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Generative Artificial Intelligence in Higher Education: Challenges, Opportunities and Pedagogical Implications

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ABSTRACT

Generative Artificial Intelligence (GAI) is transforming Higher Education (HE), impacting academic writing, teaching methodologies and institutional practices. This study presents a literature review on the use of GAI in HE between 2024 and 2025, analyzing its strengths, weaknesses, opportunities and challenges. GAI improves productivity, student engagement, and personalization, but raises concerns about academic integrity, envy, and over-reliance on this technology. The results highlight the need for clear institutional policies, ethical guidelines and continuous training for teachers, ensuring a responsible integration of GAI. Future research should address pedagogical strategies, ethical issues, and long-term impacts of GAI on learning.

Keywords: Generative Artificial Intelligence (GAI), Higher Education (HE), Artificial Intelligence (AI), ChatGPT, pedagogical innovation

INTRODUCTION

Artificial Intelligence (AI), despite having a long history in research, can be difficult to pinpoint its exact roots. In any case, in the 1940s, Isaac Asimov's science fiction short story "Runaround" and the Three Laws of Robotics already stipulated the rules that an intelligent machine should follow (Haenlein & Kaplan, 2019). Later, in 1950, Alan Turing published "Computing Machinery and Intelligence", an article discussing how to create and test machine intelligence, the famous Turing Test (Haenlein & Kaplan, 2019). And, since the 1970s, the application of AI in the field of education has already been practiced and researched (Luckin et al., 2016). In late 2022, interest in the topic of AI increased due to the launch of ChatGPT. Today, Generative Artificial Intelligence (GAI) is a type of AI designed to create new content that does not previously exist in the input data. The difference between this and Non-Generative Artificial Intelligence is that this is a type of AI focused on analyzing, recognizing patterns, and making decisions based on existing data, without creating anything new. For example, Facebook identifies faces in a group photo and suggests tagging your friends, that is, it recognizes existing patterns (the faces), but does not create images.

The digital transformation has profoundly affected all facets of human life, with technological advances potentially reshaping the economy, society and our daily living and working arrangements (Peláez-Sánchez et al, 2024). GAI has impacted diverse contexts, significantly improving productivity (Guerrero & Herrera, 2024), by offering opportunities and challenges, and has increasingly influenced Higher Education (HE), particularly academic writing (Nguyen et al, 2024). It presents new ways to create effective learning activities in the education sector. However, integrating AI with a pedagogical focus represents a challenge. Although it is present in many areas, making life easier, it also requires updating certain professions or university study plans.

Education 4.0, which integrates emerging technologies and innovative strategies, could help prepare new generations for a technologically fluid world (Peláez-Sánchez et al, 2024). In education, for example, AI could streamline the tasks teachers perform and limit the amount of attention they have to each student, allowing them to focus on more important activities. GAI has experienced exponential growth in recent years, emerging as a fundamental disruption in education, demonstrating the ability to produce diverse and relevant content, and is transforming HE in terms of learning and institutional practices. Concomitantly, the number of university students using AGI to develop academic tasks is also increasing rapidly, which makes it necessary to explore how this technology is being approached (Niño-Carrasco et al, 2025), namely the dynamics of its use in academic writing.

For Al-Dokhny et al (2024), aligning technological resources with educational needs can improve student engagement and learning outcomes. However, technologies available on platforms such as ChatGPT have raised immense concerns about their impact on teaching (Întorsureanu et al, 2024), namely in the context of knowledge assessment, where it presents a particular challenge of ensuring the academic integrity of undergraduate and master's dissertations, as well as other types of work. The article by Nguyen et al (2024) focused on examining the nature of human-AI interactions in academic writing, specifically investigating the strategies that doctoral students employed when collaborating with an AI-based assistance tool. However, challenges such as assessment practices, institutional strategies and academic integrity risks were also observed.

