


Chapter 1

The Effective Use of Generative AI in Higher Education Exploring Lecturers' Artificial Intelligence Literacy: Unveiling Sustainable and Ethical AI–Powered Practices for Learning, Teaching, and Assessment

Eleni Meletiadou

 <https://orcid.org/0000-0003-4833-1450>

London Metropolitan University, UK

ABSTRACT

Generative artificial intelligence has transformed the way educators deliver their lectures and seminars in higher education institutions around the world having an impact on societal norms as well. Despite the impact the adoption of GenAI has had on lecturers and students in higher education, very few research studies have explored lecturers' perceptions of Gen AI and identified sustainable and ethical practices of Gen AI for learning, teaching, and assessment. The current study explored 42 European lecturers' perceptions of the use of innovative Gen AI tools. The current qualitative study used semi-structured interviews to collect data. Convenience sampling was used in this study as the researcher tapped on her network to invite

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as many lecturers as possible to participate in this study. The data were transcribed and analyzed using the deductive approach for the thematic analysis. The findings revealed that lecturers had an overall positive attitude to adopt and use AI for content creation, debates, assessment and feedback, and conducting research in their respective institutions.

INTRODUCTION

Generative Artificial Intelligence (Gen AI) can be defined as the ability of a common computer/laptop or a robot-controlled computer to complete tasks that are normally regarded as human. AI (Artificial Intelligence) is designed to learn from experience and practice, reason, or generalize. Its main characteristic is its ability to continuously evolve as it aspires to resolve particularly complex issues. This may lead to a “revolution” that can result in automating many activities normally performed by humans, including the automation of a significant number of human tasks. Lately, AI has moved beyond performing narrow, specialized tasks (e.g. information search), and towards general AI, as it can perform activities similar to those done by humans (Russell & Norvig, 2016). As the range of services using Gen AI is growing, societies are confronted with ethical dilemmas regarding the responsible and ethical use of AI.

Gen AI is based on models i.e., GPT (Generative Pre-trained Transformer), which can produce new, original content, similar to that created by humans. Its most recent version, GPT-4 can also get involved in sophisticated educational debates supporting students in their efforts to understand complex concepts. As it can train on huge data sets, AI is increasingly employed in HE by educators who always strive to create innovative materials to use in their lectures and seminars, quizzes, adaptive quizzes, and tests, or even automatic assessments of assignments. Higher Education is now moving towards a more personalized approach to teaching which fosters student autonomy, more efficient knowledge, and skill acquisition as the skills related to AI use are crucial for the next generation (Pelletier et al., 2022; UNESCO, 2023). Gen AI also allows lecturers to pilot various teaching approaches before using them in their classes by creating synthetic educational data that educators can evaluate before making any further decisions (Brown et al., 2020). Gen AI facilitates various aspects of lecturers' work i.e., administration, TLA, reporting, research etc. (Burns, 2021). Gen AI can now undertake some of the tasks lecturers usually perform on their own and decrease their workload by i.e., monitoring students' progression and progress, predicting it, facilitating students' learning process, and offering tutoring and academic mentor support (Williamson, 2017).

Gen AI can be applied in numerous ways in education to allow personalization of the education process and allow educators to: (a) keep track of students' progress, (b) identify their challenges and mistakes, and provide individualized feedback adapting the level of difficulty to the learners' needs, (c) offer writing support, marking assignments, detecting plagiarism, (d) offer assessment support to lecturers and generally enabling the use of automation of specific educational processes to enable learners to adapt to a universe dominated by algorithmic activities, and (e) offer training for educators to develop their skills while also monitoring the impact of AI on students' creativity and critical thinking (UNESCO, 2023). Educators' work is becoming more efficient as Gen AI is taking over activities that can be automated (i.e., marking) enabling lecturers to spend more time helping students who need special support (inspiration, encouragement, mentoring/coaching) which promotes integration and equalization of educational opportunities, Education for Social Justice and inclusion (Bryant et al., 2020). Gen AI can also support disabled and neurodiverse students who often face exclusion. However, researchers and scholars have raised a great number of ethical dilemmas involved in designing and using Gen AI tools (Floridi et al., 2018). One major issue is that of transparency as students often do not understand how their lecturers use AI to assess their performance. One other major 'thorn' is the privacy of student data as lecturers need to be careful about how this data is stored as it relates to students' progress, preferences, and overall behavior and who has access to it. Finally, this data should only be used for educational purposes (Jobin et al., 2019).

UNESCO offers ethical guidelines that stress the sustainable and fair use of AI in HE, focusing on the significance of responsibility and fairness in the development and implementation of Gen AI (UNESCO, 2021). Gen AI can even replace educators in terms of automatic learning, adapting the level of difficulty, providing answers and information, or offering feedback. From the moment, we put Gen AI into general use, we need to start to realize that we are coming towards the end of classic examination and testing approaches that reflect the essence of academic learning: reasoning, argumentation, and deduction. We also need to consider exams under strict supervision to avoid plagiarism and nonexistent bibliographical sources as is sometimes the norm with texts generated by AI and reconsider how we assess and evaluate our students' learning.

Despite concerns that AI might replace educators, it is believed that AI should be used as a tool to assist lecturers' work as they can now focus on developing students' soft skills i.e., critical thinking, intercultural awareness, and empathy rather than grading and providing personalized feedback. The key challenge yet remains how we can support lecturers' effective, responsible, and sustainable use of AI as individualization of the teaching process using AI is one of the most promising changes in HE (Holstein et al., 2019; Holmes et al., 2019; Luckin et al., 2016). To sum up,

Gen AI can transform the teaching process in HE by increasing its effectiveness, flexibility, and adaptability, considering diverse student needs, which is becoming increasingly important in the context of distance and hybrid education (Hopcan et al., 2023). Potential exclusion of students from the tools related to Gen AI may reduce students' competitiveness in the market and their overall professional development.

