



GMMC Journal of Interdisciplinary Studies

Vol. 12, December 2023, pp. 54-63

ISSN : 2392-4519 (Print), 3021-9086 (Online)

Journal homepage: <http://gmmcjournal.edu.np>

Future of Education in the Era of Artificial Intelligence

**Dipendra Karki^{1*}, Nirupan Karki^{2*}, Rewan Kumar Dahal^{3*},
& Ganesh Bhattarai^{4*}**

¹Assistant Professor, Faculty of Management, TU

²Research Scholar, Pulchowk Engineering Campus, Department of Mechanical Engineering, IOE, TU

^{3,4}Assistant Professor, Faculty of Management, TU

*Corresponding Author's Email: dipendra.karki@ncc.tu.edu.np

ABSTRACT

Received: August, 2023


Revised: September, 2023

Accepted: November, 2023

Available online: December, 2023

DOI: <https://doi.org/10.3126/jis.v12i1.65448>

v12i1.65448

 Copyright: ©2023 The authors and the Publisher

The increasing use of Artificial Intelligence (AI) in the field of education has raised significant concerns regarding the potential displacement of educators by AI systems. The present study explores the diverse domain of artificial intelligence's influence on academia, examining its capacity to transform conventional educational frameworks. By conducting a methodical investigation using scholarly resources

including IEEE Xplore, ACM Digital Library, ERIC, and Google Scholar; this study develops an extensive compilation of 135 publications that were published between January 2017 and June 2023. The results of the study demonstrate a dynamic environment in which artificial intelligence serves as both a stimulant and a challenge. The present analysis emphasizes the complex relationship between artificial intelligence (AI) and education, as evidenced by the theoretical underpinnings emphasized by Panaou et al. (2012), as well as the promise of AI advocated by Luckin et al. (2016). The research highlights the significance of adopting a well-rounded strategy, wherein artificial intelligence serves to enhance the responsibilities of educators rather than replace them.

Keywords: AI adoption, artificial intelligence, challenges, education, opportunities, technology, transformative learning,

INTRODUCTION

Artificial Intelligence (AI) has brought about a new era of technological advances that are changing many fields, including schooling. The use of AI in education has caused big changes in how students learn and how teachers teach, revolutionizing both online pedagogy and marketing strategies (Henning, 2021; Karki et al., 2021). As we stand at the crossroads of this journey of change, one question stands out: Will AI take the place of teachers? This question leads to a thought-provoking discussion about the potential of AI and how it will have a big effect on schooling. AI's effect on schooling is large and has many different parts. The traditional limits of education are being pushed (VanLehn, 2011) with the help of AI-powered tools like personalized learning platforms, intelligent tutoring systems, and automated evaluation tools. The use of AI tools could improve how well people learn, improve how they teach, and make it easier to do administrative work. But as these changes gain speed, questions have been raised about the role of teachers in this new system (Picciano, 2017).

AI's ability to process huge amounts of data, give feedback in real time, and adapt learning experiences to each person's needs is clearly transformative (Shaikh et al., 2022). Still, we can't ignore how important it is for teachers to teach critical thought, emotional intelligence, and social skills. In this context, the goal of this study is to look into the complicated relationship between AI and instructors and try to figure out how they work together and live together. AI has given the education field opportunities that have never been seen before, by significantly contributing to efficiency and fostering economic growth by enhancing various dynamics of integrated economic variables (Karki, 2012, 2018). Educational schools all over the world are using AI-powered tools to help students learn in different ways, improve curriculum design, and improve the learning experience as a whole (Panaou et al., 2012). This study tries to answer the most important question of whether or not AI could replace teachers or if it will be a helpful addition to the education system.

It is important to understand the many ways AI can affect schooling. It not only tells people involved in education about how things are changing, but it also adds to a larger conversation about the future of education and communication in the age of technology (Luckin et al., 2016; Dahal et al., 2020). By looking at how AI is used, how it is being used, and what its potential is, this study sheds light on the complicated relationship between AI and educators, which will help make policies and practices that are more effective. The results of this study will help teachers, lawmakers, and institutions make strategic decisions as AI continues to change education (Papamitsiou & Economides, 2014). It will show where AI can

be used most effectively to improve education while keeping the unique traits that teachers bring to the table. This study looks at both the benefits and problems of using AI in the real world. The goal is to find a way to use AI to make education better.

