# Artificial Intelligence in Education: A Threat or a Tool for Teaching

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**Abstract**
The exponential rise in the use of artificial intelligence in instructional delivery has challenged the academic landscape and provided implications for teaching and learning. Artificial intelligence (AI) becomes one of the emerging issues in higher education. This paper looked into the state university teachers' views and usage of artificial intelligence in the classroom. Using mixed-method research design, a researcher-made survey questionnaire solicited the teachers' experiences with the use and non-use of artificial intelligence in their teaching practice. A purposive random sampling technique was used in choosing the thirty university teachers as the research respondents. As such, in the quantitative data, the teachers' use of AI-powered educational technology in the classroom was identified. For the qualitative data, advantages and disadvantages of the use of AI based on the teachers' experiences were analyzed using Braun and Clarke's six-step data analysis. The study found that teachers use canva, chatGPT, educational games, educational chatbots, grammarly, quillbot, and YouTube videos in their classes. The advantages of using AI include personalized learning, having virtual assistants, and streamlining teaching and learning. However, AI also has its disadvantages, as it limits human interaction and empathy, which are essential in the teaching and learning process. The findings offer pedagogical implications and recommendations on how artificial intelligence can help teachers provide personalized learning experiences for their students. AI has been used as a tool in teaching but it can also imply some threats if not properly managed or regulated as it poses ethical challenges in academic work.

Keywords: Artificial Intelligence, Education, Instructional Delivery, Threat or Tool in Teaching

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## Introduction

In the age of information, expanding the amount of information taught in the classroom, implementing high-quality instruction, and enhancing both are the key components of teaching. When information technology is used in the classroom, it can significantly alter the amount of knowledge that students learn. According to research by credible experts, "sight and hearing are the main organs of student learning." Information technology will therefore become a more comprehensive and richer tool library for our study once it is used as a teaching method. In a traditional classroom, teaching quality can only be improved based on the students' needs and areas of difficulty. Numerous real-world examples demonstrate how information technology can be used to overcome the main obstacles and challenges in the teaching and learning process.

Artificial Intelligence (AI) has the potential to address some of the biggest challenges in education today, to innovate teaching and learning practices, and to accelerate progress towards quality education (UNESCO, 2023). However, rapid technological developments inevitably bring multiple risks and challenges, which have so far outpaced policy debates and regulatory frameworks. UNESCO is committed to supporting Member States to harness the potential of AI technologies for achieving the Education 2030 Agenda, while ensuring that its application in educational contexts is guided by the core principles of inclusion and equity.

Artificial Intelligence (AI) has the potential to significantly impact higher education in various ways. The potential of using artificial intelligence in education to enhance learning, assist teachers and fuel more effective individualized learning is exciting, but also a bit daunting. Thus, ethical considerations must be in place in order not to abuse and misuse this technological means of facilitating teaching and learning. In order to determine the effects of using Ai in education, this study explores the use of artificial intelligence among higher education teachers and identifying the pros and cons of integrating AI-generated technology into the tertiary classroom.

Higher education could be greatly impacted by artificial intelligence (AI) in a number of ways. It's fascinating, but also a little scary, to think about how artificial intelligence might improve education, help instructors, and support more successful tailored learning. Therefore, in order to avoid abusing and misusing this technical tool that makes teaching and learning easier, ethical concerns must be in place. This study explored the use of artificial intelligence among higher education teachers and identifies the benefits and drawbacks of incorporating AI-generated technology into tertiary classrooms in order to ascertain the effects of employing AI in education.

## Review of Related Literature

The development of artificial intelligence has had a profound impact on education and teaching practice. It is changing the teaching methods of teachers and the learning methods of students (Xue and Wang, 2022). The generative AI tool – ChatGPT remarkably perform complex tasks within the field of education has caused mixed feelings among educators, as this advancement in AI seems to revolutionize existing educational praxis. Benefits of ChatGPT include but are not limited to promotion of personalized and interactive learning, generating prompts for formative assessment activities that provide ongoing feedback to inform teaching and learning (Baidoo-Anu and Ansah, 2023). Their study offers recommendations on how ChatGPT could be leveraged to maximize teaching and learning. Policy makers, researchers, educators and

technology experts could work together and start conversations on how these evolving generative AI tools could be used safely and constructively to improve education and support students' learning.

