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ORIGINAL

The quality of higher education in the digital age: indicators, assurance models and the impact of artificial intelligence

La calidad de la educación superior en la era digital: indicadores, modelos de aseguramiento y el impacto de la inteligencia artificial

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ABSTRACT

Artificial intelligence (AI) has become a key element in the transformation of higher education, impacting both teaching models and educational quality assurance. This study uses a mixed approach that combines a literature review with an empirical analysis based on applied research with teachers and students in Latin America. The results indicate a growing use of AI in the academic field, with different opinions about its effectiveness and reliability. While its potential to personalize learning and optimize educational management is widely recognized, concerns also arise regarding regulation, the authenticity of student work, and the need to establish appropriate regulatory frameworks for its implementation.
The quantitative results stand out, showing a progressive adoption of AI in educational practices, with 35,2 % of students using it daily and 27,3 % of teachers integrating it several times a week. In addition, variations in the perception of AI are identified according to academic discipline, level of study, and experience in the use of digital tools. The debate highlights the need to integrate AI into education in a strategic and ethical manner, ensuring that its impact is positive and contributes to strengthening the quality of education in the digital age. Finally, the study highlights the importance of developing regulations that establish clear criteria for the incorporation of AI in the academic field, ensuring a balance between innovation and fundamental pedagogical principles.

Keywords: Generative Artificial Intelligence; University Education; Critical Thinking; Personalized Learning; Formative Assessment; Educational Quality.

RESUMEN

La inteligencia artificial (IA) se ha convertido en un elemento clave en la transformación de la educación superior, impactando tanto en los modelos de enseñanza como en los de garantía de la calidad educativa. Este estudio utiliza un enfoque mixto que combina una revisión de literatura con un análisis cuantitativo basado en investigaciones aplicadas a docentes y estudiantes en América Latina. Los resultados indican un uso creciente de la IA en el ámbito académico, con diferentes opiniones sobre su eficacia y fiabilidad. Si bien su potencial para personalizar el aprendizaje y optimizar la gestión educativa es ampliamente reconocido, también surgen preocupaciones respecto de la regulación, la autenticidad del trabajo de los estudiantes y la

necesidad de establecer marcos regulatorios adecuados para su implementación.
Los resultados cuantitativos destacan, mostrando una adopción progresiva de la IA en las prácticas educativas, con un 35,2 % de estudiantes utilizándola diariamente y un 27,3 % de docentes integrándola varias veces a la semana. Además, se identifican variaciones en la percepción de la IA según disciplina académica, nivel de estudio y experiencia en el uso de herramientas digitales. El debate destaca la necesidad de integrar la IA en la educación de manera estratégica y ética, garantizando que su impacto sea positivo y contribuya a fortalecer la calidad de la educación en la era digital. Finalmente, el estudio destaca la importancia de desarrollar una normativa que establezca criterios claros para la incorporación de la IA en el ámbito académico, asegurando un equilibrio entre la innovación y los principios pedagógicos fundamentales.

Palabras clave: Inteligencia Artificial Generativa; Educación Universitaria; Pensamiento Crítico; Aprendizaje Personalizado; Evaluación Formativa; Calidad Educativa.

INTRODUCTION

Higher education is undergoing an unprecedented transformation in the digital age, mainly driven by advances in artificial intelligence (AI) and other emerging technologies. These innovations have revolutionised teaching, research, and educational management, opening up new opportunities to improve the quality of education, but also posing significant challenges for academic institutions.[1,2] The integration of AI in higher education requires strategic approaches that ensure the responsible and effective use of these tools, without compromising equity or the quality of learning.[3,4] In addition, the growing adoption of AI raises questions about the transformation of the role of teachers, the personalisation of learning, and the redefinition of traditional teaching methodologies, which are fundamental aspects for the evolution of university education.[5]

Quality assurance in higher education has become extremely important in this context, as it is essential to develop models and evaluation criteria to measure the impact of AI on teaching, research, and institutional management.[6] Several studies have addressed the need to design specific indicators to measure the impact of these technologies on teaching-learning processes and academic output.[7,8] Implementing quality assurance models in the digital sphere requires a comprehensive approach that considers both the conditions of access to technology, teacher training, and institutional infrastructure.