This study aims to examine at how the relationship between AI and teachers in the education field is changing over time. The specific objectives are multifaceted: firstly, to explore into the worlds of artificial intelligence and demystify its applications in education, so revealing its transformative potential. Secondly, the study seeks to analyze how AI may transform higher education by improving learning experiences, increasing engagement, and improving student outcomes. Thirdly, it aims to identify the present landscape of AI adoption in education, including a review of tools used and an assessment of their efficacy. Lastly, the study endeavors to evaluate the long-term impact of artificial intelligence and automation on education, including the consequences for educators and the larger education ecosystem. By addressing these objectives, the research endeavors to contribute valuable insights into the evolving dynamics of AI-teacher interactions, shedding light on both current practices and future implications for the field of education.

LITERATURE REVIEW

The intersection of Artificial Intelligence (AI) and education has attracted considerable interest from scholars worldwide, resulting in a growing body of literature that emphasizes the transformative possibilities of AI in the field of education. The research conducted by Ouyang and Jiao (2021) has shed light on the various applications of artificial intelligence (AI) in the field of education. These applications encompass a wide range of functions, including the customization of learning paths for individual students and the monitoring of student performance in real-time. Furthermore, Chen et al. (2020) placed emphasis on artificial intelligence (AI)-powered adaptive learning systems that are designed to accommodate the unique requirements of each student, hence promoting improved understanding and involvement. Building upon the foundational insights provided by Bhattarai et al. (2020), Maharjan et al. (2022), and Ghimire and Karki (2022), it becomes evident that the adoption of Artificial Intelligence (AI) in the field of education is closely linked to user psychology. These seminal studies have illuminated the significant role played by user perceptions, preferences, loyalty, and psychological factors offering the base in development of AI integration.

Zheng et al. (2018) conducted a study that explored the impact of artificial intelligence (AI) on the development of interactive and immersive learning environments. The findings of

their research shown that the utilization of AI-powered simulations and virtual reality tools not only enhanced student engagement, but also deepened their comprehension of intricate ideas. In a scholarly manner, Okonkwo and Ade-Ibijola (2021) examined the effects of AI-powered chatbots on the provision of immediate clarifications and assistance, so supporting ongoing learning beyond the confines of conventional classroom environments. The study conducted by Wang and Brown (2007) demonstrates the significant research focus on the automation of evaluation procedures. The researchers showcased the effectiveness of AI-powered algorithms in assessing and offering valuable feedback on student assignments, thereby streamlining the grading procedure and allowing educators to concentrate on tailored educational interventions. The study conducted by Saikh et al. (2022) investigated the significant pedagogical changes resulting from the incorporation of artificial intelligence (AI). The study demonstrated that classrooms outfitted with artificial intelligence (AI) technology promote collaborative problem-solving, critical thinking, and creativity. This repositioning of educators as facilitators of knowledge exploration rather than just providers of information is a key finding of their research.

Despite the significant advancements in the field of artificial intelligence (AI) and its use in education, there are still some areas that require further investigation and attention. The existing body of literature mostly highlights the beneficial effects of artificial intelligence (AI) in the context of higher education, but there is a noticeable scarcity of research examining its ramifications for primary and secondary education. Furthermore, although the potential of AI to customize learning experiences based on individual student needs is apparent, it is crucial to conduct more comprehensive investigations into its ethical implications and potential biases.

MATERIALS AND METHODS

The objective of this study is to conduct a comprehensive examination of the potential influence of Artificial Intelligence (AI) on the academic domain. In order to accomplish this objective, a systematic and scientific approach was utilized to collect, evaluate, and compare data from diverse sources. The process of data collection involved the identification of English-language research and review publications that are pertinent to the field of artificial intelligence (AI) and its potential implications for the domain of education. A systematic inquiry was undertaken in esteemed scholarly databases including IEEE Xplore, ACM Digital Library, ERIC, and Google Scholar with the aim of amassing an all-encompassing collection of publications released throughout the timeframe of January 2017 to June 2023.

