International Journal of Computer Science and Mathematical Theory (IJCSMT) E-ISSN 2545-5699
P-ISSN 2695-1924 Vol 11. No.4 2025 www.iiardjournals.org online version

Ethical Dilemma Of Artificial Intelligence In Education: Balancing Automation And Human Teaching Roles: A Review

Anih Anselem Anayochukwu
Department of Science Education, Faculty of Education Federal University Otuoke
Corresponding authors 'e-mail: anihaa@fuotuoke.edu.ng
DOI: 10.56201/ijcsmt.vol.11.no4.2025.pg.94.106

Abstract
Artificial Intelligence(AI) has transformed education through task automation, personalization, and administrative enhancement.Nonetheless, its educational integration raises ethical issues, notably regarding job loss,academic integrity,data security, and algorithmic bias.This review analyzes the challenges and ethical ramifications of AI in education and suggests strategies for responsible implementation.The importance of this study is underscored by its focus on balancing AI automation with the indispensable role of human educators.By examining policy suggestions, governance structures, and ethical guidelines, this review offers perspectives on ensuring fairness,transparency, and inclusivity inAI-enhanced education.Addressing these ethical issues is vital for upholding academic integrity,promoting equitable access,and maintaining human engagement in educational settings.

Keywords: *Artificial Intelligence; Ethical Dilemmas; Education Policy; Human-AI Collaboration; Data Privacy; Algorithmic Bias.*

1.0 Introduction

Artificial Intelligence (AI) has significantly transformed various sectors, including education, by introducing innovative teaching and learning tools. AI-driven educational technologies are designed to enhance personalized learning, automate administrative tasks, and improve student engagement. These tools include chatbots, AI tutors, and automated grading systems, all of which have redefined the traditional classroom experience. However, their integration into education also raises ethical concerns regarding their role in replacing human teachers, data privacy, and equity in learning opportunities (Lee & Hurst 2020).

AI-Driven Teaching Tools in Education include Chatbots for Student Support and Engagement.AI-powered chatbots have become essential tools in modern education. These virtual assistants provide students with instant responses to inquiries, facilitate communication between learners and educators, and offer academic support outside of regular classroom hours (Nakanishi et al., 2019). Chatbots such as "Jill Watson," developed at the Georgia Institute of Technology, have been used to respond to students' frequently asked questions, significantly reducing the workload of human instructors (Seo,Tang, Roll, et al, 2021). Moreover, AI chatbots enhance student engagement by providing interactive and adaptive learning experiences. They can deliver personalized feedback, recommend learning resources, and facilitate peer collaboration through discussion forums (Woolf, 2010). However, concerns about data security, misinformation, and the lack of emotional intelligence in AI chatbots persist, making it necessary to establish ethical guidelines for their deployment. Another important AI-Driven Teaching Tool in Education is AI-Powered Intelligent Tutoring Systems (ITS).

Intelligent Tutoring Systems (ITS) are AI-driven platforms designed to provide students with personalized learning experiences. These systems analyze students' learning patterns and adapt instructional content accordingly, offering customized lessons, quizzes, and feedback (VanLehn, 2011). Examples of ITS include Carnegie Learning's MATHia and IBM Watson Tutor, which have been implemented in various educational settings to enhance comprehension and improve academic performance.ITSs use machine learning algorithms to detect students' strengths and weaknesses, allowing them to provide real-time interventions and targeted support (Aleven et al., 2016). However, while ITSs can supplement traditional teaching, they cannot replace the nuanced guidance and mentorship provided by human educators. Ethical concerns related to student data privacy and algorithmic bias also need to be addressed to ensure that ITSs provide equitable learning opportunities (Luckin et al., 2016). Besides the ITSs are also Automated Grading and Assessment Systems.

Automated grading systems leverage AI to evaluate student assignments, quizzes, and exams. These tools utilize natural language processing (NLP) and machine learning algorithms to assess written responses, providing timely and consistent feedback (Shermis& Burstein, 2013). Platforms like Turnitin and Grade Scope use AI-driven assessment models to detect plagiarism and grade large volumes of assignments efficiently. Automated grading systems reduce teachers' workload and enable quicker feedback loops, improving student learning outcomes (Dwivedi et al., 2023). However, the reliability of AI in grading subjective responses, such as essays and creative writing, remains controversial. Studies have shown that AI grading tools can sometimes fail to recognize nuances in language, leading to inconsistencies in evaluation (Singla,etal. 2023)). Ethical considerations also arise regarding transparency in grading algorithms and the potential for bias against non-native English speakers or students with diverse writing styles (Williamson, 2019).