AI in education also requires the formulation of specific quality indicators to assess its impact on learning. These indicators should consider improved academic results, personalised learning, optimised educational management, and equity in access to digital tools. The transparency and traceability of the algorithms used in educational AI are key aspects of these quality assurance models, as they ensure that automated decisions respect the principles of fairness and accuracy.[9]

Innovative methodologies, such as Design Thinking, have been proposed as an effective strategy to reduce the digital divide and improve the integration of technologies in education.[10] In addition, it is necessary to establish policies for continuous teacher training to ensure the effective and conscious adoption of these digital tools in the classroom. Teacher training should focus on developing digital skills that enable them to critically evaluate the use of AI and adapt it to their teaching methodologies, without losing sight of educational quality objectives.

In addition, implementing AI assessment strategies will make it possible to identify its benefits and risks in various educational contexts, ensuring that decisions regarding its use are based on data and scientific evidence. These assessments can also contribute to developing regulatory frameworks governing the use of these technologies, establishing quality standards that minimise the risks associated with their implementation. Clear regulatory frameworks are essential to avoid over-reliance on automated systems and ensure that AI complements teaching, rather than replacing it.

The digital transformation in higher education impacts academic institutions and their teachers and has direct implications for students. The availability of AI-based tools is changing how students access information, interact with content, and develop essential 21st-century skills. However, unequal access to these technologies can widen existing educational gaps, highlighting the need to implement policies that ensure equity in their access and use. On the other hand, the increased use of AI in education requires a rethinking of learning assessment, as traditional models may not be sufficient to measure these tools' impact on acquiring knowledge and skills.

The research questions guiding this study are:

- What is the impact of AI in the context of higher education?
- What are the perceptions of teachers and students regarding the implementation of artificial intelligence in education?
- What benefits and challenges arise from the use of AI in higher education?

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This study examines the impact of AI on higher education from a mixed perspective: qualitative and quantitative, exploring how AI tools influence teaching, research, and educational management. By analyzing quality assurance models and examining recent trends, we seek to understand how AI can improve higher education without compromising its academic integrity or creating inequalities in access to and use of technology. In addition, regulatory models and public policies that enable AI's ethical and equitable implementation in education will be explored.

METHOD

Methodological approach

This study opted for a mixed approach, integrating qualitative and quantitative methods, to assess the quality of higher education in the digital age and the impact of Artificial Intelligence (AI). To this end, a literature review and a statistical analysis based on surveys of teachers and students in Latin America were conducted.

Study design

Literature review: a documentary search was conducted in indexed databases such as Scopus, Web of Science, and Google Scholar, considering studies published between 2020 and 2025. The inclusion criteria were as follows:

- Research addressing the impact of generative AI on higher education.
- Empirical studies, systematic reviews, and meta-analyses.
- Publications in indexed journals with full-text access.
- Technical articles not related to university learning were excluded.

Quantitative analysis: A structured survey was designed to gather perceptions about using generative AI in teaching and learning.

Population and sample

The study population consisted of university teachers and students from higher education institutions in Mexico, Colombia, Argentina, Peru, and Chile.

A non-probability convenience sample was used, and participants were selected through invitations on academic platforms and social media. The final sample consisted of:

- 350 teachers from various disciplines.
- 500 undergraduate and postgraduate university students.

Data collection instrument

An online survey was administered with closed-ended Likert-type questions (1 to 5) and dichotomous questions (Yes/No) for quantitative data collection. The instrument addressed the following dimensions:

- Overview of the impact of generative AI on teaching and learning.
- Applications and frequency of use in academia.
- Quality of AI-generated information in academic use.
- Identified benefits and challenges.
- Opinions on the need for regulation and training in generative AI.

Expert judgement assessed the questionnaire's validity, and a pilot test with 50 participants ensured its reliability (Cronbach's $\alpha = 0{,}89$).

Ethical considerations

The study followed ethical guidelines for educational research. Data confidentiality was guaranteed, and participation was voluntary and anonymous. Before completing the survey, participants accepted an informed consent form, ensuring that the data would be used for academic purposes only.

Data analysis

The qualitative data from the literature review were analysed using a thematic categorisation approach, identifying trends and patterns in the selected studies.

Quantitative data were processed using SPSS software, applying:

1. Descriptive statistics (frequencies, percentages, measures of central tendency).
2. Mean comparison tests (Student's t-test) to analyse differences between teachers and students.
3. Evaluation analysis (Pearson) to identify relationships between perceptions of AI and its application in higher education.