The present study explored lecturers' perceptions of the use of AI in HE, their AI literacy, and the range of sustainable and ethical LTA practices using AI tools they have successfully implemented in HE. In this chapter, the relevant literature on lecturers' use of AI in higher education classrooms and their AI literacy will be explored to provide the background of the study. Then, the methodology of the study will be presented in detail to help readers better understand lecturers' perceptions of AI tools in HE. The findings of the study will be examined and then discussed to highlight the benefits and challenges of using AI tools in HE. Implications and recommendations will be analyzed and then limitations and suggestions for further research will be considered to conclude this chapter.

BACKGROUND

This section will provide the literature review of this study exploring several relevant topics.

Evolution of AI in Education

Since 1956, Gen AI has transformed HE offering individualized options to enhance student learning while also engaging students in improper usage of AI tools with disastrous effects on their academic performance and creativity (Sanabria-Navarro et al., 2023). Some scholars stress that AI will eventually replace educators while others believe that lecturers are irreplaceable as they can transmit important values to learners and inspire them. Gen AI tools are increasingly in demand lately as they personalize learning and foster better retention and long-term academic performance (Moturu et al., 2023). In the last three decades, the integration of AI in HE has been directly associated with advancements in educational approaches, highlighting the significance of AI-based e-learning applications in transforming the educational context. Changes include supportive student-facing systems, individualized adaptive learning, automatic grading/marketing, and tutor feedback. The integration of AI with revolutionary technologies like the Internet of Things and immersive augmented/virtual reality technology is necessary for the future of AI in HE (Tan et al., 2013).

Lecturers' Attitudes and Perceptions Towards AI

The use of AI tools in HE was either welcomed with enthusiasm as it reduced lecturers' workload or with caution as it generated several problems, i.e., plagiarism. According to Ofosu-Ampompong et al. (2024), university teaching staff were enthusiastic about the use of AI tools in their classrooms. However, that study also revealed that lecturers' acceptance was partially due to institutional decisions to integrate AI tools in HE, the ease of use of AI, and the relative support they received. Additionally, the sociocultural context and the continuous professional development opportunities offered always play their role in solidifying lecturers' positive attitudes toward AI. Lecturers are open to tools that can offer significant benefits and ease their everyday lives (Eden et al., 2024).

Previous studies reveal lecturers' attitudes in various contexts as they express their excitement about AI's revolutionary capabilities (Aithal & Aithal, 2023), and its influence on lecturers' and learners' engagement and academic achievement (Huang et al., 2023). Educators express their willingness to explore AI tools and use them in their classes (Pilai et al., 2024; Kim & Kim, 2022; Wang et al., 2021) but some of them also express their concerns about how feasible its integration into certain more traditional HE curricula is (Liu et al., 2023).

Towards AI Key Themes in Integrating Artificial Intelligence (AI) in Education

Adaptive and Personalized Learning

AI-powered adaptive and personalized learning also referred to as intelligent tutoring systems (ITS), is a virtual learning environment that tailors LTA approaches to individual students' needs, tastes, and capabilities. It also employs machine learning techniques, self-training algorithms, and neural networks to identify suitable learning content for students depending on their needs (Kabudi et al., 2020). This individualized strategy helps determine each learner's proficiency level and offers appropriate tasks and tests. For instance, Arizona State University used CogBooks, an adaptive learning technology that substituted ordinary books and written material and led to increased passing rates and dropout rates (Contrino et al., 2024). TSAL and WELSA also combine various AI techniques like adaptive learning, automated feedback, grading, and chatbot responses. These AI-powered strategies facilitate Education for Social Justice as they widen access beyond physical institutions. (Bulathwela et al., 2024).

Automated Grading and Feedback

Lecturers increasingly use AI in grading students' work using i.e., the autograder program, which can evaluate written assignments and multiple-choice tests without human interference (August & Tsaima, 2021). Some other educators use a fusion of AI and virtual reality to assess aspiring dentists' proficiency based on their movements. Gradescope is also employed to digitize and evaluate learners' assignments, decreasing lecturers' workload. On the other hand, lecturers claim that overreliance on AI grading reduces students' creativity and puts certain students at a disadvantage as it promotes uniformity. However, AI programs are consistently used to save educators time and effort in large-scale tests (AI Braiki et al., 2020). Certain platforms like edX are using AI scoring engines that may replicate lecturers' marking and provision of feedback on a large volume of writing assignments. This approach is widely used in online learning environments, but it can restrict students' creative skills and original and innovative thinking in traditional classrooms (Baker, 2021).

Emotional AI

Students' social and emotional learning is currently measured using Emotional AI (McStay, 2019) and affective computing which focuses on developing systems and devices that can identify and explain students' emotions checking student engagement levels using nonverbal signals assessed by AI technologies (Vistorte et al., 2024). Research indicates that AI tools may use eye, facial expressions, and head movements to evaluate student involvement and further improve engagement and academic performance but there are still serious concerns and reservations for learners with specific disabilities (Barua et al., 2022).

