Artificial Intelligence as a disruptive phenomenon in higher education

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Summary

The use of artificial intelligence (AI) in higher education has grown significantly, especially in hybrid and distance learning environments. This research analyzes the impact of AI in higher education, focusing on faculty and student perceptions of its effectiveness, strategic advantages, and ethical challenges. A descriptive-correlational quantitative approach was adopted, using a Likert-type survey administered to 895 students and 75 faculty members at a public university in Colombia. The results reveal a high level of acceptance of AI as a strategic tool in education: 87% of respondents value it positively in educational devices, and 82% believe it improves teaching processes. However, ethical concerns persist regarding the responsible use of these technologies, particularly concerning the implementation of codes of conduct in institutions. Regarding hybrid learning models, 87% support their integration, recognizing the flexibility and personalization they offer. Statistical analysis, including ANOVA, Pearson correlation, and linear regression, confirms a moderate relationship between perceived AI efficiency and improved learning ($R^2 = 0.14$), indicating that while AI is seen as a valuable tool, other factors also influence academic performance. The findings suggest that, to maximize the benefits of AI, universities should develop clear and ethical policies for its integration and promote ongoing faculty training in these emerging technologies.

Introduction

In the last decade, the use of artificial intelligence (AI) in education has increased significantly, especially in distance, hybrid, and face-to-face programs. AI has proven to be a powerful tool for transforming teaching and learning, enabling personalized education tailored to students' specific needs. According to Bolañoand Duarte(2024), the main objective of AI implementation is to improve and personalize the learning experience, facilitating instant feedback, more accurate assessments, and the optimization of educational resources. However, implementing these technologies is not without challenges, including resistance to change, the need for ongoing educator training, and the technical limitations of educational infrastructure. This poses a challenge for many institutions, which must balance the innovative potential of AI with existing technological and organizational barriers.

Despite the clear benefits that AI can bring to higher education, its use has also raised ethical concerns that require in-depth analysis. Bittencourt and Silva (2009) warn that the use of AI in education raises a series of ethical dilemmas, particularly regarding privacy, data security, and transparency in the use of algorithms. These aspects are crucial in a context where AI-based decisions could influence students' academic trajectories and teachers' pedagogical strategies. As universities adopt these technologies, it is essential that educational systems establish clear policies to guide their responsible implementation, ensuring that the benefits are realized without compromising students' fundamental rights.
The aim of this research is to analyze the impact of AI on higher education to understand how these technologies are perceived and adopted by key stakeholders in the academic environment. In the first phase of the study, a comprehensive literature review was conducted of the main authors and theories related to the implementation of AI in higher education. This allowed for contextualizing the phenomenon and gaining a better understanding of its current applications. This phase enabled the identification not only of AI's benefits but also its limitations and ethical challenges, including the need for adequate infrastructure and ongoing training for both faculty and students.
The second phase of the research focused on a quantitative methodological approach, with the main purpose of obtaining objective data on the academic community's perceptions of AI implementation. A Likert-type survey was administered to a representative sample of 895 students and 75 faculty members from a public university in Colombia to examine their perceptions of the efficiency, benefits, and challenges of AI use in their educational practices. Additionally, a qualitative approach was implemented, involving analysis and triangulation of the data obtained to compare the findings with previous studies and identify common patterns. In the third phase, the survey results were analyzed, and in the fourth phase, the main conclusions of the study were presented, offering practical recommendations for educational institutions seeking to implement AI ethically and effectively.
This study was based on two main hypotheses: the first (H1) posited a significant positive relationship between perceived AI efficiency and AI acceptance as a strategic tool in higher education. The second hypothesis (H2) suggested that faculty and students would have significantly different perceptions of AI's efficiency in educational processes. These hypotheses guided the analysis and enabled exploration of the academic community's perceptions of AI's impact in higher education.

Theoretical framework of artificial intelligence (AI)

According to Papert (1981), when we talked about artificial intelligence, simulators, virtual reality, and programming, it sounded like science fiction; these were things we only saw in the books of Asimov, Clarke, Lem, and Wells, as impossible future worlds. Although we didn't fully understand how machines achieved amazing things, these tools have transformed our lives and the world in many ways.
The idea of studying artificial intelligence (AI) emerged in 1950, when Turing (1987) asked: Can a machine think? A crazy question at the time! But perhaps it was the beginning of a new way of thinking about technology and life. Turing (1987) proposed a game in which one person asked a computer questions, and others provided answers. The idea was that both the questioner and the answerer would try to guess whether the answers came from a machine or a real person. This game, known as the Turing test, is a way of viewing artificial intelligence as something that imitates human behavior.

