

Artificial intelligence as a tool to support university research: perceptions and practices among students

Inteligencia artificial como herramienta de apoyo a la investigación universitaria: percepción y prácticas en estudiantes

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Joanna Beatriz Perozo Mosello

<https://orcid.org/0000-0001-5030-7076>

joaperozo21@mail.com

Universidad Nacional Experimental Rafael María Baralt
Cabimas, Venezuela

Henry Alberto Rodríguez Urdaneta

<https://orcid.org/0000-0001-7030-4753>

henryalbertorodriguez@gmail.com

Universidad Nacional Experimental Rafael María Baralt
Cabimas, Venezuela

Abstract

Technological advancements have positioned artificial intelligence (AI) as a strategic tool in global research, reducing time, facilitating literature reviews, generating hypotheses, and analyzing complex data. This study explores its use as a research support tool for university students, based on the postulates of Kroff et al. (2024) and Gutiérrez-Castillo et al. (2025), who highlight its transformative potential in emerging educational contexts. Methodologically, this is a quantitative, exploratory, field-based, non-experimental, and cross-sectional study. The purposive sample included students from public universities in Zulia state (LUZ, UNERMB, UBV), using standardized instruments to capture perceptions and practices. The results reveal clear patterns: AI use predominates in general tasks such as information retrieval and writing (85% of the sample), while its use is avoided or disapproved of in advanced data processing and management (only 22%). This underutilization limits its potential in more precise stages, possibly due to a lack of awareness of advanced applications, insufficient ethical training, and fears of plagiarism or algorithmic bias. It is concluded that students in Zulia restrict AI to basic functions, hindering its role as a comprehensive research ally. This highlights the need for training programs that promote ethical, responsible, and advanced use, integrating digital competencies into university curricula to enhance research in Venezuelan contexts.

Keywords: students, artificial intelligence, research.

Resumen

Los avances tecnológicos han posicionado a la inteligencia artificial (IA) como una herramienta estratégica en la investigación global, al reducir tiempos, facilitar la revisión bibliográfica, generar hipótesis y analizar datos complejos. Este estudio explora su uso como apoyo en la investigación de estudiantes universitarios, fundamentado en los postulados de Kroff et al. (2024) y Gutiérrez-Castillo et al. (2025), quienes destacan su potencial transformador en contextos educativos emergentes. Metodológicamente, se trata de una investigación cuantitativa, exploratoria, de campo, no experimental y transversal. La muestra intencional incluyó estudiantes de universidades públicas zulianas (LUZ, UNERMB, UBV), con aplicación de instrumentos estandarizados para capturar percepciones y prácticas. Los resultados revelan patrones claros: predomina el uso de IA en tareas generales como búsqueda informativa y redacción (85% de la muestra), mientras se evita o desaprueba en procesamiento y gestión de datos avanzados (solo 22%). Esta subutilización limita su potencial en etapas de mayor precisión, posiblemente por desconocimiento de aplicaciones avanzadas, falta de formación ética y temores a plagio o sesgos algorítmicos. Se concluye que los estudiantes zulianos restringen la IA a funciones primarias, lo

que obstaculiza su rol como aliada investigativa integral. Esto evidencia la necesidad de programas formativos que promuevan un uso ético, responsable y avanzado, integrando competencias digitales en los planes curriculares universitarios para potenciar la investigación en contextos venezolanos.

Palabras clave: estudiantes, inteligencia artificial, investigación.

Introduction

Artificial Intelligence (AI) has transcended its origins in science fiction to become a transformative reality across various domains, including academic research. For university students, particularly in resource-limited contexts such as Venezuela, AI emerges as a powerful support tool, optimizing critical phases of the research process from literature review to the analysis of complex data sets.

However, this technology should not replace critical thinking or students' intellectual authorship. Rather, it serves as an intelligent assistant that automates repetitive tasks and accelerates processes, allowing students to concentrate on in-depth analysis, result interpretation, and the creation of original knowledge. In this manner, it enhances both the efficiency and quality of research.

