Students' Perceptions of the Adoption of Artificial Intelligence in Higher Education* [1]

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Abstract

The aim of this study was to identify university students' perceptions of the adoption of AI in education. A quantitative, cross-sectional, non-experimental study was conducted with a non-probability sample of 1,010 students enrolled in seven undergraduate degree programs at a Mexican university during the academic period from August 2024 to January 2025. A 35-item instrument comprising seven dimensions was administered. Mann–Whitney U and Kruskal–Wallis H tests were performed to examine differences according to age, sex, degree program, and school. Spearman's correlation was used to identify correlations among the dimensions. The results indicate significant differences in students' perceptions of the adoption of AI in education according to sex, degree program, age, and school. Positive, statistically significant correlations were also identified among all seven dimensions, with particularly strong interconnections between effectiveness in the use of AI and emotional reactions to AI, as well as between learning improvement and learning support. University students recognize both the potential and the risks of AI; higher education institutions should therefore step up their efforts to integrate it ethically and responsibly while improving students' skills in using AI for personal and professional purposes.

Keywords

Learning – Teaching – Student – Artificial Intelligence – University.

* English version by Fernando Effori de Mello. The authors take full responsibility for the translation of the text, including title of books/articles and the quotations originally published in Spanish.

1- Data availability: The complete quantitative dataset supporting the results of this study has been published in the article itself. The dataset has also been made available on ResearchGate and can be accessed at https://doi.org/10.13140/RG.2.2.11012.39045

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Introduction

The presence of artificial intelligence has rapidly expanded into multiple areas of academic life, from teaching and learning practices to research and administrative management. This expansion has sparked considerable debate about how university students perceive and use these technologies in their learning processes (Niño *et al*., 2025; Ravšelj *et al*., 2025). In this context, it is important to understand university students' perceptions, attitudes, and experiences regarding AI (Slimi *et al*., 2025). Students' perspectives are not merely opinions; they directly influence the adoption, use, and ultimately the effectiveness of these technologies in educational settings (Acosta *et al*., 2024a; Li; Castulo; Xu, 2025; Ravšelj *et al*., 2025).

The overarching question guiding this study is: What are university students' perceptions of the adoption of artificial intelligence in education? To answer this question, the following specific questions were formulated: Are there significant differences in these perceptions according to students' sociodemographic variables (sex, age, degree program, and school)? What type of correlation exists among the dimensions comprising students' perceptions of artificial intelligence in education?

Related Studies

In recent years, there has been an increase in studies aimed at understanding the implications of AI in different areas of society. For the purposes of this study, its impact is examined from an educational perspective. In this regard, the literature review presents opposing views on the adoption of artificial intelligence by university students, highlighting both positive and negative aspects. Regarding the integration of AI into education by university students, studies point to the increasing normalization of the use of these tools in recent years (Baek; Tate; Warschauer, 2024; Li; Castulo; Xu, 2025; Mena de la Rosa; Cruz-Romero; Silva-Payró, 2024).

On the other hand, the literature has identified the advantages of AI use recognized by university students (Acosta *et al*., 2024b; Barrett; Pack, 2023; Blahopoulou; Ortiz, 2025; Chan; Hu, 2023; Chan; Lee, 2023; Das; Madhusudan, 2024; Essel *et al*., 2022; Iwasawa; Kobayashi; Otori, 2023; Klimova; Luz de Campos, 2024; Molina-Montalvo; Macías; Haces, 2025; Nagah; Salah, 2024; Ngo, 2023; Orok *et al*., 2024; Ríos *et al*., 2024; Ruiz; Miramontes; Reyna, 2024; Terblanche *et al*., 2022; Xu *et al*., 2024), including ease of use (Acosta *et al*., 2024b; Das; Madhusudan, 2024; Ngo, 2023) and convenience (Ngo, 2023), the ability to answer any type of question, the possibility of finding information relevant to their studies, time savings in research through more efficient information gathering (Blahopoulou; Ortiz, 2025; Chan; Lee, 2023; Iwasawa; Kobayashi; Otori, 2023; Klimova; Luz de Campos, 2024; Nagah; Salah, 2024; Ngo, 2023), a simple interface and free access (Das; Madhusudan, 2024; Nagah; Salah, 2024), and the possibility of correcting and editing articles (Nagah; Salah, 2024).