While AI-driven teaching tools offer numerous benefits, they also present ethical dilemmas that must be addressed. The potential replacement of human educators, the digital divide, data privacy, and algorithmic bias are key concerns that policymakers and educators must consider. More precisely the following are ripe for consideration: The increasing reliance on AI raises fears of teacher displacement, with automated systems taking over tasks traditionally performed by educators. AI should be viewed as a tool to augment teaching rather than replace human instructors (Lee & Hurst 2020).The digital divide remains a significant challenge, as students in underprivileged areas may not have access to AI-driven learning tools, exacerbating educational inequalities (Van Dijk, 2020).in addition, another scarcely AI-driven teaching tool that requires urgent attention is data privacy and security. The collection of vast amounts of student data by AI systems raises concerns about data protection and privacy. Institutions must implement robust policies to safeguard student information (Williamson, 2019).AI tools may reflect biases present in their training data, leading to unfair assessments and recommendations. Addressing this issue requires transparency in AI design and continuous algorithm evaluation (Baker & Hawn, 2021).AI-driven teaching tools have revolutionized education by enhancing personalized learning, improving engagement, and streamlining assessment processes. However, their integration must be guided by ethical considerations to ensure fairness, transparency, and inclusivity. As AI continues to evolve, it is crucial to strike a balance between automation and the irreplaceable role of human educators in fostering holistic student development. Thus the rationale behind this topic is,Ethical Dilemma of Artificial Intelligence in Education: Balancing Automation and Human Teaching Roles.

The ethical debate surrounding Artificial Intelligence (AI) in education, particularly in balancing automation and human teaching roles, is crucial in shaping the future of learning. While AI offers numerous benefits, including personalized instruction and efficient data management, concerns regarding its ethical implications must be addressed. This study is significant as it explores the critical areas where AI integration in education presents both opportunities and ethical dilemmas. First preserving the Human Element in Education, Education extends beyond knowledge dissemination; it involves mentorship, emotional intelligence, and social development, which AI lacks (Lee & Hurst 2020). Human teachers provide critical emotional support and motivation, helping students navigate challenges that AI-driven systems may overlook (Aoun, 2017). This study highlights the need to ensure AI complements human educators rather than replacing them, preserving essential interpersonal aspects of teaching.

Second Ethical Responsibility and Accountability**,** one of the primary ethical concerns in AI-driven education is accountability. Unlike human teachers, AI lacks moral reasoning and ethical judgment, raising questions about who is responsible when errors occur (Williamson & Eynon, 2020). Bias in AI algorithms, particularly in grading and decision-making, can lead to discrimination and unfair treatment of students (Baker & Hawn, 2021).Addressing these ethical issues is essential to maintaining trust and fairness in AI-integrated educational settings.

Apart from ethical considerations, there need to assess the Quality of Learning and Personalized Instruction**.**AI enables personalized learning by analyzing student performance and tailoring instruction to individual needs (Luckin et al., 2016). However, AI-driven learning lacks the adaptability and creativity of human educators, which are crucial for fostering critical thinking and problem-solving skills (Holmes et al., 2021). This study emphasizes the importance of a balanced approach where AI serves as an assistive tool rather than a replacement, ensuring educational quality and effectiveness.

Also, Equity and Access to Education**.** The increasing reliance on AI in education raises concerns about the digital divide. Many students, particularly in developing regions, lack access to advanced AI-driven educational tools due to economic and infrastructural disparities (West, 2019). The ethical debate on AI in education must consider equity and inclusivity to prevent further marginalization of disadvantaged students (Selwyn, 2022). This study underscores the need for ethical AI implementation that prioritizes accessibility for all learners. Job Security and the Future of Teaching Rolesareother variables to be considered. AI's growing presence in education has led to fears of job displacement among teachers (Seldon & Abidoye, 2018). While AI can handle administrative tasks and content delivery efficiently, the role of human educators remains indispensable for fostering social skills, ethical reasoning, and adaptability (Aoun, 2017).