Nonetheless, its integration into academia necessitates a profound ethical responsibility. It is essential for students to master these tools with transparency and full awareness, clearly distinguishing technological support from their own intellectual voice. Only in this way can the integrity and originality of academic work be preserved in an increasingly algorithmically mediated world.

Artificial intelligence

Kaur et al. (2022) trace the conceptual roots of artificial intelligence back to Alan Turing, who proposed the famous "Turing Test" in 1950 as a criterion for determining whether a machine can exhibit intelligent behavior indistinguishable from that of a human. For this visionary contribution, Turing is recognized as the father of artificial intelligence and modern computing. However, it was not until 1956 that John McCarthy formally coined the term "artificial intelligence" and developed LISP, the first programming language specifically designed for this discipline.

From a critical standpoint, Innerarity (2025) argues that AI lacks the essential properties of human beings; it is merely "instrumental intelligence" that mimics us with astonishing precision but cannot deeply understand reality. It precisely lacks common sense—the intuitive and natural ability that humans possess to grasp the context of a complex situation.

Russell and Norvig (2004) provide a more operational definition, describing AI as "the study of intelligent agents," referring to systems that act autonomously, perceive their environment, and pursue specific goals. These authors classify AI systems into four main categories, depending on whether they think or act in ways that are human-like or rational. They also highlight how algorithm-mediated decision-making profoundly impacts daily life, reshaping social and work patterns.

Within this context, Kaur et al. (2022) emphasize the urgency for all citizens to comprehend artificial intelligence in today's digital era. Being "AI literate" has become crucial for navigating a constantly evolving world, where applications of this technology ignite intense debates about its impact on daily life and employment. These innovations have the potential to bring about profound and unprecedented changes to the way humanity lives, works, and interacts.

In the educational field, the impact of AI is gradually but steadily increasing, gaining popularity due to advanced applications (López-Meneses et al., 2022). A prominent example includes chatbots and virtual assistants based on natural language processing: AI programs that facilitate smooth interactions between people and machines, whether through written or spoken code. These tools are particularly interesting for optimizing educational processes within university settings.

Kroff et al. (2024) explore this transformative potential further, noting that AI enables the creation of adaptive learning systems that dynamically adjust to the individual needs of each student, promoting more personalized and effective learning. This represents a genuine paradigm shift in academia: AI transcends its role as a mere technological tool to become a catalyst for student-centered education.

Complementarily, Gutiérrez-Castillo et al. (2025) assert that AI fosters student autonomy by providing tools for self-directed learning with continuous and intelligent support. From an accessibility standpoint, it allows for the adaptation of educational materials to meet specific needs, overcoming economic, geographic, and cultural barriers common in Latin American contexts. By personalizing education, AI not only enhances retention, academic performance, and student engagement but also directly benefits the approach to diversity in learning styles, paces, and needs, making higher education more inclusive and equitable.

Support in research

In this context, Daza et al. (2021, p. 139) assert that "educational research aims to thoroughly understand a knowledge problem and to expose and publish the findings produced by inquiry." This perspective underscores that research not only enriches the investigator but also benefits the institution and the nation as a whole. They view the research process as centered around innovation—one of the most complex elements at the onset—particularly regarding the precise definition of "what to investigate." Only then can outcomes be expected, measurable, comparable, and auditable, contributing to collective advancement.

In alignment, Tejedor (2024, p. 20) contends that "the basic objective of academic research should be to provide reasonable explanations of the studied facts or phenomena in order to contribute to the creation of a coherent body of knowledge that allows for improvements in education." This stance encourages moving beyond a linear and formal vision of research towards a dynamic and collaborative approach, integrating diverse perspectives and methods beyond mere observation. Thus, the emphasis falls on praxis and social impact, prioritizing not only theoretical production but also its transformative application in real educational contexts.

In this regard, Rodríguez and Pulgar (2023) caution that in a globalized society, the ethical use of technologies has become a persistent dilemma, fueled by ongoing debates about their benefits and risks. They recommend that educators and students adopt these technologies responsibly without turning their backs on technological advancements. Today, developments in artificial intelligence permeate educational spaces, although a sterile confrontation continues over whether it is "good or bad," instead of focusing on its ethical and responsible management that can turn it into a genuine ally in each educational process.

