Scholarly Research Journal for Interdisciplinary Studies
Online ISSN 2278-8808, SJIF 2026 = 8.727
https://www.srjis.com/issues_data/290
Peer Reviewed & Refereed Journal, MAR-APRIL 2026, Vol- 14/94
https://doi.org/10.5281/zenodo.20392622

ARTIFICIAL INTELLIGENCE IN TEACHING OF SOCIAL SCIENCES: A REVIEW OF APPLICATIONS, CHALLENGES AND ETHICAL CONCERNS

Mohd Gufran Barkati[1]& Dr. Sadia Shakeel[2]

[1]Research Scholar, [2]Assistant Professor

[1,2]Department of Education, Integral University, Lucknow

Paper Received On: 20 MAR 2026

Peer Reviewed On: 24 APRIL 2026

Published On: 01 MAY 2026

Abstract

This review paper analyses how Artificial Intelligence (AI) is finding its way into different branches of the social sciences education. The focus is on four main areas of social sciences i.e. History, Geography, Political Science and Economics where the techniques such as machine learning, natural language processing, geospatial analysis and several forms of modelling have been used by the teachers to make the concepts easy and understanding. The paper looks at how these tools are gradually being woven into ordinary teaching-learning practices. In History, AI is helping teachers and students sort large collections of documents, trace patterns in historical writing and, at times, offer support in reconstructing events that lack complete records. Geography makes use of AI in a somewhat different manner, mainly to work with spatial information, examine environmental shifts and refine climate-related studies. Political Science is applying AI to understand the tone of public opinion, review election patterns and explore policy scenarios. Economics, meanwhile, uses AI to interpret markets, think through risk and analyse certain kinds of behaviour. While these developments show clear momentum, the paper also notes several challenges and concerns that appear repeatedly across the literature. These include the possibility of biased outputs, worries about privacy, uneven or incomplete datasets and the increasing dependence on automated systems. A brief comment is also offered on what these changes might mean for teaching and learning in the social sciences, since classrooms will eventually have to respond to these shifts. This review paper suggests that AI is reshaping parts of the social sciences education, though its adoption still calls for careful judgement and a realistic understanding of its limits.

Keywords: *Artificial Intelligence, AI in History, AI in Geography, AI in Political Science, AI in Economics, Geospatial Analytics, Predictive Modelling, Algorithmic Bias, Ethical Concerns.*

1. Background:

The concept of artificial intelligence (AI) has its roots in the summer of 1956, at Dartmouth University, where it was formally introduced during a conference. Throughout the years AI has

experienced challenges and progress with a development documented in historical records. However, recent times have seen an increase in AI related activities. Investments, research efforts, educational programs and academic publications in AI and machine learning have thrived, indicating a shift. Global AI funding hits record $100.4 billion in 2024 (State of AI, 2024). The education sector has also embraced AI at different levels right from the admission to the instructions and evaluation process. As per the recent study, AI would likely restructure the procedure of scientific discovery, transform the way science is organised and will emerge as a new method of invention (S. Bianchini et al., 2022). The dawn of AI technologies has led not only in technical fields but also areas traditionally rooted in human experiences, such as the social sciences.

2. **Objectives of the study:**
    - To review the major applications of Artificial Intelligence in teaching of key social science disciplines, including History, Geography, Political Science and Economics.
    - To identify the principal challenges and limitations of using AI in the teaching of social sciences.
    - To analyse ethical concerns, arise from the use of AI in the teaching of social sciences.
3. **Research Questions:**
    - What are the major applications of AI in teaching social sciences, particularly in History, Geography, Political Science and Economics?
    - What challenges and limitations are reported in the literature regarding the use of AI in teaching of social sciences?
    - What ethical concerns arise from the use of AI in teaching of social sciences and how are they addressed in existing studies?
4. **Methodology:**

    This study is based on a systematic analysis of forty-six relevant research published works in the form of articles, chapters, books, and policy documents. Researchers used the following methodology:

- **Data Collection: –** Researcher searched for peer-reviewed articles, conference papers, reports, and books using keywords such as “AI in Social Sciences”, “AI in Geography”, “AI in History”, “AI in Political Science”, “AI in Economics”, “ethical implications of

AI", and "challenges in AI application". The databases and platforms used for the search included Google Scholar, ResearchGate, Shodhganga, Scopus, Academia, and JSTOR.