As GAI rapidly integrates with ES, a critical question arises: should we focus on the potential of technology or the essential role of stakeholders? In this sense, there are already some studies on GAI in the context of ES. For example, regarding the potential of technology, the study by Özmat et Akkoyunlu (2024) considered it important to determine how AI-based translation tools could specifically affect translation studies. The study by Dogru et al (2024) aimed to critically review the effect of GAI tools on HE and research in the field of tourism and hospitality. The study by Batista et al (2024) also investigated the versatility and potential use of GAI, student acceptance and improvement in teaching. Furthermore, the study by Al-Dokhny et al (2024) examined the role of MLLMs in improving performance benefits in HE students.

Regarding stakeholders, the study by Yang et al (2024) examined their structure and the relationship patterns between them. The study by Koroleva et Jogezai (2024) also aimed to show the desired path for the use of GAI in HE, including expectations, concerns and the way forward. Focusing on the evolution of faculty roles in the classroom, Aad et al Hardey (2024) investigated the transformative impact of GAI in HE. The study by Perezchica-Vega et al (2024) explored teachers' concerns about the use of GAI, how it was used, the preventive measures adopted and their training on the topic. The rapid advancement of AI and the extensive use of social media have transformed the way students engage with educational materials and interact with their peers (Shahzad et al, 2025).

The study by Johnston et al (2024) aimed to understand the perspectives of University of Liverpool students on ChatGPT. Barrientos' (2024) study also investigated how 24 science and mathematics students viewed the impact of GAI on academic integrity. Focusing on collaborative learning, research by Shahzad et al (2025) examined the effects of GAI (ChatGPT-4) and social media use on academic performance and psychological well-being of young students. Furthermore, the cross-sectional study by Niño-Carrasco et al (2025) also explored the perceptions of 280 students at a public university in northern Mexico about GAI.

Recently, work by Jin et al (2025) revealed that universities are already proactively addressing the integration of GAI by emphasizing academic integrity, improving teaching and learning practices, and promoting equity. However, despite some studies and reviews related to GAI, which is revolutionizing education, and represented by ChatGPT, for Wang et al (2025) existing reviews predominantly focus on macro-level discussions, covering general development trends, central issues, opportunities and risks. For these authors, there is still a lack of systematic reviews from a micro-level perspective, examining the application of GAI in the classroom, in HE.

As noted above, there are already some studies on the use of GAI in teaching, particularly in HE. However, the rapid advancement in the use of this technology makes it necessary to constantly monitor and update what is happening in this area. Thus, our objective is to contribute to the survey of a set of studies on the use of GAI in higher education, identifying strengths and weaknesses of its use, in addition to possible opportunities and threats that it may represent. To this end, a survey of studies carried out over the last 2 years was carried out, presented below.

METHODOLOGY

As mentioned above, this study consisted of a literature review with the aim of identifying works whose object of study was the use of GAI in HE. Specifically, we attempt to explore contemporary research and analyze potential strengths, weaknesses, opportunities, and threats of using GAI in HE. Furthermore, this research focused on its potential use, student acceptance, teacher concerns regarding its use, and preventive measures that can be adopted.

As procedures were adopted, we searched the SCOPUS database in January 2025. The following combination of keywords "gai" AND "education" was used. The search period was limited to publications between 2024 and 2025, including recent studies on the topic. The types of documents considered were scientific articles and reviews. For greater accuracy, the keywords were filtered to include only studies related to Higher Education, with 18 documents being found, as shown in Table 1. These documents were analyzed to identify the objectives of the studies, context and methodologies used.

The articles were examined qualitatively, grouping the findings according to the main axes: potential benefits and challenges of using GAI in HE; perception and acceptance of technology by students; concerns and challenges faced by teachers and suggestions for preventive measures and regulations. The analysis of these studies allowed us to identify emerging trends in research on GAI in HE and point out gaps and opportunities for future investigations.