The rapid advancement of artificial intelligence (AI) has significantly influenced education. Its application, including adaptive learning, teaching evaluation, and virtual classrooms, has positively impacted teaching and learning, enhancing both educators' teaching capabilities and students' learning outcomes. However, challenges for AI in education are also anticipated in the future. Addressing these challenges will contribute to leveraging AI for education reform (J Huang, S Saleh, Y Liu, 2021). The integration of artificial intelligence (AI) in education has introduced new prospects and challenges. This position paper outlines three paradigms of AI in education: AI-directed, AI-supported, and AI-empowered, each involving distinct roles for AI and learners. These paradigms reflect AI's evolution from directing cognitive learning to empowering learners as leaders. The trend in AIEd emphasizes leaner agency, personalization, and iterative development of learner-centered, data-driven, personalized learning (Ouyang & Jiao, 2021).

The educational effects of emerging technologies on how educational institutions teach and how students learn were investigated in the conceptual review that looks into the advent of using artificial intelligence in teaching and learning in education. The goal of this study is to forecast how artificial intelligence will affect education in the future. It is thought that using artificial intelligence techniques well can raise the standard of instruction and learning. Nonetheless, the difficulties associated with incorporating AI in educational settings are discussed. Additionally, the difficulties that students encounter in using artificial intelligence with regard to administration, instruction, learning, and student support (Fahimirad & Kotamjani, 2018).

In a quantitative study, teachers' opinions about GAI and its possible application in the classroom were investigated (Kaplan-Rakowski, 2023). In a validated survey, a representative sample of 147 teachers expressed their opinions about GAI technology, including its potential, integration, use, and drawbacks. Generally speaking, regardless of their method of instruction, the teachers have positive opinions on GAI. The study's conclusions imply that instructors' viewpoints got more optimistic the more GAI they employed. Teachers said GAI may be a useful tool for pupils and improve their professional growth.

Another study evaluated AI's impact on education, focusing on administration, instruction, and learning (Gwo-Jen Hwang, et al., 2020). The findings indicated extensive AI adoption in education, evolving from computer-based technologies to web-based intelligent education systems and humanoid robots. AI has enabled efficient administrative tasks like grading, improved teaching quality, and personalized learning content, enhancing the overall learning experience (Chen et al., 2020). A study conducted a comprehensive review of influential Artificial Intelligence in Education (AEId) studies by analyzing 45 articles. Findings revealed a growing interest and impact of AIEd research, a lack of deep learning technologies in educational contexts, and a need for deeper engagement with educational theories. Recommendations included exploring AI in physical classroom settings, employing advanced deep learning algorithms, utilizing NLP for personalized education, integrating biomedical detection and imaging technologies, and closely combining AI technologies with educational theories (Chen et al., 2020). In another study, (AIED) applications were focused which involve using AI technologies in educational settings to enhance teaching, learning, and decision-making processes. It addresses the interdisciplinary nature od AIED, proposing a framework

to guide researchers with diverse backgrounds in conducting AIED studies. The paper also outlines 10 potential research topics in AIED and describes the preferred article types for submissions.

This study delves into the impact of AI systems on learner-instructor interaction in online learning. Through Speed Dating with storyboards, the voices of 12 students and 11 instructors were analyzed, revealing that while AI systems can enhance personalized interactions at scale, concerns exist regarding social boundaries, responsibility, agency and surveillance. The study emphasizes the need for AI systems to prioritize explainability, human-in-the-loop process, and careful data handling. The findings also contribute to the design of AI system storyboards. And offer practical implications for maximizing positive impacts while minimizing negative ones (K Seo, J Tang, I Roll, S Fels, & D Yoon, 2021).

The U.S. Department of Education Office of Education Technology's new policy report, Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations, addresses the clear need for sharing knowledge, engaging educators, and refining technology plans and policies for artificial intelligence (AI) use in education. The report describes AI as a rapidly-advancing set of technologies for recognizing patterns in data and automating actions, and guides educators in understanding what these emerging technologies can do to advance educational goals – while evaluating and limiting key risks (U.S. Department of Education – Office of Educational Technology, 2023).

This article provides a comprehensive review of empirical studies on artificial intelligence in education (AIEd) from 1993 to 2020. A total of 40 empirical studies were thoroughly reviewed, employing bibliometrics, content analysis, and categorical meta-trends analysis. The review highlights AIEd technologies and applications, their prove and potential benefits for education, and bridges the gap between AI technological innovations and educational applications. The article offers practical examples and insights for both technological experts and educators, along with rich discussions on practical implications and future AIEd necessitates addressing AI ethics and privacy concerns, emphasizing interdisciplinary and transdisciplinary collaborations for large-scale, longitudinal research and development efforts (Zhang & Aslan, 2021).

