Enhance or Replace: The Ethical Challenges Faced by University Teachers in Using AI

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Abstract: Background: AI has quietly sparked a reform in higher education, bringing convenience to teaching but also triggering a series of ethical challenges. Currently, most relevant research participants are students, university teachers have not been given sufficient attention. Objective: Our purpose was to engage in a systematic review of the literature to identify the ethical challenges of AI teaching assistants in higher education faced by university teachers and propose some corresponding solutions. Method: A comprehensive search was conducted on the Web of Science and Scopus databases to identify English articles related to AI teaching assistants and higher education. After systematic screening, a review was conducted on 24 articles. Then, we used the thematic induction method for analysis. Results and Conclusions: Analysis of these studies provides evidence of that AI teaching assistants brought benefits to higher education, but also found a series of ethical challenges. Through literature analysis, we have summarized these ethical challenges which most related to university teachers into five aspects: teacher-student relationship apathy, human teacher displacement, academic and education integrity, algorithmic bias, and digital divide. We found that in response to these ethical challenges, university teachers should continuously improve their relevant abilities and strengthen their supervision of themselves and students in using AI. Universities or higher education institutions should provide AI resources and training opportunities for teachers. Decision-makers and AI education product developers should also fulfill their ethical responsibilities. All responsible parties should collaborate to creating a better educational environment to address the ethical challenges of AI in higher education.
Keywords: AI, Teaching Assistant, University Teacher, Higher Education, Ethical Challenges.

1. INTRODUCTION

Currently, the application of AI as a teaching assistant in higher education is increasing. For instance, AI as teaching assistants could assist university teachers in many aspects (Bucea-Manea-Ţoniş et al., 2022; Essel et al., 2022; Liu et al., 2022; Suryanarayana et al., 2024). Some AI applications not only could help teachers search for materials and content more easily and make fewer mistakes (Bucea-Manea-Ţoniş et al., 2022), but also could analyze students' incorrect answers and suggest which teaching

units require additional guidance (Bucea-Manea-ţoniş et al., 2022). The intelligent chatbots could answer students' questions in a timely manner after class instead of teachers (Essel et al., 2022). An automating daily management system could monitor students' development and identify problems for developing personalized teaching (Suryanarayana et al., 2024). In addition, existing literature mentioned a series ethical concerns of AI in higher education (Al-Zahrani, 2024; Dakakni & Safa, 2023; Essel et al., 2022; Fiialka et al., 2023; Henry & Oliver, 2022; Slimi & Carballido, 2023; Williams, 2024; Yang et al., 2024), which mainly involve six aspects: teacher-student relationship (Al-Zahrani, 2024), human teacher displacement (Dakakni & Safa, 2023; Fiialka et al., 2023), academic integrity (Dakakni & Safa, 2023; Fiialka et al., 2023; Henry & Oliver, 2022; Isiaku et al., 2024), privacy concerns (Dakakni & Safa, 2023; Huallpa et al., 2023); algorithmic bias (Al-Zahrani, 2024; Dakakni & Safa, 2023; Darban, 2023), and digital divide (Al-Zahrani, 2024; Dakakni & Safa, 2023). Through reading literature, we could find that using AI teaching assistants in higher education brings both convenience and potential ethical challenges. Although these articles provide many insights on AI in higher education, but they still haven't explored the ethical challenges faced by university teachers in depth. Most of the research took students as participants (Essel et al., 2022; Kim et al., 2020; Liu et al., 2022). Some research included university teachers as participants (Bucea-Manea-ţoniş et al., 2022; Fiialka et al., 2023; Kamoun et al., 2024), but only focused on teachers' views or attitudes of AI. It remains unclear how should teachers deal with the ethical challenges brought by AI and how AI could have a meaningful impact on teaching and learning in higher education (Zawacki-Richter et al., 2019). As Airaj said, "In the context of higher education, the integration of AI technologies and changes to teaching-learning methods and content requires careful consideration of potential disruptions, challenges, and benefits."(Airaj, 2024). This study aims to analysis the ethical challenges of AI in higher education faced by teachers and attempt to propose some improvement measures. To achieve this goal, this study is guided by two questions: (1) What ethical challenges do university teachers face when using AI as teaching assistants in higher education? (2) What solutions should be taken to address these ethical challenges？ This study has two main contributions. At first, we meets the call of researchers to explore ethical issues of AI in higher education (Fiialka et al., 2023; Zawacki-Richter et al., 2019) and specific solutions (Airaj, 2024). As Fiialka and her