Likewise, other advantages include the ability to generate ideas or model responses through brainstorming and outlining (Barrett; Pack, 2023; Klimova; Luz de Campos, 2024); an improved learning experience (Das; Madhusudan, 2024; Iwasawa; Kobayashi;

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Otori, 2023; Ngo, 2023; Orok *et al.*, 2024; Ríos *et al.*, 2024); the ability to provide a wide range of information, individualized tutoring and feedback, and improved retention (Ngo, 2023); use during students' free time, the possibility of setting goals, impartiality, the ability to deliberately and consistently follow a best-practice approach, intelligence, and rapid responses (Terblanche *et al.*, 2022); and the possibility of achieving greater understanding and confidence in completing the course and making learning more engaging and interactive (Essel *et al.*, 2022).

Thus, the tool helps students understand complex topics and improve their study habits (Klimova; Luz de Campos, 2024; Molina-Montalvo; Macías; Haces, 2025; Orok *et al.*, 2024); helps answer questions and enables them to make progress on their assignments at different times without having to wait for human assistance (Blahopoulou; Ortiz, 2025; Chan; Hu, 2023; Molina-Montalvo; Macías; Haces, 2025; Ríos *et al.*, 2024; Terblanche *et al.*, 2022); improves their academic performance (Essel *et al.*, 2022; Molina-Montalvo; Macías; Haces, 2025; Orok *et al.*, 2024); fosters autonomous learning and classroom interaction (Ruiz; Miramontes; Reyna, 2024); provides suggestions and hints and guides their writing (Chan; Hu, 2023; Chan; Lee, 2023; Xu *et al.*, 2024); and can serve as a translator or assistant (Klimova; Luz de Campos, 2024).

The increasing integration of artificial intelligence into academic settings has generated growing interest in examining its implications for academic integrity among university students. Academic integrity is defined as the "commitment to and demonstration of honest and moral behavior in an academic setting" (NAIN, 2025, p. 5). Accordingly, academic misconduct refers to "any behavior that undermines integrity and honesty, or any attempt to gain an unfair advantage in academic work (or assist others in doing so)" (NAIN, 2025, p. 5).

In this regard, the literature indicates that the concept of academic fraud is related to concepts such as academic dishonesty and academic misconduct (Bakulina, 2025; Harrad *et al.*, 2024; Laturette *et al.*, 2025) and therefore encompasses a wide range of dishonest and unethical behaviors by members of the academic community (Céspedes *et al.*, 2024; NAIN, 2025; Suprapto *et al.*, 2025). Academic fraud constitutes a violation of the fundamental values of academic life: honesty, fairness, trust, respect, and responsibility (Céspedes *et al.*, 2024; Fishman, 2021).

According to the sources identified, this practice takes various forms of academic misconduct, including plagiarism in all its forms; the falsification, fabrication, or invention of data, statistics, and research findings (NAIN, 2025; Suprapto *et al.*, 2025); contract cheating, which involves paying a third party or company to complete a student's assignments or assessments (NAIN, 2025); and unauthorized collaboration among students when individual work is required (NAIN, 2025; Suprapto *et al.*, 2025).

Several authors note that cheating, as a form of academic dishonesty, is associated with the misappropriation of ideas (Garza *et al.*, 2024; Puche Villalobo, 2025). Such forms of dishonesty include downloading and submitting entire works from the internet, copying or translating passages without proper attribution, paraphrasing without giving credit, fabricating bibliographic references, self-plagiarism, and even submitting documents

that contain no original contribution whatsoever despite complying with formal citation standards (Diaz *et al*., 2025).