AI for Equity, Diversity, and Inclusion (EDI)

Research indicates that AI tools that use machine learning algorithms can foster equity and inclusion offering equal opportunities for success to all learners irrespective of their background, tastes, and capabilities (Anis, 2023). As HE Institutions develop their strategic focus on equity and inclusion in AI HE policies, particularly for marginalized students, i.e., BAME, neurodiverse, multilingual, certain initiatives like IBM's Simpler Voice: Overcoming Illiteracy Project help widen access to HE and face challenges such as fairness, accountability, and transparency in AI tools as issues like underdeveloped digital skills and speaking English as a second language may decrease accessibility for certain groups of learners (UNESCO, 2019). Unfortunately, many scholars claim that the use of AI in HE may increase inequalities for marginalized groups and biases. AI tools can support the provision

of individualized learning and help students from marginalized groups overcome barriers. Nevertheless, if the algorithms are biased, the solutions offered by AI will also be biased, i.e., Microsoft's Tay, a Twitter chatbot (Dhawan and Batra, 2021). To sum up, responsible and ethical use of AI in HE is the solution to the challenges already mentioned and policymakers must put forward equity, inclusion, and accessibility to increase AI's possibilities of fostering equal and inclusive education (UNESCO, 2021).

Global Perspectives on AI in HE

Scholars indicate that lecturers' attitudes towards AI depend highly on their context, i.e., country of origin, as this can influence their practices. Lecturers in Estonia, for example, confessed that they need to develop their AI literacy but have been using AI to develop teaching materials and organize their lectures (Chounta, 2022). Another study in the same context revealed that lecturers' previous experience with the use of digital technologies has a significant impact on their personal stances towards AI and the successful use of AI tools in HE (Leoste, 2021). In another continent, Asia, lecturers living in Pakistan are also favorably disposed to the integration of technology in HE as they believe that it increases student engagement and involvement in their own learning (Akram et al., 2022). On the other hand, South Korean educators recognize the need to use AI tools in HE but are deeply concerned as this may influence the development of students' critical thinking skills and learning autonomy (Kim et al., 2022). In Sweden, lecturers claim that there may be issues with fairness, responsibility, and insufficient knowledge and resources for using AI tools in their everyday lectures (McGrath et al., 2023). In North America, university teachers are worried about their own role and the transparency of AI decision-making (Kim, 2022). The overall conclusion one reaches when considering the use of AI globally is that the integration of AI into HE needs to take into consideration the context and consider the challenges and opportunities of each country to enable efficient and inclusive use of AI in HE worldwide. Consequently, collective initiatives informed by the local context and international best practices will have an undeniable impact on shaping the future of the integration of AI tools in HE globally.

Concluding the literature review on the use of AI tools in HE, it is worthwhile mentioning that the main aim of the current study was to answer the following research question:

- How AI literate are HE lecturers nowadays?
- How can lecturers develop sustainable and ethical AI-powered LTA in HE?

MAIN FOCUS OF THE CHAPTER

Methodology

Participants

The current study used a mixed-method approach and a semi-experimental design. 42 lecturers from various universities across Europe participated in this study. This was a convenience sample as the researcher tapped on her professional network and lecturers' demographic data can be seen in Table 1. The main aim of the study was to explore lecturers' AI literacy and their sustainable and ethical AI-powered LTA practices to inform the readers of this chapter about useful tools they may use in their classes and ensure senior leadership teams are aware of the potential need to develop their academic staff AI literacy.

Table 1. Demographic details and characteristics of participating lecturers

	Students	Frequency
Gender	Male	10
	Female	28
	LGBTQ+	4
Nationality	UK	15
	International	27

Method and Procedure

The present study utilized an exploratory qualitative approach to explore lecturers' AI literacy and best AI-related practices in HE at 4 HEI in the UK, Greece, Albania, and Cyprus (Ward et al., 2018). It aspired to examine a modern real-life phenomenon within a certain context (Sampson & Johannessen, 2020). The study used a qualitative interviewing data collection method, which is more suitable for exploratory studies that attempt to gain rich insights into a complicated phenomenon like lecturers' AI literacy. In the current study, a semi-structured interview technique was deployed as it matches this exploratory study that implements interpretive phi-

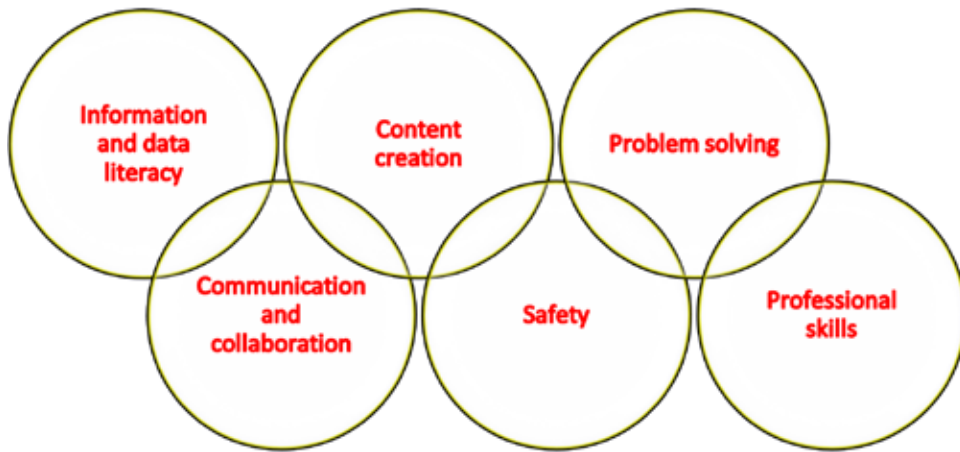
losophy (Saunders, 2016). Its structure allows the researcher to “probe answers and allows a balance between focus and flexibility” (Saunders et al., 2016).

