Assessing the Extent of Utilization and Availability of Artificial Intelligence in Teaching and Assessment of Students by Lecturers in University

Margaret Ose Asika[1]*, I. James Asika[2]
[1]Department of Curriculum and Instruction, Faculty of Education, Ambrose Alli University, Edo, Nigeria
[2]Department of Modern Languages, Faculty of Arts, Ambrose Alli University, Edo, Nigeria
*Corresponding author: ose@aau.edu.ng

Received: 23 May 2024; Accepted: 04 December 2024; Published: 09 December 2024

To cite this article (APA): Asika, M. O., & Asika, I. J. (2024). Assessing the Extent of Utilization and Availability of Artificial Intelligence in Teaching and Assessment of Students by Lecturers in University . *Asian Journal of Assessment in Teaching and Learning, 14*(2), 87–95. https://doi.org/10.37134/ajatel.vol14.2.7.2024

To link to this article: https://doi.org/10.37134/ajatel.vol14.2.7.2024

Abstract

This study assessed the extent of utilization and availability of Artificial Intelligence (AI) in teaching and assessment at Ambrose Alli University. As educational paradigms shift towards digitalization. This study employed survey research design. A snowball sampling method was used to select 103 lecturers who provide the relevant data or information regarding the extent of availability and utilization of AI in teaching and assessment of students. The instrument for data collection was a self-developed semi structured questionnaire, entitled Availability and Utilization of AI in Teaching and Assessment of Students by Lecturers in Ambrose Alli University (AUAITASLAAU). The Statistical Package for Social Sciences version 23.0 was used to analyze the data collected. The study found that a positive reception of AI-enhanced teaching and assessment tools among both Lecturers and Students, highlighting increased engagement, personalized learning experiences, and efficient assessment mechanisms. However, concerns related to data privacy, accessibility, and technological proficiency remain significant barriers to widespread AI adoption. The author logically concluded that the adoption of AI for teaching and assessment of students by lecturers within the university setting will measurably improve the teaching and unbiased assessment of students. The author recommended, among others, that before implementing AI, the management of Ambrose Alli University should endeavour to improve on the quality of electricity power supply.

Keywords: *Artificial Intelligence, Assessment of Students, Availability and Utilization, Lecturers, Teaching of Students*

INTRODUCTION

In view of modern-day job demands and the quest for academic excellence, artificial intelligence (AI) represents a new level of technological and scientific development that will have a huge impact on the way the world had hitherto function. (Gasmi & Prlja, 2021). AI can be considered as one of the main paradigms of the contemporary society. It is fast becoming a component of our daily lives and, has change the way people live, study and think (Jeffrey, 2020).

The term "AI" was first introduced by John McCarthy in 1955, when he defined it as the science and engineering of making intelligent machines (Manning, 2020). Since its first conceptualization in the year 1955, other definitions have emerged. A common definition of AI is one in which it is associated with a computer system capable of performing tasks usually related to intelligent beings (European Commission Joint Research Centre, 2018). AI has been viewed simply as making machines capable of simulating intelligence by giving computer human-like capabilities, such as understanding, reasoning, and problem solving (Buabbas et al., 2023).

There are different types of AI technology. Following the European Commission Joint Research Centre (2018), AI can be explained through three alternative approaches based on data, logic, and knowledge. The first approach depends mainly on data and its availability, and in biological terminology, these systems could be called "datavores". The other two approaches are set on a cognitive level, whereas logic-based AI deals with problem-solving processes, and knowledge-based AI implements simple models of inference, claiming that knowledge is more required than logic for effective decision making. Additionally, AI can be classified as narrow, general, and Artificial Superintelligence (Marrone, Taddeo & Hill, 2022). The most common is narrow AI, which implied machine learning to accomplish a certain goal. Generally, AI is considered to be a match for humans, whereas artificial superintelligence surpasses them.

