

Artificial Intelligence as a Key Tool in Knowledge Generation Processes in Higher Education

Viviana Jazmila Salamanca Pérez 

Article Info

Article History

Received:

18 October 2025

Accepted:

30 December 2025

Keywords

Artificial intelligence

Artificial intelligence tools

Higher education

Knowledge generation

Ethics

Abstract

To conduct a documentary review of literature focused on the use of artificial intelligence (AI) as a tool in knowledge generation processes in higher education, analyzing its impact, challenges, and ethical aspects, in a period of time established between 2020 and 2025. The methodology used is a documentary review with interpretive synthesis, a model that allows for the selection of literature. In this case, search engines such as Scopus, Redalyc, and Mendeley were used, 40 articles were found, and Excel was used to process the information and create tables. The analysis identified several AI tools, including Chat GPT, Copilot, Intelligent Tutoring Systems (ITS), Turnitin AI, GPZero, Random Forest, Research Rabbit, Scispacet, and Rayyan (among others). On the other hand, the main challenges for higher education institutions are addressed, such as training teachers and students and the impact on resistance to change, as it is a disruptive incremental innovation. Ethical issues regarding the provision of information from AI are analyzed, although work still needs to be done on the content, without forgetting that the main input is the human being. Ten perceptions of ethics in different universities in Latin America, Spain, and the Netherlands are analyzed. It is clear that AI is becoming another fundamental tool for the entire HEI environment, which in turn will have a major impact on continuous improvement and involves all actors in the system. The great challenge now is to begin implementing procedures and building trust in order to address the immersion of this technology in academic training spaces.

Introduction

Artificial intelligence (AI) has emerged in the last two decades as one of the most disruptive technological pillars, generating incremental innovation in economic, social, and educational environments. In the field of higher education, its incorporation has led to a series of profound transformations in academic management, teaching, research, administrative processes, and institutional decision-making. The literature review included in this article highlights the trend in higher education toward the use of tools such as ChatGPT, *Gemini*, *Copilot*, *Research Rabbit*, and intelligent tutoring systems, demonstrating that the processes of learning personalization, teacher support, and resource optimization are key to their immersion. These tools have driven new teaching methodologies based on flexibility, immediate feedback, and student autonomy, contributing to the improvement of educational quality. However, rapid technological adoption also raises questions about

institutional capacity to manage change, teacher training, data governance, and digital equity in universities. As emphasized by Ruiz Muñoz et al. (2024) and Carvajal Chávez (2024), the integration of AI promotes innovation in educational practices, and AI systems are revolutionizing curriculum planning and learning assessment, leading us to internalize that this technology has arrived to transcend the educational space.

Several studies, including Medina Romero (2024), Diaz Ancco et al. (2024), and Rentería García (2024), point out that higher education institutions (HEIs) face multiple challenges in achieving critical and responsible appropriation of AI, among which the absence of regulatory policies, a lack of awareness and training for both teachers and students, the coordination of government actors to generate policies for the integration of AI into curricular structures as an integrated tool, resistance to change due to ignorance of the implications of AI use, and, finally, the idea of replacing humans in some functions specific to the environment. This scenario requires understanding AI not only as a tool, but also as an articulator that contributes to new pedagogical practices, knowledge management, and institutional university culture.

On an ethical level, the incorporation of AI in higher education generates controversy regarding the protection of personal data, transparency of information, academic ethics, and the scientific validity and reliability of information. UNESCO (2022) emphasizes that the development of global regulatory frameworks and the promotion of a culture of digital ethics are essential to ensure that AI contributes to social welfare and human development without creating new forms of exclusion or technological dependence. For Ríos Hernández, Mateus et al. (2024), the implementation of AI in higher education promotes an educational environment that is accessible to all and ensures that technology is integrated ethically and effectively to enhance the quality and personalization of the educational process. Finally, ethical issues related to AI, such as equity, privacy, and algorithmic biases, are fundamental to ensuring that the use of these technologies does not perpetuate inequalities or violate rights (Castillo Pindo et al. 2024).

This article aims to analyze experiences of using artificial intelligence as a productive tool in higher education, identify the challenges faced by universities in its integration, and examine the ethical considerations associated with its implementation. Through a documentary review of recent research, it seeks to provide a critical understanding of the role of AI as an ally of educational quality, institutional sustainability, and the fulfillment of the Sustainable Development Goals (ODSs), particularly ODS 4 (quality education), ODS 9 (industry, innovation, and infrastructure), and ODS 11 (sustainable cities and communities).

Method

The methodology used in this analysis is a documentary review with interpretive synthesis, which, according to Sobrido, Rumbo & Prieto (2018), is one in which a certain amount of information related to the topic studied is identified, selected, and evaluated. A hermeneutic method is used as an interpretive process of the documents found to discover, understand, and explain.