- **Inclusion Criteria: –** The most relevant studies which were published between 1995 to 2025 were included to ensure a comprehensive review of AI's application, challenges and ethical concerns in Social Sciences. Only those studies which were written in English and focusing on AI and its application in Social Sciences and Education were considered.

Q1. What are the major applications of AI in teaching social sciences, particularly in History, Geography, Political Science and Economics?

5. Applications of AI Social Sciences:

5.1 AI in History: Artificial Intelligence revolutionizes traditional ways of teaching-learning and research (Ajayi & Oluwatosin, 2024). Language translation, quick data analysis and predictive modelling etc. have made it quite easier for the teachers and students of history to analyse patterns in datasets, translate ancient language scriptures, and break down the barriers in communication that may exist within historical texts (Zhang, 2023). This predictive modelling enables them to make well informed hypotheses regarding research trends in the subject (Karell et al., 2024). In addition to this, AI helps them in preserving and restoring the artefacts by applying techniques of imaging and reconstruction algorithms (Gaber et al., 2023). AI creates virtual restorations that provide better understanding of past settings, when it is integrated with immersive technologies such as Augmented Reality (AR) or Virtual Reality (VR), (Basu et al., 2023). In the historical photos identification of people, by the use of the facial recognition technology and then their cataloguing, can be easily done (Zhang, 2023). All this integration opens up good avenues to explore history.

5.2 AI in Geography: These days AI has become very useful in the manner in which Geography, as a discipline, is taught and studied in academic institutions (Lee et al., 2025). One of the evident advantages, which is there, is that the students can now work with the help of interactive visuals and simulations that make geographical environments, relatively, easy to understand (Lavallin & Downs, 2021). With hi-tech tools such as augmented reality and virtual reality, learners are, today, able to explore maps, landscapes and natural events in a better engaging and realistic manner than that which traditional classroom methods allow (Albahbah et al., 2021). All of these modern

emerging technologies also help teachers in adjusting lessons to different learning needs and encourage students to work with information rather than simply memorising the same (Papanastasiou et al., 2019). Moreover, AI helps in the analysis of huge amount of geographic data, identification of patterns and provide insights due to environmental changes, population movements, and other geographic phenomena (Muin & Rakuasa, 2023). All of this, as a result, allows researchers to understand, in a better manner the impact of climate change, anticipate natural disasters and forecast changes in human migration patterns (Rakuasa, 2022). Such an immersive and data-driven learning tools not only promote engagement and self-learning but also enable students to develop critical skills applicable in real-world scenarios.

5.3 AI in Political Science: AI helps the teachers and students to understand the changing dynamics of the political system (Liu & Luo, 2024). The use of AI in politics is changing the very basic tenants of political science through social media analytics of tracking public sentiment in real-time, predictive analytics for election results, and policy simulations to predict outcomes before decisions are made (Tomar et al., 2023). Additionally, AI allow us to identify and analyse large amounts of unstructured data that increase our understanding of political phenomena and help in decision making (Duffy & Tucker, 1995). With the advent of digital tools like Natural Language Processing (NLP), it is now possible to understand the emotion and intension patterns in speeches and document (Ahmad, 2022). Machine learning algorithms play a significant role in maintaining the election security as it allows us to identify the patterns of irregularities and guide us that more attention is required to overcome these concerns (Norden & Ramachandran, 2023).

5.4 AI in Economics: Nowadays, teachers of economics are using AI in their teaching and research practices to transform the discipline with its ability of complex data processing and improve decision-making (Wan et al., 2025). They apply AI models for predictive purposes of the consequences of fiscal and trade policies (Liu & Lim, 2023). Artificial intelligence enhances market projections, detects fraud, and reduces risk, and hence creates economic safety (Asia-Pacific Economic Cooperation, 2022; Union Bancaire Privée, 2025). The importance of AI in Economics can be imagined by its potential to create $2.6 to $4.4 trillion annually in banking, retail and pharma industries (McKinsey & Company, 2023a). Artificial intelligence helps in economic development by highlighting the investment prospects and areas for growth (McKinsey & Company,

2023b). Thus, the use of AI in economics enhance efficiency, foster creativity, and promote adaptation in a swiftly changing global economy.