Education is one of the many sectors that has come under the influence of artificial intelligence. The significance of higher education belonging to that sector is widely recognized since universities are the main sources of highly qualified workforce and knowledge and are being instrumental to the development of societies and economies based on knowledge development (Dinu, 2011). To understand and improve the availability and utilization of AI technology for educational purposes, AI in Education (AIEd) has been drawing great attention in the scientific community for a couple of decades (Cheng et al., 2023). The AI-driven pedagogy has become the research subjects were the different aspects of AI in education, including the perspectives of teachers (Sangapu, 2018) and students (Kuleto et al., 2021; Cheng et al., 2023; Idroes et al., 2023) are discussed.

As AI takes the centre stage in teaching and learning, lecturers and students are apprehensive of what the outcome would be if teachers in higher education resort to students' assessment using AI and management of schools are exploring the potentials of AI as tool for reducing workload of teachers. In the wake of this, Celuch and Robinson (2016) opined that education represents a unique experiential service in which students involvement occurs in the academic domain and also in the total educational experience as well. Therefore, the process of creating value in the delivery of educational service requires a better understanding of the students and their teachers since AI technology has the potential to influence their experience (Barrett et al., 2019). With a better understanding of both the teacher and the learners view, the utilization and implementation of AI in teaching and assessment of students could be well tailored through the users for acceptance by all stakeholders. The aim of this study is to assess the extent of utilization of AI in teaching and assessment of students by lecturers in Ambrose Alli University Ekpoma. Based on this broad objective, the study seeks to provide answers to following research questions: (1) What is the extent of utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University? (2) What are the challenges hindering the utilization of AI for teaching and assessment of students by Lecturers in Ambrose Alli University Ekpoma?

ARTIFICIAL INTELLIGENCE IN TEACHING AND ASSESSMENT OF STUDENTS

Artificial intelligence is a sharp shift in paradigm revolutionizing the academic sector. The study of Adams and Jervis (2021) on the role of AI-driven personalized learning systems in higher education showed that AI algorithms can analyze students' learning patterns and preferences to tailor educational content, resulting in improved engagement and comprehension. Similarly, Johnson and Smith (2022) highlighted the potential of AI-powered chatbots in providing instant feedback and support to students, enhancing their learning experience outside traditional classroom settings. Furthermore, Chen and Liu (2023) emphasized the use of AI in creating interactive simulations and virtual laboratories, enabling students to engage in hands-on learning experiences remotely. These AI-driven platforms have been shown to increase students' understanding of complex concepts and foster critical thinking skills.

Artificial Intelligence technology have also changed the assessment methods used in university

education. According to a study by Williams and Brown (2022), AI-based grading systems can provide consistent and timely feedback to students, reduce the workload of lecturers and promote self-directed learning. Kim and Lee (2023) further assessed the use of AI-driven proctoring tools in online examinations. They added that AI proctoring systems can effectively monitor students' activities during examinations and test, ensuring academic integrity, while allowing for flexible and accessible assessment options.

Today, there are varieties of AI platforms which have been proven to be efficient in the teaching and assessment of students. Woolf (2019) emphasized the effectiveness of Interactive Teaching System (ITS) in improving student learning outcomes by offering personalized support and identifying areas where students need additional help. Merchant et al. (2021) explored the benefits of Virtual Reality-based learning environments in fostering experiential learning and improving students' comprehension of complex concepts. As such, AI platforms can automate the grading process and provide instant feedback to students, saving educators' time and offering timely insights to students. Shah and Kwok, (2022) conducted a study on AI-powered grading systems, demonstrating their accuracy and efficiency in evaluating students' assignments and providing constructive and accurate feedback. Furthermore, AI platforms utilize predictive analytics to forecast students' performance and identify at-risk students who may need additional support. Baker and Siemens (2020) discussed the potentials of predictive analytics in higher education, highlighting its role in early intervention and personalized learning interventions to improve student retention and success rates. In the same vein, Jones and Clark (2023) investigated the effectiveness of AI-based proctoring solutions in maintaining academic integrity during remote assessments, emphasizing their role and impact in creating fair and secure testing environments.