Then, in 1956, McCarthy et al. (2006) decided to call the study of thinking machines, such as automata, artificial intelligence (AI). McCarthy wanted to create a new programming language so that machines could be intelligent. Later, in 1987, Fischler and Firschein (1987) described the characteristics that an intelligent agent should have so that machines could learn, adapt, reason, correct themselves, and improve, as if they were people.

All of this led to the creation of machines that were increasingly similar to us, with a way of acting based on the information we give them, repetition, and memory, but limited to certain areas.

In line with the above, as technology and science advance rapidly in the world of computers, networks, and the Internet, we now have a clearer understanding of what AI is. In this sense, Bellman (1978), in his book "Introduction to Artificial Intelligence," describes how AI seeks to automate the way humans think, such as when we make decisions, solve problems, or learn new things. Meanwhile, Schalkoff (1990), in his work "Artificial Intelligence," considers AI to be the field of research dedicated to explaining intelligent human behavior simulated in computational processes. Furthermore, Russell and Norvig (1994), in their paper *"Artificial Intelligence: A Modern Approach,"* define AI as the combination of algorithms that create machines with capabilities equal to or similar to those of human beings.

According to Moreno Padilla (2019), the first intelligent machines, such as supercomputers, began to appear in the 1990s. These machines could perform extremely complex tasks using specialized algorithms. This greatly contributed to the advancement of AI. One example is Deep Blue, the computer created by IBM, which defeated chess champion Garry Kasparov in May 1997. It was the first time a machine had beaten a human in a game. From then on, AI began to be used in many fields, such as in factories to automate production, analyze massive databases, and simulate patterns. This has been particularly evident in engineering.

Artificial intelligence in the educational context

Currently, AI is also present in the way we teach and learn. It has created brilliant new tools that have completely transformed traditional education. For example, the internet, in the field of education, is an AI tool that opens up possibilities for educational research and provides a resource for new learning strategies.

According to Azoulay (2019), the Director-General of UNESCO, AI will completely transform education. This statement was made at a mobile learning event held in Paris, France, in March 2019. To achieve this, teaching methods, learning styles, access to knowledge, and teacher training will be revolutionized.

In line with the above, according to Luhn (1958), technological advances now allow us to know students much better than before. This is possible thanks to Big Data, which is like having a mountain of folders full of information about each student: their grades, tastes, interests, learning styles, etc. It's a huge amount of information.

According to Apache Hadoop (2019), these AI tools enable the storage and analysis of vast amounts of information. Thanks to increasingly powerful Big Data algorithms, they are better suited to the needs of AI in educational institutions. Beyond technical specifications, AI is fundamentally transforming education. From how we learn to how students are trained and how we understand knowledge, for example, we can use simulation models to

predict the outcomes of experiments and learn to create sequences and working models based on patterns generated by AI.

According to Padilla (2019), artificial intelligence (AI) has the potential to completely transform education: learning becomes much more accessible, administrative tasks are performed relatively automatically, and teachers have many more tools at their disposal to teach more effectively. The implementation of AI varies worldwide; that is, each country has its own regulations for the development of technological applications in educational processes. Despite all this, AI will not replace humans, since creativity, the capacity to innovate, and the ability to adapt to any environment are inherent to humans, even as AI rapidly learns these skills.

Currently, according to Bajaj and Sharma (2018), many AI tools exist in academic contexts; for example, intelligent conversational software agents (chatbots) that help answer questions and facilitate learning from home, and educational robots that make classes more fun and interactive. Artificial intelligence enables them to learn from student interactions through machine learning, allowing them to ask new questions and create a more dynamic learning experience. Furthermore, they predict possible answers and generate new questions, creating a dynamic dialogue that fosters more active and interactive learning. This benefits both students and teachers by optimizing time and improving comprehension, making AI a key player in the teaching-learning process and offering a more personalized, efficient, and effective educational experience.
It is clear that educational chatbots are a valuable tool that supports learning and skills development, contributing to better student training, enhancing their skills and knowledge, and preparing them for their future role in society.