Ethical Dilemma of Artificial Intelligence in Education

The integration of Artificial Intelligence (AI) in education presents both opportunities and ethical dilemmas. While AI enhances personalized learning, automates grading, and improves administrative efficiency, it also raises concerns about academic integrity, job displacement, data privacy, and algorithmic bias. Striking a balance between automation and human teaching roles is crucial to preserving educational quality and equity. This review explores AI's impact on education, highlighting the need for ethical governance, human oversight, and responsible AI adoption. Addressing these challenges ensures that AI serves as a tool to support, rather than replace, educators while maintaining fairness, transparency, and inclusivity in learning environments.

However, achieving this balance requires a robust regulatory framework that ensures ethical AI implementation in education. Privacy concerns, data security, and the responsible development of AI-driven tools must be carefully managed to protect both students and educators from potential risks (Williamson, 2021). Ethical AI policies should align with fundamental human values and educational ethics, preventing unintended consequences such as biased decision-making or excessive reliance on automation. The ethical debate on AI in education is central to navigating the fine line between automation and human teaching roles. While AI offers remarkable advancements in efficiency and personalized learning, it cannot replace essential human qualities like emotional intelligence, ethical judgment, and mentorship. By addressing these concerns, this study contributes to the broader discourse on responsible AI use, advocating for policies and regulations that uphold educational equity, accountability, and human-centred learning.

2.0 Regulation and Ethical AI Development

Ethical concerns surrounding AI in education necessitate regulatory frameworks to ensure responsible implementation. Privacy concerns, data security, and ethical AI development must be addressed to protect students and educators from potential harm (Williamson, 2021). This study highlights the need for policies and guidelines that promote ethical AI use, ensuring that AI-driven education aligns with fundamental human values and educational ethics.The ethical debate on AI in education is crucial in navigating the balance between automation and human teaching roles. While AI presents significant advancements in personalized learning and efficiency, it cannot replace the indispensable human aspects of education, including emotional intelligence, ethical reasoning, and mentorship. Addressing these ethical concerns ensures that AI integration enhances, rather than undermines, the quality and inclusivity of education. By examining these issues, this study contributes to the broader discourse on responsible AI use, advocating for policies that prioritize educational equity, accountability, and human-centred learning**.**

3.0 Current Trends and Adoption of AI in Schools and Universities

The increasing adoption of Artificial Intelligence (AI) in education presents both opportunities and ethical dilemmas. While AI-powered tools enhance personalized learning and automate administrative tasks, their widespread implementation raises concerns about equity, data privacy, and the diminishing role of human educators (Holmes et al., 2021). AI-driven learning systems, such as intelligent tutoring systems (ITS) and adaptive learning platforms, claim to offer personalized instruction, yet they often lack the human intuition required for social-emotional learning and critical thinking development (Selwyn, 2020).

Another critical issue is algorithmic bias. AI models trained on historical data may reinforce educational inequalities, disadvantaging marginalized students (Zawacki-Richter et al., 2019). Additionally, reliance on AI for assessment and grading raises concerns about fairness, as automated systems may fail to account for the complexity of human expression in subjects requiring creativity and subjective evaluation (Luckin et al., 2022).

Moreover, the shift toward AI-driven education may lead to the commodification of learning, prioritizing efficiency over holistic development. While AI can provide insights into student performance, it cannot replace the mentorship and moral guidance provided by teachers (Baker & Smith, 2019). The challenge remains in striking a balance between AI automation and human teaching roles to preserve the ethical and pedagogical integrity of education.

Thus, while AI has transformative potential, its implementation must be carefully regulated to ensure it complements rather than replaces human educators, safeguarding both ethical considerations and educational quality.

4.0 Ethical Concerns in AI-Driven Education

The integration of Artificial Intelligence (AI) in education presents profound ethical concerns that impact students, educators, and institutions. These concerns have far-reaching implications for equity, data privacy, accountability, and the role of human educators in learning environments.

4.1 Deepening Educational Inequality

AI-driven education systems risk reinforcing existing educational disparities. Algorithmic bias can lead to discriminatory outcomes, disadvantaging marginalized students based on gender, race, or socioeconomic status (Holmes et al., 2021). If AI models are trained on biased data, they may perpetuate inequalities rather than eliminate them. Schools with limited resources may also struggle to implement advanced AI tools, widening the digital divide.

4.2. Privacy Violations and Data Security Risks

AI in education relies on vast amounts of student data, raising concerns about data privacy and security. Without strict regulations, sensitive student information could be misused or exposed to cyber threats (Luckin et al., 2022). Moreover, the unclear ownership of student data poses ethical dilemmas regarding consent and surveillance.