The researcher created different types of open-ended questions that comprised descriptive, structural, contrast, and evaluative content to explore the participants’ perspectives and get valid information (Elo et al., 2014). To avoid reflexivity error and response bias, the researcher chose to initiate the interview with a brief discussion to explain the scope of the study in detail and develop intimacy as a strategy to lessen such biases. Case studies have been criticized because they offer little basis for scientific generalization (Yin, 2013). The current study has limitations because it was a qualitative study that used only a specific number of interviewees from a few HEI in Europe. It is closely related to the phenomenological and hermeneutical research approach which points to an internal and thorough awareness of the essence of research, not at generating generalizable outcomes.

The interviews were recorded and transcribed verbatim, based on predetermined semi-structured questions (Yin, 2013). These questions were further elaborated to probe deep into the interviewee’s experiences. They aimed to examine their opinions and practices. The semi-structured interview questions were scrutinized taking into consideration an extensive literature review of studies exploring lecturers’ AI literacy and included a list of basic questions and some prompts (e.g., exploratory) to promote further discussion. Introductory, barrier, and closing questions were used to allow for a certain kind of progression in the interview procedure and included background demographic questions, experience/behavior questions, opinion/value questions, and feeling questions (Collis & Hussey, 2013). Each interview lasted approximately fifty minutes.

Qualitative research data was collected from non-standardized interviews and analyzed using a prominent approach, thematic analysis (Thornhill et al., 2022). Thematic analysis is adjustable and can provide insight into major resemblances and contrasts on the current topic depending on how these are observed by the interviewees. The research team (the researcher and an assistant) employed a constructivist grounded theory method to analyse the interviews (Ramalho, 2015). The thematic analysis was enhanced by incorporating GenAI into the process (Morgan, 2023).

Figure 1. Lecturers' AI literacy subfields



Findings

The researcher analysed all findings taking into consideration the research questions of the current study and detected the following major themes which were repeated by more than 30 lecturers.

Lecturers as enthusiastic adopters of AI tools

Many lecturers confessed that their knowledge of AI tools was limited but were eager to learn and experiment with new AI techniques which could potentially decrease their workload, increase students' engagement, and promote Social Justice for low-achieving students. However, they expressed their concerns about the impact of AI on students' critical thinking, creative and problem-solving skills.

"AI is a new friend we have to get to know better. We have been using it for seeking new information and proofreading our work, but we need to learn other ways in which we can use AI tools to support all our students irrespective of their background, and make our lectures more engaging. I look forward to using AI as an assessment tool as well as it will help us dedicate our marking time to students in need. HEI should invest money and time in developing our AI literacy. This would be a wise investment for our own and our students' future."

Lecturers also discussed imaginative ways in which they were using AI to inspire their students and develop autonomous learners, responsible for their own and their peers' learning.

"I love exploring new ways to use AI tools. At first, I was using Chat GPT and grammar checkers for proofreading as they help expedite processes like article and research paper writing as well as grammar verification. I then used Chat GPT in statistical analysis expanding students' capabilities beyond the usual methods. I also encouraged students to use AI for exam preparation when they needed assistance in solving problems or needed to better understand our course materials. Finally, I used chatbots and digital assistants as they are widely accessible and provide excellent student learning opportunities and rapid guidance and support."

Lecturers as cautious adopters of AI tools

Some lecturers also highlighted the fact that Chat GPT can be used as a supplementary tool rather than as a primary teaching approach. They believed in maintaining a balanced approach and facilitating a gradual adoption of AI in HE learning and teaching. The main goal was to ensure that students did not depend on them too much as this would have an impact on the development of crucial personal and professional skills. AI tools can be used to provide additional practice for students who need it especially before exams fostering analytical skills and allowing low-achieving students or students with disabilities to receive additional support if needed.

"Cautious optimism may allow gradual successful and meaningful integration of AI techniques in AI classes without compromising traditional pedagogical values. I have used Chat GPT in my classes as an additional resource for students and can assure you that it increased student engagement and autonomy. The use of AI tools for targeted tasks or supplementary material supports students as they receive additional practice and is a valuable assistance for low-achieving students. Lecturers should always pilot AI tools before using them systematically in their classes and receive extensive 365 feedback to ensure they achieve the goals for which they are used without creating additional problems. Even tried-out AI tools need to be introduced with caution to different groups of learners as their needs and tastes vary. "

Some lecturers were even more skeptical about the use of AI tools as they are not always accurate and reliable. This may result in offering students the wrong information and this ultimately has a direct impact on student learning. Students need to be warned to be cautious and further verify all information they receive.

“AI tools can offer misleading information. I have seen it in my classes. Students should learn to critically assess all information they receive from AI tools. They should not rely on AI to do their coursework and resolve all their problems. That kind of dependency should be avoided. Therefore, the use of AI tools should be carefully monitored and students’ AI literacy should also be developed before using AI tools in the classroom. Students should be aware that plagiarism is a serious academic offense and AI tools should not be used to offer readymade solutions to potentially ‘lazy’ students.”

To sum up, the findings from the current study indicated that lecturers expressed their wish to develop their own AI literacy and that of their students but also expressed their ethical and pedagogical concerns about using AI tools systematically in their classes as they want to avoid students and their own overdependence on AI and the potential underdevelopment of their creative and critical thinking skills due to excessive use of AI in their everyday lives.