Q2. What challenges and limitations are reported in the literature regarding the use of AI in the teaching of social sciences?

6. Challenges and Ethical Concerns of AI in the Social Sciences:

As the use of AI in the teaching of social sciences bring transformative potential but it also raises challenges and ethical concerns in its use. These challenges arise from the intersection of advanced technologies and disciplines traditionally rooted in human values, ethics and interpretive understanding.

6.1 Challenges in AI Integration:

- **Lack of Domain-Specific Expertise:** Most of the students and teachers of the social sciences usually lack technical expertise like designing a model, interpreting results, or validating any AI model (Lee & Liu, 2025). At the same time, AI developers may have little or no understanding of the exact knowledge of these subjects and are thus likely to misapply the models (Rahwan et al., 2019).
- **Quality and Scarcity of Data:** It was a big challenge for the teachers of social sciences that the Data in the social sciences, in contrast to the natural sciences, is often found qualitative, fragmented and contextual (Lazer et al.,2020). The very severe shortage of good-quality and well-structured datasets places a fixed limit on effective applications of AI in the social sciences (Bender & Friedman, 2018).
- **Over-reliance on Quantitative Methods:** Another concern of using AI in the social sciences is the tendency of AI tools to lean heavily on numbers and measurable patterns (Grossmann et al., 2023). Although it is very useful, but this emphasis can, sometimes unnecessarily, overshadow the interpretive depth and contextual understanding that actually lie at the very heart of social sciences (Rehman & Al-Raqom, 2020).
- **Computational Bias:** Another major concern, which used to arise, is the problem of bias in AI systems (Hall & Ellis, 2023). When algorithms are trained on data that is already incomplete or already biased, they can automatically repeat or even enhance existing inequalities (Zajko, 2022). Instead of helping to correct all of these issues, the technology may end up working against the ultimate goals of fairness and inclusion that social science fields always strive to uphold (O'Neil, 2016).
- **Interdisciplinary Gaps:** A noticeable gap exist between emerging AI technologies on one side and the structure of epistemological frameworks followed by the social

sciences subjects particularly History, Geography, Political Science and Economics on another side (Kitchin, 2014). Differences in language, methods and research goals continue to limit meaningful collaboration across these subjects, making it harder to integrate AI in a balanced and productive way in the social sciences (Floridi et al., 2018).

Q3. What ethical concerns arise from the use of AI in teaching of social sciences and how are they addressed in existing studies?

6.2 Ethical Considerations:

- **Privacy and Data Security:** The teachers and students are more concerned about misuse of their personal data which they share with AI. Most of the AI applications, usually, require huge amounts of data including highly sensitive personal information (Huang, 2023). The data privacy, compulsory consent, and its possible misuse raises serious ethical concerns related to the use of such information especially in studies involving vulnerable populations (Ginanjar et al., 2022).
- **Erosion of Human Agency:** Studies have reported that there is a belief among the teachers that this unwaranted and over reliance on AI for purpose of decision-making in social sciences (Abdullah & Basheer, 2024), such as policy simulation or election analysis, is very likely to reduce, further, the very role of human judgment, ethics and creativity in dealing with all complex societal issues (Capraro et al., 2024).
- **Intellectual Integrity:** The teachers and experts of history raised a concern that it is very likely that analysis of text, historical documentation, and/or cultural artefacts may, substantially, be diminished or lost in the nuance of meaning (Guldi & Guldi, 2023) using computational methods that can distort or even change an essential truth about history or culture (Boyd & Crawford, 2012).
- **Digital Inequality:** The teachers believe that the adoption of AI in academia and research may, indeed, widen the digital divide in the contemporary society (Mac Fadden et al., 2024). It may privilege institutions which are well-resourced, and marginalize the scholars and communities who do not have adequate means and access to modern technologies (Božić, 2023).
- **Ethical Dilemmas in Automation:** Some teachers consider that when predictions in the fields of politics or economics are made by the using AI, it often raises a lot of difficult questions as to who is responsible for these outcomes (Helbing, 2018). If a policy which is built on an AI-generated forecast goes wrong or when it leads to

unwanted effects, it is often very unclear whether the blame should lie upon the human decision-makers or it lies on the very system that has produced that particular prediction (Zekos, 2022). So, all of these unclear and blurred boundaries which are there between human choices and automated outputs create a very important ethical concern.