colleague proposed "…it is crucial to take into account not only the technical aspects, but also the broader ethical, legal, and social implications. "(Fiialka et al., 2023, p. 247). And Airaj pointed out "While these guidelines provide a broad framework, they lack specific details on the practical implementation of these ethical principles."(Airaj, 2024). Therefore, our study is carried out under this background, which may help researchers identify the gap between the existing literature and have a comprehensive understanding of the AI ethical challenges faced by university teachers. Secondly, this study may be helpful for university teachers to gain a deeper understanding of the ethical challenges and responsibilities that teachers face in the era of AI. It may also provide university teachers or other stakeholders with some improvement measures for their future work to resolve AI ethical issues in higher education.

2. METHOD

2.1. Search Strategy

The process of article selection followed the Preferred Reporting of Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement. We searched Web of Science and Scopus on June 24th, 2024, for peer-reviewed articles on AI and higher education. We operationalized different permutations of each keyword based on previously validated searches. We included AI for education and virtual teaching assistants, following the article of Audras et al. published in the International Journal of Chinese Education (Audras et al., 2022) .

We drew on a series of reviews to identify keyword variants (Kim et al., 2020; Labadze et al., 2023; Zawacki-Richter et al., 2019). For higher education, we drew on a series of reviews to identify keyword variants (Basilotta-Gómez-Pablos et al., 2022; Zawacki-Richter et al., 2019). For ethic or moral, we also drew on a review to identify keyword variants (Favaretto et al., 2020). We applied the fields title/abstract in the search. Our initial search identified a total of 137 articles in Web of Science and 822 in Scopus, which were imported into Zotero reference management software. Of these 959 articles, 108 were identified as duplicates, leaving a total of 851 for screening and eligibility stages. Table 1 shows the terminology used for searching two databases related to ethical research in artificial intelligence for higher education.

Table 1: Terms used to search two databases related to AI ethics research on higher education.

Step	Terms	Results
Database Web of science		
1	TS= ("AI" OR "artificial intelligence" OR "machine teachers" OR "artificial intelligence teaching assistants" OR "AI Teaching Assistants" OR "Virtual teaching assistants" OR "VTA" OR "AI education" OR "Artificial Intelligence for Education" OR "AI in education" OR "AIEd" OR "chat bot" OR "machine learning" OR "automated tutor" OR "personal tutor" OR "intelligent agent" OR "educational chatbots" OR "Chatbots applications in education" OR "chatbots in education")	610841
2	TS= ("higher education" OR "college" OR "undergraduate" OR "graduate" OR "postgraduate" OR "University" OR "University teacher" OR "University professor")	1374789
3	TS= ("ethic" OR "moral" OR "Ethical issues" OR "Ethical risks" OR "Ethical challenges" OR "Moral challenge" OR "Moral issues" OR "moral risk")	162795
4	1 AND 2 AND 3	137
Database : Scopus		
1	TITLE-ABS-KEY ("AI" OR "artificial intelligence" OR "machine teachers" OR "artificial intelligence teaching assistants" OR "AI Teaching Assistants" OR "Virtual teaching assistants" OR "VTA" OR "AI education" OR "Artificial Intelligence for Education" OR "AI in education" OR "AIEd" OR "chat bot" OR "machine learning" OR "automated tutor" OR "personal tutor" OR "intelligent agent" OR "educational chatbots" OR "Chatbots applications in education" OR "chatbots in education")	1247292
2	TITLE-ABS-KEY ("higher education" OR "college" OR "undergraduate" OR "graduate" OR "postgraduate" OR "University" OR "University teacher" OR "University professor")	2758435
3	TITLE-ABS-KEY ("ethic" OR "moral" OR "Ethical issues" OR "Ethical risks" OR "Ethical challenges" OR "Moral challenge" OR "Moral issues" OR "moral risk")	584854
4	1 AND 2 AND 3	822