The document analysis was carried out in three phases:

Conducting Research

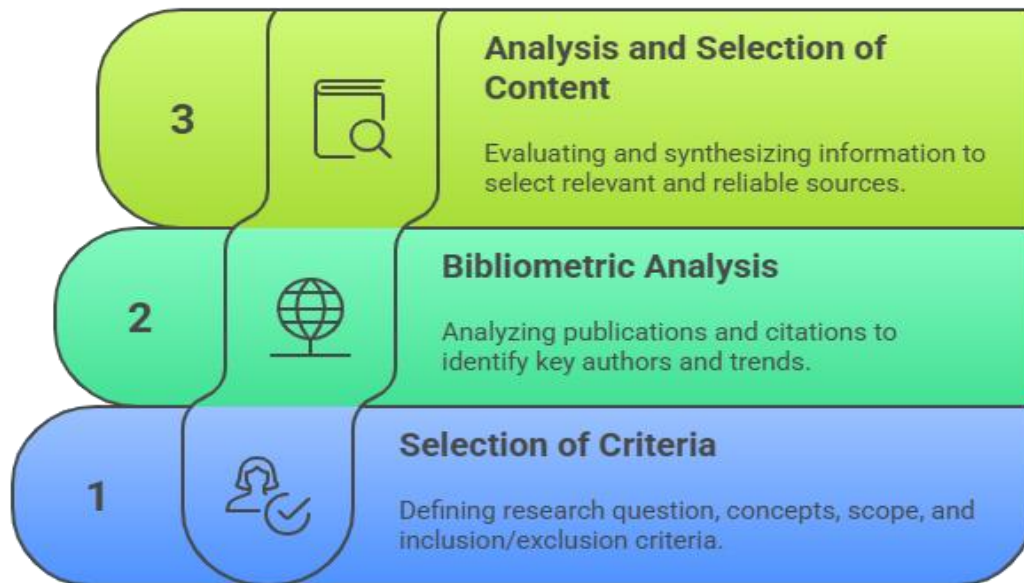


Figure 1. Search Stages

1. Selection of criteria: in this stage, the following criteria involved in the studies analyzed were focused on: 1. Artificial intelligence in higher education, 2. Artificial intelligence tools in higher education, 3. Generative artificial intelligence, 4. Ethics for the use of artificial intelligence in higher education, 5. Industry 4.0 and higher education, 5. Relationship with the contribution to research processes.
2. Document selection and bibliometric analysis: for the selection and analysis, the following search engines were chosen: Scopus, Redalyc, and Mendeley. The search yielded 9,989 articles related to the following keywords: Artificial Intelligence, Higher Education Institutions, Generative Artificial Intelligence, all with a timeline between 2020 and 2025.
3. Content analysis and selection: after analyzing the search criteria in the bibliography found, 40 articles were selected to be addressed in the context of the paper.

Some exclusion criteria for documents: articles, papers, documents, and theses that did not meet academic and scientific rigor. The analysis was carried out taking into account the relevance of contributions that relate artificial intelligence and its articulation with current higher education, mainly in Latin America.

Search equation: Artificial Intelligence OR Artificial Intelligence Tools AND Higher Education AND Knowledge Generation OR Ethics.

Results

The document review shows the following results:

Table 1. Results of the Interpretative Document Review

Artificial intelligence as a key tool in knowledge generation processes in higher education.		
	Articles found	Selected articles
Scopus	38	12
Redalyc	8454	12
Medeley	1497	16
	9989	40

Source: Author's analysis, (2025)

Experience of Using Artificial Intelligence in Higher Education

The literature review refers to the evolution and use of AI in higher education institutions (HEIs) in recent years. AI has emerged as one of the technologies that has generated disruption and change in various economic activities around the world, especially in higher education. Its integration into HEIs has generated new practices related to decision-making (for academic and administrative aspects) and teaching and learning processes for professionals. Experiences with AI in this context are related to the use of tools, mainly Chat GPT, among others related to generative AI, automated assistance, analytics, and prediction, models that allow for flexibility and results oriented toward professional excellence.

These experiences not only demonstrate technological advances, but also the ethical, pedagogical, and organizational challenges involved in integrating AI into university environments. The literature presents critical thinking, articulation with the new Industry 5.0, the implementation of policies for good use, and the promotion of ethics in the academic context as guidelines. In this sense, analyzing the use of AI as a key tool in higher education processes allows us to understand its impact on educational innovation and its contribution to the sustainability of the HEI environment based on globalization and competitiveness in the context.

Artificial Intelligence (AI) provides the potential to address some of the major challenges in education today, innovate teaching and learning practices, and accelerate progress toward achieving SDG 4. In this regard, Chamba Cuadros and Borroto Cruz (2025) argue that the active incorporation of emerging technologies into learning processes is playing a crucial role in enriching and expanding human capabilities, as a result of the need to create favorable conditions for student education and development. Likewise, artificial intelligence will contribute to the development of essential skills for the future of work and society, helping students acquire the necessary competencies (Ruiz Ruiz et al. 2025). As a contribution to the sustainable development agenda and its articulation with education and the construction of sustainable cities, according to Pérez Velasco and Álvarez Hernández (2025), educators and political actors can implement AI application programs for the benefit of students and contribute to future research and debate on the use of technology in educational processes.