Lecturers and teachers can easily detect originality of work using AI plagiarism detectors. AI-powered plagiarism detection tools scan students' submissions and compare them against a vast database of academic papers and online sources to identify potential instances of plagiarism (Martin & Lee, 2022). These tools uphold academic integrity and promote originality among students. However, there are several challenges and considerations need to be addressed in the use of AI for teaching and assessment of students. Martinez and Rodriguez (2024) discussed concerns regarding data privacy, ethical considerations and the potential for algorithmic biases in AI-driven educational systems. Additionally, there is need to emphasize the importance of maintaining a balance between AI-driven technologies and human interaction to preserve the quality and personalization of education. In summary, AI platforms in teaching and assessment processes, especially in the university system offers some promising opportunities to enhance learning experiences, personalize education and improve assessment strategies. While, AI technologies present several benefits, it is essential to address ethical considerations, data privacy concerns and ensure equitable access to these technologies for all students.

METHODOLOGY

This study employed survey research design. This type of design aims at providing opportunities for the author to have a face-to-face interaction with the participants using a structured questionnaire for the collection of data or relevant information. The study participants comprised of 103 lecturers from different Departments in the University (Table 1). A snowball sampling method was used to select 103 lecturers who provide the relevant data or information regarding the extent of availability and utilization of AI in teaching and assessment of students. A snowball sampling method was preferred because it was practically impossible to gather all the Lecturers in the study areas in one place.

RESULTS AND DISCUSSION

1. Availability and Extent of utilization of AI: What is the extent of utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University?

Table 2 showed the extent to which lecturers in Ambrose Alli University use AI in teaching and assessment of students. From the Table, it can be observed that majority of the lecturers use AI for lectures to a high extent, judged the effectiveness of AI in facilitating teaching and assessment to a very high extent, believed that AI will play a significant role in the future of education and have collaborated

with colleagues from other institutions on AI for research or academic purposes to a very large extent with a high mean score of 2.55, 3.50, 3.60 and 3.87 respectively as illustrated in Figure 1. However, training on the use of AI and frequency of use were low extent with low mean scores of 2.14 and 2.34 respectively.

Table 1 Demographic Data of Survey Participants

Departments	Lecturers	Percentage (%)
Business Education	11	10.6
Curriculum and Instruction	19	18.4
Educational Foundation and Management	22	21.4
Guidance and Counseling	13	12.6
Human Kinetics and Health Education	12	11.7
Library and Information Science	12	11.7
Vocational and Technical Education	14	13.6
Total	103	100

Table 2 Mean on the extent of utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University

S/N	Items To what extent do:	VHE	HE	LE	VLE	F	M	Remarks
1.	I use AI for lectures.	40	35	10	15	255	2.55	High Extent
2.	you received any training or workshops on use of AI tools effectively.	34	6	20	40	214	2.14	Low Extent
3.	you use AI for academic purposes.	24	16	30	30	234	2.34	Low Extent
4.	you assess effectiveness of AI in facilitating teaching and assessment.	60	35	2	1	350	3.50	Very High Extent
5.	you believe that AI will play a significant role in the future of education.	75	15	7	3	360	3.60	Very High Extent
6.	you collaborate with colleagues from other institutions on AI for research purposes.	50	39	10	50	387	3.87	Very High Extent