2.2. Inclusion and Exclusion Criteria

We applied a series of inclusion and exclusion criteria. Articles were included if they were: i) written in English; ii) published in a peer-reviewed

journal; iii) focus on AI and higher education. Of the 851 records screened, we excluded 323 because they were book chapters or conference papers or reviews, and 44 were not in English, and 326 were not focus on AI or higher education, leaving a total of 158 articles for retrieval. We were able to find the full text of all articles, resulting in 158 articles for eligibility. Upon reviewing the full text, we excluded another 29 articles which were identified to be systematic reviews. We also further excluded 32 because they were not related to AI teaching assistant and 9 not involved in ethical issues, and 64 only focus on students. This left a final 24 articles in the final review sample for data analysis and quality assessment. Figure 1 describes the process of inclusion/exclusion.

2.3. Extraction and Analysis

We extracted the main study parameters into a Microsoft Excel literature grid consisting of multiple tabs. Data included authors, year of publication, title, study design, research participants, data collection method and main Points. (Appendix 1). We used theme analysis method (Clarke & Braun, 2017) to analyze the relevant literature, based on the following two research questions: (1) What ethical challenges do university teachers face when using AI as teaching assistants in higher education? (2) What solutions should be taken to address these ethical challenges?

3. RESULT

Question 1: What ethical challenges do university teachers face when using AI teaching assistants in higher education? By using the method of thematic analysis, we summarized the ethical challenges of AI in higher education which most related to university teachers into five aspects: (1) teacher-student relationship apathy; (2) human teacher displacement; (3) academic and education integrity; (4) algorithmic bias; (5) digital divide.

3.1. Teacher-Student Relationship Apathy

Existing research already showed that AI could perform some of the tasks of human teachers to reduce teacher's workload (Bucea-Manea-Ţoniş et al., 2022; Essel et al., 2022; Suryanarayana et al., 2024; Vallis et al., 2023). However, Al-Zahrani found that AI teaching assistants may reduce direct interaction between teachers and students, leading to a decline in the quality of teacher-student relationships (Al-Zahrani, 2024), which may affect the teaching quality. Al-Zahrani's finding is very meaningful, which reminds

university teachers to strike a balance between reducing workload and maintaining teacher-student interaction frequency when using AI teaching assistants. As Al-Zahrani noted that we need to improve the quality of interaction between students and teachers through AI rather than diminishing it (Al-Zahrani, 2024).

3.2. Human Teacher Displacement

After reading the articles finally included, we found that with the development of AI more and more researchers worried about whether teacher would be replaced by AI. For instance, Dakakni and Safa noted that some universities are already implementing outsourcing of academic labor by using AI to replace expensive academic faculty to reduce costs (Dakakni & Safa, 2023). AI is indeed more efficient than human teacher in many aspects (Bucea-Manea-ţoniş et al., 2022; Essel et al., 2022), but there is not enough evidence to prove that AI is superior to human teachers in every aspect. Fiialka and her colleagues indicated that although the educational function of AI is more and more powerful, it aims to become an auxiliary tool for human learners and educators, rather than replacing the role of teachers (Fiialka et al., 2023). This view is very important, which reminds us that human beings are the ultimate ends, and AI is only the means and tools to help achieve the ends.

