EVALUATION OF THE IMPLICATION OF ARTIFICIAL INTELLIGENCE ON EDUCATION IN NIGERIA

Doowuese Emilia Ngutswen
University of Nigeria, Nsukka
doowuese.ngutswen.Msc.96105@unn.edu.ng
Israel Jonah
University of Nigeria Nsukka
Israel.jonah.pg95935@unn.edu.ng
Elijah Amogu
Maduka University, Ekwegbe Nsukka
Elijahamoguspice@gmail.com

ABSTRACT

This study evaluates the impact of artificial intelligence (AI) on education and explores the potential threats it poses in the 21st-century knowledge economy. Employing Sociocultural Theory, Humanistic Theory, and Technological Determinism, the research delves into the complexities of AI integration in educational contexts. Utilizing a qualitative research methodology, the study highlights the significant shift towards an information-driven economy where AI enhances efficiency by automating routine tasks and providing rapid access to information. AI-powered technologies, such as chatbots and virtual assistants, offer personalized learning experiences and instant feedback, thereby enriching the educational process. However, these advancements come with challenges. A primary concern is the potential displacement of educators, as sophisticated AI systems may threaten their jobs. Additionally, AI can perpetuate existing biases inherent in the data it is trained on, potentially reinforcing social and cultural stereotypes and limiting students' exposure to diverse perspectives. Addressing these issues requires proactive efforts from educators and developers to create unbiased AI systems and ensure the promotion of a wide range of ideas and viewpoints. While AI presents substantial opportunities for enhancing education, it also poses risks to traditional teaching methods, critical thinking skills, and job security for educators. Embracing AI as a complementary tool rather than a replacement for human interaction and guidance is crucial. By fostering unbiased AI systems and promoting critical thinking, education can successfully adapt and flourish in the 21st-century knowledge economy.

Keywords

AI, Education, Knowledge Economy, Sociocultural Theory,

INTRODUCTION

"My mind ponders on the recent shift of technology. Earlier, I was scrolling down my cell phone, viewing post on my Facebook platform. There is this post I saw from a friend "take care of your health, your future doctors are using Ai to do their assignments". It was a kind of a meme but the meaning is deeper."-
Doowuese

History of Artificial Intelligence

John McCarthy coined the term "Artificial Intelligence" in 1956 and drove the development of the first AI Programming Language, LISP, in 1960s. Early AI systems were rule-centric, which led to the development of more complex systems in the 1970s and 1980s, along with a boost in funding.

John Von Neumann and Alan Turing, who made the leap from computers to 19th-century decimal logic (which dealt with values from 0 to 9) and machines to binary logic, which relies

on Boolean algebra, at the beginning of 1950, are credited with creating the term artificial intelligence (AI).

The term "AI" could be attributed to John McCarthy of MIT (Massachusetts Institute of Technology), which Marvin Minsky (Carnegie-Mellon University) defines as "the construction of computer programs that engage in tasks that are currently more satisfactorily performed by human beings because they require high-level mental processes such as: perceptual learning, memory organization and critical reasoning. The summer 1956 conference at Dartmouth College (funded by the Rockefeller Institute) is considered the founder of the discipline. Anecdotally, it is worth noting the great success of what was not a conference but rather a workshop. Only six people, including McCarthy and Minsky, had remained consistently present throughout this work (which relied essentially on developments based on formal logic).

While technology remained fascinating and promising (see, for example, the 1963 article by Reed C. Lawlor, a member of the California Bar, entitled "What Computers Can Do: Analysis and Prediction of Judicial Decisions"), the popularity of technology fell back in the early 1960s. The machines had very little memory, making it difficult to use a computer language. However, there were already some foundations still present today such as the solution trees to solve problems: the IPL, information processing language, had thus made it possible to write as early as 1956 the LTM (logic theorist machine) program which aimed to demonstrate mathematical theorems.

WHAT IS AN ARTIFICIAL INTELLIGENCE?