Discussion and Implications

The current study explored lecturers’ perceptions of how AI literate educators in HE are at the moment and how they could develop sustainable and ethical AI-powered LTA in HE. The outcomes indicated that the majority of the lecturers currently use AI even to perform simple tasks, i.e., searching for new information and materials, correcting work, and creating new materials confirming previous research (Jafari & Keykha, 2024; Rudolph et al., 2023; Ou et al., 2024). Lecturers have indicated that they are trying to familiarize themselves with the new AI tools and they see great potential but need additional guidance and support. Many lecturers express their concerns about the ethical concerns of using AI to generate answers as the credibility of the generated material is often questionable. They also point out the benefits of the use of AI tools by multilingual students in translation and proofreading. This fosters equity for marginalized students who do not speak English as their first language. Lecturers in our study also seem worried about keeping up with the evolution of technology and preparing students for using AI in their work in the future. They believe that training in the ethical use of AI should be mandatory as students and lecturers often use AI in their research.

Participants in this study highlighted that Gen AI tools are invaluable as they can provide immediate and detailed feedback to students - which is impossible for lecturers to do - enhancing student academic performance and engagement. These outcomes align with previous research stressing how useful and effective Gen AI tools can be in HE (He et al., 2025; Khlaif et al., 2024; Lau & Guo, 2023; Moorhouse et al., 2023). However, they also identified several pitfalls as both lecturers and students lack the necessary skills to make full and responsible use of AI tools.

They also need continuous professional development to become instantly aware of new developments (Fakhar et al., 2024). Lecturers also seem unaware of effective ways in which they can integrate AI tools in their teaching. They also report their concerns for integrity and the fear for AI-generated content to undermine traditional assessment approaches. They stressed the necessity of developing improved AI detection techniques and awareness programs to eliminate the chances of plagiarism and academic dishonesty (Tripathi & Thakar, 2024).

To sum up, the findings of this research highlight the complexity lecturers are faced with when using AI tools in HE. The findings highlight both the potential benefits and challenges linked with integrating AI tools, offering valuable insights for lecturers, policymakers, senior leaders and managers, and HEIs. The contribution of this study lies in the way participants reported different procedures used to improve the integration of AI tools with LTA in HE. The study wishes to offer recommendations for the development of successful, ethical, and sustainable AI-powered practices and for continuously developing lecturers' AI literacy to be able to effectively guide their students and develop their AI-related professional skills.

CONCLUSION

This research offers a thorough understanding of the factors influencing the use of generative artificial intelligence (Gen AI) by lecturers in HE and offers valuable insights into their perceptions of their AI literacy. The study also presents several sustainable and ethically powered LTA practices that educators currently use in HE. Even though there are evident benefits, such as instant and personalized feedback for students, challenges related to ease of use and academic integrity need to be addressed. By leveraging these insights, HEIs, senior leadership teams, and policymakers can develop strategies to help lecturers efficiently integrate Gen AI, thereby improving both their own LTA practices and student learning experiences and outcomes.

Limitations and Directions for Future Research

The current study has several limitations and offers directions for future research. First, the study included a limited number of participants from European HEIs only. Therefore, the results may not apply to other educational contexts. The cultural, technological, and educational differences across different European countries may have an impact on these lecturers' adoption and successful integration of Gen AI tools in their classes. Moreover, the current research relied on self-reported data from the interviewees, which are susceptible to several biases such as social desirability

and recollection bias. The lecturers may also have inflated or understated their use and perceptions of Gen AI tools, potentially impacting the outcomes' accuracy.

This study used a cross-sectional approach, collecting data at a single point in time. This technique limits the ability to infer causality or track changes in perceptions and behaviors over time. More longitudinal studies would be more efficient in capturing the evolution of educators' perceptions and the long-term impacts of Gen AI integration in HE.

Furthermore, this research did take into consideration the variability in the types and functionalities of Gen AI tools employed by the interviewees. Different tools may have varying levels of effectiveness and user-friendliness, influencing educators' perceptions and experiences. These studies should use longitudinal designs to track changes in educators' perceptions, attitudes, and use of Gen AI tools over time. This would provide additional insights into the long-term effects of Gen AI in HE settings. In addition, conducting comparative studies across different countries, educational levels, and cultural contexts could help to identify universal and context-specific factors influencing Gen AI adoption. This would enhance the generalizability of the findings and inform tailored implementation strategies.

Future studies should also include a broader range of individuals, including those who are skeptical about or neutral towards Gen AI techniques. Understanding the barriers and facilitators for different groups can provide a more complete picture of the problems and potential of integrating Gen AI into HE. As Gen AI technologies continue to evolve, future research should examine the latest advancements and their implications for educational assessment. Studies should investigate the integration of emerging technologies, such as augmented-reality learning systems, with Gen AI tools to improve educational experiences. Additional research is needed to explore the ethical implications of utilizing Gen AI in HE, including concerns about data privacy and academic integrity and the potential of AI bias. Creating comprehensive ethical rules and policies will be critical to the responsible use of Gen AI capabilities.

Finally, exploring the efficiency of different training and support programs for lecturers using Gen AI tools can offer insights into best sustainable practices for continuous professional development. Future research should investigate the most effective approaches to develop educators' digital competencies and self-confidence in utilizing AI-powered techniques. By addressing these limitations and investigating the recommended future research topics, researchers can contribute to a more comprehensive understanding of Gen AI integration in HE contexts and its potential to enhance HE LTA fostering social justice.