3.2. Academic and Education Integrity

Many studies have found that students may engage in the abuse of AI (Al-Zahrani, 2024; Dakakni & Safa, 2023; Isiaku et al., 2024), leading to intellectual laziness and hindering the development of critical and independent thinking abilities(Dakakni & Safa, 2023). These findings are very meaningful because they remind us that teachers need to guide and supervise students' behavior in using AI. In another example, Kumar conducted a qualitative study on the case of faculty member using AI to grade students' papers, and proposed further conceptual exploration and empirical research on educational integrity (Kumar, 2023). If future researchers can conduct more in-depth research on AI and educational integrity, we may have a more comprehensive understanding of the future circumstances of university teachers.

3.3. Algorithm Bias

Many existing studies have raised the ethical issues of algorithmic bias, such as how algorithmic bias in AI may pose challenges of bias and

inequality to students (Dakakni & Safa, 2023). Further research has shown that the moral awareness of AI teaching assistants is positively correlated with students' learning performance (Darban, 2023). These research results are very meaningful, revealing to us that algorithmic bias may pose moral challenges to students and lead to a decline in academic performance. At the same time, it also reminds us to consider whether teachers' moral cognition may also be influenced by the moral views of AI, which may be an aspect that future research needs to focus on.

3.4. Digital Divide

Through literature analysis, it is concluded that whether university teachers have equal opportunities to use AI teaching assistants and cultivate related abilities is also an important issue. Dakakni and Safa pointed out that the unequal distribution of AI between students who can use it and those who cannot has resulted in disparities in learning outcomes, goals, and opportunities (Dakakni & Safa, 2023). But their research did not pay attention to whether teachers also face the same problem. Al-Zahrani found that unequal access to AI resources may exacerbate disparities in education quality, leading to a digital divide in higher education (Al-Zahrani, 2024). This viewpoint makes us realize that as AI is increasingly integrated into higher education, it is necessary to promote just distribution in AI resources to ensure that all teachers and students could benefit from AI, regardless of their socioeconomic status. Question 2: What solutions should be taken to address these ethical challenges? Through the review of the existing literature, we found that some articles noted the relevant measures to deal with AI ethical issues in higher education. For example, many researchers indicated university teachers should receive training of AI (Al-Zahrani, 2024; Essel et al., 2022; Kamoun et al., 2024; Rudolph et al., 2024), other researchers suggested that relevant responsible parties should also fulfill their respective responsibilities, including policy makers (Slimi & Carballido, 2023), managers(Pande et al., 2024), resource allocators (Dakakni & Safa, 2023), and AI developers (Slimi & Carballido, 2023). We will discuss the relevant measures according to the five ethical risk topics in Question 1.

3.5. Teacher-Student Relationship Apathy

As for the relationship between teachers and students, many researchers emphasized that AI should enhance rather than replace the interaction between human beings (Al-Zahrani, 2024; Huallpa et al., 2023). The

research of Huallpa and his colleagues found that the use of ChatGPT in universities may cause the loss of human interaction (Huallpa et al., 2023). This reminds us that whether it is ChatGPT or other AI tools, university teachers should pay attention to the way and frequency of using AI teaching assistants and should be good at using various functions of AI to improve the efficiency and quality of interaction between teachers and students. However, Kamoun and his colleague's study showed that 63.4% of surveyed teachers reported a lack of training and resources needed to integrate ChatGPT into their teaching practices (Kamoun et al., 2024). This survey results reflected that ordinary teachers need resources to obtain these tools and need training to learn how to use them correctly and responsibly. Many researchers called on higher education institutions should provide relevant AI resources or training (Al-Zahrani, 2024; Kamoun et al., 2024; Pande et al., 2024). Therefore, relevant departments should pay attention to these appeals and take measures to meet the need of teachers.

3.6. Human Teacher Displacement

As AI becomes more and more powerful in education, human teachers do worry about whether they may be replaced by AI. This sense of crisis may help human teachers improve their abilities, which AI may not be good at. As Fiialka and her colleagues noted that human teachers are better able to understand students' unique needs, provide humanistic care, and cultivate students' critical thinking skills (Fiialka et al., 2023). This reminds us that human teachers need to constantly improve these abilities to cope with the challenges from AI. In addition to teachers should enhance their awareness of self-improvement, universities should also provide corresponding help to teachers. Slimi and Carballido pointed out that universities should minimize the potential impact of AI on teacher employment as much as possible (Slimi & Carballido, 2023). Therefore, higher education institutions and university teachers should work together to prevent human teachers from being replaced by AI.