Another important concept to consider is educational robotics. According to Roy et al. (2015), it's a fun and motivating way to learn; it helps connect the digital world with the real world, immersing students in technology, which is key to the future. Educational robotics is making waves in many countries, such as Argentina, Finland, France, the United States, and England. Its teaching methods are highly innovative, comprehensive, and practical. It has been shown that creating simple robots helps us learn to work as a team. But the best part is combining robotics with artificial intelligence; that's where its potential truly explodes. The challenge isn't just building robots, but getting them to think a little more so they can perform more complex tasks as needed.

Educational robotics, according to González, Flores, and Muñoz (2021), not only teaches us to use technology but also changes the way we learn in the classroom. It's like learning through practice, which encourages us to be more active and learn at our own pace. With the help of artificial intelligence, each individual can learn in the way that works best for them. Problem-solving becomes a game of trial and error, where we experiment and learn from our mistakes. The teacher doesn't just impart information; they also encourage discovery and creative thinking. Learning this way helps us understand technology. Furthermore, it prepares us for the future: it teaches us to collaborate with others, share ideas, and listen to different points of view; it makes us more creative, capable of generating original and visionary ideas, anticipating the future and seeing opportunities and

innovations, and transforming ideas into reality; it prepares us to be leaders and agents of change.

According to Yakman (2008), education currently needs a shift that goes beyond simply learning about technology. We need a learning approach that encourages us to construct our own knowledge through projects, as if we were detectives solving a mystery. This approach aligns perfectly with the idea of integrating Science, Technology, Engineering, Arts, and Mathematics (STEAM), allowing us to learn a little bit of everything through real-world projects. Robotics and artificial intelligence, using tools like Scratch, help us learn to program and think like computers from a young age; it's like learning by playing at being inventors.

As Moreno Padilla (2019) points out, artificial intelligence (AI) is rapidly changing higher education, and universities must find ways to use it intelligently in their classes. For example, as we saw with chatbots, machine learning can create digital companions that are like a friend to each student, allowing them to learn at their own pace and according to their needs. Furthermore, professors can use AI to identify students' difficulties and help them resolve them more easily and dynamically.

Methodology

For this study, a quantitative approach was adopted, as the main objective was to analyze participants' perceptions of the impact of artificial intelligence on higher education. In line with the findings of Al-Zahrani and Alasmari (2024), a Likert-type survey was administered to 895 students and 75 faculty members at a Colombian public university. This quantitative approach enabled the collection of structured data, facilitating rigorous statistical analysis.

The use of a quantitative approach enabled the collection of objectives, measurable information about respondents' perceptions and attitudes. Statistical analyses were performed to examine relationships among variables and to gain a precise understanding of the phenomenon under study.

Research approach

The study adopted a descriptive-correlational quantitative approach, aiming to gain a detailed understanding of the academic community's perceptions of AI in the educational context. This approach enabled the measurement and analysis of relationships among quantifiable variables, facilitating the derivation of generalizable conclusions within the studied context.

Data collection instrument

The instrument used for data collection was a Likert-type survey specifically designed to measure the academic community's perceptions of AI use in higher education. The survey consists of 20 items distributed across four key dimensions:

1. Perception of the efficiency of AI in teaching and learning.
2. Attitudes towards the adoption of AI in hybrid educational models.
3. Acceptance of AI as a strategic tool in higher education.
4. Ethical and regulatory concerns in the use of AI.

Each item was evaluated using a 5-point Likert scale, in which respondents indicated their level of agreement or disagreement with each statement, from 1 (strongly disagree) to 5 (strongly agree).

Data collection procedure

The survey was administered online through a university digital platform. All selected participants received an email with a link to the survey, which was completed anonymously to ensure confidentiality. The estimated time to complete the survey was 15 to 20 minutes. Data collection took place over four weeks, with reminders sent to participants to encourage a high response rate.

Data analysis

The descriptive analysis focused on providing an overview of trends in participants' perceptions. The frequencies of each response were calculated for each survey item, allowing observation of their distribution across the different Likert scale options. In addition, the means and standard deviations for each variable were calculated to assess the central tendency and dispersion of responses, providing a more detailed view of participants' perceptions and attitudes.