In the experiential context, AI is credited with factors such as increased productivity in any organization and, in conjunction with, for example, diagnosis based on knowledge management models and tools, it generates

impactful innovations. In this research, it is clear to highlight this internalization and externalization of knowledge in HEIs. In this context, the author Norman Acevedo (2023) reveals that with the help of AI, the ability to adjust the content and pace of teaching and learning is enhanced, taking into account a more accurate characterization of the specific needs of each student. AI, blended courses, open educational resources (OER), and microcredentials will continue to be present in the university world. Castellanos López (2022) in relation to Norman Acevedo (2024), suggests that equipping students with the skills necessary to interact with AI will allow them to stand out in the job market and adapt to the constant changes in the knowledge economy.

Concluding the experiences discussed by various authors in relation to the use of AI in HEIs, the application of AI in the teaching of programming has made it possible to personalize students' learning according to their needs, by adapting language instructions to learning styles, developing algorithms or flowcharts, conducting code syntax assessments, and creating customized exercises (Muñoz Andrade, 2023) . To that extent, Zavala Cárdenas et al. (2023) instruct that AI can adapt the teaching-learning process to the individual needs and preferences of each student, offering learning resources and activities tailored to their level of knowledge, learning style, and pace of progress. In this mapping of experiential trends, AI is here to stay and become part of learning processes as a tool and resource that, when framed within good practices and conscious ethics, is efficient and generates competitiveness in the educational environment.

Artificial Intelligence as a Key Tool in Higher Education Processes

AI has various tools at its disposal. Based on the analysis of articles, it will be possible to visualize some of those addressed based on their use in higher education.

Table 2. Artificial Intelligence Tools in Higher Education

Item	Author	Article	Tool	Description	Search engine	Country	Year
1	Sánchez Prieto et al. (2025)	Generative artificial intelligence for self-learning in higher education: Design and validation of an example machine	ChatGPT	Design, validation, and pilot implementation process of four prompts developed in the ChatGPT tool by a group of research methodology teachers.	Scopus	Spain	2025
2	Oseda Gago et al. (2025)	Use of artificial intelligence as a resource to enhance	Rayyan, Consensus, Research Rabbit,	Collecting information from academic articles, grouping	Scopus	Peru	2025

Item	Author	Article	Tool	Description	Search engine	Country	Year
		research skills and critical thinking in higher education	Scispacet	relevant information, using specific filters to refine the information			
3	López Vasco et al. (2025)	Teacher training in Generative AI: ethical impact and challenges in higher education	Turnitin AI GPTZero	They detect AI-generated content, but their accuracy remains questionable due to limitations in identifying manually reworded texts	Redalyc	Ecuador	2025
4	Nuong Deri et al. (2024)	Leveraging Artificial Intelligence in Higher Educational Institutions: A Comprehensive Overview	Intelligent tutoring systems (ITS)	ITSs use artificial intelligence to provide personalized tutoring and support. These systems simulate individualized human tutoring by assessing students' understanding and offering specific feedback and explanations.	Scopus	India-Ghana	2024
5	Hernández González et al. (2024)	Advantages and risks of Generative Artificial Intelligence from higher education students' perception in Mexico	Gemini, CoPilot, Microsoft's BingChat, and Google's Bard	Generate content that radically transforms the teaching-learning process, thereby opening up new opportunities and challenges for Higher Education Institutions	Scopus	Mexico	2024

Item	Author	Article	Tool	Description	Search engine	Country	Year
				(HEIs).			
6	Forero Corba and Negre Bennisar, (2024)	Techniques and applications of machine learning and Artificial Intelligence in education: a systematic review systematic	Random Forest	It is a supervised learning technique with a high probability of prediction. Combined with AI, it generates relevant research results.	Mendeley	Spain	2024
7	Ordoñez García et al. (2024)	Impact of artificial intelligence on teacher training for higher education	DALL-E2	This platform is best known for its ability to create images based on text written by users. This artificial intelligence system can create surreal images on any topic.	Mendeley	Ecuador	2024
8	Ortiz Velasco and Ortiz Velasco, (2024)	Artificial intelligence in higher education	Midjourney	It is an artificial intelligence tool for creating images. With the ability to generate images from text descriptions	Mendeley	Ecuador	2024
9	Sanabria Medina and Regil Vargas, (2024)	Artificial intelligence for recommending resources in online education	Expert systems - AgentGeom	System that supports students in acquiring strategic and argumentative skills involved in problem solving, particularly geometric problems	Redalyc	Costa Rica	2024

Item	Author	Article	Tool	Description	Search engine	Country	Year
10	Tomás Bellomo, (2023)	Artificial intelligence in higher education: an analytical assessment	Educational Big Data	The predictions are made available to course tutors and support teams via easily accessible dashboards, enabling them to consider the the most appropriate support. The overall goal is to prepare students who may have difficulty completing their courses	Mendeley	Argentina	2023

Source: Compilation of Scopus, Mendeley, and Redalyc search engines, author analysis, (2025)

Challenges for Higher Education Institutions in Relation to the Use of Artificial Intelligence

The analysis of the articles identifies the challenges faced by higher education institutions in adopting and strategically using artificial intelligence in academic, administrative, and knowledge management processes. In terms of trends, the knowledge paradigms of AI use refer to López Secanell et al. (2025), who suggest that the limited integration of AI in informal spaces could be limiting its critical appropriation by students and teachers, which has important implications for the development of comprehensive digital skills. in this sense, collaboration between educators, instructional designers, researchers, and AI developers is essential to establish pedagogical principles that balance technological innovation with the preservation of human elements (Chiappe et al. 2025).

