International Scientific Journal of Engineering and Management ISSN: 2583-6129
Volume: 03 Issue: 06 | June – 2024 DOI: 10.55041/ISJEM02014
An International Scholarly || Multidisciplinary || Open Access || Indexing in all major Database & Metadata

Enhancing the student Experience: The impact of Artificial Intelligence in Higher Education

Aanchal Kushwaha,
aanchalkush80@gmail.com,
Pramod Singh
pramodsinghbvv@gmail.com
Akhilesh A. Waoo
akhileshwaoo@gmail.com
AKS University, Satna (M.P.)

Abstract

The purpose of this study is to evaluate the impact of artificial intelligence (AI) on education. Based on the assessment of AI that emerged from the previous analysis, it is presented; that studies focused on the role and impact of AI on, teaching and learning. Qualitative research methods using literature review as a case study design are used and facilitate the learning objective. Through a comprehensive review of current literature, this paper highlights the potential benefits and challenges of AI implementation in higher education and offers insights into future directions for maximizing its potential. Examining the educational impact of technology is increasingly evident in how students learn and how institutions teach and change. In a world where artificial intelligence is part of the fabric of our universities, the development of modern technology and the increasing pace of the use of new technologies in higher education are trying to determine the future of higher education.

.

Keywords - Artificial intelligence, Higher education, Impact of Teaching and Learning, Impact of Assessment and Classification.

1. Introduction

The use of artificial intelligence (AI) in higher education (HE) has increased rapidly over the past five years with the proliferation and availability of new AI tools [2]. Scholars report on the potential of artificial intelligence for teachers and students in higher education. These benefits include using artificial intelligence in higher education to adapt teaching to the needs of different types of students, providing rapid feedback [12], and improving assessment and predicting success [13]. This research

ISSN: 2583-6129
DOI: 10.55041/ISJEM02014

helps inform educators about how Artificial Intelligence in Education (AIEd) can be used in higher education [14]. However, scholars have identified a gap in understanding the overall benefits of using AI in higher education [15]. The purpose of this study is therefore to review existing research from 2016 to 2022 to provide an up-to-date assessment of how AI is being used in the higher education sector [1]. AI researchers are continually advancing methods, algorithms, tools, and technologies to streamline education. Extensive literature reviews underscore the transformative impact of artificial intelligence (AI) on education, particularly in the medical field, where it offers innovative approaches for instructing, learning, and evaluating medical students, residents, and healthcare professionals. Notably, AI-driven adaptive testing stands out for its ability to dynamically assess a student's knowledge and skills, tailoring question difficulty based on their responses. This real-time adjustment yields assessments that are both more accurate and efficient compared to traditional methods. Furthermore, AI facilitates automated grading of assignments, feedback provision, and plagiarism detection, liberating instructors to concentrate on higher-order tasks like mentoring and guiding students [4]. Artificial intelligence, as defined by Russell and Norwig, involves machines that mimic cognitive functions normally associated with human intelligence, such as learning and problem-solving [3].

2. Literature Review

A literature review on the impact of artificial intelligence (AI) on higher education. This demonstrates the potential benefits of integrating artificial intelligence to improve the quality of education and introduce new teaching methods.

2.1 Artificial Intelligence: Artificial intelligence (AI) focuses on developing systems that mimic human intelligence and perform tasks such as learning and problem-solving. It includes specialized AI skills, general knowledge, and super-intelligent AI [5]. Artificial intelligence has evolved from machine learning to deep learning using artificial intelligence. Machines can learn from experience, adapt to new inputs, and perform special tasks without human intervention, thanks to artificial intelligence integrated into machines. For example, face recognition, speech recognition, winning a chess game, and similar tasks are possible [6].

2.2 AI impact on the learning and teaching process: The analyzed articles show that artificial intelligence systems play an important role in teaching and learning by helping to create and implement learning materials [9]. Artificial intelligence people believe in promoting education and innovation

ISSN: 2583-6129
DOI: 10.55041/ISJEM02014

teaching and learning methods and more. They researched the role of the intellectual mind in vision students at risk of preventive placement measures taken to improve learning processes standing [8].

2.3 AI impacts on assessment, future careers, and ethics in higher education: As online learning becomes more and more popular, I need artificial intelligence (AI), deep learning, and teaching assistants[10]. However, searches in the United States yielded limited results. Due to misunderstandings, results students are watching AI assistants [7].

2.4 AI Application in Higher Education

Artificial intelligence has been implemented in almost every industry. Education is no different when it comes to summarizing some of the latest AI projects in the world.

Table – 1 AI Application

AI Application	Function
Virtual Teaching Assistant	Able to answer frequently asked questions without the help of humans.
Personalized Learning	Apply data analytics to make the learning program adaptable based on various requirements.
Intelligent Tutoring System	Apply cognitive science and AI technologies to provide personalized tutoring in real time.
Smart Education	Use AI technology to make education more effective, efficient, flexible, and comfortable.
Virtual Lab	Provide students with an online platform with interactive simulations to perform experiments, collect data, etc.
Student Learning Assessment Tool	Apply AI technology to develop a student's specific learning subject by using the concept maps.