4.3. Erosion of Human Teaching Roles

AI automation could diminish the role of teachers, replacing critical human interactions with machine-driven instruction. While AI can personalize learning, it cannot provide mentorship, emotional support, and ethical guidance (Keri, & Neil, 2020). Over-reliance on AI could undermine the holistic development of students.

4.4. Accountability and Transparency Challenges

AI-driven assessments and decision-making tools often operate as "black boxes," making it difficult to challenge unfair outcomes (Zawacki-Richter et al., 2019). The lack of transparency in AI algorithms raises ethical concerns about who is responsible for errors—educators, developers, or institutions. To mitigate these ethical challenges, AI should complement, not replace, human educators. Policymakers must enforce ethical AI guidelines to ensure fairness, transparency, and data security in education.

4.5 Job Displacement and Teacher Autonomy

The increasing adoption of Artificial Intelligence (AI) in education raises ethical concerns about job displacement and the role of teachers in AI-driven classrooms. While AI has the potential to enhance teaching by automating tasks and personalizing learning, it also poses risks to human interaction and teacher autonomy.

5.0 Replacement or Augmentation of TeachersRoll Their Roles

AI in education is designed to support, rather than replace, teachers by automating administrative tasks, grading, and personalized content delivery (Holmes et al., 2021). Intelligent tutoring systems

and AI-driven feedback mechanisms can enhance efficiency, but they lack the emotional intelligence, creativity, and mentorship that human educators provide (Keri, & Neil, 2020). However, if educational institutions prioritize cost-cutting over pedagogical quality, there is a risk of AI reducing the demand for human teachers, especially in lower-level instructional roles.

6.0 The Risk of Reducing Human Interaction in Education

A major ethical concern is the potential reduction of meaningful teacher-student interaction. Education is not just about information delivery; it involves social and emotional development, critical thinking, and ethical reasoning—skills that AI cannot fully replicate (Luckin et al., 2022). Over-reliance on AI-driven learning environments may lead to a dehumanized education system where students receive automated responses rather than personalized guidance. This could negatively impact student motivation, empathy, and collaborative learning experiences.AI should be used as a tool to augment, rather than replace, teachers. Policies must ensure that AI enhances human teaching roles while preserving the fundamental human interactions essential for holistic education.

7.0 The Risk of Academic Dishonesty and AI-Assisted Cheating

7.1 AI-Generated Essays and Assignments

The rise of AI-powered text generators, such as ChatGPT, has introduced new challenges in academic integrity. Many students misuse these tools to produce essays and assignments without genuine effort, leading to plagiarism concerns (Cotton et al., 2023). AI-generated content can evade traditional plagiarism detection software, making it difficult for educators to identify dishonesty (Smutradontri&Kewruang, 2023). This trend threatens academic standards by undermining critical thinking, originality, and the learning process.

7.2 Ethical Challenges of AI Evaluating Students Without Human Oversight.

AI-driven grading systems promise efficiency but raise ethical concerns regarding fairness and accuracy. These systems may struggle with nuanced assessments, such as creative writing or complex problem-solving, which require human judgment (Zawacki-Richter et al., 2019). Additionally, AI grading models can perpetuate biases from their training data, leading to unfair evaluations (Holmes et al., 2021). Over-reliance on automated grading risks dehumanizing education and marginalizing students who require personalized feedback.

8.0 Solutions and Policies for Responsible AI Use in Education

To counteract AI-assisted cheating, institutions must implement strict policies and promote academic integrity. AI-detection tools like Turnitin's AI writing detection can help educators identify misuse (Kasneci et al., 2023). Additionally, assessments should emphasize critical thinking and oral presentations to reduce reliance on AI-generated work. Ethical AI policies should also mandate human oversight in grading to ensure fairness and transparency. Educators must train students on responsible AI use, emphasizing that AI should be a learning aid rather than a shortcut.

9.0 Striking a Balance: Ethical Frameworks for AI in Education

As Artificial Intelligence (AI) becomes increasingly integrated into education, ethical frameworks must ensure that AI enhances learning without compromising fundamental educational values.

Ethical AI adoption should prioritize human oversight, fairness, and responsible use to maintain integrity and inclusivity in education (Holmes et al., 2021).