- **Manipulation and Abuse:** Teachers believe that AI systems can also be misused in different kind of social or political settings (Pashentsev, 2021). The AI systems that track online conversations may be used to influence how people think or feel. In some of the cases, this kind of monitoring can be turned into a way of shaping public opinion for reasons that are undemocratic (Helbing, 2018).
- **Cultural Sensitivity:** A recent study conducted by Haque in 2024 confirmed that AI does not always read cultural or historical contexts correctly. Because when the same model is applied everywhere, it can miss local meanings or unique experiences. Sometimes it happens that all of this leads to interpretations which do not fully reflect the community being studied and may even render certain voices to the unheard (Haque, 2024).

7. Conclusion:

The review which is done, shows that the Artificial Intelligence, nowadays, has been a steady presence in the social sciences and has also started to influence the academic work done by the student, teachers and researchers. Different kind of tools such as machine learning, natural language processing, geospatial methods and modelling are, nowadays gradually moulding studies in different disciplines such as History, Geography, Political Science and Economics in such ways that were not common even a few years ago. But, today, the expansion of AI also brings a number of concerns that appear again and again in the literature which includes worries about privacy, different forms of bias, uneven access to the technology and also the shortage of people who can work comfortably across both the technical and social science perspectives.

Furthermore, many of these issues, for sure, need attention from both sides. AI developers and social science researchers will have to work more closely, and ethical guidelines will need to keep an eye on openness, responsibility and the particular social settings in which AI is used. What is obvious is that the AI should not replace the human touch in all these disciplines, rather it should be used in such ways that ensure and support thoughtful inquiry and also avoid mitigating the questions that may be asked by social scientists.

Overall, if AI is used in good faith with utmost care, caution and with a sense of its limits, then it can provide useful possibilities without taking social sciences away from their core concerns like critical thinking, fairness and a better understanding of human behaviour and society.

Acknowledgement:

The authors acknowledge the contributions of the researchers whose works have been reviewed and cited in this paper. The author also expresses sincere gratitude to the Librarian of Integral University Lucknow for generating the similarity report, and to the Dean, Research and Development Cell, Integral University Lucknow for issuing the Manuscript Communication Number (MCN: IU/R&D/2026-MCN0004526).

References

Abdullah, S. A., & Basheer, I. (2024). The Ethical and Social Implications of using Artificial Intelligence in Social Studies Instruction.". Larq Journal for Philosophy, Linguistics & Social Sciences, 1(52).

Ahmed, N. (2022). Natural Language Processing Techniques for Political Opinion and Sentiment (Doctoral dissertation, Harvard University).

Ajayi, K., & Oluwatosin, Y. I. (2024). From archives to algorithms: The evolution of History education in the era of artifitial intelligence. International Research Journal of Arts and Social Sciences, 2, 290-301.

Albahbah, M., Kıvrak, S., & Arslan, G. (2021). Application areas of augmented reality and virtual reality in construction project management: A scoping review. Journal of Construction Engineering, Management & Innovation, 4(3). https://doi.org/10.31462/jcemi.2021.03151172

Asia-Pacific Economic Cooperation. (2022). Artificial Intelligence in the Financial Sector: Emerging Trends and Challenges. Retrieved from https://www.apec.org

Basu, A., Paul, S., Ghosh, S., Das, S., Chanda, B., Bhagvati, C., & Snasel, V. (2023). Digital restoration of cultural heritage with data-driven computing: A survey. IEEE Access, 11, 53939-53977. https://doi.org/10.1109/ACCESS.2023.3280639

Bender, E. M., & Friedman, B. (2018). Data statements for natural language processing: Toward mitigating system bias and enabling better science. Transactions of the Association for Computational Linguistics, 6, 587-604. https://doi.org/10.1162/tacl_a_00041

Bianchini, S., Müller, M., & Pelletier, P. (2022). Artificial intelligence in science: An emerging general method of invention. Research Policy, 51(10). https://doi.org/10.1016/j.respol.2022.104604

Boyd, Danah, & Crawford, K. (2012). Critical Questions for Big Data: Provocations for A Cultural, Technological, and Scholarly Phenomenon. Information, Communication & Society, 15(5), 662–679. https://doi.org/10.1080/1369118X.2012.678878

Božić, V. (2023). Artifical intelligence as the reason and the solution of digital divide. Language Education and Technology, 3(2).