AI represents significant potential for optimizing teaching, improving learning analytics, and strengthening institutional decision-making. The articles analyzed offer perspectives on the future implications for HEIs. For Perezchica Vega et al. (2024) it is also the responsibility of HEIs themselves to have teacher training mechanisms in place to help guide their staff in the knowledge and mastery of these tools, their correct use and application, as well as to incorporate into academic discussion the opportunities and risks that Generative Artificial Intelligence (GAI) poses for academic work.

It is necessary to propose scenarios that sensitize the different actors in educational spaces to understand that teachers will not be displaced and that there is no dehumanization. In fact, at this moment, the scenario of Education 4.0 and Industry 5.0 is being proposed, where one of the key factors is the human being as a catalyst for different global environments, in this case, HEIs. While AI offers significant advantages in optimizing academic performance, personalizing learning, and improving educational decision-making, it is crucial to address its limitations and ethical challenges in order to maximize its potential in contemporary education (Orozco Morales & Osorio García, 2024).

Consequently, some of the insights presented below offer a comprehensive view of the main challenges that HEIs must face to ensure that AI becomes established as a tool for educational quality. It is necessary to provide access to low-cost models for the development of AI technologies, thus guaranteeing access to low-income countries and vulnerable social sectors, involving them in key debates for society, training them in advanced digital skills, and bringing them closer to the digital society (Blanco Torres et al. 2024). Taking into account the concept of the sustainable development agenda with goals such as ODS 4, ODS 9, and ODS11, in this context, González Campos et al. (2024) state that AI has achieved widespread use in various fields of work, which is why changes in the approaches to public education policies throughout the education system are urgently needed, but mainly in the university education system. One of the most significant challenges is the training or level of knowledge that teachers and students must have in order for the use of this technology to reach the desired level (Zamora Varela & Mendoza Encinas, 2023). This shows that knowledge management and change management in HEIs need to be strengthened in terms of technological immersion, especially in the incorporation of AI as a tool that is here to stay and will enable higher quality standards in higher education.

Ethical Considerations of the Use of Artificial Intelligence in Higher Education

Among the considerations, the praxis in the context of higher education in relation to AI is evident. Below is an analysis of the different studies that address ethics.

Table 3. Ethical Issues Surrounding the Use of Artificial Intelligence in Higher Education

Z	Author	Article	Contribution	Search engine	Year	Country
1	Quiceno Osorio, (2025)	Artificial intelligence and the risk of a reversed analogy	The absence of apparent consequences in reality, beyond virtuality, erodes the moderating influence of ethics on users.	Redalyc	2025	Peru
2	Puche Villalobo, (2025)	Artificial intelligence and academic fraud in the university	It is necessary to promote a culture of academic integrity, which is essential for	Redalyc	2025	Venezuela

Z	Author	Article	Contribution	Search engine	Year	Country
		context	reducing the incidence of academic fraud.			
3	Comas Rodríguez, (2025)	Is it ethical to use artificial intelligence tools in the development of scientific articles?	There are a number of undesirable effects in research when AI tools are used improperly, such as overfitting, data snooping, and p-hacking (false evidence).	Redalyc	2025	Ecuador
4	Recio Sastre, (2025)	The question of teaching ethics as a limit to artificial intelligence	Ethics is not just about gathering information, and a code of ethics is not only acquired by virtue of absolute values, because sometimes situations arise in practice that require decisions that are not systematized according to an established doctrine.	Redalyc	2025	Ecuador
5	Recalde Drouet, Tello Salazar, & Charro Domínguez, (2024)	Analysis of the repercussions of Artificial Intelligence in the Personalization of the Virtual Educational Process in Higher Education Programs	Concerns about student data privacy, equity in access to advanced educational technologies, and the potential amplification of algorithmic bias are critical issues that require attention.	Scopus	2024	Ecuador
6	Vélez Rivera et al. (2024)	The use of artificial intelligence in higher education and its ethical implications. Systematic literature mapping	An ethical framework for the use of AI in education is essential for sharing an ethical vision with all actors involved in the educational process, starting with	Redalyc	2024	Chile

Z	Author	Article	Contribution	Search engine	Year	Country
			the creation of AI.			
7	Gallent Torres et al. (2023)	The impact of generative artificial intelligence on higher education: a perspective from ethics and academic integrity.	It is essential to take action in favor of of an ethical, responsible, and reliable IAG. Therefore, rather than resisting change or prohibiting its use, we should commit to its effective integration into the learning process.	Redalyc	2023	Spain
8	Flórez Rojas, (2023)	Design thinking and ethical frameworks for Artificial Intelligence: a look at multi-stakeholder participation	Creation of a proactive digital ethics program to prevent some of the existing concerns related to the large-scale adoption of AI around the world.	Redalyc	2023	Netherlands

Source: Scopus and Redalyc search engine compilation, author analysis, (2025)

To conclude this section on ethical considerations, it is pertinent to quote UNESCO :

"Member States should promote and support research on AI, in particular research on the ethics of AI, for example by investing in this type of research or by creating incentives for the public and private sectors to invest in this field, recognizing that research contributes significantly to the further development and improvement of AI technologies with a view to promoting international law and the values and principles set out in this Recommendation." (UNESCO, 2022) .