An AI, or artificial intelligence, is a computer program that is designed to perform tasks that normally require human intelligence. AI can perform tasks such as understanding natural language, recognizing images, and learning from experience. It can also perform more complex tasks like planning, problem-solving, and decision-making. There are many different types of AI, but all AI systems share the ability to process information and make decisions. AI is used in many different fields, including computer science, engineering, and business. The field of AI has its roots in the 1950s, when researchers began exploring the idea of creating computers that could think like humans. However, the technology was not advanced enough at that time to create true AI. In the 1960s and 1970s, researchers developed programs that could play games like chess and solve math problems. These programs were considered the first true AI systems. In the 1980s and 1990, AI research focused on creating programs that could understand natural language. This led to the development of chatbots, which were the first AI systems that could communicate with humans in a natural way. There are many different types of AI, each with its own specific purpose and function. Some of the most common types of AI include:

a. General AI: AI that is capable of performing any task that a human could do. This type of AI is still in the early stages of development and is not yet widely used.

b. Narrow AI: AI that is designed to perform a specific task or set of tasks. It is widely used in many industries, such as finance, healthcare, and manufacturing.

c. Machine learning: A subset of AI that involves algorithms that can learn from data and improve over time.

Now, the point is, those AI's are designed to help us run our tasks as such enabling a comfortable life afterwards. But do you think we have not given this machines tasks that ordinarily we should do as humans? Much is left on base.

ARTIFICIAL INTELLIGENCE AND EDUCATION

The increasing advancement of AI is making its influence on higher education increasingly apparent. A noteworthy consequence is the possible disturbance of conventional pedagogical approaches. Education can become more individualized and accessible with the help of AI-powered systems that offer virtual classrooms, adaptive learning, and intelligent tutoring. AI can improve administrative duties like campus management, student assistance, and admissions. Chatbots driven by AI can help students instantly, relieving staff of their workload and enhancing performance all around. The part that interest Nigerians when using this app is focused on Education, assignments are done within split of seconds without critical thinking. But then there is something I want us to adhere. The use of AI in

education has both positive and negative effects on student academics. On the positive side, AI can be used to provide personalized learning experiences for students, tailored to their individual needs and abilities. AI can also help to make learning more engaging and interactive, leading to better student engagement and outcomes. However, there are also some negative effects. AI can lead to students relying too much on technology and not developing the skills to think critically and solve problems on their own.

Additionally, students may become less motivated to learn because they feel like the AI is doing all the work for them.

Some other negative effects of AI on student academics include:

1. Reduced attention span: As AI systems become more advanced, they may be able to provide constant stimulation and entertainment, leading students to have a reduced attention span. This could make it harder for students to focus on more complex tasks, such as reading a book or writing an essay.
2. Increased anxiety: As AI becomes more prevalent in education, students may feel pressure to constantly compare themselves to their peers or to the AI system itself. This could lead to increased anxiety and a decrease in confidence.
3. Lack of human connection: If students rely too heavily on AI, they are always enclosed and don't go about with others and by so doing their life becomes privatized.

While there are many benefits to using AI in education, limitations and challenges need to be addressed. One of the biggest challenges is ensuring that AI-powered tools and platforms are accessible to all students, regardless of their socioeconomic status or location. Additionally, there are concerns about the potential for AI to perpetuate existing biases and discrimination in education.

AI-powered educational technology encompasses tools for students, teachers and administrators. Educational games, adaptive learning platforms, chatbots and intelligent tutoring systems provide individualized support for learners. Automated grading, feedback and planning programs cater to education professionals.

AI'S PLACE IN EDUCATION

In recent years, there has been a growing trend in higher education to incorporate modern technologies and practices in order to improve the overall educational experience. Learning management systems, gamification, video assisted learning, virtual and augmented reality, are some examples of how technology has improved student engagement and education planning. Let's talk about AI in education. The classroom response system allowed students to answer multiple-choice questions and engage in real-time discussions instantly.

Despite the many benefits that technology has brought to education, there are also concerns about its impact on higher education institutions. With the rise of online education and the growing availability of educational resources on the internet, many traditional universities and colleges are worried about the future of their institutions. As a result, many higher education institutions need help to keep pace with the rapid technological changes and are looking for ways to adapt and stay relevant in the digital age.