Capraro, V., Lentsch, A., Acemoglu, D., Akgun, S., Akhmedova, A., Bilancini, E., ... & Viale, R. (2024). The Impact of Generative Artificial Intelligence on Socioeconomic Inequalities and Policy Making. PNAS nexus, 3(6), pgae191. https://doi.org/10.1093/pnasnexus/pgae191

Duffy, G., & Tucker, S. A. (1995). Political Science: Artificial Intelligence Applications. Social Science Computer Review, 13(1), 1-20. https://doi.org/10.1177/089443939501300101

Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., ... & Taddeo, M. (2018). AI4People—an ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. Minds and Machines, 28(4), 689-707. https://doi.org/10.1007/s11023-018-9482-5

Gaber, J. A., Youssef, S. M., & Fathalla, K. M. (2023). The role of artificial intelligence and machine learning in preserving cultural heritage and artworks via virtual restoration. ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences, X(1/W1), 185–190. https://doi.org/10.5194/isprs-annals-X-1-W1-2023-185-2023

Ginanjar, D., Firdausyi, M. F., Suswandy, S., & Andini, N. T. (2022). Human rights protection in the digital era: Challenges and legal solutions. Journal on Education, 4(4), 2080–2094. https://jonedu.org/index.php/joe/article/view/4317/3527

Grossmann, I., Feinberg, M., Parker, D. C., Christakis, N. A., Tetlock, P. E., & Cunningham, W. A. (2023). AI and the transformation of social science research. Science, 380(6650), 1108-1109.

Guldi, J., & Guldi, J. (2023). The dangerous art of text mining: A methodology for digital history. Cambridge University Press.

Hall, P., & Ellis, D. (2023). A systematic review of socio-technical gender bias in AI algorithms. Online Information Review, 47(7), 1264-1279.

Haque, E. (2024). AI Horizons: Shaping a Better Future Through Responsible Innovation and Human Collaboration. De Gruyter, Germany.

Helbing, D. (2018). Societal, economic, ethical and legal challenges of the digital revolution: from big data to deep learning, artificial intelligence, and manipulative technologies. In Towards digital enlightenment: Essays on the dark and light sides of the digital revolution (pp. 47-72). Springer International Publishing.

Huang, L. (2023). Ethics of artificial intelligence in education: Student privacy and data protection. Science Insights Education Frontiers, 16(2), 2577-2587.

Karell, D., Shu, M., Okura, K., & Davidson, T. (2024). Artificial Intelligence Summaries of Historical Events Improve Knowledge Compared to Human-Written Summaries. Open Science Foundation. https://doi.org/10.31235/osf.io/3qsqw

Kitchin, R. (2014). Big Data, new epistemologies and paradigm shifts. Big data & society, 1(1), 2053951714528481.

Lavallin, A., & Downs, J. A. (2021). Machine learning in geography–Past, present, and future. Geography Compass, 15(5). https://doi.org/10.1111/gec3.12563

Lazer, D. M., Pentland, A., Watts, D. J., Aral, S., Athey, S., Contractor, N., ... & Wagner, C. (2020). Computational social science: Obstacles and opportunities. Science, 369(6507), 1060-1062.

Lee, J., & Liu, Y. (2025). AI and the Future of Social Science Education: Opportunities, Challenges, and Practical Applications. AI Use in Social Sciences, 1-34.

Lee, J., Cimová, T., Foster, E. J., France, D., Krajňáková, L., Moorman, L., ... & Zhang, J. (2025). Transforming geography education: the role of generative AI in curriculum, pedagogy, assessment, and fieldwork. International Research in Geographical and Environmental Education, 1-17.