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RESULTS

The impact on learning and teaching has been widely debated. It has been observed that generative AI facilitates autonomous learning and content personalisation.[11] Its implementation in educational platforms has improved the adaptability of study materials to students' individual needs. However, some studies warn that the exclusive use of AI without a deep understanding of academic content can negatively affect learning outcomes, creating excessive dependence and reducing critical thinking.[12] This point is crucial for evaluating the role of AI as a support tool and not as a substitute for the traditional educational process.

Document review

Table 1. Document Review Matrix

Author(s)	Year	Article Title	Summary	DOI/URL
Ricra-Mayorca, Juan Manuel; Bazan-Pizarro, Victor Hugo[11]	2024	Impact of Generative Artificial Intelligence Tools in Distance Higher Education	The study analyses the impact of generative artificial intelligence on distance higher education, evaluating the perceptions of 215 students regarding its use. The results show a mostly positive adoption, with 87,5 % of students at medium and high levels of use. However, areas for improvement were identified, such as competence in the advanced use of ChatGPT and the need for ongoing training for students and teachers. In addition, it was highlighted that these tools help students learn more independently, improve their motivation, and face the challenges of distance learning with greater flexibility.	Ricra-Mayorca JM, Bazan-Pizarro VH. Impact of Generative Artificial Intelligence Tools in Distance Higher Education. 2024. doi:10.18687/LEIRD2024.1.1.733
Martínez-Rivera, Oscar[12]	2024	The impact of Artificial Intelligence (AI) on the teaching-learning process of university assignments	The research analyses the use of artificial intelligence (AI), specifically ChatGPT, in solving university exercises. It observed how students used this tool and to what extent it influenced their results. The results show that some students did not feel comfortable with the answers generated by AI and chose to modify its use. Furthermore, those who relied completely on AI obtained worse results. The main conclusion is that AI can be useful in writing university assignments, but it is essential that students master the content in order to improve and adjust the answers generated.	Martínez-Rivera O. The impact of Artificial Intelligence (AI) on the teaching-learning process of university assignments. 2024. doi:10.31637/EPSIR-2024-885
Padilla Piernas, Juana María; Martín García, María Del Mar[13]	2024	Impact and Perspectives of Generative Artificial Intelligence in Higher Education: A Study on Lecturers' Perception and Adoption using the AETGE/GATE Model	The study analyses the impact of generative artificial intelligence (AI) on higher education, focusing on the perceptions of university lecturers in Spain. Using the AETGE/GATE model and a questionnaire analysed with SPSS, factors such as usefulness, ease of use, perceived value, social influence and ethical concerns are examined. The results show that, although there are no gender differences in the overall perception of AI, women report greater social influences and ethical concerns. It is concluded that for effective implementation, these differences must be addressed through appropriate training and support programmes.	Padilla Piernas JM, Martín García MM. Impact and Perspectives of Generative Artificial Intelligence in Higher Education: A Study on Lecturers' Perception and Adoption using the AETGE/GATE Model. 2024. doi:10.31637/epsir-2024-595
Finkel, Lucila; Parra-Contreras, Pilar; Martínez-Solana, Yolanda; Matos-Mejías, Carla[14]	2025	ChatGPT as a Source of Information in Higher Education: Evaluating the Results Provided by Generative AI	This study examines university students' perceptions of ChatGPT-3 shortly after its launch and its implications as a source of information in higher education. Using a mixed-methods approach, researchers analysed 4800 survey responses, assessing students' knowledge, experience, and evaluations of ChatGPT. The results reveal significant differences in knowledge and perception based on sociodemographic and educational factors. Previous experience with AI influences students' perception of ChatGPT as a reliable source or a tool for misinformation. Expert analysis of ChatGPT responses highlights the need to train students to critically evaluate AI-generated content, laying the groundwork for integrating generative AI into education.	Finkel L, Parra-Contreras P, Martínez-Solana Y, Matos-Mejías C. ChatGPT as a Source of Information in Higher Education: Evaluating the Results Provided by Generative AI. 2025. doi:10.3145/epi.2024.0604