Discussion and Conclusion

Artificial intelligence (AI) has become a structural component of contemporary educational processes, especially in higher education institutions (HEIs). However, the integration of these technologies generates divergence in terms of good practices. The discussion considers aspects such as teacher training, students, investment in technology, government support, and ethics, which are intertwined in the redefinition of educational models and professional training in the new era.

The personalization of educational processes must be accompanied by teachers and a process of awareness-raising and digital training geared toward constructive criticism, which allows students to understand not only

how to use technology, but also how to evaluate its impacts, its integration into research processes, and the results of professional integration. The literature shows that the risk of dependence on the use of different AI tools can limit students' reflective and creative abilities if it is not integrated into a constructivist and ethically oriented pedagogical approach.

At the institutional level, the discussion focuses on the role of universities as agents of change in the face of Industry 4.0 immersion. HEIs cannot limit themselves to adopting digital tools; they must develop technological governance policies that regulate the implementation of AI in line with their educational mission. As a result, a space for reflection and shared responsibility between teachers, students, and technology developers is proposed. Across the board, the discussion suggests that AI should be understood as a means to strengthen educational quality and institutional sustainability. Higher education in the future requires balancing technological efficiency with comprehensive human development, promoting a vision in which technology complements rather than replaces the creativity, empathy, and critical thinking skills that characterize human beings. As a contribution to the proposal, the references by Lara Andino et al. (2023) and Jimbo Santana et al. (2023) reaffirm that AI influences students' learning processes as a generator of academic performance and adaptation to specific needs.

Analysis of experiences with the use of artificial intelligence in higher education leads to the conclusion that this technology has an impact on teaching, learning, decision-making, and administrative processes in the university context. Higher education institutions are more productive when they use the various tools that AI allows them to incorporate into the different functions related to students, teachers, and administrators. In this sense, ChatGPT, intelligent tutoring systems, academic search engines, and predictive algorithms are a means of personalizing learning and promoting organizational efficiency. Addressing the impact of AI as a productivity tool in HEIs, authors Villegas José and Delgado García (2024) state that it allows for the personalization of learning experiences and offers significant potential in terms of teaching practices and educational innovation.

In terms of challenges, the results show that HEIs face significant limitations associated with the lack of institutional policies, poor teacher training in advanced digital skills, and the absence of an academic culture that encourages the critical appropriation of AI. The literature agrees that higher education must migrate towards models of technological governance that articulate innovation and humanism. In this context, institutional support and the creation of an enabling environment are fundamental for the successful adoption of AI technologies in higher education (Padilla Piernas & Martín García, 2024).

Likewise, in the context of Latin America, there has been growing interest in the implementation of AI in education with the aim of improving the quality and accessibility of education (Macias Lara et al., 2023). On the other hand, AI can identify patterns and early signs of academic challenges and provide interventions to improve retention and completion of educational programs (Chávez Granizo et al. 2024). The integration of AI requires knowledge management and change management strategies that generate new cultures in the academic environment.

From an ethical perspective, it is necessary to establish regulatory frameworks and codes of conduct to guide the responsible use of AI in university research and teaching. The main risks identified are information bias, data privacy violations, and academic fraud. This generates interdisciplinary ethical reflection involving educators, developers, government institutions, and actors involved in the process. In this context, authors such as Barcia Cedeño et al. (2024) and Tramallino and Marize Zeni (2024) refer to the importance of ethics from the perspective of responsibility, equity, transparency, and justice.

Finally, AI is here to stay in university environments, but its true value lies in the ability to integrate it with social responsibility, a humanistic vision, and critical thinking. Higher education in the future will not be defined by technology itself, but by how it is articulated with ethical principles, pedagogical innovation, and the mission of comprehensive training.

Future studies are invited to highlight the importance of using new technologies immersed in Industry 4.0, including AI in the context of higher education, articulating models, tools, and ethical practices that will help bridge gaps in education worldwide. In the face of these practices, we must not forget the humanization factor (Industry 5.0), which is key to the success of a competitive and comprehensive process that contributes to globalization trends and the sustainable development agenda.

Acknowledgments

Thanks to the Minuto de Dios University Corporation UNIMINUTO, Virtual Rector's Office, Dr. Sandra Patricia Parada Fonseca, for co-financing this article.