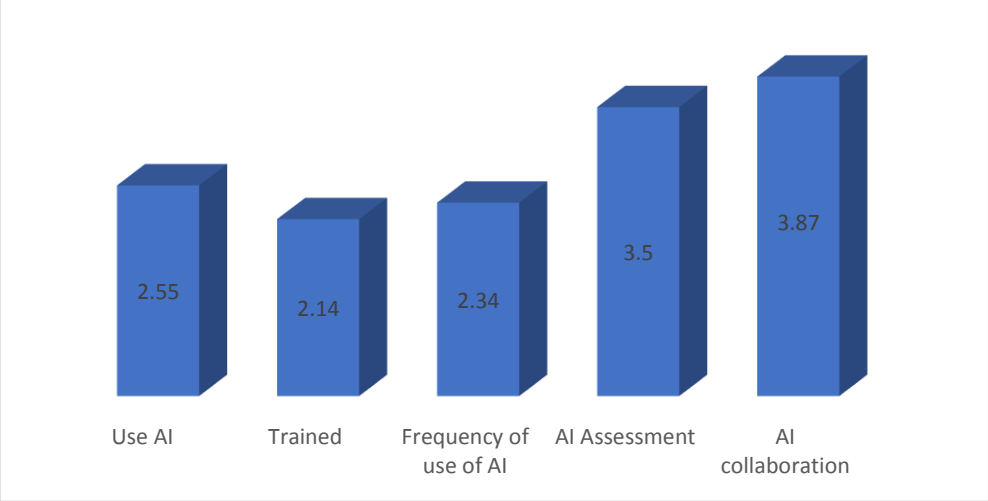

Figure 1 Utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University

On the platform of AI for teaching and assessment of students by lecturers, majority of the

respondents identified AI plagiarism detector and AI content detector with high percentages of 70 and 85 respectively. The result showed that majority of the AI platforms identified were not used largely by lecturers. These include interactive teaching system, virtual reality-based learning environments, AI-powered grading systems, AI-based proctoring solutions and AI content detector which had low percentages of 20, 5, 30, 4 and 25 respectively as presented in Table 3. The lowest used platform was AI-based proctoring solutions.

Table 3 Platforms of the utilization of AI in teaching and assessment of students by Lecturers

S/N	AI Platform	Yes	Percentage (%)	No	Percentage (%)
1.	Interactive Teaching System	20	20	80	80
2.	Virtual Reality-based learning environments	5	5	95	95
3.	AI-powered grading systems	30	30	70	70
4.	AI-based proctoring solutions	4	4	96	96
5.	AI plagiarism Detector	70	70	30	30
6.	AI content generator	85	85	15	15
7.	AI content detector	25	25	75	75

2. Challenges hindering utilization of AI: What are the challenges hindering the utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University?

Table 4 present the challenges of AI in teaching and assessment by lecturers in Ambrose Alli University. The Table revealed that the major challenges identified are technical issues while using AI, difficulty providing technical support to lecturers using AI tools, Inefficiency of power and powering systems, difficulties in engagement using AI teaching, cost of data and internet facilities, Lack of infrastructure, Poor basic digital literacy skills and Poor funding of the system which all recorded high mean scores. However, difficulties in student engagement using AI in teaching was considered the least challenges with the smallest mean score of 2.86. followed by technical issues while using AI with a mean score of 2.95. the highest challenges faced by the lecturers are cost of data and internet facilities, inadequate provision of infrastructure and inadequate funding with very high means scores of 4.88, 4.78 and 5.23 respectively as presented in Figure 2.

Table 4 Mean on the challenges hindering the utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University

S/N	Items	SA	A	D	SD	F	M	Remarks
1.	I face technical issues whenever I am using AI.	40	35	5	20	295	2.95	Agreed
2.	There is difficulty providing technical support to lecturers using AI.	60	35	2	1	348	3.48	Agreed
3.	I always experience inefficiency of power and powering systems.	35	45	10	10	305	3.05	Agreed
4.	There are difficulties in using AI for teaching.	12	20	80	18	286	2.86	Agreed
5.	Data and internet facilities are expensive.	78	42	20	10	488	4.88	Agreed
6.	Inadequate provision of infrastructure.	88	32	10	20	478	4.78	Agreed
7.	Poor basic digital literacy skills.	55	15	30	40	335	3.35	Agreed
8.	Inadequate funding of the system.	108	22	5	15	523	5.23	Agreed