Garcia-Peñalvo, Francisco José; Alier, Marc; Pereira, Juanan; Casany, Maria Jose[15]	2024	Safe, Transparent, and Ethical Artificial Intelligence: Keys to Quality Sustainable Education (SDG4)	This study highlights the need for a structured framework to ensure the safe and ethical use of AI in education. A manifesto proposes seven basic principles, including student data protection, institutional alignment, adherence to teaching principles, minimisation of errors, user-friendly interfaces, human oversight, and ethical transparency. Smart learning applications (SLApps) are introduced to safely integrate AI into institutional systems. While AI tools such as GPT offer transformative potential, they also raise accuracy and ethical concerns. A checklist based on these principles is recommended to help educators evaluate AI tools, ensuring that they support academic integrity and enhance learning experiences.	Garcia-Peñalvo FJ, Alier M, Pereira J, Casany MJ. Safe, Transparent, and Ethical Artificial Intelligence: Keys to Quality Sustainable Education (SDG4). 2024. doi:10.46661/ijeri.11036
Cornejo-Plaza, Isabel; Cippitani, Roberto[16]	2023	Ethical and Legal Considerations of Artificial Intelligence in Higher Education: Challenges and Prospects	The use of artificial intelligence (AI) has grown in academic and student communities, and ChatGPT offers both opportunities and challenges. Beyond regulation, ethical principles and legal frameworks must be combined with adequate education to ensure that AI is used to generate meaningful knowledge rather than decontextualised information. Misuse could hinder higher education and broader social goals that emphasise inclusion and solidarity in education.	Cornejo-Plaza I, Cippitani R. Ethical and Legal Considerations of Artificial Intelligence in Higher Education: Challenges and Prospects. 2023. doi:10.13444/REYD2023.28.43935
Ojeda, Adelaida D.; Solano-Barliza, Andrés D.; Alvarez, Danny Ortega; Cárcamo, Efraín Boom[17]	2023	Analysis of the impact of artificial intelligence ChatGPT on the teaching and learning processes in university education	This study analyses the impact of ChatGPT use in higher education. Using a qualitative approach, it employs content analysis and structured interviews validated by experts. The results highlight the perception of ChatGPT as a transformative tool in teaching and learning, with various benefits and applications. It concludes that its use, combined with pedagogical strategies and information technologies, can improve interaction between teachers and students, promoting more dynamic and effective learning environments..	Ojeda AD, Solano-Barliza AD, Alvarez DO, Cárcamo EB. Analysis of the impact of artificial intelligence ChatGPT on the teaching and learning processes in university education. 2023. doi:10.4067/S0718-50062023000600061
Hind, Berrami; Jallal, Manar; Serhier, Zineb; Bennani Othmani, Mohammed[18]	2024	Exploring the Horizon: The Impact of AI Tools on Scientific Research	The article analyses the impact of artificial intelligence (AI) and natural language processing (NLP) on the writing of medical research articles. It highlights both their advantages and disadvantages, emphasising the growing popularity of tools such as ChatGPT, Gemini, Elicit, and SCISPACE. While these technologies promote innovation and progress in health research, they also present challenges that may affect scientific quality. The conclusion highlights the importance of addressing ethical and regulatory issues to optimise the use of AI in the production of medical knowledge.	Hind B, Jallal M, Serhier Z, Bennani Othmani M. Exploring the Horizon: The Impact of AI Tools on Scientific Research. 2024. doi:10.56294/dm2024289
Mayol, Julio[19]	2024	Impact of generative Artificial Intelligence on scientific publishing	The article describes how artificial intelligence (AI), particularly generative AI based on natural language processing, has rapidly transformed the field of scientific publishing. Thanks to the development of transformer architecture, machines can understand and generate text fluently, facilitating automated writing and information synthesis. This improves the efficiency and accessibility of research, but also raises ethical and security challenges that must be addressed with care.	Mayol J. Impact of generative Artificial Intelligence on scientific publishing. 2024. doi:10.37551/S2254-28842024019
Segovia-García, Nuria[20]	2024	Optimizing Student Support: A Review of the Use of AI Chatbots in Higher Education	This study examines the role of AI chatbots in improving student support and service quality at universities. Using the PRISMA methodology and data from SCOPUS, Web of Science, and ERIC, the research highlights the growing interest in AI-based tools for academic and administrative support. The results show that chatbots improve efficiency by providing	Segovia-García N. Optimizing Student Support: A Review of the Use of AI Chatbots in Higher Education. 2024. doi:10.31637/epsir-2024-324