3.7. Academic and Education Integrity

As Henry & Oliver noted that the cultivation of integrity should be regarded as an important component of higher education (Henry & Oliver, 2022). This may mean that teachers should not only cultivate students' academic integrity, but also teachers themselves should achieve academic integrity and educational integrity when using AI. Essel and her colleagues

further suggested that universities should establish education technology centers managed by subject experts to assist teachers in guiding students to use AI correctly (Essel et al., 2022). This is a very valuable suggestion, which enlightens us that the education technology center not only could provide technical help for teachers and students, but also should provide ethical guidance to enhance the academic integrity and education integrity.

3.8. Algorithm Bias

For the possible algorithm bias in AI education products, Slimi and Carballido proposed the need to ensure algorithm transparency and the proper cultivation of AI's ethical capabilities (Slimi & Carballido, 2023). Al-Zahrani also noted the importance of adopting transparent algorithmic frameworks, regularly auditing biases and correcting them to ensure fair and equal treatment of all students (Al-Zahrani, 2024). These research findings remind us that developers of AI products may need to avoid algorithmic bias as much as possible and enhance the moral awareness of AI. However, none of these studies have addressed that how university teachers face algorithmic bias. If teachers are not vigilant about algorithmic bias, the moral bias from AI may affect students' moral cognition and development. This means university teachers maybe become the last line of defense against algorithmic bias. Therefore, on the one hand, teachers need to maintain a correct moral stance and not be influenced by algorithmic bias, On the other hand, teachers need to be vigilant and promptly detect and correct algorithmic biases to ensure that students are not affected.

3.9. Digital Divide

For the issue of digital divide, relying solely on the efforts of university teachers is not enough, and the participation of other responsible parties is also needed. Dakakni and Safa proposed that resource allocators should ensure that AI education resource could be equally accessed by all those who need it (Dakakni & Safa, 2023). Pande and his colleagues emphasized that ensuring fair access to AI resources, especially in underserved communities, is considered key to promoting equal educational opportunities (Pande et al., 2024). Pande and his colleagues also suggested that higher education institutions should prioritize teacher training programs to enable educators to perfectly apply AI tools to their teaching methods (Pande et al., 2024). The recommendations from these studies are very important, reminding us that resource allocators and higher education

institutions may play a crucial role in addressing the digital divide issue. As Zahrani said, the interrelationships between responsible parties confirm that a single or decentralized solution is unlikely to be effective, and we need to propose a comprehensive strategy (Al-Zahrani, 2024). This viewpoint is of great significance because it makes us realize that relying solely on the efforts of university teachers cannot address the ethical challenge of the digital divide. We also need all responsible parties to work together to create a better AI education environment in the future.

4. CONCLUSION

This review focus on university teachers and discussed the ethical challenges of using AI in higher education and proposed corresponding solutions. Through literature analysis, we found that AI teaching assistants could help university teachers enrich teaching methods and improve work efficiency, freeing them from a large amount of repetitive teaching work and allowing them to have more time and energy to engage in creative educational research. Existing literature also pointed out a series of ethical challenges associated with AI in higher education. We summarized the ethical challenges most relevant to university teachers, including apathy in teacher-student relationships, displacement of human teachers, academic and educational integrity, algorithmic bias, and digital divide. To address these ethical challenges, university teachers should continuously improve their abilities and literacy of AI and strengthen ethical supervision of themselves and their students in using AI. Universities or higher education institutions should provide teachers with AI resources and training opportunities. For the ethical challenges of algorithmic bias and digital divide, decision-makers and developers of AI education products should fulfill their ethical responsibilities. In the future, all responsible parties should collaborate to create a better educational environment to address the ethical challenges of AI in higher education. We also call for future research to focus on different responsible parties and propose more specific response measures.