Table 1. Articles identified in SCOPUS on the use of GAI in HE, 2024-2025

	Document Title	Authors	Source	Year
1	Artificial Intelligence-Assisted Translation in Education: Academic Perspectives and Student Approaches	Özmat, D., Akkoyunlu, B.	Participatory Educational Research, 11(Gift-Issue), pp. 151–167	2024
2	Surging currents: a systematic review of the literature on dynamic stakeholder engagements in higher education in the generative artificial intelligence era	Yang, J., Qiu, H., Yu, W.	Journal of Asian Public Policy	2024
3	Discourse analysis on academic integrity generative AI: Perspectives from science and mathematics students in higher education	Barrientos, A.A., Del Mundo, M.A., Inoferio, H.V., ... Abdulmajid, B.P., Espartero, M.M.	Environment and Social Psychology, 9(9), 2927	2024
4	Generative AI: hopes, controversies and the future of faculty roles in education	Aad, S., Hardey, M.	Quality Assurance in Education	2024
5	Generative Artificial Intelligence and the Academic Integrity of Graduation Works in Economics–Exploring Perceptions of Romanian Academia	Întorsureanu, I., Voicu-Dorobanțu, R., Nisioiu, C.-F., Ploae, C.	Economic Computation and Economic Cybernetics Studies and Research, 58(2), pp. 132–147	2024
6	The impact of large language models on higher education: exploring the connection between AI and Education 4.0	Peláez-Sánchez, I.C., Velarde-Camaqui, D., Glasserman-Morales, L.D.	Frontiers in Education, 9, 1392091	2024
7	Human-AI collaboration patterns in AI-assisted academic writing	Nguyen, A., Hong, Y., Dang, B., Huang, X.	Studies in Higher Education, 49(5), pp. 847–864	2024

8	Practical Applications of Generative Artificial Intelligence in Teaching: The Case of Multimedia Design Engineering | Aplicaciones Prácticas de la Inteligencia Artificial Generativa en la Labor Docente: El Caso de la Ingeniería en Diseño Multimedia	Guerra Guerrero, C.O., Tass Herrera, B.	European Public and Social Innovation Review, 9	2024
9	The implications of generative artificial intelligence in academic research and higher education in tourism and hospitality	Dogru, T., Line, N., Hanks, L., ... Ozdemir, O., Suess, C.	Tourism Economics, 30(5), pp. 1083–1094	2024
10	Generative artificial intelligence in higher education: uses and opinions of teachers. | Inteligencia artificial generativa en la educación superior: usos y opiniones de los profesores	Perezchica-Vega, J.E., Sepúlveda-Rodríguez, J.A., Román-Méndez, A.D.	European Public and Social Innovation Review, 9	2024
11	Generative AI and Higher Education: Trends, Challenges, and Future Directions from a Systematic Literature Review	Batista, J., Mesquita, A., Carnaz, G.	Information (Switzerland), 15(11), 676	2024
12	Can Multimodal Large Language Models Enhance Performance Benefits Among Higher Education Students? An Investigation Based on the Task–Technology Fit Theory and the Artificial Intelligence Device Use Acceptance Model	Al-Dokhny, A., Alismaiel, O., Youssif, S., ... Drwish, A., Samir, A.	Sustainability (Switzerland), 16(23), 10780	2024
13	Student perspectives on the use of generative artificial intelligence technologies in higher education	Johnston, H., Wells, R.F., Shanks, E.M., Boey, T., Parsons, B.N.	International Journal for Educational Integrity, 20(1), 2	2024
14	Perceptions of University Students on the Uses of Artificial Intelligence in Education | Percepciones de estudiantes universitarios sobre los usos de inteligencia artificial en educación	Niño-Carrasco, S.A., Castellanos-Ramírez, J.C., Perezchica Vega, J.E., Sepúlveda Rodríguez, J.A.	Revista Fuentes, 27(1), pp. 94–106	2025
15	The desire path: unleashing expectations, discussing apprehensions, and proposing a way forward for GAI use in higher education	Koroleva, D., Jogezai, N.	Information and Learning Science	2024
16	Generative Artificial Intelligence (ChatGPT-4) and Social Media Impact on Academic Performance and Psychological Well-Being in China's Higher Education	Shahzad, M.F., Xu, S., Liu, H., Zahid, H.	European Journal of Education, 60(1), e12835	2025
17	A systematic literature review on the application of generative artificial intelligence (GAI) in teaching within higher education: Instructional contexts, process, and strategies	Wang, P., Jing, Y., Shen, S.	Internet and Higher Education, 65, 100996	2025
18	Generative AI in higher education: A global perspective of institutional adoption policies and guidelines	Jin, Y., Yan, L., Echeverria, V., Gašević, D., Martinez-Maldonado, R.	Computers and Education: Artificial Intelligence, 8, 100348	2025