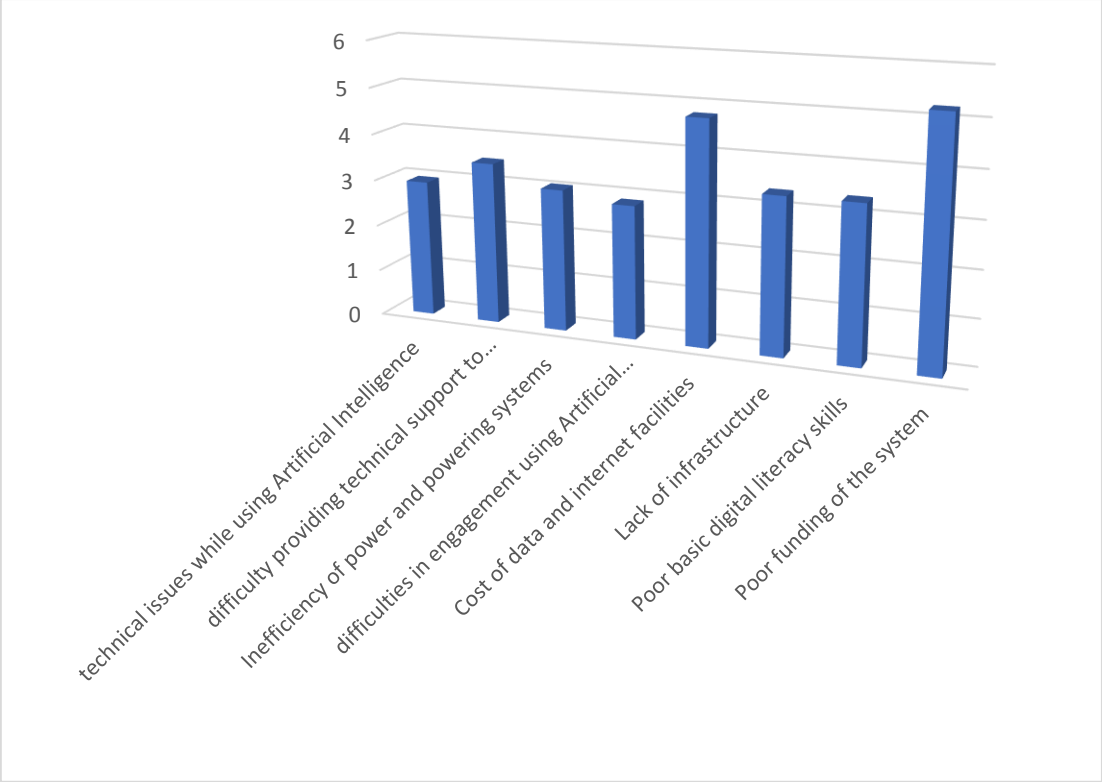

Figure 2 Challenges hindering the utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University

DISCUSSION

The study was conducted at Ambrose Alli University to assess the utilization of AI in teaching and assessment of students by lecturers. Table 2 depicted that majority of the lecturers use AI for lectures to a high extent, judged the effectiveness of AI in facilitating teaching and assessment to a very high extent, believed that AI will play a significant role in the future of education and have collaborated with colleagues from other institutions on AI for research or academic purposes to a very large extent. This result aligns with a recent research by Smith et al. (2023), who found that educators increasingly recognize AI's ability to enhance learning experiences and streamline assessment processes. Furthermore, the study revealed that there is a strong belief among lecturers that AI will play a significant role in the future of education. This optimism echoes the sentiments expressed by Jones and Clark (2023), who argued that AI technologies have the potential to revolutionize education by personalizing learning experiences and optimizing administrative tasks. Despite the positive attitudes towards AI, the study highlights notable challenges in its implementation. Table 4 illustrated various technical, logistical, and financial challenges hindering the utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University. These challenges include technical issues, difficulty in providing technical support, inefficiencies in power and powering systems, and the high cost of data and internet facilities. This result corroborates the findings of more recent studies by Kuleto et al., 2021), who identified similar barriers to AI integration in educational settings. Of a particular concern are the challenges associated with infrastructure and funding, which emerged as significant obstacles in the study. Lecturers indicated that there is inadequate provision of infrastructure and inadequate funding as some of the major challenges hindering the utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University. This aligns with the broader discourse on educational technology adoption in developing contexts, where limited resources often hinder innovation and progress (Chen & Liu, 2023). Despite all these challenges, the study underscores the potentials of AI in the transformation of teaching and assessment practices. By addressing the identified barriers through targeted interventions such as capacity building programmes, infrastructural development, and strategic resource allocation, universities can harness the full potentials of AI in education.