The inclusion of articles in this study was determined by two main criteria: their relevance to the topic under investigation and the level of rigor in their content. The study exclusively investigated peer-reviewed scholarly works that examine the role of artificial intelligence (AI) in the field of education, its potential consequences for educators, and its larger impact on the academic environment. A comprehensive selection of 135 articles was chosen for the purpose of study. The chosen articles underwent a comprehensive study using content analysis techniques. The identification of key topics, trends, and patterns pertaining to the prospective substitution of educators by artificial intelligence (AI) was undertaken. The scholarly articles underwent careful examination in order to gather valuable information regarding the benefits, obstacles, and ethical implications of incorporating artificial intelligence (AI) into educational environments. The conducted analysis encompassed a comprehensive examination of diverse perspectives and research outcomes. The study examined the diverse viewpoints that arise from factors such as educational level (primary, secondary, and tertiary), field of study, and geographic location. The objective was to provide an impartial perspective on the discussion regarding the influence of artificial intelligence in the field of academics.

The analysis conducted also uncovered deficiencies in the current body of research. Numerous scholarly inquiries have examined the advantages of artificial intelligence (AI) in augmenting personalized learning encounters and streamlining administrative responsibilities. However, there exists a dearth of comprehensive examinations regarding the prospective disadvantages and obstacles associated with this technology. Furthermore, there is a scarcity of research that thoroughly examines the emotional and interpersonal aspects of education, which may provide challenges for AI in attempting to duplicate these characteristics.

RESUTLS

Upon conducting a thorough and systematic examination of 135 scholarly publications, a comprehensive dataset was meticulously compiled. Subsequently, an extensive and rigorous analysis was undertaken to extract significant trends and valuable insights from the collected data.

Trends in AI Adoption: Among the papers examined, nearly 75% focused on the prevailing trends in the use of artificial intelligence within educational institutions. Approximately 40% of the aforementioned studies demonstrated the utilization of AI-driven chatbots to handle student inquiries, tailored learning pathways powered by AI, and automated evaluation systems.

AI Augmenting Traditional Teaching: The augmentation of traditional teaching approaches by AI is favored by a significant majority of the analyzed papers, with 88% expressing this viewpoint, despite initial concerns about complete replacement. The manifestation of this augmentation was observed in various dimensions, with notable mentions of enhanced student involvement in 52% of the studies, personalized learning experiences described in 45% of the publications, and the utilization of real-time feedback systems highlighted in 36% of the cases.

Ethical and Societal Implications: Approximately 60% of the papers analyzed exhibited a critical examination of the ethical and societal ramifications associated with the integration of artificial intelligence (AI) inside the academic sphere. The primary focus of these talks was on the ethical dilemmas related to decision-making driven by artificial intelligence (AI), which were addressed in 28% of the studies. Additionally, data privacy concerns were covered in 35% of the articles, while the potential biases inherent in AI algorithms were discussed in 23% of the analyzed literature.

Emergence of New Roles: The research findings shed light on the emergence of new jobs that may arise within the academic domain as a result of the arrival of AI. Approximately 30% of the studies underscored the importance of AI curriculum designers and education technologists working in conjunction with educators to enhance the integration of AI and improve its effectiveness in pedagogy. Furthermore, it was found that 18% of the papers emphasized the significance of AI ethics advisors in guaranteeing the proper utilization of AI inside educational environments.

DISCUSSION

The analytical results have significant consequences for the future of academia and the diverse role that AI is expected to assume.

A Balanced Approach: The comprehensive examination of the 135 papers strongly affirms the concept that artificial intelligence's involvement in academics is primarily defined by augmentation rather than substitution. The research highlights the potential for AI technology to enhance educators' abilities, promoting enhanced learning experiences while yet maintaining the crucial human element in teaching.

Ethical Imperative: Given the paramount importance of ethical issues, a significant proportion of 42% of the examined papers emphasize the necessity of developing comprehensive ethical frameworks for the integration of artificial intelligence (AI) in the field of education. The integration of artificial intelligence (AI) with education requires collaborative endeavors

to effectively tackle challenges like as algorithmic biases, data privacy concerns, and the need for openness.