			quick responses and personalised support. However, challenges such as data security and privacy need to be addressed. The study highlights the need for continuous evaluation to optimise the impact of AI on academic performance and student retention.	
Ledesma-Silva, Yolanda; Cobos-Reina, Rodrigo[21]	2025	Educational Quality and Modality of Studies in Higher Education	This study examines the relationship between study modes and the quality of education in higher education. Using a descriptive-correlational, quantitative, and cross-sectional approach, the researchers surveyed 280 students at the Central University of Ecuador. The results indicate a moderate positive correlation between study mode and education quality, confirmed by linear regression and ANOVA analysis. The findings highlight the importance of effective strategies, resource optimisation, and digital skills training for teachers and students to improve education quality across different learning formats.	Ledesma-Silva Y, Cobos-Reina R. Educational Quality and Modality of Studies in Higher Education. 2025. doi:10.31637/epsir-2025-1488
Navarrete-Cazales, Zaira; Manzanilla-Granados, Héctor Manuel[22]	2023	A perspective on artificial intelligence in education	The text explores machine learning through artificial intelligence (AI), illustrating it with examples of freely accessible digital agents. It also analyses the interest of large companies in AI-based education and its potential impact on a developing country such as Mexico, taking into account UNESCO guidelines. Through document analysis, the benefits, challenges and international policies on AI in education are examined. The conclusion highlights that, although the automation of education through AI is becoming increasingly popular, it is not always the best option.	Navarrete-Cazales Z, Manzanilla-Granados HM. Una perspectiva sobre la inteligencia artificial en la educación. 2023. doi:10.22201/iisue.24486167e.2023.Especial.61693
Solano Hilario, Christian; Belinda Ccope Jaucha, Kathy[23]	2024	Generative Artificial Intelligence and its impact on the educational quality of students: Systematic Review	The study analyses the impact of generative artificial intelligence (Gen AI) on education and compares it with traditional tools. Through a systematic review of the literature based on 20 studies from Scopus, it examines how Gen AI improves learning. The findings indicate a balanced preference between Gen AI and traditional tools, highlighting personalisation and feedback as key factors. The need for further research and the fundamental role of teachers in the effective adoption of this technology in education are emphasised.	Solano Hilario C, Ccope Jaucha KB. Generative Artificial Intelligence and its impact on the educational quality of students: Systematic Review. 2024. doi:10.18687/LACCEI2024.1.1.1481
Mendiola, Melchor Sánchez; Degante, Erik Carbajal[24]	2023	Generative artificial intelligence and university education: has the genie been let out of the bottle?	Generative Artificial Intelligence (GAI) has gained significant importance worldwide, especially in the field of education. This text aims to generate academic debate about its potential and analyse its advantages and disadvantages. Although its use in education is still being evaluated, tools such as ChatGPT have spread rapidly, creating a gap between expectations and formal research on its impact. It is concluded that, while GAI has great educational potential, it also has limitations and risks that must be rigorously studied for its proper implementation in education.	Mendiola MS, Degante EC. La inteligencia artificial generativa y la educación universitaria ¿Salió el genio de la lámpara? 2023.
Figueras-Ferrer, Eva[25]	2021	Reflections upon the contemporary graphics. Future challenges in higher education	Rapid scientific and technological changes in recent decades have affected all areas of knowledge, culture and daily life, including the arts. These advances have introduced new ways of creating, sharing and experiencing art, which often exceed the adaptive capacity of traditional art institutions, academia and critics. Many arts education programmes struggle to align their curricula with the changing demands of the arts market, partly due to limited resources and teacher training. To bridge this gap, a transdisciplinary approach that integrates the arts, sciences and	Figueras-Ferrer E. Reflections upon the contemporary graphics. Future challenges in higher education. 2021. doi:10.5209/aris.68512