REFERENCES

- Aithal, P. S., & Aithal, S. (2023). Optimizing the use of artificial intelligence-powered GPTs as teaching and research assistants by professors in higher education institutions: A study on smart utilization. *International Journal of Management, Technology, and Social Sciences*, 8(4), 368–401. DOI: 10.47992/IJMTS.2581.6012.0326
- Akram, H., Abdelrady, A. H., Al-Adwan, A. S., & Ramzan, M. (2022). Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. *Frontiers in Psychology*, 13, 920317. DOI: 10.3389/fpsyg.2022.920317 PMID: 35734463
- Al Braiki, B., Harous, S., Zaki, N., & Alnajjar, F. (2020). Artificial intelligence in education and assessment methods. *Bulletin of Electrical Engineering and Informatics*, 9(5), 1998–2007. DOI: 10.11591/eei.v9i5.1984
- Anis, M. (2023). Leveraging artificial intelligence for inclusive English language teaching: Strategies and implications for learner diversity. *Journal of Multidisciplinary Educational Research*, 12(6), 54–70.
- August, S. E., & Tsaima, A. (2021). Artificial intelligence and machine learning: an instructor's exoskeleton in the future of education. *Innovative Learning Environments in STEM Higher Education: Opportunities, Challenges, and Looking Forward*, 79-105.
- Baker, R. S. (2021). Artificial intelligence in education: Bringing it all together. *Digital education outlook: Pushing the frontiers with AI, blockchain, and robots*, 43-54.
- Barua, P. D., Vicnesh, J., Gururajan, R., Oh, S. L., Palmer, E., Azizan, M. M., Kadri, N. A., & Acharya, U. R. (2022). Artificial intelligence enabled personalised assistive tools to enhance education of children with neurodevelopmental disorders—A review. *International Journal of Environmental Research and Public Health*, 19(3), 1192. DOI: 10.3390/ijerph19031192 PMID: 35162220
- Brown, T. B., Mann, B., Ryder, N., Subbiah, M., Kaplan, J., Dhariwal, P., . . . Amodei, D. (2020). Language Models are Few-Shot Learners. *arXiv preprint arXiv:2005.14165*.
- Bryant, J., Heitz, C., Sanghvi, S., & Wagle, D. (2020). *How artificial intelligence will impact K-12 teachers*. McKinsey & Company.

Bulathwela, S., Pérez-Ortiz, M., Holloway, C., Cukurova, M., & Shawe-Taylor, J. (2024). Artificial intelligence alone will not democratise education: On educational inequality, techno-solutionism and inclusive tools. *Sustainability (Basel)*, 16(2), 781. DOI: 10.3390/su16020781

Burns, M. (2021). Technology in education. Background paper prepared for the 2023 Global Education Monitoring Report on Technology in Education. https://www.researchgate.net/publication/358358065_Technology_in_Education_Background_Paper_for_2023_Global_Education_Monitoring_Report

Chounta, I. A., Bardone, E., Raudsep, A., & Pedaste, M. (2022). Exploring teachers' perceptions of artificial intelligence as a tool to support their practice in Estonian K-12 education. *International Journal of Artificial Intelligence in Education*, 32(3), 725–755. DOI: 10.1007/s40593-021-00243-5

Contrino, M. F., Reyes-Millán, M., Vázquez-Villegas, P., & Membrillo-Hernández, J. (2024). Using an adaptive learning tool to improve student performance and satisfaction in online and face-to-face education for a more personalized approach. *Smart Learning Environments*, 11(1), 6. DOI: 10.1186/s40561-024-00292-y

Eden, C. A., Chisom, O. N., & Adeniyi, I. S. (2024). Integrating AI in education: Opportunities, challenges, and ethical considerations. *Magna Scientia Advanced Research and Reviews*, 10(2), 6-13.

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open*, 4(1). DOI: 10.1177/2158244014522633

Fakhar, H., Lamrabet, M., Echantoufi, N., & Ajana, L. (2024). Towards a New Artificial Intelligence-based Framework for Teachers' Online Continuous Professional Development Programs: Systematic Review. *International Journal of Advanced Computer Science and Applications*, 15(4). Advance online publication. DOI: 10.14569/IJACSA.2024.0150450

Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., Luetge, C., Madelin, R., Pagallo, U., Rossi, F., Schafer, B., Valcke, P., & Vayena, E. (2018). AI4People—an ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. *Minds and Machines*, 28(4), 689–707. DOI: 10.1007/s11023-018-9482-5 PMID: 30930541

He, A. J., Zhang, Z., Anand, P., & McMin, S. (2025). Embracing generative artificial intelligence tools in higher education: A survey study at the hong kong university of science and technology. *Journal of Asian Public Policy*, 18(1).

Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Centre for Curriculum Redesign.

Holstein, K., McLaren, B. M., & Aleven, V. (2019). Designing for complementarity: Teacher and student needs for orchestration support in AI-enhanced classrooms. *Artificial Intelligence in Education: 20th International Conference, AIED 2019, Chicago, IL, USA, June 25-29, 2019 Proceedings*, 20(Part I), 157–171.

Hopcan, S., Polat, E., Ozturk, M. E., & Ozturk, L. (2023). Artificial intelligence in special education: A systematic review. *Interactive Learning Environments*, 31(10), 7335–7353. DOI: 10.1080/10494820.2022.2067186

Huang, A. Y., Lu, O. H., & Yang, S. J. (2023). Effects of artificial Intelligence–Enabled personalized recommendations on learners’ learning engagement, motivation, and outcomes in a flipped classroom. *Computers & Education*, 194, 104684. DOI: 10.1016/j.compedu.2022.104684

Jafari, F., & Keykha, A. (2024). Identifying the opportunities and challenges of artificial intelligence in higher education: A qualitative study. *Journal of Applied Research in Higher Education*, 16(4), 1228–1245. DOI: 10.1108/JARHE-09-2023-0426

Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. *Nature Machine Intelligence*, 1(9), 389–399. DOI: 10.1038/s42256-019-0088-2

Kabudi, T., Pappas, I., & Olsen, D. H. (2021). AI-enabled adaptive learning systems: A systematic mapping of the literature. *Computers and Education: Artificial Intelligence*, 2, 100017. DOI: 10.1016/j.caeai.2021.100017