It is noteworthy that Heredia-Pérez et al. (2025) emphasize AI's relevance in scientific research, particularly for facilitating data searching, collection, classification, tool development, and analytical processing. However, they insist that human participation is irreplaceable: only then can inherent biases in algorithms be eliminated, ensuring the robustness and reliability demanded by both the scientific community and society.

Zambrana-Copaja et al. (2025) complement this viewpoint by stressing that AI should not be an end in itself. To ensure fair, high-quality, adaptive academic research aligned with technology, it must function as a supportive or supplementary tool, always reserving the directing role for humans. Accordingly, Menacho-Ángeles et al. (2024) reiterate the importance of ethical responsibility in its management, which will allow it to be utilized in research to enhance autonomous learning, automated knowledge assessments, and the integral development of competencies in university students.

Preceding empirical studies

Various prior studies are directly relevant to this research. For instance, Alvarez and Saborío-Taylor (2025) found that 75% of surveyed university students utilized digital AI technologies to generate ideas and grammatically correct academic texts.

Ruiz et al. (2025) analyzed the impact of these technologies on scientific production, particularly concerning academic writing and associated ethical dilemmas. They discovered that 68% of students in technical fields frequently employed AI, reducing their writing time by over 53%. However, they also identified "algorithmic hallucinations" in 18% of cases, concluding that legal regulations and constant human supervision are necessary to preserve academic quality.

Additionally, Reyes and Téllez (2025) conducted an exploratory study and found that 46% of participants considered AI to be useful in their daily lives (both academic and professional), while 20% viewed it as ethical, and 10% expressed concerns about the originality of their work. In a similar vein, Guevara-Enríquez and Herrera-Espinoza (2025) reported that 69.3% of respondents used these tools for task completion, solving mathematical problems, writing, and deepening their understanding of academic terms.

Overall, these findings clearly indicate that AI is not a futuristic concept; it is a present reality. In the global digital ecosystem centered around AI, university students exhibit varied attitudes toward its use. In the Venezuelan context, particularly in Zulia state, interactions with students from public universities reveal a similar landscape: positive experiences alongside pernicious aspects such as underutilization or ethical concerns. This backdrop prompted this research, aimed at exploring the use of artificial intelligence as a support tool in the research of Zulia's university students.

Methodology

Following the principles of Hernández-Sampieri and Mendoza (2018), this study adopts a quantitative approach with exploratory scope, utilizing a non-experimental field and cross-sectional design. This combination allows for capturing current perceptions and practices regarding the use of AI in research without manipulating variables within a specific temporal context.

The population consisted of undergraduate and graduate students from three public universities in Zulia: The University of Zulia (LUZ), the National Experimental University Rómulo Betancourt (UNERMB), and the Bolivarian University of Venezuela (UBV), encompassing their various branches in the region. From this population, a non-probability convenience sample of 310 participants was selected, prioritizing accessibility and institutional representativeness during the vacation period of July-August 2025, when students remain highly active digitally despite regional logistical limitations.

Data collection was conducted using a survey technique via a structured digital questionnaire (Google Forms), distributed through email and WhatsApp. Prior to participation, each respondent provided informed consent, ensuring anonymity and confidentiality in accordance with ethical standards for educational research.

The instrument measured four key dimensions of AI use in research:

1. Information search and synthesis (assisted literature reviews).
2. Writing and editing (generation and correction of texts).
3. Data analysis and visualization (automated statistical processing).
4. Organization and presentation (report and visual creation).

The questionnaire was validated by experts in educational methodology and AI, with a pilot test yielding a reliability coefficient of 0.90 (Cronbach's alpha), classified as "very high." Additionally, a comprehensive documentary review of books, scientific articles, and related primary sources was conducted.

Finally, the data were processed and analyzed using Microsoft Excel, applying descriptive statistics (frequencies, percentages, means) to identify patterns in AI usage. The results are presented in the following section.