PRESENTATION OF RESULTS

The main results identified in the 18 documents investigated are presented below. In the study by Özmat et Akkoyunlu (2024), translation students expressed concern about artificial intelligence because it would reduce employment opportunities in the profession. They also believe that the use of AI weakens memory and leads to laziness, further noting that it harms and weakens the teacher-student relationship. Faculty members, on the other hand, believe that AI will redefine the translator's role in the profession and provide significant support. While students advocate for the inclusion of AI in professional life, faculty members stress the need to increase the integration of AI into the translation curriculum.

On the other hand, the results of the study by Aad et al Hardey (2024) revealed that GAI currently creates biased learning environments, challenging traditional pedagogical models. Despite its potential to improve teaching, the autonomous nature of GAI often prioritizes commercial interests over pedagogical goals. This study also highlights the need for HE institutions to develop comprehensive policies, provide training for faculty and students, and create new courses that leverage GAI for personalized learning experiences.

The study by Wang et al (2025) evaluated GAI instructional application research from three dimensions: type of GAI product and discipline applied, level of application and discipline-specific integration, instructional strategies, and the role of GAI. Another study (Shahzad et al., 2025) showed that GAI (ChatGPT-4) and social networks positively influence the academic performance and psychological well-being of young students. Furthermore, the results of this research study showed that collaborative learning positively mediates between social networks, academic performance, and psychological well-being. On the other hand, it negatively mediates the association between GAI (ChatGPT-4), academic performance and psychological well-being. These findings could facilitate a better understanding of the implications of technologies in the educational context and subsequently assist in the formulation of evidence-based strategies to optimize their impact on student academic success and well-being.

The study by Johnston et al. (2024) states that students need clear policies on the use of GAI, and they consider that these technologies should not be banned from the university and that it is necessary to consider the possibility of ensuring that different groups of students have equal access to the technologies. Although students are familiar with GAI in their daily lives, they recognize limitations in their theoretical-academic knowledge about this technology and its educational applications (Niño-Carrasco et al., 2025). Furthermore, students value the time saved by using GAI to develop academic assignments but are uncertain about how these tools improve their academic performance and the quality of their academic assignments. They are still concerned that overuse and dependence on GAI may affect their critical thinking skills. However, stakeholders expect continuous improvement of technology, over-reliance, advocate gradual adjustment and emphasize the use of technology depending on the context (Koroleva et Jogezai, 2024). For example, in the study by Nguyen et al. (2024), the results indicated that doctoral students who engaged in iterative and highly interactive processes with the GAI assistance tool generally performed better on the writing task. In contrast, those who used the GAI only as a source of supplementary information, while maintaining a linear writing approach, had lower writing performance. This study also pointed to the need for further research on human-AI collaboration in HE learning, with implications for personalized educational strategies and solutions.