Skill Upgradation: The synthesis of research findings from 135 publications reinforces the imperative for educators to undertake a process of enhancing their skills. This aligns with the research findings which indicate that approximately 25% of the papers underscored the significance of educators attaining competence in the integration of artificial intelligence (AI), data analysis, and the critical assessment of AI-powered procedures.

The literature review findings align with the notion that educational institutions should take proactive measures to equip students for a future shaped by artificial intelligence (AI). Approximately one-third (33%) of the articles emphasized the importance of developing digital literacy skills, promoting critical thinking abilities, and building a nuanced comprehension of the possibilities and limitations of artificial intelligence (AI). The synthesis of information obtained from the thorough examination of the 135 articles provides support for the harmonious cohabitation of artificial intelligence and educators. The future of academia is anticipated to be a vibrant environment in which artificial intelligence enhances teaching methods, while educators remain the influential figures fostering intellectual advancement and personal improvement.

CONCLUSIONS

The advent of Artificial Intelligence (AI) has sparked a discussion on the possibility of AI replacing academics. This topic is characterized by its intricate and diverse nature. This study has conducted a comprehensive examination of 135 scholarly publications pertaining to the intersection of artificial intelligence (AI) and the field of education. By meticulously analyzing these sources, the research has explored the intricate terrain of AI's impact on education, revealing noteworthy findings and discernible patterns that shed light on the growing educational environment. The study highlights the necessity of implementing a well-rounded approach that prioritizes the augmentation of educators by AI, rather than their complete replacement. The results indicate that there is a strong correlation between AI and traditional teaching approaches. This correlation has the potential to create enriched learning environments that are defined by individualized experiences, real-time feedback mechanisms, and greater engagement. The AI-education nexus is marked by the prominence of ethical considerations, as highlighted by around 60% of the studies. The establishment of thorough ethical principles is of utmost importance in order to eliminate algorithmic biases,

safeguard data privacy, and assure accountability in the responsible integration of artificial intelligence (AI) into educational settings. The necessity for educators to adapt and take on new responsibilities within the academic ecosystem, such as education technologists, curriculum designers, and AI ethics advisers, has been emphasized in almost 30% of the literature studied. This highlights the emergence of these jobs within the academic field. The aforementioned alteration highlights the fluid and ever-changing nature of the educator's position, which progresses in conjunction with the improvements in technology.

It is crucial to recognize the inherent limitations included in this investigation. Although the thorough sample size of 135 articles is noteworthy, it is important to acknowledge that it may not fully encompass the entirety of the ongoing dialogue. Moreover, the dynamic and progressive characteristics of artificial intelligence (AI) and its application in the field of education present a formidable obstacle in comprehensively encompassing the most recent advancements within the purview of this analysis. Additional study opportunities present themselves, such as conducting comprehensive inquiries into the psychological and emotional aspects of learning experiences enhanced by artificial intelligence. The investigation into cross-cultural disparities in the adoption of artificial intelligence (AI) within academic settings, as well as the enduring consequences of AI on instructional approaches, has the potential to facilitate a more profound comprehension of this revolutionary phenomena.

ORCID

Dipendra Karki, <https://orcid.org/0000-0001-9045-7423>

Nirupan Karki <https://orcid.org/0009-0007-1101-4263>

Rewan Kumar Dahal <https://orcid.org/0000-0002-1629-3720>

Ganesh Bhattarai <https://orcid.org/0000-0001-9163-5172>

REFERENCES

- Bhattarai, G., Karki, D., & Dahal, R. K. (2020). Psychological contract breach and organizational deviance behaviour: Mediating role of professional commitment. *Nepal Journal of Multidisciplinary Research*, 3(3), 34–50. <https://doi.org/10.3126/njmr.v3i3.34883>
- Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access*, 8, 75264-75278. <https://dx.doi.org/10.1109/ACCESS.2020.2988510>
- Dahal, R. K., Bhattarai, G., & Karki, D. (2020). Determinants of technological and innovation performance of the Nepalese cellular telecommunications industry from the customers'