10.0 Human-AI Collaboration in Teaching: AI as a Teaching Assistant, Not a Replacement
AI should function as a supplement to human educators rather than a substitute. Intelligent tutoring systems, such as Carnegie Learning's AI-based tutors, provide personalized instruction, but they cannot foster critical thinking, emotional intelligence, and mentorship (Luckin et al., 2022). Human teachers remain essential for guiding discussions, contextualizing knowledge, and nurturing students' socio-emotional development. Therefore, an ethical framework should ensure that AI supports teachers by automating administrative tasks, providing analytics, and personalizing learning experiences while preserving the role of educators as mentors and facilitators.

11.0 Ethical AI Design and Regulation: Policy Recommendations for AI Integration in Education. For AI to be ethically integrated into education, clear policies must govern its use. Regulatory bodies should ensure that AI tools adhere to principles of transparency, data privacy, and algorithmic fairness (Kasneci et al., 2023). Educational institutions should establish guidelines on AI-assisted learning, including measures to prevent academic dishonesty and safeguard student data. Governments and policymakers must collaborate with educators and AI developers to create ethical guidelines that prioritize human oversight and mitigate biases in AI-driven educational systems (Zawacki-Richter et al., 2019).

12.0 Best Practices for AI-Enhanced Education: Case Studies of Ethical AI Use in Schools and Universities.
Several institutions have successfully implemented AI while maintaining ethical standards. For instance, the University of Helsinki's AI-powered digital tutor offers personalized learning recommendations while ensuring transparency and human oversight (Holmes et al., 2021). Similarly, AI-powered grading systems at Georgia Tech are used alongside human assessment to ensure accuracy and fairness (Kasneci et al., 2023). These examples demonstrate that ethical AI integration is achievable when human oversight is maintained, students' data privacy is protected, and AI tools are used to enhance—rather than replace—traditional teaching methods. In conclusion, striking a balance between automation and human involvement in education requires strong ethical frameworks. AI should be used as a tool to empower educators, guided by policies that ensure fairness, transparency, and accountability. Institutions must continuously assess AI's impact to uphold the integrity of education while leveraging its innovation potential.

13.0 Future Directions
The increasing integration of Artificial Intelligence (AI) in education presents both opportunities and ethical dilemmas. While AI has the potential to revolutionize teaching and learning by offering personalized instruction, automating administrative tasks, and improving efficiency, it also raises concerns about academic integrity, teacher autonomy, data privacy, and fairness. This review has highlighted the importance of balancing automation and human teaching roles to ensure that AI enhances rather than undermines the educational experience.

14.0 Ethical Challenges and Solutions

Several ethical challenges arise from AI-driven education. One of the primary concerns is job displacement and teacher autonomy. The fear that AI may replace human educators is valid, particularly with the rise of intelligent tutoring systems and automated grading tools (Holmes et al., 2021). However, rather than replacing teachers, AI should serve as an assistive tool that enhances instruction while preserving the role of human educators in fostering creativity, critical thinking, and social-emotional development. Institutions should implement policies that ensure AI is used to support, not replace, teachers.

Another pressing issue is academic dishonesty and AI-assisted cheating. AI-powered writing tools like ChatGPT enable students to generate assignments and essays with minimal effort, raising concerns about plagiarism and authenticity (Cotton et al., 2023). To address this, educators must adopt AI-detection tools, revise assessment methods to focus on critical thinking and originality, and educate students on ethical AI use.

Bias and fairness in AI-driven education are other major concerns. AI algorithms often reflect biases present in training data, potentially leading to discrimination in automated grading, admissions processes, and personalized learning systems (Kasneci et al., 2023). Ensuring algorithmic transparency and regularly auditing AI models can help mitigate these biases.

Additionally, privacy and data security are significant ethical issues. AI-powered educational platforms collect vast amounts of student data, raising concerns about consent, security, and potential misuse (Zawacki-Richter et al., 2019). Schools and universities must adopt strict data protection policies, ensuring compliance with regulations such as GDPR and FERPA.

15.0 Policy Implications for Educators, Policymakers, and AI Developers

To ensure ethical AI integration in education, coordinated efforts are required among educators, policymakers, and AI developers.

15.1 For Educators:

1. Schools and universities should provide training programs to help teachers understand AI's capabilities and limitations.
2. Institutions must establish guidelines for responsible AI use, including policies on AI-assisted assessments and plagiarism detection.
3. Educators should integrate AI literacy into the curriculum, teaching students how to use AI ethically and responsibly.