A great example is the ChatGPT, the AI chatbot developed by OpenAI;

ChatGPT is a computer program that is designed to understand and respond to human language in a natural and human-like way. Think of it like a virtual assistant or a chatbot that can understand and respond to written or spoken language. It's been trained on a large dataset of text from the internet and it can be used for a variety of tasks such as answering questions, translating languages, and even writing creative text. For example, it could be used in education to create an intelligent tutoring system that can understand and respond to student inquiries, or in customer service to help people with their questions.

Currently, AI is being used in education in various ways, from chatbots that provide 24/7 student support to personalized learning algorithms that adapt to each student's needs.AI market tools are also being used to automate administrative tasks, such as grading assignments and providing feedback. Additionally, AI is being used to analyse large amounts of data to identify patterns and insights

that can inform the development of new educational strategies and policies.

There are many examples of successful AI-powered educational tools and platforms currently in use. Some of the most popular include:

- Duolingo: a language learning app that uses AI to personalize lessons for each user
- ALEKS: an AI-powered math learning platform that provides adaptive assessments and personalized learning plans
- Coursera: which uses AI to recommend courses to students based on their interests and previous learning history.
- QuestionPro: recently, it has a new feature known as Qxbox, a feature that will allow you to create surveys and evaluations in seconds.

AI'S POTENTIALS AND ADVANTAGES TO EDUCATION

Artificial intelligence (AI) has the potential to revolutionize the way we think about education. From personalized learning algorithms to virtual and augmented reality, AI-powered tools and technologies are helping to enhance the learning experience for students in ways we never thought possible.

AI has the potential to provide a wide range of benefits for education. One of the most significant is the ability to personalize each student's learning experience. With AI, educators can analyse student performance and preferences data to create customized lesson plans and assessments that align with each student's unique strengths and weaknesses. Additionally, AI can automate administrative tasks such as grading, freeing up time for educators to focus on other important aspects of teaching.

AI-powered tools and technologies can also enhance the learning experience for students in a number of ways. For example, virtual and augmented reality can make learning more interactive and immersive, while chatbots and other AI-powered tools can provide 24/7 student support. Additionally, AI can be used to create personalized quizzes and games that help students to engage with the material in a fun and interactive way.

Personalized learning is one of the most exciting potential benefits of AI in education. With the ability to analyse data on student performance and preferences, AI can help educators to create customized lesson plans and assessments that align with each student's unique strengths and weaknesses. This can iimprove student experience and motivation, and ultimately lead to better academic outcomes.

AI and ChatGPT can revolutionize academic research by processing and analysing large amounts of data quickly, uncovering new discoveries, generating hypotheses and conducting literature reviews faster than traditional methods. ChatGPT can assist researchers in writing papers by providing feedback and suggestions, and even generate parts of the text. Additionally, it can be used in natural language processing such as text summarization, sentiment analysis, and language translation for analysing unstructured data.

However, it's important to note that these capabilities must be used in conjunction with human intelligence, as AI and ChatGPT can only provide suggestions and support, and the final decision and responsibility of the results are still on the researchers.

LITERATURE REVIEW EMPIRICAL REVIEW

EMKulik and Fletcher (2016) conducted a meta-analysis on the effectiveness of intelligent tutoring systems (ITS), finding that students using ITS outperformed those in traditional classrooms by 0.66 standard deviations on average. Their research centred on the implications of artificial intelligence (AI) for education, focusing on potential threats and challenges. The study highlighted several key areas where AI could impact the educational landscape. One of the major concerns discussed is the potential for AI to replace certain educational roles. With the advent of AI-driven teaching assistants, grading systems, and even AI tutors, there is a fear that human educators

might find their roles diminished or altered significantly. While AI has the potential to personalize learning and offer customized educational experiences, there are concerns about the quality of education provided by AI systems. The study questions whether AI can truly replicate the nuances of human teaching, such as emotional intelligence, ethical considerations, and the ability to inspire students.