Khlaif, Z. N., Ayyoub, A., Hamamra, B., Bensalem, E., Mitwally, M. A., Ayyoub, A., Hattab, M. K., & Shadid, F. (2024). University teachers’ views on the adoption and integration of generative AI tools for student assessment in higher education. *Education Sciences*, 14(10), 1090. DOI: 10.3390/educsci14101090

Kim, J., Lee, H., & Cho, Y. H. (2022). Learning design to support student-AI collaboration: Perspectives of leading teachers for AI in education. *Education and Information Technologies*, 27(5), 6069–6104. DOI: 10.1007/s10639-021-10831-6

Kim, N. J., & Kim, M. K. (2022, March). Teacher’s perceptions of using an artificial intelligence-based educational tool for scientific writing. *Frontiers in Education*, 7, 755914. DOI: 10.3389/educ.2022.755914

Lau, S., & Guo, P. (2023, August). From "Ban it till we understand it" to "Resistance is futile": How university programming instructors plan to adapt as more students use AI code generation and explanation tools such as ChatGPT and GitHub Copilot. In *Proceedings of the 2023 ACM Conference on International Computing Education Research-Volume 1* (pp. 106-121). DOI: 10.1145/3568813.3600138

Leoste, J., Jögi, L., Õun, T., Pastor, L., San Martín López, J., & Grauberg, I. (2021). Perceptions about the future of integrating emerging technologies into higher education—The case of robotics with artificial intelligence. *Computers*, 10(9), 110. DOI: 10.3390/computers10090110

Liu, M., Ren, Y., Nyagoga, L. M., Stonier, F., Wu, Z., & Yu, L. (2023). Future of education in the era of generative artificial intelligence: Consensus among Chinese scholars on applications of ChatGPT in schools. *Future in Educational Research*, 1(1), 72–101. DOI: 10.1002/fer3.10

Luckin, R. W., Holmes, M., & Griffiths, L. B. (2016). *Forcier Intelligence Unleashed: An Argument for AI in Education*. Pearson London.

Moorhouse, B. L., Yeo, M. A., & Wan, Y. (2023). Generative AI tools and assessment: Guidelines of the world's top-ranking universities. *Computers and Education Open*, 5, 100151. DOI: 10.1016/j.caeo.2023.100151

Morgan, D. L. (2023). Exploring the use of artificial intelligence for qualitative data analysis: The case of ChatGPT. *International Journal of Qualitative Methods*, 22, 1–10. DOI: 10.1177/16094069231211248

Moturu, V. R., & Nethi, S. D. (2022). Artificial intelligence in education. In *Emerging IT/ICT and AI Technologies Affecting Society* (pp. 233–244). Springer Nature Singapore.

Ofosu-Ampong, K. (2024). Beyond the hype: Exploring faculty perceptions and acceptability of AI in teaching practices. *Discover Education*, 3(1), 38. DOI: 10.1007/s44217-024-00128-4

Ou, A. W., Stöhr, C., & Malmström, H. (2024). Academic communication with AI-powered language tools in higher education: From a post-humanist perspective. *System*, 121, 103225. DOI: 10.1016/j.system.2024.103225

Pelletier, K., Brown, M., Brooks, D. C., McCormack, M., Reeves, J., Arbino, N., Bozkurt, A., Crawford, S., Czerniewicz, L., Gibson, R., Linder, K., Mason, J., & Mondelli, V. (2021). *2021 EDUCAUSE horizon report teaching and learning edition*. EDUCAUSE.

Pillai, R., Sivathanu, B., Metri, B., & Kaushik, N. (2024). Students' adoption of AI-based teacher-bots (T-bots) for learning in higher education. *Information Technology & People*, 37(1), 328–355. DOI: 10.1108/ITP-02-2021-0152

Ramalho, R., Adams, P., Huggard, P., & Hoare, K. (2015). Literature review and constructivist grounded theory methodology. In Ramalho, R., Adams, P., Huggard, P., & Hoare, K. (Eds.), *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 16 (Vol. 3).

Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning and Teaching*, 6(1), 342-363.

Russell, S. J., & Norvig, P. (2016). *Artificial intelligence: a modern approach*. Pearson.

Sampson, H., & Johannessen, I. A. (2020). Turning on the tap: The benefits of using 'real-life' vignettes in qualitative research interviews. *Qualitative Research*, 20(1), 56–72. DOI: 10.1177/1468794118816618

Sanabria-Navarro, J. R., Silveira-Pérez, Y., Pérez-Bravo, D. D., & de-Jesús-Cortina-Núñez, M. (2023). Incidences of Artificial Intelligence in Contemporary Education. *Comunicar: Media Education Research Journal*, 31(77), 93–103. DOI: 10.3916/C77-2023-08

Saunders, L. (2016). Teaching the reference interview through practice-based assignments. *RSR. Reference Services Review*, 44(3), 390–410. DOI: 10.1108/RSR-04-2016-0025

Tan, S. (2013). Harnessing Artificial Intelligence for Innovation in Education. In *Learning Intelligence: Innovative and Digital Transformative Learning Strategies* (pp. 335–363). Springer.

Thornhill, E., Sanderson, C., & Gupta, A. (2022). A grounded theory analysis of care-coordinators' perceptions of family growth associated with an experience of first episode psychosis. *Psychosis*, 14(4), 355–367. DOI: 10.1080/17522439.2021.1971743

Tripathi, A., & Thakar, S. V. (2024). Ethical Use of AI for Academic Integrity: Preventing Plagiarism and Cheating. *Ethical Frameworks in Special Education: A Guide for Researchers*, 91.