4.1. Conflict of Interest

The author declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

4.2. Author Contributions

ZXJ: research design, data collection, data analysis, manuscript drafting, and manuscript editing.

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References

Airaj, M. (2024). Ethical artificial intelligence for teaching-learning in higher education. *Education and Information Technologies*. https://doi.org/10.1007/s10639-024-12545-x

Al-Zahrani, A. (2024). Unveiling the shadows: Beyond the hype of AI in education. *HELIYON*, *10*(9). https://doi.org/10.1016/j.heliyon.2024.e30696

Audras, D., Zhao, A., Isgar, C., & Tang, Y. (2022). Virtual teaching assistants: A survey of a novel teaching technology. *International Journal of Chinese Education*, *11*(2). https://doi.org/10.1177/2212585x221121674

Basilotta-Gómez-Pablos, V., Matarranz, M., Casado-Aranda, L.-A., & Otto, A. (2022). Teachers' digital competencies in higher education: a systematic literature review. *International Journal of Educational Technology in Higher Education*, *19*(1). https://doi.org/10.1186/s41239-021-00312-8

Bucea-Manea-Ţoniş, R., Kuleto, V., Gudei, S. C. D., Lianu, C., Lianu, C., Ilić, M. P., & Păun, D. (2022). Artificial Intelligence Potential in Higher Education Institutions Enhanced Learning Environment in Romania and Serbia. *Sustainability (Switzerland)*, *14*(10). https://doi.org/10.3390/su14105842

Clarke, V., & Braun, V. (2017). Thematic analysis. *The Journal of Positive Psychology*, *12*(3), 297-298. https://doi.org/10.1080/17439760.2016.1262613

Dakakni, D., & Safa, N. (2023). Artificial intelligence in the L2 classroom: Implications and challenges on ethics and equity in higher education: A 21st century Pandora's box. *Computers and Education: Artificial Intelligence*, *5*. https://doi.org/10.1016/j.caeai.2023.100179

Darban, M. (2023). The future of virtual team learning: navigating the intersection of AI and education. *Journal of Research on Technology in Education*, 1-17. https://doi.org/10.1080/15391523.2023.2288912

Essel, H. B., Vlachopoulos, D., Tachie-Menson, A., Johnson, E. E., & Baah, P. K. (2022). The impact of a virtual teaching assistant (chatbot) on students' learning in Ghanaian higher education. *International Journal of Educational Technology in Higher Education*, *19*(1). https://doi.org/10.1186/s41239-022-00362-6

Favaretto, M., Shaw, D., De Clercq, E., Joda, T., & Elger, B. S. (2020). Big Data and Digitalization in Dentistry: A Systematic Review of the Ethical Issues. *Int J*

Environ Res Public Health, *17*(7). https://doi.org/10.3390/ijerph17072495

Fiialka, S., Kornieva, Z., & Honcharuk, T. (2023). ChatGPT in Ukrainian Education: Problems and Prospects. *International Journal of Emerging Technologies in Learning*, *18*(17), 236-250. https://doi.org/10.3991/ijet.v18i17.42215

Henry, J. V., & Oliver, M. (2022). Who Will Watch the Watchmen? The Ethico-political Arrangements of Algorithmic Proctoring for Academic Integrity. *Postdigital Science and Education*, *4*(2), 330-353. https://doi.org/10.1007/s42438-021-00273-1

Huallpa, J. J., Flores Arocutipa, J. P., Panduro, W. D., Huete, L. C., Flores Limo, F. A., Herrera, E. E., Alba Callacna, R. A., Ariza Flores, V. A., Medina Romero, M. Á., Quispe, I. M., & Hernández Hernández, F. A. (2023). Exploring the ethical considerations of using Chat GPT in university education. *Periodicals of Engineering and Natural Sciences*, *11*(4), 105-115. https://doi.org/10.21533/pen.v11i4.3770