This paper examines the use of AI in education across the globe with an emphasis on its possible effects in developing nations. Examples of AI's application in education are provided, and the pressing need to close the digital and social divide is discussed. In the first section, cases from different nations are examined to show how AI can enhance learning outcomes. In the second section, learners are better prepared for a future driven by AI through a new curriculum and the development of AI capabilities through training and education. The document highlights the need for comprehensive public policy, inclusion and equity, teacher preparation, high-quality data systems, meaningful research, ethics, and transparency in data use, as well as the challenges and policy implications associated with AI in education. It ends by urging more conversations about the applications, opportunities, and dangers (Pedro et al., 2019).

Another article explores the applications of artificial intelligence (AI) in education and the associated ethical challenges. It defines AI, introduces its educational applications and benefits, outlines ethical dilemmas, and provides recommended instructional resources from MIT Media Lab and Code.org. The aim is to help practitioners leverage the benefits of AI in K-12

classrooms while addressing ethical challenges and advancing students' understanding of AI and ethics (Akgun & Greenhow, 2022).

This paper speculates on future of research in Artificial Intelligence and Education (AIED) based on three uses of models of educational processes: as scientific tools, as components of educational artifacts, and as bases for the design of educational artifacts. It emphasizes the need for an evolution of theories and models to study collaborative learning situations, integration of computer-based learning systems into schools, and the utilization of models as bases for design of educational technologies. The conclusion highlights the importance of AIED research being concerned with all three roles of models to varying extents in each case (Michael Baker 2000).

The paper provides an in-depth analysis of global research developments in applying artificial intelligence techniques to the education sector, highlighting AI's role in teaching and student evaluation. It emphasizes that AI is fundamental in NLP – enabled intelligent tutors' system, fostering skills such as self-reflection, addressing complex questions, resolving conflicting statements, generating creative queries, and decision-making abilities (G Malik, DK Tayal, & S Vij, 2019).

In a study that examined the integration of AI technologies into key educational domains of learning, teaching, assessment, and administration, the results identify 13 roles of AI technologies in education domains, 7 learning outcomes of AIED, and 10 major challenges, shedding light on the current focus of AIEd research and offering suggestion for future directions (Chiu et al., 2023). Likewise, another paper delves into ethical considerations surrounding Artificial Intelligence in Education (AIED) by analyzing international organizations' policies and guidelines. It explores the potential ethical issues arising from the adoption of AIED and aims to establish a set of ethical principles through thematic analysis. The proposed ethical principles are intended to guide educational stakeholders in developing and deploying ethical and trustworthy AIED, offering implications for students, teachers, technology developers, policymakers, and institutional decision-makers. The paper serves as a framework to inform ethical AIED and encourage future impact studies in the field (Nguyen et. al., 2022).

This paper addresses the emerging concerns about Fairness, accountability, Transparency, and Ethics (FATE) in AI-supported educational interventions. It argues that explainable AI (XAI) is crucial in education but requires a distinctive approach. The paper introduces the XIA-ED framework, which encompasses six key aspects related to explainability in educational AI tools. It presents four case studies illustrating the application of XAI-ED in different AI tools and concludes by discussing opportunities, challenges, and future research needs for the effective incorporation of XAI in education (Hassan Khosravi, et.al., 2022).

In a similar study that examined the potential scenarios and implications of the arrival of AI in education, it aimed to shed light on the future of schools. Conducted as a phenomenological, qualitative research, the study gathers opinions from participants across different sectors. The results indicate that the introduction of AI in education will bring both new benefits and drawbacks for schools and teachers. While participants generally express positive perceptions towards AI, some concerns, particularly from teachers and academicians, are highlighted regarding the future of teaching. Additionally, the study reveals that lawyers and jurists focus on the legal aspects of AI in education, foreseeing potential future problems, while engineers

view AI as a tool to enhance the quality and benefit of education for all (Gocen & Aydemir, 2020).

Over the past decade, a collaborative effort between educators and computer scientists at the University of Illinois has focused on envisioning the future of education within the realm of "artificial intelligence". Dissatisfied with initial digital learning environments, the agenda has been to design alternatives and study their implementation. The central inquiry revolves around the nature of machine intelligence, its constraints, and its potential in education. The paper offers conceptual insights and outlines results from experimental implementations. A key finding suggests that while artificial intelligence will not replace the role of a teacher due to fundamental differences between machine and human intelligence, it has the potential to transform education in ways that paradoxically make it more human, not less (Cope et al, 2020).