GAI in teaching improves efficiency, motivation, and personalization of learning. Even if well received, balanced integration with clear regulations and ethical capacity is needed, ensuring that it complements - but does not replace - teaching work. For example, the adoption of GAI in Tourism and Hospitality education can facilitate personalized learning experiences, improve students' technological competence, and promote a more diverse and inclusive learning environment (Dogru et al., 2024). For academic research, GAI-enabled technologies can revolutionize data collection, analysis, and writing in countless ways. However, there are several ethical and legal issues associated with its adoption that must be considered. The results of the study by Guerrero and Herrera (2024) also indicated that the integration of GAI into teaching is viable, with a positive perception among students and teachers toward these technologies. GAI can improve learning and streamline educational tasks such as creating materials, activities, and rubrics. However, there are concerns about the reliability and ethics of the content generated and the possible dehumanization of the educational process.

Yang et al (2024) research extensively discusses the potential of GAI, however, it also argues that in-depth analyses of stakeholder roles and relationships are lacking, mainly due to real-world complexities. For this reason, future research should explore these multidimensional relationships to promote the responsible and effective use of GAI in teaching. The findings in Barrientos's (2024) study also revealed a twofold perspective: GAI can enhance learning and inquiry by providing advanced tools and resources, but it risks undermining ethical standards if misused. This study highlights the importance of balancing technological advances with maintaining academic integrity, emphasizing the need for responsible use of AI and the development of policies to mitigate potential negative impacts. Still regarding academic integrity, the article by Întorsureanu et al. (2024) presented the results of an exploratory study on perceptions in Romanian HE in economics regarding the integrity of academic works using AI tools based on LLMs, such as ChatGPT. Survey-based research provided detailed insights into the attitudes and perceptions of the target group. The study also identified significant relationships between constructs and proposed two latent factors, a structural dimension and a consultative

dimension, which reflect two facets of the use of LLM in the creation of academic papers.

In the study by Al-Dokhny et al. (2024) the findings empower teachers to strategically improve the adoption of MLLMs, driving transformative learning outcomes, just as the results by Peláez-Sánchez et al (2024) highlighted the significant potential of LLMs to enrich HE, aligning with Education 4.0, by promoting more autonomous, collaborative and interactive learning. However, this study highlighted the need for human oversight to ensure the quality and accuracy of AI-generated content. It addressed the ethical and legal challenges to ensuring equitable implementation, suggesting an exploration of LLM integration that complements human interaction, thus maintaining academic integrity and pedagogical foundation.

In the study by Perezchica-Vega et al. (2024), it was also found that teachers are concerned about academic honesty due to the risk of tests and assignments being completely resolved with the support of the GAI. They recognize its benefits in data analysis, idea generation, and its use in writing learning activities, creating teaching materials, highlighting the time savings, and improvement of educational quality. Teachers are still learning how to use GAI, but they realize that they are capable of integrating it into their classes, with a level of mastery of these technologies ranging from reasonable to good. This study also concluded that teachers are eager to use GAI personally and academically, but in their classes, they feel concerned about the risks, although they have not yet made adjustments to their assessment mechanisms. Also, in the study by Batista et al. (2024), the results helped to identify potential directions for future investigations, including the integrity of assessment and pedagogical strategies, ethical considerations and policy development, impact on teaching and learning processes, student and teacher perceptions, technological advances, and preparation of future competencies.

The concerns of most of these studies encompass issues such as data reliability, ethical considerations, risks of compromising fundamental aspects, limitations in fully replacing human involvement, and concerns about personal responsibility. The study by Koroleva et Jogezai (2024) offers valuable insights into the use of GAI in HE, formulating policies that encourage innovation without compromising effectiveness. Key policy measures should include developing guidelines for the ethical use of GAI, designing authentic assessments to mitigate misuse, and providing training programs for teachers and students to promote GAI literacy (Jin et al., 2025). These authors recommend creating flexible regulations, data-driven decision-making, professional development, stakeholder engagement, and stakeholder accountability.