CONCLUSION AND RECOMMENDATIONS

The study shed light on the extensive integration/utilization of AI for teaching and assessment of students by lecturers in Ambrose Alli University. The results underscore a high level of utilization and acknowledgment of the efficacy of AI in enhancing effective teaching and assessment processes. Notably, lecturers exhibit a strong belief in the future prominence of AI in education and have engaged in collaborative efforts with peers from other institutions for AI-related research and academic pursuits. While, AI plagiarism and content detection tools are widely adopted, other AI platforms such as interactive teaching systems, virtual reality-based learning environments, and AI-powered grading systems remain underutilized. Particularly, AI-based proctoring solutions emerge as the least employed tool among lecturers.

Despite the enthusiasm for AI integration and utilization, several challenges hinder its effective implementation. These challenges include difficulties in providing technical support to lecturers, inefficiencies in power supply, limited student engagement with AI-based teaching methods, financial constraints related to data and internet costs, inadequate infrastructure, deficient digital literacy skills among stakeholders, and insufficient funding. Among these challenges, technical issues while utilizing AI pose the most significant obstacle, whereas student engagement is comparatively less problematic. While, Ambrose Alli University's lecturers demonstrate a robust adoption of AI in teaching and assessment of students, there exist notable challenges that need to be addressed for the optimal integration and utilization of AI in the educational system. Efforts to mitigate technical issues, enhance infrastructure, improve digital literacy, and secure adequate funding are imperative for realizing the full potentials of AI in education.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

i. Before implementing AI, Ambrose Alli University management should endeavour to improve on the quality of electricity power supply;
ii. Before implementing AI, Ambrose Alli University management should endeavour to set up a technical crew and train both students and lecturers on effective usage of AI;
iii. Adequate funding of the system should be implemented by the management; and
iv. iv Ambrose Alli University management should endeavour to install quality internet facilities and AI-supportive infrastructures in order to help in alleviating some of the challenges hindering utilization of AI for teaching and assessment

ACKNOWLEDGEMENT

This study was solely sponsored by the authors, all data were collected, analysed and interpreted by the authors.

FUNDING

This study was not supported by any grants from funding bodies in the public, private, or not-for-profit sectors. The authors declare that no financial support was received for the research, authorship, and publication of this article.

DATA AVAILABILITY STATEMENT

The authors do not have permission to share data

CONFLICT OF INTEREST

The authors declare no conflicts of interest

REFERENCES

Adams, R., & Jervis, S. (2021). Personalized learning in higher education: The role of AI-driven systems. *Journal of Educational Technology, 15*(3), 234-249.

Baker, R. S., & Siemens, G. (2020). Predictive analytics and education: An overview. *Educational Technology Research and Development, 68*(4), 1925-1948.

Barrett, M., Branson, L., Carter, S., DeLeon, F., Ellis, J., Gundlach, C., & Lee, D. (2019). Using Artificial Intelligence to enhance educational opportunities and student services in higher education. *Inquiry: The Journal of the Virginia Community Colleges, 22*(1), 1-10.

Buabbas, A.J., Miskin, B., Alnaqi, A.A., Ayed, A.K., Shehab, A.A., Syed-Abdul, S., & Uddin, M. (2023). Investigating students' perceptions towards Artificial Intelligence in medical education. *Healthcare, 11*, 1-16.

Celuch, K., & Robinson, N.M. (2016). How the customer feedback process contributes to perceived customer orientation and affective commitment in the higher educational service context. *The Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior, 29*, 53-76.