Liu, J., & Lim, C. (2023). AI-Driven Simulations in Economic Policy Analysis. Journal of Economic Innovation and Policy Research, 12(4), 45-58. https://doi.org/10.1016/jeipr.2023.02.004

Liu, M. S. M., & Lim, J. M. H. (2023). Establishing a research territory in economics: Implications for academic writing instruction. Southern African Linguistics and Applied Language Studies. https://doi.org/10.2989/16073614.2022.2136224

Liu, Z., & Luo, L. (2024, March). Using Artificial Intelligence for Intelligent Ideological and Political Education Teaching. In 2024 International Conference on Interactive Intelligent Systems and Techniques (IIST) (pp. 137-144). IEEE.

Mac Fadden, I., García-Alonso, E. M., & López Meneses, E. (2024). Science Mapping of AI as an Educational Tool Exploring Digital Inequalities: A Sociological Perspective. Multimodal Technologies and Interaction, 8(12), 106.

McKinsey & Company. (2023a). The Economic Potential of Generative AI: The Next Productivity Frontier. Retrieved from https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier

McKinsey & Company. (2023b). Using AI in Economic Development: Challenges and Opportunities. Retrieved from https://www.mckinsey.com/industries/public-sector/our-insights/using-ai-in-economic-development-challenges-and-opportunities

Norden, L., & Ramachandran, G. (2023). Artificial Intelligence and Election Security. Brennan Center for Justice. https://www.brennancenter.org/our-work/research-reports/artificial-intelligence-and-election-security

O'Neil, C. (2016). Weapons of math destruction: How big data increases inequality and threatens democracy. Crown Publishers. https://doi.org/10.5860/crl.78.3.403

Papanastasiou, G., Drigas, A., Skianis, C., Lytras, M., & Papanastasiou, E. (2019). Virtual and augmented reality effects on K-12, higher and tertiary education students' twenty-first century skills. Virtual Reality, 23(4), 425–436. https://doi.org/10.1007/s10055-018-0363-2

Pashentsev, E. (2021). The malicious use of artificial intelligence through agenda setting: Challenges to political stability. In Proceedings of the 3rd European Conference on the Impact of Artificial Intelligence and Robotics ECIAIR (pp. 138-144).

Rahwan, I., Cebrian, M., Obradovich, N. et al. Machine behaviour. Nature 568, 477–486 (2019). https://doi.org/10.1038/s41586-019-1138-y

Rakuasa, H. (2023). Integration of Artificial Intelligence in Geography Learning: Challenges and Opportunities. Sinergi International Journal of Education, 1(2), 75-83. https://doi.org/10.61194/education.v1i2.71

Rehman, S., & Al-Raqom, D. (2020). Using big data in telecommunication companies: A case study. African Journal of Business Management, 14(7), 209-216. https://doi.org/10.5897/AJBM2019.8874

State of AI. (2024). State of AI report 2024. https://www.stateof.ai/2024

Tomar, M., Raj, N., Singh, S., Marwaha, S., & Tiwari, M. (2023). The role of Ai-driven tools in shaping the democratic process: a study of Indian elections and social media dynamics. Industrial Engineering Journal, 52(11), 143-153.

Union Bancaire Privée. (2025). AI and Financial Security: Risk Mitigation Strategies. Retrieved from https://www.ubp.com

Wan, Y., Wan, X., Huang, L., & Zhao, Y. (2025). Artificial Intelligence Empowered Reforms in Economics Education. International Journal of Computer Science and Information Technology, 5(1), 1-15.

Zajko, M. (2022). Artificial intelligence, algorithms, and social inequality: Sociological contributions to contemporary debates. Sociology Compass, 16(3), e12962.

Zekos, G. I. (2022). Political, economic and legal effects of artificial intelligence: Governance, digital economy and society. Springer. https://doi.org/10.1007/978-3-030-94736-1

Zhang, Y. (2023). Use of artificial intelligence (AI) in historical records transcription: Opportunities, challenges, and future directions. McGill University. https://escholarship.mcgill.ca/concern/theses/gb19fc418

Cite Your Article as

Barkati, M. G., & Shakeel, S. (2026). Artificial intelligence in teaching of social sciences: A review of applications, challenges and ethical concerns. Scholarly Research Journal for Interdisciplinary Studies, 14(94), 205–214. https://doi.org/10.5281/zenodo.20392622