Strengths, weaknesses, opportunities and threats

This research aims to contribute, through the survey of a set of studies, to the transformative impact of GAI in HE, identifying strengths and weaknesses of its use, in addition to possible opportunities and threats that it may represent. In Humble's research (2024), several articles have already been analyzed between 2023 and 2024 from a theoretical and thematic approach, supported by the SWOT analysis structure, to identify strengths, weaknesses, opportunities and threats with GAI in computing education. In this study, the findings highlighted several challenges posed by GAI, such as potential biases, overconfidence, and loss of skills, but also several possibilities, such as increased motivation, educational transformation and support for teaching and learning.

The points that were identified in this study on GAI can solve many tasks in higher education and support the production of learning material, however, frequent difficulties with more complex tasks and problems with accuracy were also observed. The same could be said about potential biases and lack of transparency at GAI. These are important topics for continued ethical discussions. The many opportunities identified with GAI are to assist teaching and learning, induce student motivation, provide personalized learning, and improve student knowledge (Humble, 2024).

Some interesting findings from this study were the ease of use and interaction with other GAI systems. A user-friendly, human-like interface could potentially explain its popularity among students, although many are aware of the associated weaknesses and threats, such as accuracy issues, ethical issues, becoming overly dependent, and the potential loss of skills due to overuse of technology. Teachers must still consider instructional alignment, or lack thereof, because many of these GAI systems were not developed with teaching in mind and may not be suitable for learning. Highlighting the need to foster social skills, communication and teamwork is also important in teaching, as the development of these skills can guarantee students a place in the future job market (Humble, 2024). Based on this study and the 18 documents presented in Table 1, we prepared a SWOT analysis of GAI in HE, as shown in **Figure 1**.

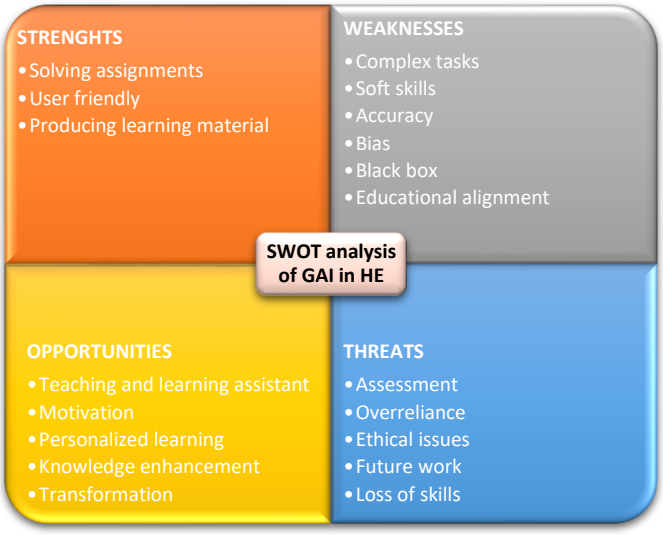

Figure 1. SWOT analysis of GAI in HE

Based on this SWOT framework, we suggest strategies for GAI in HE to use its strengths of task resolution, ease of use and production of teaching materials to optimize GAI as a teaching and learning assistant and maximize student motivation. We also recommend taking advantage of the GAI opportunity to reduce challenging problems, introduce new educational methodologies and technologies, and develop skills such as critical thinking to minimize the effects of their limited ability to deal with complex tasks, the possible loss of social skills, and possible errors or inaccurate information.

Based on Figure 1, we can also suggest using the strength of GAI to support the development of innovative teaching and learning materials to reduce the risk of cheating and mitigate the threat to future job prospects. Regarding the weaknesses of GAI, namely the inaccuracy of the generated content, biases, and its lack of transparency, they can minimize the threat of its over-dependence and the effects of ethical issues.