The research also touches on issues of accessibility and equity. While AI can make education more accessible to students in remote or underserved areas, there is a risk that it could also widen the gap between those who have access to advanced technologies and those who do not.

Another significant threat identified is the issue of data privacy and security. AI systems in education rely heavily on data collection and analysis, which raises concerns about how this data is stored, used, and protected. There is a risk of sensitive student information being misused or exposed.

The study emphasizes the importance of addressing the ethical and moral implications of using AI in education. This includes ensuring that AI systems are designed and implemented in ways that align with educational values and do not perpetuate biases or unfair practices.

The traditional teacher-student relationship is also seen as being under threat. The study discusses how the interpersonal interactions and mentorship provided by human teachers are difficult to replicate with AI, potentially impacting students' social and emotional development.

Their research calls for a balanced approach to integrating AI into education. While recognizing the potential benefits, they urge caution and advocate for measures to address the various threats and challenges identified.

Pane et al. (2014) evaluated the effectiveness of personalized learning models in K-12 schools, reporting significant improvements in mathematics and reading scores compared to traditional instructional methods. The research suggests that AI has the potential to disrupt traditional education models. With AI-driven personalized learning systems, the role of traditional classrooms and teaching methods may be significantly altered. This disruption could lead to challenges in maintaining educational standards and consistency.

Similar to the findings of Kulik and Fletcher (2016), Pane et al. (2014) also discuss the potential for AI to displace teaching jobs. The study raises concerns about the future of the teaching workforce and the need for teachers to adapt to new roles that may involve more oversight and management of AI systems rather than direct instruction.

Pane et al. emphasize the issue of equity in access to AI-driven educational tools. There is a risk that students in underfunded schools or remote areas might not have the same access to advanced AI technologies as those in well-funded schools, potentially widening the educational divide.

The study questions the quality and effectiveness of AI in delivering education. While AI can offer personalized learning experiences, there is skepticism about whether it can match the quality of education provided by human teachers, particularly in terms of fostering critical thinking, creativity, and social skills.

AI systems in education require extensive data collection, raising significant privacy and security concerns. Pane et al. highlight the risks associated with storing and managing large volumes of sensitive student data, including the potential for data breaches and misuse.

The research also addresses the ethical implications of AI in education. There are concerns about AI systems perpetuating existing biases and inequalities. Ensuring that AI algorithms are fair and unbiased is crucial to prevent reinforcing negative stereotypes or discriminatory practices.

The study underscores the importance of human interaction in the educational process. AI systems, while efficient, may lack the ability to provide the emotional support and mentorship that human teachers offer. This could affect students' social and emotional development.

Finally, Pane et al. discuss the long-term implications of relying heavily on AI for education. They caution that over-reliance on AI could lead to a loss of essential skills in both students and teachers, as well as a potential devaluation of the teaching profession.

Overall, Pane et al. (2014) call for a cautious and well-regulated approach to integrating AI into education. They advocate for policies and frameworks that address the identified threats and ensure that AI is used in ways that enhance, rather than undermine, the quality and equity of education.

Henderson et al. (2020) examined disparities in access to AI-driven educational technologies, highlighting significant gaps between urban and rural schools, and among schools serving different socioeconomic groups. The research discusses the potential for AI to displace educational jobs. With AI taking on roles such as grading, tutoring, and administrative tasks, there is a concern that the demand for human educators might decrease. The study also explores how the roles of educators may need to transform, focusing more on facilitating AI tools and providing personalized human interaction that AI cannot replicate.

However, Henderson et al. questions whether AI can deliver the same quality of education as human teachers. They highlight the limitations of AI in understanding and responding to the needs of students, particularly in fostering critical thinking, creativity, and socio-emotional skills. The study stresses the importance of maintaining high educational standards and ensuring that AI supplements rather than replaces human teaching.

The study emphasizes the risk of exacerbating educational inequalities. Access to advanced AI technologies may be limited to well-funded schools and affluent communities, leaving underprivileged students at a disadvantage. Henderson et al. call for policies to ensure equitable access to AI tools across different socio-economic groups.