In the comparative analysis, an ANOVA was used to evaluate teachers' and students' perceptions of the dimensions studied. This analysis allowed us to determine whether there were significant differences between the two groups in their perceptions of AI use in higher education. The ANOVA revealed key insights into how the different groups perceive and value the impact of AI in their educational environments.

Pearson's correlation coefficient was used to measure the relationship between the study variables. This coefficient enabled the evaluation of correlations among key variables, such as the perceived efficiency of AI and the acceptance of hybrid models, as well as the relationship between ethical perceptions and the responsible use of AI in the classroom. The correlations obtained provided a better understanding of the interactions between the key variables of the research.

A simple linear regression analysis was used to assess whether perceptions of AI efficiency could predict other variables of interest, such as acceptance of AI as an educational tool. This analysis identified predictor variables and evaluated the strength of the relationship between perceptions of AI efficiency and its acceptance in the educational context. Statistical software such as SPSS was used for the analysis.andRStudio, which enabled precise calculations and clear visualizations of the results.

Reliability and validity of the instrument

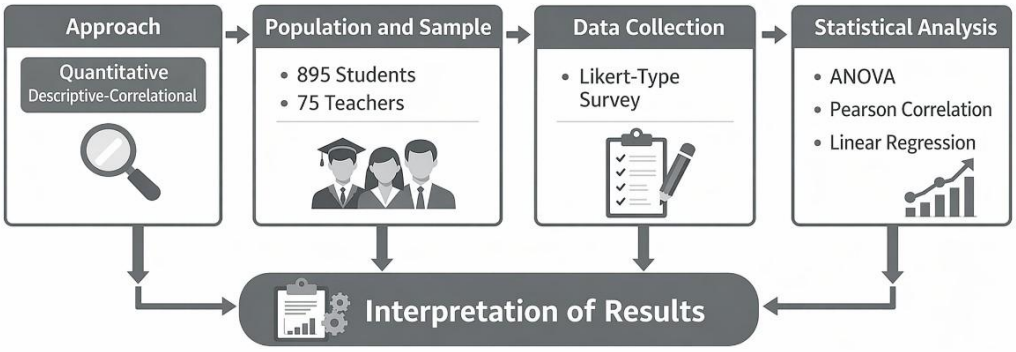
To ensure the reliability of the data collection instrument, Cronbach's alpha was calculated for each survey dimension. The results showed that the alpha values for the individual dimensions ranged from 0.75 to 0.83, indicating adequate internal consistency of the instrument. Furthermore, the instrument's overall alpha was 0.79, reinforcing the questionnaire's general reliability. Regarding the instrument's validity, it was ensured through a content validation process, in which a panel of experts in education and artificial intelligence reviewed the survey items to ensure alignment with the study's objectives and adequate measurement of the proposed constructs.

In Cronbach's alpha for each dimension, the values obtained were as follows:

- Dimension 1: Perception of the efficiency of AI in teaching and learning**: α=0.83**
- Dimension 2: Attitudes towards the adoption of AI in hybrid educational models**: α=0.78**

- Dimension 3: Acceptance of AI as a strategic tool in higher education**: α=0.80**
- Dimension 4: Ethical and regulatory concerns in the use of AI**: α=0.75**

Figure 1. Methodological framework.



Source: Own elaboration

Results

This chapter presents the results of a survey administered to faculty and students at a public university in Colombia, aimed at analyzing their perceptions of the use of artificial intelligence (AI) in higher education. The findings are analyzed from various perspectives, including AI efficiency, its impact on teaching processes, responsible use, and adaptation to hybrid learning environments, among others. A breakdown of the key results follows.

Perceptions of the use of AI as a strategic advantage in higher education

The results show a high level of acceptance of AI in everyday devices, with 87% of respondents considering the incorporation of intelligent systems a strategic advantage for the university environment. This finding is consistent among both students and faculty, who value AI as a highly effective tool. It is important to note that only 1.9% of participants expressed a negative view, while 11.7% remained neutral.