			technology is essential. This would enable a more effective response to contemporary challenges in various fields, adapting to the demands of the digital age.	
Taipicaña Vergara, Jessica Adriana; Hidalgo Achig, Milton Fernando; Sinchiguano Molina, Germanico; Salguero Núñez, Cristian Stalin; Chiguano Umajinga, Nelson Rodrigo[26]	2024	Factors impacting the integration of AI in Ecuadorian higher education: perspectives and implications	This study examines the integration of AI in higher education in Ecuador, using a qualitative, exploratory, and descriptive approach. Surveys and statistical analyses reveal that the technological aspect has the greatest influence (46,8), while the pedagogical approach has a moderate impact (24,9). The results highlight the need to redouble efforts to effectively integrate AI into education. Socioeconomic inequalities remain a major obstacle to the equitable adoption of AI, reflecting the challenges faced by many developing countries in Latin America and elsewhere.	Taipicaña Vergara JA, Hidalgo Achig MF, Sinchiguano Molina G, Salguero Núñez CS, Chiguano Umajinga NR. Factors impacting the integration of AI in Ecuadorian higher education: perspectives and implications. 2024. doi:10.51798/sijis.v5i4.868
Ávila, María Jesús Lago; Hurtado, Mónica Pérez[27]	2024	AI in Higher Education: Shaping More Competitive and Employable Professionals	This study explores the integration of AI tools into university programmes to improve graduate employability by analysing successful case studies. Using a mixed-methods approach, researchers will survey and interview faculty and students from 50 selected degree programmes. The project, which will be carried out during the 2024-2025 academic year, is currently in the design phase, with initial results expected in early 2025. The study anticipates that the integration of AI will improve students' preparation for employment through active learning methodologies, while assessing implementation challenges.	Ávila MJL, Hurtado MP. AI in Higher Education: Shaping More Competitive and Employable Professionals. 2024. doi:10.31637/epsir-2024-859
Zambrano Zambrano, Elisa Juverly; Loor Bravo, Lucia Dolores; Mendoza Fernández, Verónica Monserrate; Velásquez Gutiérrez, Martha Tatiana[28]	2024	Perspectives and challenges in university learning: A critical analysis	This study examines the changing landscape of higher education in response to globalisation and digital transformation. Using a qualitative and explanatory approach and a systematic review of previous research, it explores key learning theories, such as constructivism and cognitivism, as well as innovative methodologies such as problem-based learning and digital education. The findings highlight a shift towards student-centred learning, which emphasises active participation and adaptability to technological advances. The study concludes that this transformation fosters critical thinking and self-directed learning, providing a comprehensive framework for addressing contemporary educational challenges.	Zambrano Zambrano EJ, Loor Bravo LD, Mendoza Fernández VM, Velásquez Gutiérrez MT. Perspectives and challenges in university learning: A critical analysis. 2024. doi:10.31876/rcs.v30i.42829
Kravchenko, Hanna; Ryabova, Zoya; Kossova-Silina, Halyna; Zamojskyj, Stepan; Holovko, Daria[29]	2024	Integration of information technologies into innovative teaching methods: Improving the quality of professional education in the digital age	This study analyses the integration of digital technologies in vocational training to improve the quality of training and adapt it to the demands of the labour market. Using a quantitative approach, the research includes a content analysis and a survey of 140 vocational training teachers. The results indicate frequent use of digital tools, but highlight the challenges of updating educational infrastructure, especially in Ukraine. The study emphasises the need for continuous professional development due to rapid technological progress. It concludes that digitalisation is essential for adapting vocational training to the current challenges of the labour market.	Kravchenko H, Ryabova Z, Kossova-Silina H, Zamojskyj S, Holovko D. Integration of information technologies into innovative teaching methods: Improving the quality of professional education in the digital age. 2024. doi:10.56294/dm2024431
Mariscal-Camacho, Josefina; Justo-López, Araceli C.; Aguilar-Salinas, Wendolyn E.; De Las Fuentes-Lara, Maximiliano[30]	2024	Model to evaluate the impact of a quality management system on teaching-learning processes in higher education institutions. A case study	The study evaluates the impact of a quality management system on teaching and learning among engineering graduates from the Autonomous University of Baja California. Through an online survey, their perceptions are collected and analysed by experts in educational quality. With a sample of 82 participants from the 2023-2021 cycle, the results indicate a positive influence on training, as well as identifying areas for improvement. It is concluded that the analysis helps to detect risks	Mariscal-Camacho J, Justo-López AC, Aguilar-Salinas WE, De Las Fuentes-Lara M. Model to evaluate the impact of a quality management system on teaching-learning processes in higher

	in quality management and promotes continuous improvement.	education institutions. A case study. 2024. doi:10.4067/S0718-50062024000400027

Regarding the perceptions of teachers and students, differences have been identified in the acceptance and ethical concerns of AI based on gender and academic level.[13] While teachers see AI as a support tool that can optimise their work and facilitate the generation of educational resources, students tend to trust its answers more without critical evaluation.[14] This phenomenon has raised questions about the level of digital literacy and the degree of preparedness of users to discern between accurate information and false content generated by AI. In addition, studies have found that some students use AI as a substitute for cognitive effort, which can affect the development of essential skills such as reasoning and problem-solving.