Along the same lines, several studies highlight the disadvantages of AI use identified by university students (Abdaljaleel *et al*., 2024; Chan; Hu, 2023; Chan; Lee, 2023; Das; Madhusudan, 2024; Iwasawa; Kobayashi; Otori, 2023; Klimova; Luz de Campos, 2024; Nagah; Salah, 2024; Ngo, 2023; Xu *et al*., 2024), including its potential to weaken critical thinking skills and creativity; the fact that the information it provides is not always accurate; the perception that its use constitutes cheating (Chan; Hu, 2023; Chan; Lee, 2023; Das; Madhusudan, 2024; Klimova; Luz de Campos, 2024; Nagah; Salah, 2024); the fact that the information it presents is not always reliable (Chan; Lee, 2023; Das; Madhusudan, 2024; Iwasawa; Kobayashi; Otori, 2023; Ngo, 2023); it can commit academic fraud; the fact that it is not always impartial in assessment; and the risk of becoming addicted to the tool (Chan; Hu, 2023; Chan; Lee, 2023; Das; Madhusudan, 2024).

However, AI may produce inaccurate or false factual references (Ngo, 2023); may pose security risks when personal information is shared (Xu *et al*., 2024); may at times provide outdated information or inaccurate statistics or make numerical errors in mathematics; may generate fabricated information (Klimova; Luz de Campos, 2024); may widen gaps among students because it is not accessible to everyone; and tends to increase anxiety and perceptions of risk (Abdaljaleel *et al*., 2024).

Several studies have also expressed concern about the ethical implications of academic dishonesty associated with university students' use of AI (Chan; Hu, 2023; Chan; Lee, 2023; Johnston *et al*., 2024; Klimova; Luz de Campos, 2024), including the possibility that some students may fail to acknowledge or reference the use of these tools in seminars or research papers (Klimova; Luz de Campos, 2024), use them to write an entire essay (Johnston *et al*., 2024), or facilitate cheating or the generation of ready-made answers. However, these same students considered that banning these technologies altogether would be a step backward and could put them at a disadvantage in their future careers (Chan; Hu, 2023; Chan; Lee, 2023).

Materials and methods

The aim of this study was to identify university students' perceptions of the adoption of AI in education; accordingly, a quantitative, cross-sectional, non-experimental study was conducted. The 1,010 respondents from a Mexican university were enrolled in seven undergraduate degree programs during the academic term that began in August 2024 and ended in January 2025. A non-probability sample was used, with students randomly selected based on convenience to the researcher.

The sample consisted of students enrolled from the second academic term onward. Regarding sex distribution, 58.9% were women and 41.1% were men. As for the respondents' age, 23.9% were between 18 and 19 years old, 50.2% between 20 and 21, 19.8% between 22 and 23, 3.7% between 24 and 25, and 2.5% were over 26 years old.

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The characteristics of the validated instrument used in this study are described in Torres-Gastelú and Torres-Real (2025), and the instrument met acceptable criteria in both exploratory and confirmatory factor analyses. It consists of 35 items distributed across seven dimensions, rated on a five-point Likert scale: Strongly Agree (SA), Agree (A), Indifferent (I), Disagree (D), and Strongly Disagree (SD). Regarding reliability, a value of 0.945 was obtained, indicating a high level of internal consistency.

Data collection complied with research ethics standards (Torres-Gastelú; Torres-Real, 2026). To this end, support for administering the instrument was arranged with the university authorities through an official written request. Information was provided on instructors, classrooms, schedules, and class days. Before the instrument was administered in person, the purpose of the study was explained. Each student was also asked to complete an informed consent form, providing their name and signature. It was emphasized that the research was academic in nature and not for profit, with a view to publishing the results while maintaining the confidentiality and anonymity of the responses collected.

The items were subjected to several statistical analyses. First, descriptive statistics were calculated to provide an overview of the data. The Kolmogorov–Smirnov test for normality was then applied to all 35 items, and all yielded a significance value of 0.001. This indicates that the data were not normally distributed; therefore, non-parametric tests were used.

The hypotheses were as follows:

H1: There are no significant differences in perceptions of the adoption of artificial intelligence in education according to university students' age.

H2: There are no significant differences in perceptions of the adoption of artificial intelligence in education according to university students' sex.

H3: There are no significant differences in perceptions of the adoption of artificial intelligence in education among the undergraduate degree programs university students are enrolled in.