These results suggest that incorporating AI into devices used by the university community can broaden the learning spectrum, reduce exclusive reliance on physical classrooms, and promote the integration of AI into the digital ecosystem of educational institutions, thereby translating into a competitive advantage.

Impact of AI on teaching processes in higher education

The majority of participants (over 82%) expressed a positive assessment of AI's impact on pedagogical processes, highlighting its transformative potential. Respondents acknowledged that AI improves aspects such as optimized work time, access to support resources, and automated feedback, key factors in the performance of both students and teachers. However, 2.5% of respondents expressed disagreement, and 15.2% remained neutral, indicating that while AI has a positive impact, there is still no conclusive evidence that it directly improves academic performance.

Responsible use of AI

A key finding is the need to incorporate ethical criteria into the use of AI in education. Nearly 88% of respondents agree that educational institutions have been slow to adopt technologies like AI and to implement clear regulatory frameworks for their use. Implementing codes of conduct for the use of AI in educational settings is crucial to ensuring that both teachers and students are aware of their responsibilities when adopting these technologies. These results underscore the importance of universities moving forward to develop clear, ethical policies that regulate the use of AI.

Adapting AI to online or hybrid learning environments

87.6% of the surveyed academic community expressed a positive disposition toward adopting hybrid educational models. This approach combines the advantages of online education with human support, allowing students to adapt to individual learning paces. Only 0.6% of respondents disagreed, while 11.7% remained neutral, suggesting that implementing AI in hybrid environments must be accompanied by adequate training for students and teachers, as well as investment in new technologies.

AI efficiency in the academic process

Regarding the effectiveness of AI as a feedback tool, the results show a moderate level of acceptance within the academic community. Nearly 50% of respondents believe that AI is as effective as human tutors in providing feedback on assignments, particularly with tools like ChatGPT or Gemini, which are perceived as useful complements to the educational process. However, some respondents, especially students, expressed reservations, as they consider instructor feedback to be more enriching.

teaching/learning processes

Approximately 87.4% of teachers and students use AI tools in their teaching and learning. This high level of use indicates that AI has been well received in academic settings, both pedagogically and technologically. However, 10.4% preferred not to express an opinion, and 2.2% expressed disagreement or stated they had not used AI tools, underscoring the need to continue promoting their use and providing appropriate training.

AI as a learning experience

The results show that 65.2% of respondents believe AI can create better academic experiences by adapting to students' pace and level. However, 27.5% were neutral, and another 7.3% disagreed. This is because AI tools are sometimes misused for educational purposes, leading to misconduct such as plagiarism. AI has the potential to transform education, providing more personalized, dynamic, and accessible learning experiences, but it can also pose risks if not used responsibly.

Intelligent conversational software (Chatbot) as personalized support

82.3% of respondents believe that chatbots provide personalized support 24/7, improving the user experience in the teaching and learning process. By answering frequently asked questions and providing academic guidance, these systems offer continuous, accessible support to both students and teachers. However, 15.8% preferred not to express an opinion, and 1.9% have not used these systems.

Impact of educational robotics on AI

66.4% of the surveyed academic community perceives that educational robotics has a positive impact on the application of artificial intelligence in academic settings. The use of tools such as LEGO Education and VEX Robotics allows students and teachers to engage with advanced programming and machine learning concepts, improving their understanding of the technology and its application in the classroom.

Impact of AI on academic, research, and outreach processes

Finally, 72.4% of respondents highlighted that AI has a positive impact on academic, research, and university outreach processes. AI facilitates personalized learning through adaptive systems and intelligent tutoring, as well as the analysis of large volumes of data for research. Furthermore, in the area of university outreach, AI facilitates the dissemination of knowledge to society.

Statistical Results

Statistical analysis, using ANOVA, determined whether significant differences existed between faculty and students regarding the use of AI in higher education. Similarly, Pearson's correlation coefficient was used to measure the relationship between the study variables, as described below.