Another key aspect is the quality and regulation of AI in education. The importance of implementing policies that ensure these technologies' ethical and responsible use has been highlighted, especially in higher education, where challenges include the originality of academic work and the authenticity of acquired learning.[15] Regulation and training on the use of AI are essential to prevent the spread of misinformation and ensure its implementation based on the principles of fairness and transparency. Recent studies highlight the need to develop clear regulatory frameworks and control mechanisms to assess the impact of AI on teaching and learning.[16] In this regard, universities and educational organisations are crucial in defining strategies that promote the appropriate use of AI in academic settings.

Quantitative Analysis of the Impact of Generative Artificial Intelligence on University Education in Latin America

To complement the literature review, a quantitative analysis was conducted based on surveys of 350 teachers and 500 university students from higher education institutions in Latin America. The sample included participants from Mexico, Colombia, Argentina, Peru, and Chile, ensuring a diverse representation of the regional educational context.

1. Frequency of use of AI in academia

Table 2. Frequency of AI use in academia

Frequency of Use	Teachers (%)	Students (%)
Daily	18,5	35,2
Several times a week	27,3	40,6
Occasionally	33,2	18,7
Rarely	21,0	5,5

These data indicate that students are more open to integrating these tools into their learning, while teachers may be more reserved or less familiar with their application in teaching.

2. Benefits and Challenges Identified

88,3 % of students surveyed said that generative AI improves access to information, while 79,6 % of teachers believe it supports writing assignments. However, 80,5 % of teachers expressed concern about the lack of regulation of this technology, compared to only 55,6 % of students who perceived this risk. In addition, students and teachers expressed concern about excessive dependence on AI, 72,7 % and 65,3 %, respectively.

3. Level of trust in information generated by AI

The level of trust in information generated by AI was also assessed: the results are not very high, with only 28,4 % of students expressing a high level of trust in information generated by AI, and the figure is even lower among teachers, at just 12,8 %. The highest percentage of both groups is at a moderate level of confidence, at just 45,7 % and 50,1 % of teachers and students, respectively. These data indicate that, despite the frequent use of AI, there is widespread concern about the accuracy and reliability of the information generated by these tools. This is also supported by 78,2 % of teachers and 60,1 % of students who expressed concern about possible misinformation due to the excessive use of AI.

4. Correlation analysis

Pearson's correlation coefficient was applied to assess the relationship between various variables:

- Frequent use of AI and trust in the information generated: $r = 0,62$ ($p < 0,01$). A moderate positive relationship indicates that those using AI more frequently tend to trust its results more.

- Concern about misinformation and level of trust: r = -0,48 (p < 0,01). Moderate inverse relationship, suggesting that the greater the concern about misinformation, the lower the trust in AI.
- Frequency of use and perceived benefits: r = 0,74 (p < 0,01), Strong positive relationship, indicating that those who use AI more frequently perceive more benefits in its academic use. The results show a high acceptance of generative AI in university education in Latin America, especially in the personalisation of learning and the improvement of formative feedback. However, concerns remain regarding technological dependence, the quality of critical thinking generated, and the need for adequate regulation.

This quantitative analysis reflects a growing adoption of AI in academia, particularly among students. However, concerns remain regarding trust in the information generated and the risk of misinformation. The strong correlation between frequency of use and perceived benefits suggests that these technologies could be improved through appropriate training strategies and quality assurance mechanisms that minimise the risks associated with their application.

DISCUSSION

This study's results align with current trends in the impact of artificial intelligence (AI) on higher education, which have been highlighted in several recent studies. As observed in the study by [12] using AI tools such as ChatGPT to solve academic exercises shows that blind trust in technology can lead to suboptimal results, highlighting the need for critical training in using these tools. Similarly, the study by Ojeda et al.[17] highlights that the effective implementation of ChatGPT in university teaching and learning processes depends mainly on its integration with appropriate pedagogical strategies, suggesting that quality assurance models should consider specific criteria for using AI in teaching.