Chen, H., & Liu, Y. (2023). Virtual laboratories and interactive simulations: Leveraging AI for remote learning. *Computers & Education*, 168.

Cheng, L., Umapathy, K., Rehman, M., Ritzhaupt, A., Antonyan, K., Shidfar, P., Nichols, J., Lee, M., & Abramowitz, B. (2023). Designing, Developing, and Validating a Measure of Undergraduate Students' Conceptions of Artificial Intelligence in Education. *Journal of Interactive Learning Research*, 34(2), 275-311.

Dinu, V. (2011). The knowledge-based economy: Implications for higher education in economics and business. *Amfiteatru Economic, 13*(30), 343-344.

European Commission. Joint Research Centre. (2018). *The impact of Artificial Intelligence on learning, teaching, and education.* LU: Publications Office. Retrieved from https://data.europa.eu/doi/10.2760/12297.

Gasmi, G., & Prlja, D. (2021). *Ugrožavanje ljudskih prava i veštačka inteligencija*. Zbornik radova Kopaoničke škole prirodnog prava – Slobodan Perović, pp. 323-335.

Idroes, G.M., Noviandy, T.R., Maulana, A., Irvanizam, I., Jalil, Z., Lensoni, L., Lala, A., Abas, A.H., Tallei, T.E. and Idroes, R. (2023). Student perspectives on the role of Artificial Intelligence in Education: A Survey-based Analysis. *Journal of Educational Management and Learning, 1*(1), 8-15.

Jeffrey, T., 2020. Understanding college student perceptions of Artificial Intelligence. *Systemics, cybernetics and informatics*, *18*(2), 8-13.

Johnson, M., & Smith, L. (2022). Enhancing student support through AI-powered chatbots. *Higher Education Research & Development, 41*(2), 189-204.

Jones, M., & Clark, M. (2023). AI-based proctoring: Ensuring academic integrity in remote assessments. *International Journal of Educational Technology in Higher Education, 20*(1), 1-18.

Kim, J., & Lee, S. (2023). AI-driven proctoring in online examinations: Ensuring academic integrity in digital learning environments. *International Journal of Educational Technology in Higher Education, 20*(1), 45.

Kuleto, V., Ilić, M., Dumangiu, M., Ranković, M., Martins, O.M.D., Păun, D. and Mihoreanu, L. (2021). Exploring opportunities and challenges of Artificial Intelligence and Machine Learning in higher education institutions. *Sustainability*, *13*(18).

Manning, C. (2020). *Artificial Intelligence Definitions*. Stanford University: Human-Centered Artificial Intelligence.

Marrone, R., Taddeo, V., & Hill, G. (2022). Creativity and Artificial Intelligence: A student perspective. *Journal of Intelligence*, *10*(3).

Martin, K., & Lee, H. (2022). AI-powered plagiarism detection: Ensuring academic integrity in the digital age. *Journal of Academic Ethics, 20*(1), 50-65.

Martinez, P., & Rodriguez, L. (2024). Ethical considerations and data privacy in AI-driven educational technologies. *Journal of Information Ethics, 12*(1), 30-45.

Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-Kennicutt, W., & Davis, T. J. (2021). Virtual reality and education: An overview. *Journal of Educational Technology, 15*(1), 20-35.

Sangapu, I. (2018). Artificial Intelligence in education: From a teacher and a student perspective. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3372914.

Shah, S., & Kwok, A. (2022). Automated grading systems in higher education: A comparative study. *Assessment & Evaluation in Higher Education, 47*(3), 456-470.

Smith, J., Brown, T., & Williams, R. (2023). AI-driven content creation and curation: Transforming educational practices. *International Journal of Artificial Intelligence in Education, 26(2)*, 120-135.

Williams, A., & Brown, D. (2022). Automated grading systems: An evaluation of AI-based approaches. *Assessment & Evaluation in Higher Education, 47*(5), 698-713.

Woolf, B. P. (2019). Intelligent tutoring systems: Past, present, and future. *Educational Psychology Review, 31*(2), 297-316.