References

- Barcia Cedeño, E. I., Tambaco Quintero, A. R., Angulo Quiñónez, O. G., Prado Zamora, M. E., & Valverde Prado, N. (2024). Analysis of trends and the future of Artificial Intelligence in Higher Education: perspectives and challenges. *Ciencia Latina Revista Científica Multidisciplinar*, 8(1), 3061-3075. doi:https://doi.org/10.37811/cl_rcm.v8i1.9637
- Blanco Torres, Y., Fragozo Alvarez, L. D., & Gómez Lesport, M. (2024). Artificial Intelligence: Possibilities, limits, and challenges in higher education. *Revista De Ciencias Sociales*, 30(4), 178-187. Retrieved from <https://produccioncientificaluz.org/index.php/rcs/article/view/42985/50358>
- Carvajal Chávez, C. A. (2024). Artificial intelligence as a teaching resource in higher education. A systematic review. *RECIAMUNDO*, 51-65. doi:10.26820/recimundo/8.(4).December.2024.51-65
- Castellanos López, B. (2022). Artificial intelligence and personal learning environments: attentive to the appropriate use of learning: attentive to the appropriate use of university students. *Pontificia Universidad Católica del Perú*, 31(60), 9-24. doi:<https://doi.org/10.18800/educacion.202201.001>
- Castillo Pindo, B. M., Humanante Endara, M. G., Calderón Aguirre, A. J., & Chang Dávila, C. F. (2024). Artificial Intelligence as an Educational Resource in Higher Education: Ethical Perspectives on its Use. *Revista Ciencia Latina*, 8(4), 3950-3961. doi:https://doi.org/10.37811/cl_rcm.v8i4.12622

- Chávez Granizo, G. P., Castro Game, J. K., Ibarra Martínez, M. A., & Tobar Flores, Y. F. (2024). Artificial intelligence in higher education: opportunities and threats. *RECIAMUC*, 71-79. doi:10.26820/reciamuc/8.(1).ene.2024.71-79
- Chamba Cuadros, J. E., & Borroto Cruz, E. R. (2025). Benefits and Challenges of Artificial Intelligence in Higher Education. *ECIMED Educación Médica Superior*, 1-19. Retrieved from https://creativecommons.org/licenses/by-nc/4.0/deed.es_ES
- Chiappe, Á., Sanmiguel, C., & Sáez Delgado, F. M. (2025). Generative AI vs. Teachers: insights from a literature review. *Pixel-Bit. Media and Education Journal*, 72, 119-137. doi:<https://doi.org/10.12795/pixelbit.107046>
- Comas Rodríguez, R. (2025). Is it ethical to use artificial intelligence tools in scientific articles? *Uniandes Episteme. Digital Journal of Science, Technology, and Innovation*, 12(1), 1-5. Retrieved from <https://www.redalyc.org/journal/5646/564679988001/564679988001.pdf>
- Díaz Ancco, F., Rodríguez Gonzales, K., & Estrada Chacón, L. H. (2024). Impact of Artificial Intelligence on the training of higher education students. *Yachay*, 13(1), 44-61. doi:<https://doi.org/10.36881/yachay.v13i1.782>
- Flórez Rojas, M. L. (2023). Design thinking and ethical frameworks for Artificial Intelligence: a look at the participation of multiple stakeholders. *DESAFIOS*, 35(1), 1-31. doi:<https://doi.org/10.12804/revistas.urosario.edu.co/desafios/a.12183>
- Forero Corba, W., & Negre Bennasar, F. (2024). Techniques and applications of machine learning and artificial intelligence in education: a systematic review. *RIED-Ibero-American Journal of Distance Education*, 27(1), 209-253. doi:<https://doi.org/10.5944/ried.27.1.37491>
- Gallent Torres, C., Zapata González, A., & Ortego Hernando, J. L. (2023). The impact of generative artificial intelligence on higher education: a look from the perspective of ethics and academic integrity. *RELIEVE*, 29(2), 1-22. doi:<http://doi.org/10.30827/relieve.v29i2.29134>
- González Campos, J., López Núñez, J., & Araya Pérez, C. (2024). Higher education and artificial intelligence: challenges for the university of the 21st century. *ALOMA Journal of Psychology, Education and Sports Sciences*, 42(1), 79-90. Retrieved from <https://www.revistaaloma.blanquerna.edu/index.php/aloma/article/view/760/200200380>
- Hernández González, M., Ramos Quiroz, J. M., Chávez Maciel, F. J., & Trejo Cázares, M. D. (2024). Advantages and risks of Generative Artificial Intelligence from higher education student's perception in Mexico. *European Public & Social Innovation Review*(9), 1-18. doi:<https://doi.org/10.31637/epsir-2024-495>
- Jimbo Santana, P., Lanzarini, L. C., & Jimbo Santana, M. (2023). Artificial intelligence for analyzing academic performance in higher education institutions. A systematic review of the literature. *Revista Cátedra*, 6(2), 30-50. doi:<https://doi.org/10.29166/catedra.v6i2.4408>
- Lara Andino, A. R., Sacatoro Toaquiza, J. I., León Vinuesa, A. G., Jarrín Trujillo, G. M., & Simancas Malla, F. M. (2023). Evaluation, artificial intelligence, and other cutting-edge technologies in Higher Basic General Education. *Prometeo Conocimiento Científico*, 3(2), 1-13. doi:<https://doi.org/10.55204/pcc.v4i1.e85>
- López Secanell, I., Gamero Sandemetrio, E., & López Requena, S. (2025). Artificial intelligence, digital