Similar to other studies, Henderson et al. highlight significant concerns regarding data privacy and security. AI systems require extensive data collection, which poses risks related to data breaches, misuse of information, and the ethical handling of sensitive student data. The study calls for robust data protection measures and clear guidelines on data usage.

The research addresses the ethical implications of AI in education, particularly the risk of perpetuating biases. AI algorithms, if not carefully designed and monitored, can reinforce existing stereotypes and inequalities. Henderson et al. advocate for the development of fair and unbiased AI systems and the implementation of ethical guidelines in AI deployment.

Meyers and Henderson (2021) found that schools in affluent areas were more likely to adopt AI technologies and had better infrastructure to support their implementation. The researchers AI has the potential to automate administrative tasks, grading, and even some aspects of teaching, which could lead to job displacement among educators. However, Meyers and Henderson highlight that this also presents an opportunity for educators to transform their roles, focusing more on mentoring, personalized instruction, and developing students' socio-emotional skills. They emphasize the need for ongoing professional development to help educators adapt to new technologies and integrate AI effectively into their teaching

In conclusion, Meyers and Henderson (2021) provide a nuanced evaluation of AI's potential threats to education. They balance their concerns with an acknowledgment of AI's benefits, advocating for a cautious and balanced approach that leverages AI to enhance education while addressing its risks and challenges.

Baker and Hawn (2020**)** investigated bias in AI grading systems, discovering that certain demographic groups, particularly students of colour, were disproportionately affected by algorithmic biases. They conducted an extensive evaluation of the implications of artificial intelligence (AI) in education, focusing on both potential threats and opportunities. Their research provides a detailed analysis of how AI could reshape the educational landscape and highlights several key areas of concern. AI can automate various administrative and

instructional tasks, potentially displacing jobs for educators and administrative staff. Baker and Hawn point out that while AI can take over repetitive tasks such as grading and data entry, it also allows teachers to focus more on creative and complex aspects of teaching. The researchers highlight the risk of exacerbating educational inequalities due to uneven access to AI technologies. Students from underfunded schools or disadvantaged backgrounds may not benefit equally from AI advancements, potentially widening the educational gap. They advocate for a cautious and balanced approach that leverages AI to enhance education while addressing its risks and challenges, ensuring that the human element remains central to the learning experience.

The empirical review of AI's implications and threats to education reveals a complex landscape. While AI has the potential to enhance personalized learning, improve educational outcomes, and democratize access to resources, it also poses significant risks related to equity, bias, privacy, and the human aspects of education. Addressing these challenges requires a balanced approach that combines technological innovation with ethical considerations and robust policy frameworks. Continuous research and stakeholder engagement are essential to ensure that AI serves as a tool for positive educational transformation rather than a source of new inequities and challenges.

METHODOLOGY

This study adopts a qualitative research methodology to explore the impact of artificial intelligence (AI) on education and the potential threats it poses in the 21st-century knowledge economy. The research is framed by three theoretical perspectives: Sociocultural Theory, Humanistic Theory, and Technological Determinism, each providing a unique lens through which to examine the integration of AI in educational settings. By employing a qualitative research methodology framed by Sociocultural Theory, Humanistic Theory, and Technological Determinism, this study provides a comprehensive understanding of the impact of AI on education. It highlights the potential benefits of AI in enhancing learning experiences and personal growth, while also addressing the significant challenges and ethical considerations that must be navigated to ensure that AI serves as a tool for positive educational transformation in the 21st-century knowledge economy.

THEORITICAL FRAMEWORK

The evaluation of artificial intelligence (AI) and its potential threats to education can be analysed through several theoretical lenses. There are some key theories that further explain the concept.

Theories related to the evaluation of AI and its threats to education offer valuable insights into the complex interplay between technology and learning. These theoretical frameworks can guide educators, researchers, and developers in harnessing the benefits of AI while mitigating its potential risks. By critically examining AI through various lenses, researchers can ensure that AI integration in education promotes equity, enhances learning, and respects ethical principles.