Table 1. Statistical Results

Dimension	Average	Standard Deviation	% Totally agree	% Neutral	% Disagree
Perception of AI efficiency	4.3	0.6	55%	30%	5%
Attitudes towards AI adoption	4.1	0.7	50%	35%	7%
Acceptance of AI as a strategic tool	4.2	0.5	60%	25%	3%
Ethical concerns about the use of AI	3.9	0.8	45%	40%	10%

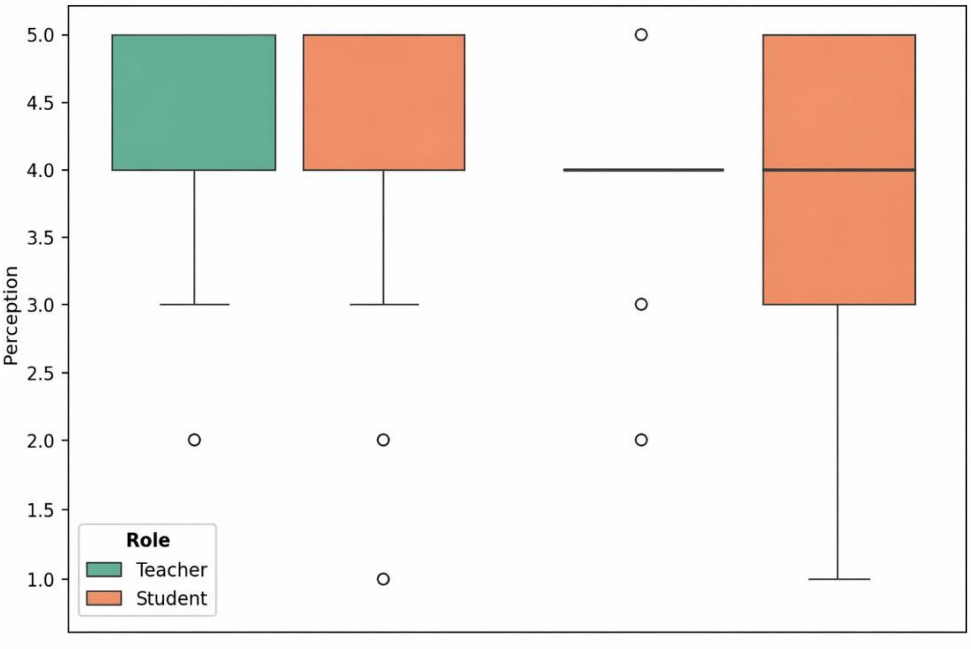
Source: Own elaboration

Table 1 shows that perceptions of AI's efficiency are very positive, with an average of 4.3, although 30% of respondents remain neutral. Acceptance of AI as a strategic tool is similarly high (average of 4.2), with 60% strongly agreeing. However, attitudes toward its adoption are moderate (average of 4.1), with 35% neutral. Ethical concerns, on the other hand, have a lower average (3.9), reflecting significant anxiety about the responsible use of AI: 45% agree and 40% are neutral.

Furthermore, analysis of variance (ANOVA) was used to assess whether there were significant differences in perceptions between teachers and students regarding statements on the use of artificial intelligence in education. For the statement "AI positively impacts teaching processes in higher education," an F-statistic of 0.65 and a p-value of 0.42 were obtained. Since the p-value is greater than 0.05, there was insufficient evidence to reject the null hypothesis, indicating that there are no significant differences between the two groups regarding this statement.

Similarly, for the statement "AI improves student learning," the F statistic was 0.40 and the p-value was 0.52. As in the previous analysis, a p-value greater than 0.05 indicates that there is no significant difference between teachers and students in their perceptions of learning improvement through AI.