Results and discussion

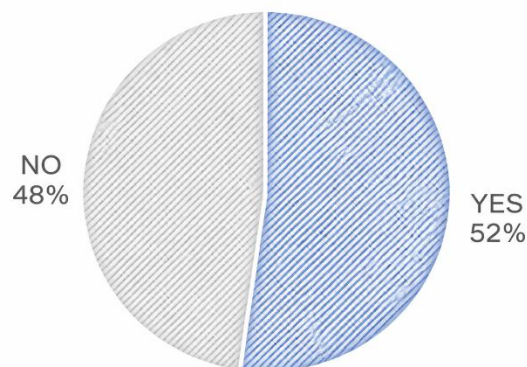
The collected data were processed using basic descriptive statistics, calculating absolute and relative frequencies for the dichotomous responses ("Yes"/"No") for each item in the questionnaire. Subsequently, the percentages of use for each specific AI function reported by the students were determined. These indicators were grouped into the four established dimensions (search/synthesis, writing/editing, analysis/visualization, organization/presentation), summing percentages by category and calculating the arithmetic mean by dimension to facilitate inter-dimensional comparison.

The results are presented visually in pie charts corresponding to each dimension, enabling intuitive identification of the most and least frequent usage patterns. This graphical representation highlights areas of high adoption—where usage exceeds 70%—in contrast to low-penetration areas—below 30%—revealing disparities in AI-assisted research practices among Zulia students. Such contrasts not only illustrate functional preferences but also anticipate pedagogical implications for developing advanced digital competencies.

The following details each dimension along with its principal findings:

Figure 1

Information search and synthesis



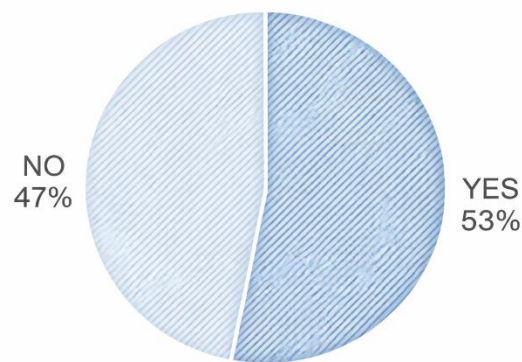
Source. Authors' own elaboration (2025)

As illustrated in Figure 1, 52% of the 310 respondents reported using AI to search for information in their academic research. This moderate adoption reflects common practices among Zulia students, such as generating lists of keywords or relevant terms to explore specific topics; obtaining automated summaries of scientific articles, which expedite initial processing of extensive literature; translating texts not available in Spanish—crucial in contexts with linguistic barriers and limited access to international databases; and thematically organizing examined content.

These preliminary uses highlight AI as an accessible facilitator for initial stages of research, proving especially valuable in public universities with restricted resources. However, the remaining 48% indicates either reticence or unfamiliarity, possibly linked to ethical concerns or a lack of familiarity with tools like ChatGPT or assisted Google Scholar. This dimension showcases the highest relative penetration (52%), laying the groundwork for contrasts with more technical areas.

As for the second dimension (writing and editing):

Figure 2
Writing and editing



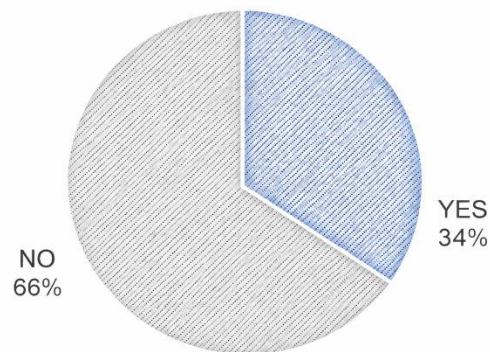
Source. Authors' own elaboration (2025)