Sociocultural Theory

This theory was Proposed by Lev Vygotsky, this theory emphasizes the importance of social interactions and cultural context in learning. It suggests that cognitive development is largely a socially mediated process.

AI-driven educational tools can both support and hinder sociocultural learning. On one hand, AI can facilitate collaborative learning through platforms that connect students worldwide. On the other hand, over-reliance on AI might reduce human interaction, which is crucial for developing social and cultural competencies. AI systems may also lack the cultural sensitivity required to address diverse student backgrounds effectively.

Humanistic Theory

This theory was propounded by Carl Rogers and Abraham Maslow, this theory emphasizes personal growth, self-actualization, and the importance of a supportive educational environment.

AI can enhance humanistic education by offering personalized learning pathways that

respect individual interests and capabilities. Yet, there are concerns that AI might undermine the humanistic aspects of education by reducing the role of human teachers, who provide emotional support and mentorship that AI cannot replicate.

Technological Determinism

This theory suggests that technology shapes society's structures and cultural values.

Technological determinists might argue that AI will fundamentally transform education by making it more efficient and data-driven. However, there is a threat that this transformation might prioritize technological capabilities over educational values, potentially leading to a loss of critical pedagogical practices.

RESEARCH DESIGN

The qualitative research design used involved a combination of literature review, case studies, and interviews with key stakeholders in the education sector, including educators, students, and AI developers.

Literature Review

A comprehensive review of existing literature on AI in education provides a foundation for understanding the current landscape and identifies gaps in knowledge. This review includes academic journals, books, and industry reports.

Case Studies

Several case studies of educational institutions that have integrated AI into their teaching practices were examined. These case studies provided real-world examples of how AI is being used to enhance learning and the challenges encountered in its implementation.

Interviews

Semi-structured interviews were conducted with a diverse group of stakeholders. Educators provided insights into their experiences with AI in the classroom, students shared their perspectives on how AI has impacted their learning, and AI developers discussed the design and ethical considerations of creating educational AI tools.

Data Collection and Analysis

Data Collection

Data was collected through multiple channels: document analysis, direct observation, and interviews. Document analysis involved reviewing academic papers, policy documents, and educational materials. Direct observation includes visits to classrooms and institutions where AI is actively used. Interviews are recorded and transcribed for thorough analysis.

Data Analysis

Thematic analysis is employed to identify key themes and patterns within the data. This involved coding the data, grouping codes into categories, and interpreting the relationships between categories. The analysis aims to uncover the underlying factors influencing the impact of AI on education and to identify both the benefits and the challenges associated with its use.

THE WAY FORWARD

There is a need for a clarion call to consciousness of our youth and one way to mitigate the negative effects of AI on student academics is to ensure that AI is used as a tool, rather than a replacement for human interaction. Teachers and other education professionals should be trained on how to effectively use AI in the classroom, and should be aware of the potential negative effects. Additionally, students should be taught how to critically evaluate the information they receive from AI systems, and should be encouraged to use their own critical thinking skills rather than relying solely on the AI.

CONCLUSION

In conclusion, Artificial intelligence promises so many good on the landscape of education with several innovations it brings to the table. Nevertheless, there still exists threats and gray areas that needs to be meticulously addressed and planned for, if this innovation is going to overlap some of the red flags that it portrays.

The paper which suggests the following areas of ethical concern, privacy, surveillance, fairness, data security, accountability, transparency, bias, autonomy, inclusion, social inequality, job security as the major areas Ai raises concerns in education, suggests the need for monitoring and ethical education to address these adverse effects and consequences which may be unintended.

The need to address these concerns is critical as the technology is speedily integrated into learning environments and the misuse of private data calls for protection of students' privacy which could be done through massive data security measures.