- competence and personal hobbies: implications for higher education. *Pixel-Bit. Media and Education Journal*, 73(9), 1-19. doi:<https://doi.org/10.12795/pixelbit.115117>
- López Vasco, F. E., Angulo Álvarez, M. R., & Sosa Zúñiga, D. I. (2025). Teacher training in Generative AI: ethical impact and challenges in higher education. *Alteridad. Education Journal*, 20(2), 166-184. Obtenido de <https://www.redalyc.org/journal/4677/467782177001/467782177001.pdf>
- Macias Lara, R., Solorzano Criollo, L. R., Choez Calderón, C., & Blandon Matamba, B. E. (2023). Artificial intelligence: analysis of the present and future in higher education. *Revista Gener@ndo*, 4(1), 861-887. Retrieved from <https://revista.gnerando.org/revista/index.php/RCMG/article/view/98/90>
- Medina Romero, M. A. (2024). Applications of artificial intelligence for research and innovation in higher education. *Revista Social Fronteriza*, 4(4), 1-25. doi:[https://doi.org/10.59814/resofro.2024.4\(4\)336](https://doi.org/10.59814/resofro.2024.4(4)336)
- Muñoz Andrade, E. L. (2023). Application of artificial intelligence in higher education. *DOCERE*(29), 21-26. Retrieved from file:///C:/Users/Idea/Downloads/Revista+Docere_29a_edicion-23-27.pdf
- Norman Acevedo, E. (2023). Artificial intelligence in education: a valuable tool for virtual university tutors and university professors. *PANORAMA*, 17(32), 1-11. doi:<https://doi.org/10.15765/pnrm.v17i32.3681>
- Norman Acevedo, E. (2024). Artificial intelligence at the service of pedagogy: enhancing creativity and critical thinking. *PANORAMA*, 18(34), 1-13. Obtenido de <https://www.redalyc.org/journal/3439/343977238002/343977238002.pdf>
- Nuong Deri, M., Singh, A., Zaazie, P., & Anandene, D. (2024). Leveraging Artificial Intelligence in Higher Educational Institutions: A Comprehensive Overview. *EDUCATION AND LAW REVIEW*, 1-23. doi:<https://doi.org/10.1344/REYD2024.30.45777>
- Ordoñez García, S. C., Padilla Romero, L. E., Buenaño Barrionuevo, L. A., & María Verónica, H. V. (2024). Impact of artificial intelligence on teacher training for higher education. *RECIAMUC*, 189-195. doi:10.26820/reciamuc/8.(1).ene.2024.189-195
- Orozco Morales, N., & Osorio García, P. A. (2024). Application of Artificial Intelligence Models in Standardized Tests for Optimizing Academic Performance in Higher Education. *European Public & Social Innovation Review*, 9, 1-21. doi:<https://doi.org/10.31637/epsir-2024-1605>
- Ortiz Velasco, L., & Ortiz Velasco, V. H. (2024). Artificial intelligence in higher education. *Conciencia Digital*, 7(12), 115-131. doi:<https://doi.org/10.33262/concienciadigital.v7i1.2.2928>
- Oseda Gago, D., Torres Chumbiauca, L. E., Mencia Sánchez, N., & Rivera Casavilca, R. (2025). Use of artificial intelligence as a resource to enhance research skills and critical thinking in higher education. *Encuentros Revista de Ciencias Humanas, Teoría Social y Pensamiento Crítico*(23), 290-297. doi:<https://doi.org/10.5281/zenodo.14283439>
- Pérez Velasco, A. A., & Álvarez Hernández, G. A. (2025). Rethinking Higher Education: Appropriation of Artificial Intelligence in University Learning. *Revista de Investigación Educativa RedCA*, 7(21), 236-261. Retrieved from <https://www.redalyc.org/articulo.oa?id=748781418011>
- Padilla Piernas, J. M., & Martín García, M. d. (2024). Impact and Perspectives of Generative Artificial Intelligence in Higher Education: A Study on Lecturers' Perception and Adoption using the AETGE/GATE Model. *European Public & Social Innovation Review*(9), 1-21. doi:<https://doi.org/10.31637/epsir-2024-595>
- Perezchica Vega, J. E., Sepúlveda Rodríguez, J. A., & Román Méndez, A. D. (2024). Generative artificial