DISCUSSION OF RESULTS

Based on the analysis of these studies, it can be seen that GAI is already widely used among the student population for academic and personal purposes, with its adoption being irreversible (Batista et al., 2024) and presenting the potential to transform teaching, promoting pedagogical innovation, and increasing student motivation. Currently, both students and teachers have a mainly positive perception towards GAI, although with significant ethical and reliability reservations. However, its implementation raises challenges. For example, a user-friendly, human-like interface could potentially explain the popularity of GAI among students, although many are aware of the accuracy issues, ethical concerns, becoming overly dependent, and potential loss of skills due to overuse of this technology (Humble, 2024). In this context, it will be necessary for universities to help students develop their skills for the healthy use of these technologies productively and effectively (Johnston et al., 2024).

GAI can be used as a teaching and learning aid, inducing student motivation, providing personalized learning, and improving student knowledge (Humble, 2024). Increasingly, students, teachers, and researchers consider this technology as a valuable support for their work, as it can significantly improve various educational activities, including assessment, writing, content analysis and feedback. There is a general positive trend regarding the acceptance of GAI, varying according to its specific application, being more favorable in support activities and content creation but with reservations in evaluation and administrative tasks (Guerrero & Herrera, 2024). However, teachers recognize that they still do not have sufficient training in GAI, despite already being able to adapt and incorporate these technologies into teaching (Perezchica-Vega et al., 2024). GAI can be very useful in creating teaching materials, rubrics, activities and resolving doubts in real time, which alleviates the workload of teachers and allows them to focus on activities of greater educational value (Guerrero & Herrera,

2024). In any case, teachers express significant concern about the risks posed by the misuse of GAI by their students (Perezchica-Vega et al., 2024), especially when academic dishonesty is reflected in exams or text tasks solved entirely or partially with their support. It should be noted that, despite this desire to integrate GAI into the teaching-learning process, there are still many teachers who have not adjusted/do not know how to adjust their teaching and assessment methods to deal with the challenges that this technology presents.

Balancing AI assistance with traditional learning methods is crucial. The effects of GAI on academic integrity have benefits and risks in terms of use in the scientific field and research (Barrientos et al., 2024). Its use in HE reveals these concerns, namely, the reassessment of assessment strategies to maintain academic integrity and ensure the quality of education (Batista et al., 2024). For this reason, its integration into HE must be careful and progressive (Guerrero & Herrera, 2024), and it is essential to establish clear university regulations and provide training on the ethical use of GAI to ensure that these tools are used responsibly and appropriately.

CONCLUSION

In conclusion, GAI can improve learning and optimize educational tasks such as creating materials and activities. However, there are concerns about the reliability and ethics of the content generated and the potential dehumanization of the educational process. GAI in education appears to increase efficiency, motivation and personalization of learning. While welcomed, balanced integration with clear regulations and ethics training is essential, ensuring that it complements—but does not replace—the teaching role.

GAI tools like ChatGPT offer transformative opportunities for HE. However, its integration must be carefully managed. By addressing ethical issues, promoting stakeholder buy-in, and continually refining pedagogical approaches, HE institutions can fully leverage the potential of GAI technologies. This approach will not only improve the educational experience but also prepare students for the growing demands of an AI-driven future. Therefore, further work is needed to explore the impact of GAI on academic integrity across different disciplines and educational contexts. Taking these studies into account, future work should focus on topics such as pedagogy, assessment, ethics, technology, and the development of social and competitive skills using GAI. It will also be necessary to investigate how reduced trust can increase the use of these technologies, without this meaning that they are using the technologies to "cheat". There is a need to discuss the ethical and legal aspects associated with the incorporation of GAI in education, namely in terms of academic honesty and integrity, intellectual property, privacy, diversity and equity, as well as the impact that the use of GAI can have on training processes in terms of learning and skills acquisition.

Integrating GAI into HE offers transformative opportunities for learning and pedagogical innovation but requires a balanced approach with clear regulations, ethical training, and strategies that guarantee academic integrity, ensuring that technology complements but does not replace the essential role of teachers and students' critical thinking. For this reason, more research is needed to explore the impact of GAI on academic integrity across different disciplines and educational contexts and to investigate its long-term effects on learning outcomes and ethical behavior.

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