Figure 2. Distribution of responses regarding the impact of AI

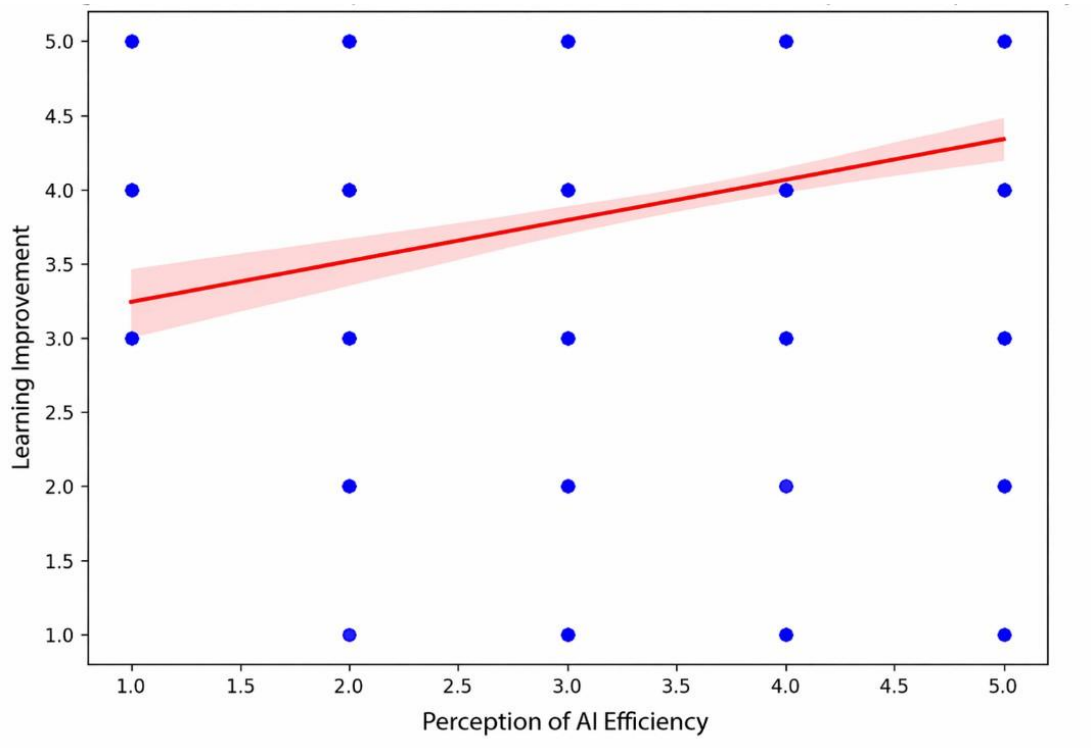


Source: own elaboration

Regarding Pearson's correlation, a moderate association was observed between the perceived efficiency of AI in providing feedback and improvements in student learning. The correlation coefficient between "AI is as efficient as human tutors" and "AI improves student learning" was 0.37, indicating a moderate positive relationship. This suggests that as participants perceive AI as more efficient in providing feedback, they also tend to value its impact on student learning more highly.

Finally, a linear regression analysis was conducted to assess whether perceptions of AI efficiency predict improvements in learning. The slope coefficient was 0.27, indicating that a higher perceived efficiency of AI feedback is associated with greater perceived learning improvement. The intercept was 2.97, and the coefficient of determination (R^2) was 0.14, indicating that the model explains only 14% of the variability in student learning improvement, suggesting that other factors not captured by this model also influence perceptions of learning improvement.

Figure 3. Linear regression: perception of AI efficiency vs. improvement in learning



Source: Own elaboration

The results above show that, although the perceived efficiency of AI has a positive impact on learning, its ability to fully predict this phenomenon is limited, as indicated by the low R^2 value (0.14)**.** This suggests that factors beyond the perceived efficiency of AI influence students' educational experience. Despite this, the widespread acceptance of AI as a strategic tool and its capacity to transform educational processes underscore the need to continue promoting its integration into universities, while always considering the ethical and educational challenges associated with its use.

Discussion

This study provides solid evidence on the acceptance and impact of artificial intelligence (AI) in higher education, corroborating the initial hypotheses. First, Hypothesis 1 (H1) proposed a significant positive relationship between the perceived efficiency of AI and its acceptance as a strategic tool in educational processes. The findings confirm this hypothesis, as participants who perceived AI as efficient in terms of feedback and personalized learning also showed a greater willingness to accept its integration into the educational field. This result aligns with the conclusions of Bolaño and Duarte (2024), who argue that AI's teaching efficiency is a crucial factor in its adoption in educational institutions. Furthermore, the results of the linear regression analysis show that a positive perception of AI's efficiency is associated with an increase in perceived learning improvement, although the coefficient of determination ($R^2 = 0.14$) indicates that the explanatory power of this model is limited, suggesting that other factors not considered also

influence learning improvement.