The results for this dimension indicate a slightly higher adoption rate—53% of respondents (one percentage point more than for the search/synthesis dimension)—reflecting the affirmative use of AI for grammatical corrections in academic work, automatic generation of titles, abstracts, and keywords. Furthermore, students from Zulia utilize AI for rephrasing or paraphrasing reviewed texts—an approach beneficial in multilingual contexts or where stylistic limitations exist—as well as for verifying the technical consistency of terminology employed in specialized writing. This slight predominance (53%) over the first dimension demonstrates a preference for "creative" and corrective functions, accessible through free tools such as Grammarly AI or ChatGPT, which democratize professional editing without necessitating paid software. This represents the peak of adoption among the four dimensions, coinciding with previous studies, such as that by Alvarez and Saborío-Taylor (2025), while simultaneously raising ethical concerns: the remaining 47% may reflect an awareness of "hallucinations" or excessive dependence, which could limit genuine authorship.

These initial patterns (52-53%) contrast sharply with analytical areas, suggesting gaps in advanced digital competencies.

Third dimension (data analysis and visualization):

Figure 3
Data analysis and visualization



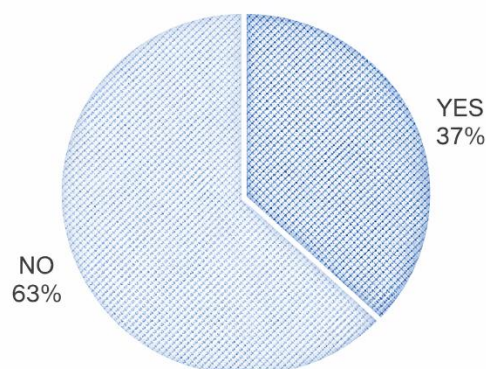
Source. Authors' own elaboration (2025)

This dimension marks a significant turning point: while the previous two indicated a predominance of "Yes" responses (52-53%), here the trend reverses, with 66% of respondents replying negatively. Zulia students do not employ AI for processing basic quantitative or statistical data, nor for generating graphs, infographics, or visualizations derived from research results. They also refrain from using AI in the qualitative analysis of interviews or in creating interactive visualizations—such as dynamic dashboards or automated concept maps.

This prevailing rejection (66%) stands in stark contrast to the initial adoptions, revealing critical gaps in advanced analytical competencies. In Zulia, where connectivity is intermittent and access to premium tools (e.g., Tableau AI, Python with GPT) is limited, distrust or unfamiliarity prevails: fears of algorithmic "hallucinations" (Ruiz et al., 2025), inherent biases (Heredia-Pérez et al., 2025), or a lack of training in integrating AI with statistical methods. This represents the least adopted dimension thus far, highlighting underutilization in more technically precise stages, aligned with initial findings of the study.

Fourth—and last—dimension (organization and presentation):

Figure 4
Organization and presentation



Source. Authors' own elaboration (2025)

The fourth dimension continues the negative trend observed in the previous one: 63% of participating students do not manage bibliographic references using AI tools, nor do they employ AI for creating presentations or slides of their findings. Other areas lacking in technology usage include establishing timelines or work plans for their research, as well as defining protocols for progress or seminar defenses in their investigative efforts.

Table 1
Comparative analysis and interpretation

Dimension	% "Yes" (AI Use)	% "No" (Non-Use)	Trend
1. Search/Synthesis	52%	48%	High adoption
2. Writing/Editing	53%	47%	Peak maximum
3. Analysis/Visualization	34%	66%	Low adoption
4. Organization/Presentation	37%	63%	Low adoption

Given the preceding results, it is evident that in the first dimension—information search and synthesis—artificial intelligence occupies a distinctive position in the academic development of the consulted students. Specifically, 52% utilize it for these essential purposes, demonstrating its natural integration in the early stages of research. This pattern aligns closely with the study by Alvarez and Saborío-Taylor (2025), which found that 75% of their respondents employed AI specifically for generating ideas for their academic texts. Additionally, these findings support the assertions of Heredia-Pérez et al. (2025), who highlight the significant role of AI in facilitating processes related to information location and organization—tasks that, through traditional manual approaches, consume considerable time and limit student productivity.

