2019-2020. A clinical psychologist by training, he is currently a postdoctoral fellow at Michigan State University College of Human Medicine. He also holds a senior lecturer position in psychology at the University of Nigeria. He was a Developing Country Fellow (2022) of the International Society for the Study of Behavioural Development (ISSBD). He can be reached at johnbosco.chukwuorji@unn.edu.ng