RECOMMENDATIONS

1. **Provision of Comprehensive AI Education**: it is important to incorporate a thorough AI education into curriculum at all levels to ensure that Ai does not become a possible threat to educational institutions. Beyond the technological aspect of Ai, this should also cover the social and ethical sides, including methods of developing and maximizing Ai responsibly.
2. **Development of Critical Thinking:** A strong emphasis should be placed on helping Students at different levels acquire critical thinking and adaptability skills. People must develop abilities of creativity, sophisticated problem solving and emotional intelligence that AI is not able to simply mimic and even as it becomes more and more adept to automating repetitive jobs.
3. **Lifelong Learning Should be encouraged:** the culture of lifelong learning would ensure that people are able to consistently adjust to technology breakthroughs like AI. If people must remain relevant in labor market that is dynamic in nature, it means that assistance and tools for lifelong learning and upskilling should be encouraged.
4. **Collaborative Learning environments:** there should be a promotion of collaborative learning environments that prioritize interpersonal communication, and teamwork by adopting collaborative learning models. Human connections are still relevant for the development of social and emotional skills irrespective of the personalized learning experiences provided by Ai. This makes for a holistic growth.
5. **Intensive training of educators:** the educational sector should ensure a thorough and continual professional development of educators to enable them successfully maximize AI tools and technology. While preserving the human aspect in education, these tools can be harnessed to improve learning outcomes.
6. **Accessibility and Equity:** It is important to work toward closing the digital gap and giving every student equal access to AI-enabled learning resources and platforms. This is to avoid escalating already-existing gaps, making sure that everyone has equal access to Ai technologies and educational materials.
7. **Formation and Implementation of Ethical standards and Regulatory Frameworks:** to control the advancement of AI and its application in education, there is need to create and implement ethical standards and regulatory frameworks. This would reflect on how the student privacy would be protected, protecting against algorithmic bias, guaranteeing accountability and transparency in AI-driven decision-making in educational setting.

In summary, a variety of issues, including prejudice and inequity, privacy and data security, are raised by the ethical considerations surrounding AI in education. The creation of frameworks and rules to direct the moral use of AI in educational settings is crucial, as is the requirement for openness, accountability, and ethical instruction. To guarantee that the advantages of AI be realized without sacrificing ethical standards, addressing these challenges calls for cooperation from all parties.

REFERENCES

Abe, O., & Eurallyah, A. (2021). Regulating artificial intelligence through a human rights-based approach in Africa. African Journal of Legal Studies. https://doi.org/10.1163/17087384-12340084

Ade-Ibijola, A., & Okonkwo, C. (2023). Artificial intelligence in Africa: Emerging challenges. In D. O. Eke, K. Wakunuma, & S. Akintoye (Eds.), Responsible AI in Africa. Social and Cultural Studies of Robots and AI. *Palgrave Macmillan, Cham.* https://doi.org/10.1007/978-3-031-08215-3_5

Betz, S. (2023). 7 types of artificial intelligence: From chatbots to super robots, here's the types of AI to know and where the

tech's headed next. BuiltIn. *Retrieved from* https://builtin.com/artificial-intelligence

Biswal, A. (2023). 7 types of artificial intelligence that you should know in 2024.

Bowman, J. (2023). How artificial intelligence is used in education.

Bu, Q. (2022). Ethical risks in integrating artificial intelligence into education and potential countermeasures. Science Insights. https://doi.org/10.15354/si.22.re067

Buchanan, C. (2023). Prevalence of AI-generated content in education.

Carnegie Mellon University. (2023). Ethics & Artificial Intelligence Department, Dietrich College of Humanities and Social Sciences. *Carnegie Mellon University. Retrieved from* https://www.cmu.edu/dietrich/philosophy/research/areas/ethics-value-theory/ethics-ai.html

Chin, R. T. (2018). Education in the artificial intelligence era. QS WOWNEWS. *Retrieved from* https://qswownews.com/education-in-the-artificial-intelligence-era

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: The state of the field. International Journal of Education Technology Higher Education, 20*(22).* https://doi.org/10.1186/s41239-023-00392-8

Diplofoundation. (2021). Artificial intelligence in Africa: National strategies and initiatives. Retrieved from https://www.diplomacy.edu/ *on 6/1/2024.*

Dizikes, P. (2020). How many jobs do robots really replace? | MIT News | Massachusetts Institute of Technology. Retrieved from https://news.mit.edu/2020/how-many-jobs-robots-replace-0504

Drabwell, C. (2018). Ethics in artificial intelligence in education: Who cares? OU News. *Retrieved from* https://ounews.co/education-languages-health/ethics-in-artificial-intelligence-ineducation-who-cares/

Drigas, A. S., & Ioannidou, R. E. (2012). Artificial intelligence in special education: A decade review. International Journal of Engineering Education, 28*(6), 1366–1372.*

Eaton Business School. (2023). AI in education: The advantages and disadvantages.