15.2 For Policymakers:

1. Governments should establish regulatory frameworks for AI in education, addressing issues such as data privacy, algorithmic transparency, and equitable access.
2. Policies should mandate human oversight in AI-driven grading and decision-making to prevent bias and unfair outcomes.
3. Ethical guidelines should be developed to prevent the commercialization of student data by AI developers.

15.3 For AI Developers:

1. AI tools must be designed with built-in ethical safeguards, including bias detection mechanisms and transparency features.

2. Developers should prioritize human-centred AI design, ensuring that AI complements, rather than replaces, human educators.
3. Collaboration between AI researchers and educators is crucial to creating tools that align with pedagogical principles and ethical standards.

16.0 Future Research to Ensure Responsible AI Use in Education

The ethical dilemmas surrounding AI in education highlight the need for further research to develop responsible AI policies and frameworks. Future research should focus on the following areas:

16.1 Developing Ethical AI Governance Models

Future studies should explore governance models that balance innovation with ethical considerations. Research should examine how institutions can implement AI ethics committees to oversee AI deployment in education.

16.2Assessing the Long-Term Impact of AI on Teaching and Learning

While AI is being rapidly integrated into education, there is limited research on its long-term effects on student learning, teacher-student relationships, and educational outcomes. Longitudinal studies are needed to evaluate these impacts.

16.3 Enhancing AI Transparency and Accountability

AI algorithms often operate as "black boxes," making it difficult to understand how they generate recommendations and assessments. Research should focus on making AI models interpretable and ensuring accountability for AI-generated decisions.

16.4 Exploring AI's Role in Reducing Educational Inequality

AI has the potential to bridge educational gaps by providing personalized learning experiences to students from diverse backgrounds. Future research should investigate how AI can be leveraged to support underprivileged students while avoiding biases that reinforce inequality.

16.5Designing AI-Resistant Assessment Methods

Given the rise of AI-assisted cheating, researchers should explore assessment models that emphasize critical thinking, creativity, and oral examinations to ensure academic integrity.

16.6 Investigating the Ethical Implications of AI-Generated Content

With the growing use of AI-generated text, images, and videos, future research should analyze how such content impacts knowledge retention, authenticity, and student engagement.

17.0 Overview of integration of Artificial Intelligence (AI) in education

The rapid integration of Artificial Intelligence (AI) in education has transformed traditional learning methods, offering personalized instruction, automated grading, and intelligent tutoring systems. AI-powered tools enhance efficiency by streamlining administrative tasks and providing real-time feedback, thus improving student engagement and learning outcomes. However, alongside these advancements, AI introduces significant ethical concerns, including job displacement, academic dishonesty, data privacy issues, and algorithmic bias. The need to balance

AI automation with human teaching roles is essential to preserving the quality and equity of education. One major concern is teacher autonomy and job security. While AI can assist educators by handling repetitive tasks and offering personalized learning experiences, the fear of replacing human teachers remains prevalent. AI lacks the emotional intelligence, creativity, and mentorship required for holistic student development. Therefore, AI should serve as a support system rather than a replacement for educators.

Another pressing issue is academic integrity. AI-generated content and automated grading systems pose challenges in detecting plagiarism and ensuring fair assessment. The misuse of AI tools by students to produce assignments and bypass critical thinking has raised concerns about the authenticity of academic work. Establishing policies that regulate AI-assisted learning and implementing AI-detection mechanisms can help uphold academic standards.

Data privacy and security also remain critical ethical dilemmas. AI-driven education platforms collect vast amounts of student data, which, if mismanaged, could lead to breaches and misuse. Strong regulatory frameworks must be put in place to safeguard student information and ensure compliance with data protection laws. Additionally, algorithmic bias and fairness in AI decision-making processes must be addressed to prevent discrimination against students from underprivileged backgrounds. Transparent AI design and continuous monitoring of AI models are necessary to ensure equitable learning opportunities.

18.0 Conclusion

AI is revolutionizing education, providing students and educators with tools that enhance learning and administrative efficiency. However, the ethical dilemmas surrounding its adoption must be carefully managed to ensure that AI complements human educators rather than replaces them. Addressing concerns such as teacher displacement, data security, algorithmic bias, and academic dishonesty is crucial in developing a fair and inclusive educational system.