3. Method

ISSN: 2583-6129
DOI: 10.55041/ISJEM02014

This research paper looks at things as a philosophical issue, based on what it found in the areas of perception, emotion, and experience. To collect qualitative data, The survey instrument consisted of multiple-choice questions, Likert-scale items, and open-ended questions to capture a range of perspectives and experiences related to AI adoption. The questionnaire was designed to assess various aspects of AI utilization, including its application in teaching and learning, research, administrative processes, as well as stakeholder perceptions and experiences. A Google form was administered to selected undergraduate and graduate students via WhatsApp, Instagram, group, and email.

3.1 Data collection: The primary data collection for this study was an anonymous survey conducted using a Google Form tool. The research focused on university students.

3.3 Data Analysis: Data analytics relied heavily on Google survey forms due to their robust reporting capabilities. In higher education, data analytics, particularly in the field of AI, significantly improves learning outcomes and teaching effectiveness by leveraging multiple data points on student activity, engagement, and tool usage.

4. Result and Discussion

The survey findings illuminate a prevailing optimism regarding the integration of AI technology in education, underpinned by a recognition of its potential to enrich the learning journey.

- **Artificial intelligence can benefit students**: Students recognize various benefits of AI. 44.4% endorse personalized learning, tailoring education to individual needs. 17.2% value tutoring support, while 19.2% appreciate AI's role in both content generation and automated learning. These percentages reflect students' confidence in AI's multifaceted contributions to education.

Table – 2 Benefits for students

Option	Percentage	No. of Responses
Personalized learning	44.4%	44
Tutoring support	17.2%	17
Education content generation	19.2%	19
Automated learning	19.2%	19

- **Comfortable with AI technology assisting teachers in grading assignments and exams:** Comfort with AI assisting teachers in grading assignments and exams varies. While 10% trust AI's accuracy, 25% prefer human grading for nuanced feedback. For 26%, acceptance hinges on AI's reliability and transparency. A majority, 39%, consider comfort contingent on specific contexts and subjects, reflecting nuanced attitudes toward AI's role in assessment.

Table – 3 AI Assisting the teacher in grading

Option	Percentage	No. of Responses
Yes, I trust AI to provide accurate and unbiased assessments.	10%	10
No, I prefer human grading for more nuanced feedback and understanding	25%	25
Maybe, depending on the reliability and transparency of the AI grading system.	26%	26
It depends on the specific context and the subject matter being graded.	39%	39

- **Artificial intelligence making decisions about your education:** Respondents' comfort with AI making decisions about their education varies. While 8.1% trust AI's data-driven decisions, 15.2% prefer human involvement. For 30.3%, acceptance depends on AI's reliability and transparency. The majority, 46.5%, deem comfort contingent on specific educational contexts and complexities, highlighting nuanced perspectives on AI's role in decision-making.

Table – 4 Making a decision

Option	Percentage	No. of Responses
Yes, I trust AI to make an informed decision based on data and algorithms	8.1%	8
No, I prefer human involvement and oversight in educational decision-making	15.2%	15
Maybe, depending on the reliability and transparency of the AI decision-making process.	30.3%	30
It depends on the specific context and the complexity of the educational decisions.	46.5%	46

- **Comfortable with an AI-powered virtual tutor assistant:** The acceptance of an AI-powered virtual tutor assistant varies among respondents. While 10.1% trust AI's support, 15.2% prefer human interaction. For 24.2%, acceptance depends on AI's reliability. The majority, 50.5%, consider comfort contingent on specific contexts and prior AI experiences, reflecting nuanced attitudes toward technology in education.

Table – 5 AI-powered virtual tutor assistant

Option	Percentage	No. of Responses
Yes, because I believe AI can provide valuable support and guidance in learning	10.1%	10
No, because I prefer human interaction and guidance in my learning process	15.2%	15
Maybe, depending on the effectiveness and reliability of the AI tutor assistant	24.2%	24
It depends on the specific context and my prior experience with AI technology	50.5%	50

- **AI has the potential to improve education**: The survey of 98 respondents shows AI's potential in education: 28.6% favor personalized learning, 11.2% appreciate instant feedback, and 24.5% see benefits in automating administrative tasks. A majority, 35.7%, believe AI's combined capabilities can holistically enhance education, making it more efficient and tailored to individual needs.

Table – 6 Improve education

Option	Percentage	No. of Responses
Personalizing learning Experience	28.6%	28
providing instant feedback	11.2%	11
Automating administrative tasks for teacher	24.5%	24
All of the above	35.7%	35

5. Limitation

ISSN: 2583-6129
DOI: 10.55041/ISJEM02014

The integration of artificial intelligence (AI) in higher education holds significant promise for enhancing personalized learning, improving accessibility, and streamlining administrative tasks. However, its impact on students is not without limitations. The digital divide exacerbates educational inequalities as not all students have access to the necessary technology. AI's reliance on algorithms can lead to a standardized educational experience, potentially stifling creativity and perpetuating biases. Data privacy concerns and the challenge of ensuring informed consent complicate the widespread adoption of AI. Furthermore, the ethical implications of job displacement and the over-reliance on technology threaten essential skills development. Pedagogical limitations arise as AI cannot fully replicate the empathetic and nuanced interactions provided by human educators, and its scope in tutoring complex subjects is limited.