Quantitative results reveal that trust in AI-generated information varies between teachers and students. While 50,1 % of students expressed moderate trust in AI, among teachers, this figure reached 45,7 %. In addition, 41,5 % of teachers indicated low confidence in AI, highlighting the need for training strategies to improve understanding and use of these tools.

Another key aspect identified is the impact of AI on academic research. Hind et al.[18] point out that artificial intelligence and natural language processing have revolutionised the writing of scientific articles in the medical field, facilitating the production of knowledge but also generating ethical challenges in evaluating and validating results. Similarly, Mayol[19] points out that generative AI has transformed scientific publishing, raising questions about the quality and veracity of the content generated. In this regard, quality assurance frameworks in research must integrate validation mechanisms that minimise dependence on AI in unsupervised academic production.

Regarding teachers' perceptions of AI in higher education, Padilla Piernas et al.[17] found that teachers perceive AI as a valuable tool but identify ethical and social concerns that must be considered. This finding coincides with the research of Cornejo-Plaza et al.[16], who warn of the need for clear regulations and ethical principles to prevent the misuse of these technologies in education. These studies highlight the importance of establishing quality assurance models that integrate regulatory frameworks to ensure the ethical use of AI in higher education institutions.

The survey data show that the main benefits identified by students include better access to information (88,3 %), support with written assignments (79,6 %), and promotion of independent learning (69,2 %). Among teachers, 72,4 % highlighted improved access to information as an essential benefit, while 60,8 % appreciated support with written assignments. However, teachers also expressed significant concerns about potential misinformation (78,2 %) and the lack of regulation in the use of AI (80,5 %), suggesting the need to establish clear guidelines for its implementation in higher education.

Various studies have also analysed AI's impact on distance learning. Ricra-Mayorca et al.[11] found that distance higher education students have received generative AI well, allowing them to learn more autonomously and flexibly. However, these results also reflect the need to improve teacher and student training in the advanced use of these tools. This suggests that quality assurance systems should include indicators on AI training and digital literacy.

Another fundamental aspect is the relationship between AI and the quality of education. Segovia-García et al.[20] highlights that AI chatbots have optimised academic support and assistance in universities, improving the student experience and contributing to academic retention. Similarly, García-Peñalvo et al.[15] propose an ethical and transparent framework for implementing AI in education, aligned with the Sustainable Development Goals (SDGs), ensuring that these technologies contribute to equitable and sustainable education. In this context, integrating AI into quality assurance models must ensure that its impact is measurable through specific indicators of equity, accessibility, and improvement in teaching-learning processes.

Finally, studies such as that by Ledesma-Silva et al.[21] have analysed the relationship between the mode of research and the quality of education, confirming that the integration of emerging technologies, such as AI, can

improve the quality of education when implemented in a strategic and structured manner. This reinforces the need for quality assurance frameworks that consider AI's benefits and challenges in higher education.

In conclusion, this study's results reinforce the idea that AI can play a key role in transforming higher education, provided it is implemented with an appropriate pedagogical approach. Furthermore, it is essential that quality assurance systems adapt their models and indicators to assess AI's real impact on teaching, learning, and educational equity, thus ensuring its responsible and sustainable use in the university context.

CONCLUSIONS

The results of this study highlight that artificial intelligence is transforming higher education in multiple dimensions, from teaching and research to academic management. While AI offers considerable benefits, such as improving access to information and promoting autonomous learning, it also poses significant challenges related to trust in the information generated, potential misinformation, and the need for regulation.

The results indicate that the frequency of AI use is associated with a greater perception of benefits, suggesting that its effective integration into higher education can improve the quality of learning. However, the lack of trust among teachers and students in the information generated by AI highlights the need for training strategies in digital literacy and critical thinking.

Similarly, integrating AI in academic research and scientific publishing requires validation mechanisms that minimise dependence on unsupervised technology, ensuring the quality and accuracy of results. Implementing quality assurance models must take these factors into account and establish specific indicators to assess the real impact of AI on higher education.

In this context, educational institutions must develop pedagogical and regulatory strategies to guide AI's responsible and ethical use. Creating regulatory frameworks and continuously training teachers and students are key aspects of ensuring that AI contributes to the equity, accessibility, and sustainability of higher education in the digital age.

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CONFLICT OF INTEREST

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