To strike a balance between automation and human teaching roles, AI should be integrated responsibly, with clear ethical guidelines and policies that promote transparency, accountability, and human oversight. Policymakers, educators, and AI developers must collaborate to create a framework that ensures AI supports, rather than undermines, the integrity of education.

The ethical dilemma of AI in education revolves around the fundamental question: how can AI be leveraged to improve learning while maintaining the essential human elements of education? This topic is critical as it highlights both the benefits and risks of AI-driven learning environments. Without ethical considerations, AI could erode the humanistic aspects of education, such as mentorship, emotional support, and critical thinking. Therefore, this review underscores the need for a balanced approach—where AI serves as an empowering tool rather than a disruptive force—ensuring that education remains inclusive, ethical, and human-centred in an increasingly technological world.

Declarations

Credit authorship contribution statement

A A: Conceptualization. Writing of Original draft, Methodology, validation, Resources, and article review

Declaration of competing interest

The author declares no conflict of interest.

Acknowledgement

The author wishes to thank the management and staff of the Department of Science Education, Faculty of Education, Federal University Otuoke for administrative support.

References

Aleven, V., McLaren, B. M., Roll, I., & Koedinger, K. R. (2016). Help helps, but only so much: Research on help seeking with intelligent tutoring systems. International Journal of Artificial Intelligence in Education, 26(1), 205-223. Doi: 10.1007/s40593-015-0089-1

Aoun, J. E. (2017). Robot-Proof: Higher Education in the Age of Artificial Intelligence. MIT Press.https://doi.org/10.7551/mitpress/11456.001.0001

Baker, R.S., Hawn, A.(2022). Algorithmic Bias in Education. *Int J Artif Intell Educ* **32**, 1052–092. https://doi.org/10.1007/s40593-021-00285-9.

Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. Innovations in Education and Teaching International, 61(2), 228–239. https://doi.org/10.1080/14703297.2023.2190148

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., Carter, L., ... Wright, R. (2023). Opinion paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, *71*, 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642

Holmes, W., Bialik, M. & Fadel,C.(2019). Artificial Intelligence in Education. Promise and Implications for Teaching and Learning.Center for Curriculum Redesign • University College London / UNESCO / IRCAI / Council of Europe, Boston M

Jan van Dijk. (2020). The digital divide. Cambridge, UK: Polity,.*Journal of the Association for Information Science and Technology* *72(4*),DOI:10.1002/asi.24355

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., Stadler, M., Weller, J., Kuhn, J., & Kasneci, G. (2023). *ChatGPT for good? On opportunities and challenges of large language models for education*. Learning and Individual Differences, 103, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Keri, F. & Neil, S(2020) Digital technology and the futures of education – towards 'non-stupid' optimism, ED-2020/FoE-BP/27.

Lee & Hurst (2020). Ethical concerns regarding private equity in Right to Try in the USA. *Lancet Oncology*, *21*(10), 1260–1262. https://doi.org/10.1016/S1470-2045(20)30469-1

Lourdu Vesna, L. (2025). Digital Divide in AI-Powered Education: Challenges and Solutions for Equitable Learning Journal of Information Systems Engineering & Management 10(21s):300-308, DOI:10.52783/jisem.v10i21s.3327

Luckin, R. & **Holmes**, W. (2016). Intelligence Unleashed: An argument for AI in Education University College London / UNESCO / IRCAI / Council of Europe 112 Publications. https://www.researchgate.net/publication/299561597 Intelligence Unleashed: An argument for AI in Education Article.

Nakanishi, J., Sumioka, H., & Ishiguro, H. (2019). A huggable communication medium can provide sustained listening support for special needs students in a classroom. *Computers in Human Behavior*, *93*, 106–113. https://doi.org/10.1016/J.CHB.2018.10.008

Smutradontri,P. & Gadavanij, S. (2020).Fandom and identity construction: an analysis of Thai fans' engagement with Twitter, Palgrave Communications, Palgrave Macmillan, vol. 7(1),

pages 1-13, .Handle: *RePEc:pal:palcom:v:7:y:2020:i:1:d:10.1057_s41599-020-00653-1*DOI: 10.1057/s41599-020-00653-1

Zawacki-Richter, O., Marín, V.I., Bond, M. et al.(2019) Systematic review of research on artificial intelligence applications in higher education – where are the educators?. *Int J Educ Technol High Educ* 16, 39; https://doi.org/10.1186/s41239-019-0171-0