6. Conclusion and Future work

The objective of this study was to assess the impact of AI on education. A qualitative research approach was employed, utilizing a literature review as both the research design and method. As a result, the future of higher education depends on human intelligence and artificial intelligence. By effectively adopting AI and leveraging its capabilities, institutions can empower students, transform educational practices, and develop a culture of lifelong learning that suits the demands of the digital age. As we navigate this evolving landscape, continued research, experimentation, and debate will be important to ensure that AI remains a force for positive change in education, promoting innovation, equity, and excellence.

Future research on AI in education should focus on several key areas to maximize its potential benefits while addressing ethical and practical challenges. First, the development of advanced AI-driven pedagogical tools is essential. These tools should adapt to diverse learning styles, provide real-time feedback, and adjust instructional strategies dynamically to enhance personalization and engagement. Ethical considerations and AI governance must also be prioritized, with frameworks ensuring transparency, fairness, and data privacy. Longitudinal studies are needed to understand the long-term effects of AI on educational outcomes, tracking its impact on student achievement and teacher effectiveness over time. Additionally, integrating AI seamlessly with existing educational technologies can create a cohesive learning environment, enhancing accessibility and functionality. Special education can greatly benefit from AI applications tailored to the needs of students with disabilities, such as speech recognition tools and adaptive learning software.

ISSN: 2583-6129
DOI: 10.55041/ISJEM02014

Reference

1. Crompton, H.; Burke, D. (2023). Artificial intelligence in higher education: the state of the field. In: International Journal of Education Technology in higher education.
2. Chu, H., Tu, Y.; Yang, K. (2022). Roles and research trends of artificial intelligence in higher education: A systematic review of the top 50 most-cited articles. In: Australasian Journal of Educational Technology; pp. 22–42. https://doi.org/10.14742/ajet.7526
3. Priyadarshi, Neeraj., Padmanaban, Sanjeevikumar., Hiran, K. Kant., Holm-Nielson, J.Bo., & Bansal, R.C. (2021). Artificial Intelligence and Internet of Things for Renewable Energy Systems. Walter de Gruyter GmbH & Co KG.
4. Nipun, MS.; Telukder, Md. SH.; Butt, U.; Sulaiman, RJ.(2023). Influence of Artificial Intelligence in Higher Education; Impact, Risk and Counter Measure. In book: Blockchain and Self-Sovereign Identity in Higher Education: pp. (143-166), http://dx.doi.org/10.1007/978-3-031-33627-0_7
5. Compot, H.; Burke, D.(2023). Artificial Intelligence in higher education: the state of the field. In: International Journal of Education Technology in Higher Education; volume 20.
6. Kuleto, V.; Ellis, M.; Dumangiu, M.; Rankovic, M.; (2021) Exploring opportunities and challenges of Artificial Intelligence and Machine learning in higher education institutions. In: sustainability. https://doi.org/10.3390/su131810424
7. Kim, W. H.; Kim, J. H. (2020). Individualised AI Tutor Based on Developmental Learning Networks. In: IEEE Access, 8, 27927–27937.
8. Taneri, G. (2020). Research & Occasional Paper Series: CSHE. 6 2020 ARTIFICIAL INTELLIGENCE & HIGHER EDUCATION: Towards Customised Teaching and Learning, and Skills for an AI World of the Work University of California - Berkeley How the AI World is Evolving.
9. Felix, C. V. (2020). International perspectives on the role of technology in humanizing higher education. In: Emerald Publishing Limited.
10. Wang, W.; Siau, K. (2017). Impact of Artificial Intelligence, Robotics, Machine Learning, and Automation on the Medical Field, pp. 4–6.

ISSN: 2583-6129
DOI: 10.55041/ISJEM02014

11. Crompton, H.; Burke, D. (2023). Artificial intelligence in higher education: the state of the field. In: International Journal of Education Technology in higher education.
12. Verdú, E., Regueras, L. M., Gal, E., et al. (2017). Integration of an intelligent tutoring system in a course in computer network design. Educational Technology Research and Development, 65, 653–677. https://doi.org/10.1007/s11423-016-9503-0
13. Dever, D. A., Azevedo, R., Cloude, E. B., & Wiedbusch, M. (2020). The impact of autonomy and types of informational text presentations in game-based environments on learning: Converging multi-channel processes data and learning outcomes. International Journal of Artificial Intelligence in Education, 30(4), 581–615. https://doi.org/10.1007/s40593-020-00215-1
14. Çağataylı, M., & Çelebi, E. (2022). Estimating academic success in higher education using big five personality traits, a machine learning approach. Arab Journal Scientific Engineering, 47, 1289–1298. https://doi.org/10.1007/s13369-021-05873-4
15. Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—Where are the educators? International Journal of Educational Technology in Higher Education, 16(1), 1–27. https://doi.org/10.1186/s41239-019-0171-0