- intelligence in higher education: uses and opinions of teachers. *European Public & Social Innovation Review*, 9, 1-20. doi:<https://doi.org/10.31637/epsir-2024-593>
- Puche Villalobo, D. J. (2025). Artificial intelligence and academic fraud in the university context. *Revista Digital de Investigación y Postgrado*, 6(11), 77-93. doi:<https://doi.org/10.59654/kg944e15>
- Quiceno Osorio, J. D. (2025). Artificial intelligence and the risk of a reversed analogy. *Sophia, Philosophy of Education Collection* (39), 315-335. doi:<https://doi.org/10.17163/soph.n39.2025.10>
- Recalde Drouet, E. M., Tello Salazar, D. M., & Charro Domínguez, T. L. (2024). Analysis of the repercussions of Artificial Intelligence in the Personalization of the Virtual Educational Process in Higher Education Programs. *Data and Metadata*(3), 1-8. doi:<https://doi.org/10.56294/dm2024386>
- Recio Sastre, A. (2025). The question of teaching ethics as a limit of artificial intelligence. *Sophia, Philosophy of Education Collection*(39), 53-81. doi:<https://doi.org/10.17163/soph.n39.2025.01>
- Rentería García, C. D. (2024). The Impact of Artificial Intelligence on Higher Education: Social Representations and Institutional Transformation. *Journal of Technology and Innovation in Higher Education*, 53-71. doi:<https://doi.org/10.22201/dgtic.26832968e.2024.11.47>
- Ríos Hernández, I. N., Mateus, J. C., Rivera Rogel, D., & Ávila Meléndez, L. R. (2024). Perceptions of Latin American students on the use of artificial intelligence in higher education. *Austral Comunicación*, 13(1), 1-25. doi:<https://doi.org/10.26422/aucom.2024.1301.rio>
- Ruiz Muñoz, G. F., Vasco Delgado, J. C., & Alvear Dávalos, J. M. (2024). Artificial intelligence and governance in the academic and administrative management of higher education. *Revista Social Fronteriza*, 4(6), 1-19. doi:[https://doi.org/10.59814/resofro.2024.4\(6\)508](https://doi.org/10.59814/resofro.2024.4(6)508)
- Ruiz Ruiz, M. F., Fernández Peñuela, I., Paucar Lecaros, B. L., & Sallandt, U. (2025). Futuristic conversation with Artificial Intelligence: Exploring its impact on Higher Education in Latin America. *Revista de Ciencias Sociales (RCS)*, 400-420. Retrieved from <https://produccioncientificaluz.org/index.php/rcs/index>
- Sanabria Medina, G., & Regil Vargas, L. (2024). Artificial intelligence for recommending resources in online education. *Apertura*, 16(2), 6-21. doi:<http://doi.org/10.32870/Ap.v16n2.2542>
- Sánchez Prieto, J. C., Izquierdo Álvarez, V., Del Moral Marcos, M. T., & Martínez Abad, F. (2025). Generative artificial intelligence for self-learning in higher education: Design and validation of an example machine. *RIED-Ibero-American Journal of Distance Education*, 28(1), 59-81. doi:<https://doi.org/10.5944/ried.28.1.41548>
- Tomás Bellomo, S. (2023). Artificial intelligence in higher education: An analytical assessment. *Journal of Ethics in Higher Education*, 87–114. Retrieved from <https://www.jehe.globethics.net/>
- Tramallino, C., & Marize Zeni, A. (2024). Advances and discussions on the use of artificial intelligence (AI) in education. *Education*, 33(64), 29-54. doi:<https://doi.org/10.18800/educacion.202401.M002>
- UNESCO. (2022). *unesdoc.unesco.org*. Retrieved from [unesdoc.unesco.org: http://www.unesco.org/open-access/terms-use-ccbysa-sp](http://www.unesco.org/open-access/terms-use-ccbysa-sp)
- Vélez Rivera, R., Muñoz Álvarez, D., Leal Orellana, P., & Ruiz Garrido, A. (2024). USE OF ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION AND ITS ETHICAL IMPLICATIONS. SYSTEMATIC LITERATURE MAPPING. *Hachetetepe. Scientific Journal of Education and Communication* (28), 1-17. doi:<https://doi.org/10.25267/Hachetetepe.2024.i28.1105>

- Villegas José, V., & Delgado García, M. (2024). Artificial Intelligence: innovative educational revolution in Higher Education. *Pixel-Bit. Media and Education Journal* (71), 159-177. doi:<https://doi.org/10.12795/pixelbit.107760>
- Zamora Varela, Y., & Mendoza Encinas, M. (2023). Artificial Intelligence and the Future of Higher Education: Challenges and opportunities. *Horizontes Pedagógicos*, 25(1), 1-13. Retrieved from <https://horizontespedagogicos.iberro.edu.co/article/view/25101>
- Zavala Cárdenas, E. P., Salazar Guaraca, D. P., Albán Yáñez, E. H., & Mayorga Albán, A. L. (2023). The role of artificial intelligence in teaching and learning in higher education. *Polo del conocimiento*, 8(3), 3028-3036. doi:10.23857/pc.v8i3

Author Information

Viviana Jazmila Salamanca Pérez



<https://orcid.org/0009-0003-4421-4692>

Corporación Universitaria Minuto de Dios

UNIMINUTO

Colombia

Contact e-mail:

viviana.salamanca.p@uniminuto.edu.co