UNESCO (Ed.). (2019). Artificial Intelligence in education: Challenges and opportunities for sustainable development. UNESCO Working Papers on Education Policy. <https://bit.ly/3z6BQvN>

UNESCO. (2020). *AI in Education: Change at the Speed of Learning*. UNESCO IITE Policy Brief.

UNESCO. (2021). International Forum on AI and the futures of education developing competencies for the AI era.

UNESCO. (2023). *Global Education Monitoring Report. Technology in Education. A Tool on Whose Terms?* UNESCO.

Vistorte, A. O. R., Deroncele-Acosta, A., Ayala, J. L. M., Barrasa, A., López-Granero, C., & Martí-González, M. (2024). Integrating artificial intelligence to assess emotions in learning environments: A systematic literature review. *Frontiers in Psychology*, 15, 1387089. DOI: 10.3389/fpsyg.2024.1387089 PMID: 38966729

Wang, Y., Liu, C., & Tu, Y. F. (2021). Factors affecting the adoption of AI-based applications in higher education. *Journal of Educational Technology & Society*, 24(3), 116–129.

Ward, J. K., Comer, U., & Stone, S. (2018). On qualifying qualitative research: Emerging perspectives and the “Deer” (descriptive, exploratory, evolutionary, repeat) paradigm. *Interchange*, 49(1), 133–146. DOI: 10.1007/s10780-018-9313-x

Williamson, B. (2017). *Big data in Education*. Sage (Atlanta, Ga.).

Yin, L. W. (2013). *Inclusive leadership and employee voice: Mediating roles of psychological safety and leader-member exchange*. PhD Thesis. Hong Kong Baptist University.

ADDITIONAL READING

Meletiadou, E. (2011). *Peer assessment of writing in secondary education: Its impact on learners' performance and attitudes*. M.A. in Applied Linguistics. University of Cyprus.

Meletiadou, E. (2012). The impact of training adolescent EFL learners on their perceptions of peer assessment of writing. *RPLTL*, 3(1), 240–251.

Meletiadou, E. (2013). EFL learners' attitudes towards peer assessment, teacher assessment and the process writing' (Vol. M.A.). In D. Tsagari (Ed.) *Language Testing and Evaluation Series*, 28 (pp. 312-330). Frankfurt am Main: Peter Lang GmbH.

Meletiadou, E. (2021a). Exploring the impact of peer assessment on EFL students' writing performance. *IAFOR Journal of Education*, 9(3), 77–95. DOI: 10.22492/ije.9.3.05

Meletiadou, E. (2021a). Opening Pandora's box: How does peer assessment affect EFL students' writing quality? *Languages (Basel, Switzerland)*, 6(3), 115. DOI: 10.3390/languages6030115

Meletiadou, E. (2021b). Exploring the impact of peer assessment on EFL students' writing performance. *IAFOR Journal of Education*, 9(3), 77–95. DOI: 10.22492/ije.9.3.05

Meletiadou, E. (2021c). Using Padlets as e-portfolios to develop undergraduate students' writing skills and motivation. *IAFOR Journal of Undergraduate Education*, 9(4), 67–83. DOI: 10.22492/ije.9.5.04

Meletiadou, E. (2022). The utilisation of peer-Assisted learning/mentoring and translanguaging in Higher Education. *IAFOR Journal of Education. Language Issue*, 10(1), 135–154.

Meletiadou, E. (2022a). The Use of Peer Assessment as an Inclusive Learning Strategy in Higher Education Institutions: Enhancing Student Writing Skills and Motivation.

Meletiadou, E. (2022b). *Learners' perceptions of peer assessment: Implications for their willingness to write in an EFL classroom*. International Journal of Teacher Education and Professional Development. IGI. DOI: 10.4018/IJTEPD.295539

Meletiadou, E. (2022c). The lived experiences of female educational leaders in Higher Education in the UK: Academic resilience and gender.

Meletiadou, E. (2022d). Profiling the writing competency of BAME undergraduate students: Fostering Inclusion and academic success to improve retention in Tertiary Education.

Meletiadou, E. (accepted). Using Educational Digital Storytelling to enhance multilingual students' writing skills in Higher Education. *IAFOR Journal of Education. Technology Issue*.

Meletiadou, E., & Tsagari, D. (2012). Investigating the attitudes of adolescent EFL learners towards peer assessment of writing. In Tsagari, D. (Ed.), *Research on English as a foreign language in Cyprus* (Vol. II, pp. 225–245). University of Nicosia Press.

Meletiadou, E., & Tsagari, D. (2014). An exploration of the reliability and validity of peer assessment of writing in secondary education. In Tsagari, D. (Ed.), *Major trends in theoretical and applied linguistics 3* (pp. 235–250). De Gruyter Open Poland. DOI: 10.2478/9788376560915.p14

Meletiadou, E., & Tsagari, D. (2016). The washback effect of peer assessment on adolescent EFL learners in Cyprus. In Tsagari, D. (Ed.), *Classroom-based assessment in L2 contexts*. Cambridge Scholars Publishing.

Meletiadou, E., & Tsagari, D. (2022a). Exploring teachers' perceptions of the use of peer assessment in EFL test-dominated writing classes. *Recent Development in Language Testing and Assessment Special Issue.Languages (Basel, Switzerland)*, 7(1), 16. DOI: 10.3390/languages7010016

KEY TERMS AND DEFINITIONS

AI Literacy: The ability to understand the basic techniques and concepts behind AI in different products and services.

Artificial Intelligence: The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

Student Engagement: A term used to describe an individual's interest and enthusiasm. for school, which impacts their academic performance and behavior.