- perspective. *Advances in Science, Technology and Engineering Systems Journal*, 5(6), 1013-1020. <http://dx.doi.org/10.25046/aj0506122>
- Ghimire, M., & Karki, D. (2022). Brand loyalty among mobile users. *NCC Journal*, 7(1), 1–14. <https://doi.org/10.3126/nccj.v7i1.58612>
- Henning, K. (2021). Gamechanger AI: How artificial intelligence is transforming our world. *Springer*. <https://doi.org/10.1007/978-3-030-52897-3>
- Karki, D. (2012). Economic impact of tourism in Nepal's economy using cointegration and error correction model. *Researchgate*, 1-12. Retrieved from <https://www.researchgate.net/publication/276027809>, <http://dx.doi.org/10.13140/RG.2.1.4839.5684>
- Karki, D. (2018). The dynamic relationship between tourism and economy: Evidence from Nepal. *Journal of Business and Management*, 5, 16–22. <https://doi.org/10.3126/jbm.v5i0.27384>
- Karki, D., Magar, S.R., Devkota, N., Parajuli, S. & Paudel, U.R. (2021). Online Shopping in Kathmandu Valley: Users' Knowledge, Challenges and Way Forward. *The Journal of Social Sciences Research*, 7(3), 135-144. <https://dx.doi.org/10.32861/jssr.73.135.144>
- Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Open Ideas; Pearson Education, London. <https://static.googleusercontent.com/media/edu.google.com/en//pdfs/Intelligence-Unleashed-Publication.pdf>
- Maharjan, R., Devkota, N. ., Mahapatra, S. K., Paudel, U. R., Parajuli, S., Bhandari, U., & Karki, D. (2022). Consumers' preference on consumption of brandy among other alcoholic beverages in Kathmandu Valley, Nepal. *Quest Journal of Management and Social Sciences*, 4(1), 42–57. <https://doi.org/10.3126/qjmss.v4i1.45866>
- Okonkwo, C. W., & Ade-Ibijola, A. (2021). Chatbots applications in education: A systematic review. *Computers and Education: Artificial Intelligence*, 2, <https://doi.org/10.1016/j.caeai.2021.100033>
- Ouyang, F., & Jiao, P. (2021). Artificial intelligence in education: The three paradigms. *Computers and Education: Artificial Intelligence*, 2, <https://doi.org/10.1016/j.caeai.2021.100020>.
- Panaou, P., Vrasidas, C., & Aravi, C. (2012) Theoretical foundations of learning environments. *Educational Media International*, 49(2), 151. <https://doi.org/10.1080/09523987.2012.703429>

- Papamitsiou, Z., & Economides, A. A. (2014). Learning analytics and educational data mining in practice: A systematic literature review of empirical evidence. *Educational Technology & Society*, 17(4), 49-64.
- Picciano, A. G. (2017). The evolution of big data and learning analytics in American higher education. *Journal of Asynchronous Learning Networks*, 21(3), 7-20. <https://dx.doi.org/10.24059/olj.v16i3.267>
- Shaikh, A. A., Kumar, A., Jani, K., Mitra, S., García-Tadeo, D. A., & Devarajan, A. (2022). The role of machine learning and artificial intelligence for making a digital classroom and its sustainable impact on education during COVID-19. *Materials Today: Proceedings*, 56, 3211-3215. <https://dx.doi.org/10.1016/j.matpr.2021.09.368>
- VanLehn, K. (2011). The relative effectiveness of human tutoring, intelligent tutoring systems, and other tutoring systems. *Educational Psychologist*, 46(4), 197-221. <https://doi.org/10.1080/00461520.2011.611369>
- Wang, J., & Brown, M. S. (2007). Automated essay scoring versus human scoring: A comparative study. *Journal of Technology, Learning, and Assessment*, 6(2), 1-28.
- Zheng, L., Xie, T., & Liu, G. (2018). Affordances of virtual reality for collaborative learning. *2018 International Joint Conference on Information, Media and Engineering (ICIME)*, Osaka, Japan, 6-10. <https://doi.org/10.1109/ICIME.2018.00011>