Refining the second dimension—writing and editing research—the results show similarity with the previous one, recording only a one-percentage-point increase in the "Yes" responses. This now represents 53% of respondents concerning key aspects, such as grammatical corrections, paraphrasing, and the automatic generation of textual elements. Such figures resonate with the findings of Ruiz et al. (2025), whose results indicated that 68% of their respondents utilized artificial intelligence for writing and revising texts—although not proportionally identical, these figures exceed the average of their study sample. Likewise, this number reinforces the perspectives of Gutiérrez-Castillo et al. (2025) regarding the use of these tools to foster student autonomy and provide ongoing support in adapting educational materials to individual needs, with the writing of academic texts being one of its most prominent and transformative applications.

Regarding the third dimension—data processing and analysis—66% of responses correspond to the "No" option, reflecting a notable shift in the overall trend of responses observed thus far. This indicates that a proportion close to two-thirds of the sample does not leverage AI to process the data obtained in their research, whether quantitative or qualitative. This is particularly striking since this stage represents one of the most extensive, labor-intensive, and technically precise phases when processing and validating research results.

In correlating these findings with those of Reyes and Téllez (2025)—whose study also shares an exploratory nature—the proportion of respondents who do not find AI useful in their academic and professional performance approaches 60%. This figure is slightly higher than our average of participants. These results may be directly linked to the views of Zambrana-Copaja et al. (2025), who argue that AI should function solely as a supportive tool, without assuming full responsibility for the research work, as human action must always retain overall control of the process.

However, the results in this third dimension—directly related to data processing in research, regardless of the methodological approach employed—reflect that a considerable majority are not delegating the analytical power of their studies to AI tools. This can also be interpreted as a reflection of some ambiguity regarding its use, ranging from ignorance about the real potential of these tools to an unwillingness to admit their everyday employment. This scenario underscores the need to actively promote ethical and responsible usage among all actors involved in the research process. Such an approach aligns with the assertions of Rodríguez and Pulgar (2023), who emphasize that beyond addressing the binary ethical dilemma concerning these technologies, there should be a decisive push toward their responsible and contextualized use.

With respect to the fourth dimension—organization and presentation of results—this trend continues: the distribution of responses remains dominated by "No," with 63% of respondents indicating they do not utilize AI for these specific functions. This proportion exceeds the overall sample average, highlighting a significant number of students who report not leveraging the benefits of these technological advancements in concrete aspects such as bibliographic management, general research processes, or the preparation of reports and academic presentations.

Our study could be proportionally related to that of Reyes and Téllez (2025), where nearly 60% of sources indicated they do not use AI in their investigative performance or in their everyday work.

The results from this fourth dimension are directly related to the emphatic stance of Menacho-Ángeles et al. (2024), who assert that AI should be utilized by university students as a strategic support tool in research. This would allow them to enhance their learning autonomously and, in turn, evaluate their knowledge through automated processes, saving valuable time that could be invested in their overall education and other supplementary professional development activities.

Conclusions

In this study, clear patterns in the use of artificial intelligence by the surveyed sample were identified: high adoption in general tasks such as information search and writing (52-53%), contrasted by a significant negativity regarding data processing and management with these technological tools (63-66%). Thus, it appears that Zulia university students are underutilizing AI in the development of their academic research, confining it to primary and basic activities rather than extending it to stages that demand greater technical and analytical precision.

However, this limitation might also reflect a lack of awareness regarding the potential of these technologies in the advanced phases of the research process. This situation could be remedied through appropriate and structured training that guides the ethical and responsible use of AI as an integral support in research tasks. Such training should encompass everything from the initial generation of ideas to the final presentation of findings, positioning AI as a strategic means rather than an end in itself, while always preserving human intellectual authorship.

Finally, it is crucial to emphasize that this exploratory study offers initial empirical evidence encouraging future research to develop more robust measurements—incorporating inferential statistical tests—to compare these patterns with other populations. Additionally, it suggests designing specific training interventions at the universities LUZ, UNERMB, and UBV aimed at minimizing the identified disparities in the use of these technologies. Such programs could include practical workshops on analytical AI, ethical protocols, and advanced digital competencies, fostering a more competitive and globally aligned research environment in Zulia.

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