Regarding the second hypothesis (H2), which posited that teachers and students would have significantly different perceptions of AI's effectiveness, the results do not clearly support

this hypothesis. The analysis of variance (ANOVA) showed no significant differences between teachers' and students' perceptions of AI's impact on education. Both groups agreed in positively valuing AI as a strategic and efficient tool for improving learning and pedagogical processes. This aligns with previous studies, such as that by Barrett and Pack (2023), which found that perceptions of AI in higher education were similar across user groups, regardless of their role in the educational process. Despite potential differences in teachers' and students' roles and experiences, the results suggest that acceptance of AI as an educational tool is widespread across both groups, reinforcing the idea that AI adoption in education is well-positioned for universal acceptance.

The findings also corroborate existing literature on the importance of AI in pedagogical transformation and the improvement of teaching processes, as noted by Chan and Lee (2023) and Barrett and Pack (2023), who emphasize that AI tools are key to optimizing learning for both students and teachers. However, the need to implement ethical and regulatory frameworks surrounding the use of AI, identified by the study participants, aligns with the arguments of Alonso-Rodríguez, A. M. (2024) and Chan (2023), who point out that institutions must develop clear policies on the responsible use of AI. In this regard, the study highlights that although AI has significant potential to improve education, its implementation must be accompanied by codes of conduct and institutional policies to ensure its ethical and transparent use.

Another relevant finding is the high acceptance of AI-supported hybrid learning models, corroborated by Patel and Ragolane (2024), who state that these models combine the best of face-to-face and online education, making training more effective and adapted to modern times. This widespread support from respondents highlights the flexibility and personalization that AI can offer in the educational process, allowing students to progress at their own pace and teachers to optimize their instruction.

Furthermore, the results regarding the effectiveness of AI as an academic feedback tool reveal moderate acceptance among participants. This finding aligns with the study by Ossa, C., and Willatt, C. (2023), who found that while AI-provided feedback is useful, many students still value human feedback for its constructive and personalized nature. However, AI systems such as chatbots have proven highly effective at providing timely feedback and improving student satisfaction, a finding also confirmed by Labadze, L., Grigolia, M., and Machaidze, L. (2023).

Finally, the results partially support the hypotheses regarding the positive relationship between perceived AI efficiency and its acceptance as an educational tool, although insufficient evidence was found to confirm that teachers and students have significantly different perceptions of AI. These findings provide a solid foundation for future research and the implementation of AI in higher education, and emphasize the need for clear ethical policies and ongoing training for educators in the use of these emerging technologies.

Conclusions

This study has demonstrated that artificial intelligence (AI) has a significant impact on higher education, particularly by improving teaching and learning processes. The results show a high level of acceptance of AI by both students and faculty, who recognize its potential to personalize learning, optimize work time, and provide effective feedback.

Furthermore, a positive relationship was identified between the perceived effectiveness of AI and its acceptance as a strategic tool in educational processes. However, although this relationship is evident, regression analysis showed that AI accounts for only part of the improvement in learning, suggesting that other factors also influence this process.

Regarding the hypotheses, the first (H1), which posited a positive relationship between perceived AI efficiency and acceptance, was confirmed. However, the second hypothesis (H2), which proposed significant differences in perceptions between teachers and students, was not supported by the results, as no statistically significant differences were observed between the two groups. Furthermore, the results point to the urgent need to establish clear ethical criteria and regulatory frameworks for the use of AI in education, which aligns with the conclusions of previous research.

In terms of educational models, the results suggest that AI-supported hybrid learning is highly valued by the academic community and stands out as a flexible, adaptable option to meet students' needs. However, the effectiveness of AI as an academic feedback tool was only moderately well received, and the importance of combining automated and human feedback was emphasized.

Limitations of the study

Despite the important findings, this study has several limitations. First, the sample was restricted to a single public university in Colombia, which limits the generalizability of the results to other institutions or educational contexts. Furthermore, the measurement of perceptions relied exclusively on a Likert-type survey, which may not fully capture the complexities and nuances of the educational experience with AI. Factors such as cultural context and the university's technological readiness may not have been adequately reflected in the participants' responses.

Due to the limitations of the R^2 statistic, a more comprehensive analysis using more complex multivariate models, such as mediation analysis or structural models, is recommended. These could provide a more complete picture of the relationship between AI perception and learning outcomes. Furthermore, incorporating a qualitative approach to complement the quantitative data would capture students' and teachers' deeper perceptions, enriching the interpretation of the results.

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