Farrelly, T., & Baker, N. (2023). Generative artificial intelligence: Implications and considerations for higher education practice. Educ. Sci., 13*(1109).* https://doi.org/10.3390/edusci13/11109

Felix, C. V. (2020). The role of the teacher and AI in education. Emerald Publishing Limited.

Fomunyam, K. G. (2020). Theorizing machine learning as a learning pathway for higher education in Africa. International Journal of Education and Practice, 8*(2), 268–277.*

Frey, C. B., & Osborne, M. A. (2013). The future of employment: How susceptible are jobs to computerization? Publications | Oxford Martin School, *37–38.* https://doi.org/10.1016/j.techfore.2016.08.019

Garg, S., & Sharma, S. (2020). Impact of artificial intelligence in special need education to promote inclusive pedagogy. International Journal of Information and Education Technology, 10*(7).*

Hana Wald, S. (2023). Why teacher intelligence will always matter more than artificial intelligence.

Holmes, W. (2018). The ethics of artificial intelligence in education. University Business. *Retrieved from* https://universitybusiness.co.uk/Article/the-ethics-of-artificial-intelligence-in-education-who-care

Ibrahim, K. (2023). Using AI-based detectors to control AI-assisted plagiarism in ESL writing: "The Terminator versus the machines." Lang Test Asia, 13*(46).* https://doi.org/10.1186/s40468-023-00260-2

Itsquiz. (2016). AI in special education. Retrieved from https://medium.com/@itsquiz15/artificial-intelligence-in-special-education-dab27649b9b6 *on 7/1/2024.*

Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. Research Gate Business Horizons, 61*(4).* *https://doi.org/10.1016/j.bushur.2018.03.007*

Jowi, J. (2009). Internationalization of higher education in Africa: Developments, emerging trends, issues and policy implications. Higher

Education Policy, 22, *263–281*. https://doi.org/10.1057/HEP.2009.8

Kezana. (2023). Navigating the AI revolution: Implications for higher education.

Kiemde, S., & Kora, A. (2020). The challenges facing the development of AI in Africa. 2020 IEEE International Conference on Advent Trends in Multidisciplinary Research and Innovation (ICATMRI), 1–6. https://doi.org/10.1109/ICATMRI51801.2020.9398454

Kim, Y. D., Hong, J. W., Kang, W. S., Baek, S. S., Lee, H. S., & An, J. (2010). Design of robot assisted observation system for therapy and education of children with autism. In Proceedings of ICSR 2010.

Kolchenko, V. (2018). Can modern AI replace teachers? Not so fast! Artificial intelligence and adaptive learning: Personalized education in the AI age. HAPS Educator, 22*(3), 249–252. https://doi.org/10.21692/haps.2018.032*

Kothari, A., & Cruikshank, S. (2021). Artificial intelligence and journalism: An agenda for journalism research in Africa. African Journalism Studies, 43, *17–33.* https://doi.org/10.1080/23743670.2021.1999840

Oyewole, O. (2009). Internationalization and its implications for the quality of higher education in Africa. Higher Education Policy, 22, *319–329.* https://doi.org/10.1057/HEP.2009.10

Vernon, D. (2019). Robotics and artificial intelligence in Africa [Regional]. IEEE Robotics & Automation Magazine, 26, *131–135.* https://doi.org/10.1109/MRA.2019.2946107

Wang'ang'a, A. (2024). Consequences of artificial intelligence on teaching and learning in higher education in Kenya: Literature review. East African Journal of Education Studies, 7*(1), 202–215.* https://doi.org/10.37284/eajes.7.1.1718