Isiaku, L., Kwala, A. F., Sambo, K. U., Ukaegbu, F. C., & Isaku, H. H. (2024). Academic Evolution in the Age of ChatGPT: An In-depth Qualitative Exploration of its Influence on Research, Learning, and Ethics in Higher Education. *Journal of University Teaching and Learning Practice*, *21*(6). https://doi.org/10.53761/7egat807

Kamoun, F., Ayeb, W. E., Jabri, I., Sifi, S., & Iqbal, F. (2024). EXPLORING STUDENTS' AND FACULTY'S KNOWLEDGE, ATTITUDES, AND PERCEPTIONS TOWARDS CHATGPT: A CROSS-SECTIONAL EMPIRICAL STUDY. *Journal of Information Technology Education: Research*, *23*, 1-33. https://doi.org/10.28945/5239

Kim, J., Merrill, K., Xu, K., & Sellnow, D. D. (2020). My Teacher Is a Machine: Understanding Students' Perceptions of AI Teaching Assistants in Online Education. *International Journal of Human–Computer Interaction*, *36*(20), 1902-1911. https://doi.org/10.1080/10447318.2020.1801227

Kumar, R. (2023). Faculty members' use of artificial intelligence to grade student papers: a case of implications. *International Journal for Educational Integrity*, *19*(1). https://doi.org/10.1007/s40979-023-00130-7

Labadze, L., Grigolia, M., & Machaidze, L. (2023). Role of AI chatbots in education: systematic literature review. *International Journal of Educational Technology in Higher Education*, *20*(1). https://doi.org/10.1186/s41239-023-00426-1

Liu, Y., Chen, L., & Yao, Z. (2022). The application of artificial intelligence assistant to deep learning in teachers' teaching and students' learning processes. *Front Psychol*, *13*, 929175. https://doi.org/10.3389/fpsyg.2022.929175

Pande, S., Moon, J. S., & Haque, M. F. (2024). EDUCATION IN THE ERA OF ARTIFICIAL INTELLIGENCE: AN EVIDENCE FROM DHAKA INTERNATIONAL UNIVERSITY (DIU). *Bangladesh Journal of Multidisciplinary Scientific Research*, *9*(1), 7-14. https://doi.org/10.46281/bjmsr.v9i1.2186

Rudolph, J., Ismail, M. F. B. M., & Popenici, S. (2024). Higher Education's Generative Artificial Intelligence Paradox: The Meaning of Chatbot Mania. *Journal of University Teaching and Learning Practice*, *21*(6). https://doi.org/10.53761/54fs5e77

Slimi, Z., & Carballido, B. (2023). Navigating the Ethical Challenges of Artificial Intelligence in Higher Education: An Analysis of Seven Global AI Ethics Policies. *TEM JOURNAL-TECHNOLOGY EDUCATION MANAGEMENT INFORMATICS*, *12*(2), 590-602. https://doi.org/10.18421/TEM122-02

Suryanarayana, K. S., Kandi, V. S. P., Pavani, G., Rao, A. S., Rout, S., & Siva Rama Krishna, T. (2024). Artificial Intelligence Enhanced Digital Learning for the Sustainability of Education Management System. *The Journal of High Technology Management Research*, *35*(2). https://doi.org/10.1016/j.hitech.2024.100495

Vallis, C., Wilson, S., Gozman, D., & Buchanan, J. (2023). Student Perceptions of AI-Generated Avatars in Teaching Business Ethics: We Might not be Impressed. *Postdigital Science and Education*, *6*(2), 537-555. https://doi.org/10.1007/s42438-023-00407-7

Williams, R. T. (2024). The ethical implications of using generative chatbots in higher education. *Frontiers in Education*, *8*. https://doi.org/10.3389/feduc.2023.1331607

Yang, Z., Wu, J. G., & Xie, H. (2024). Taming Frankenstein's monster: Ethical considerations relating to generative artificial intelligence in education. *Asia Pacific Journal of Education*, 1-14. https://doi.org/10.1080/02188791.2023.2300137

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). https://doi.org/10.1186/s41239-019-0171-0