## Methodology

A mixed-method research design involving purposive random sampling was employed as an effective approach in this study in the use of various artificial intelligence teaching and learning practices among State University teachers. This design combines both qualitative and quantitative methods to provide a comprehensive understanding of the topic. By employing a mixed-method research design with purposive random sampling, this study aims to offer a nuanced understanding of the use of artificial intelligence teaching and learning practices among State University teachers. Purposive random sampling was used to select participants based on specific criteria. For the Inclusion Criteria, State University teachers with a minimum of 3 years of teaching experience, actively involved in incorporating artificial intelligence teaching and learning practices. For the Exclusion Criteria, Teachers with less than 3 years of experience, those not actively using artificial intelligence in teaching.

Purposive sampling was employed to select a subset of participants from the quantitative phase for in-depth interviews. For the inclusion criteria, participants demonstrate innovative and effective use of artificial intelligence in teaching. For the quantitative data collection, a structured survey questionnaire was made to gather quantitative data on the frequency, effectiveness, and challenges faced by State University teachers in using artificial intelligence teaching practices. A semi-structured interview protocol was developed to explore in-depth experiences, challenges, and success stories related to the integration of artificial intelligence in teaching. Qualitative variables may include emerging themes, personal experiences, and contextual factors influencing the use of AI. Thematic analysis was used for the qualitative analysis to identify patterns, themes, and insights from qualitative interview data. The Integration of Results compared and contrasted findings from the quantitative and qualitative phases to provide a more comprehensive understanding of the research questions.

## Results and Discussion

Artificial Intelligence (AI) practices among university teachers can significantly impact the educational landscape. One of the main advantages of using AI in the classroom is that it can give students a more customized educational experience. Furthermore, it provides a wealth of opportunities for students to learn and explore more. But it also threatens moral concerns like data privacy and confidentiality. Below are the themes that emerged from the teachers' responses in incorporating AI in their teaching practices.

AI as a Tool in Teaching provides:

1. Personalized Learning: AI is capable of analyzing data on individual student performance to create learning strategies and materials that are specific to the strengths and weaknesses of each student. This individualized approach can improve comprehension and student engagement.
2. Efficiency and Automation: Teachers can concentrate more on developing creative lesson plans, engaging with students, and conducting research by using AI to automate administrative tasks like scheduling and assignment grading.
3. Data-Driven Decision Making: AI is able to find patterns and trends in student performance by analyzing huge datasets. Teachers can make well-informed decisions about their curriculum design, student interventions, and teaching strategies thanks to this data-driven approach.
4. Chatbots and virtual assistants powered by AI: These tools can help students immediately by responding to frequently asked questions, advising on assignments, and starting conversations. This contributes to the development of a more responsive and interactive learning environment.
5. Enhanced Research: By automating data analysis, literature reviews, and even insight generation, AI tools can help teachers conduct research. This has the potential to quicken the research process and produce more creative discoveries.

AI can be a Threat in Teaching when there is:

1. Absence of Human Touch: AI is incapable of providing the same emotional intelligence and empathy that human educators can. An all-encompassing education depends on the human interaction between teachers and students, which AI might find difficult to replicate.
2. Concerns about privacy: Using AI in education necessitates gathering and examining a lot of student data. One of the biggest challenges is ensuring the security and privacy of this data. Inappropriate handling of student data may result in security lapses and unapproved entry.
3. Algorithm Bias: Artificial intelligence algorithms may inherit biases from the training data. Biased data that is used to train AI systems can lead to discriminatory outcomes that impact marginalized groups and reinforce already-existing inequalities.
4. Concern about Job Displacement: There are worries that the use of AI in education could result in the loss of jobs in specific roles, particularly those involving administration and repetitive work. Regarding the effect on employment in the education sector, this presents moral and financial questions.
5. Dependency on Technology: If teachers and students rely too much on artificial intelligence (AI), they may not be able to develop critical thinking and problem-solving skills because they will grow reliant on automated solutions.

## Conclusion

The study identified the use and non-use of AI tools among higher education teachers and concluded that even though using AI in the classroom has many benefits for university instructors in terms of efficiency, personalization, and data-driven decision-making, a balanced and moral integration of AI in education requires navigating issues like job displacement, biases, and privacy concerns. It's critical to see artificial intelligence (AI) as an additional tool to human teachers, enhancing their distinct contributions to the classroom rather than taking their place. The use of Artificial Intelligence among Higher Education teachers have been a tool rather than a threat as AI helped improve students' learning outcomes through personalized

learning. It also provided teachers with efficient instructional delivery as it streamlined the teaching and learning process. AI has been used as a tool in teaching but it can also imply some threats if not properly managed or regulated as it poses ethical challenges in academic work. In conclusion, the integration of AI in higher education presents both opportunities and challenges. Successful implementation requires careful consideration of ethical, privacy, and equity issues, along with effective strategies to address potential resistance and ensure that AI enhances rather than hinders the educational experience.

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