H4: There are no significant differences in perceptions of the adoption of artificial intelligence in education among the schools university students belong to.

H5: There is no significant positive correlation among the dimensions comprising university students' perceptions of the adoption of artificial intelligence in education.

To test the hypotheses concerning differences between groups, non-parametric tests were used due to the distribution of the data. Thus, the Mann–Whitney U test was used to analyze differences in perceptions by sex, and the Kruskal–Wallis H test was used for the variables of age, degree program, and school. For the correlational hypothesis, Spearman's rho correlation coefficient was used to determine the relationships among the dimensions comprising university students' perceptions of the adoption of artificial intelligence in education.

Results

Descriptive Analyses

The effectiveness of AI use dimension refers to students' perceptions of the extent to which artificial intelligence tools improve their learning, organization, academic performance, and collaboration with others, as well as their motivation and ability to manage multiple projects more quickly and efficiently. Overall, 62.2% of students agreed on the role AI plays in these areas, while 26.05% were indifferent. In contrast, 11.76% disagreed.

The learning improvements dimension refers to students' perceptions of the impact of artificial intelligence on the quality of their assignments, their perceived academic competence, the exploration of new topics, and the overall improvement of education. Overall, 59.23% of students agreed that AI has a positive impact on their learning, while 27% were indifferent. By contrast, 13.8% disagreed.

In this regard, the cognitive and technological dependence dimension relates to the extent to which students perceive their learning and information seeking as dependent on artificial intelligence tools, with a tendency to use them automatically, trust them more than other sources, and experience difficulties performing tasks without their support. In total, 17.15% agreed that they were dependent on AI use, while 25.73% were indifferent. However, 57.08% of students disagreed.

In turn, the ease of use dimension comprises students' perceptions of how intuitive, understandable, and fast artificial intelligence tools are, as well as how easily they can be used without prior instruction and their ability to make learning more interesting. In all, 59.74% of students agreed that AI is easy to use, while 28.52% were indifferent. Meanwhile, 11.74% disagreed.

The learning support dimension relates to students' perceptions of how artificial intelligence tools complement their education, foster their curiosity, promote the development of new study skills, allow them to learn at their own pace, and help them understand their academic strengths and weaknesses. A total of 51.6% of students agreed on the role of AI in supporting their learning, while 32.3% were indifferent. In contrast, 16.5% disagreed.

With regard to emotional reactions to AI, this dimension refers to the positive emotions and attitudes students experience when using artificial intelligence tools, including a sense of personalized, self-paced learning, greater ease in overcoming academic difficulties, enthusiasm for discovering new tools, and a sense of connection with current technological trends. Of the students, 55.42% reported agreeing with positive emotions and attitudes toward AI use, while 31.44% were indifferent. Conversely, 13.18% disagreed.

Finally, the AI accuracy dimension concerns students' perceptions of the accuracy, up-to-dateness, consistency, and reliability of the information provided by artificial intelligence tools to support their learning. Overall, 41.83% of students agreed that AI provides accurate information, while 41.3% were indifferent. In contrast, 16.93% disagreed.

Table 1 presents the results of the statistical tests for each variable, with p-values greater than 0.05 for each instrument item shown in bold.

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Table 1 – Statistical Tests

No.	Item	Age	Sex	Degree Program	School
		Sig.	Sig.	Sig.	Sig.
1	AI tools help me focus my learning.	**0.222**	0.000	**0.433**	0.000
2	AI tools let me achieve better results on my exams.	0.009	0.000	**0.675**	**0.053**
3	With AI tools, I learn faster.	**0.117**	0.000	0.041	**0.672**
4	AI tools help me stay organized.	**0.455**	0.000	**0.451**	**0.812**
5	AI tools facilitate collaboration with other students.	**0.069**	0.000	**0.261**	0.019
6	I am excited about the possibilities AI offers in the university setting.	0.037	0.000	**0.088**	**0.326**
7	AI tools allow me to manage multiple projects simultaneously.	0.007	0.000	**0.336**	0.001
8	AI tools provide useful resources for my learning.	**0.056**	0.000	**0.448**	0.026
9	AI tools improve the quality of my assignments.	0.008	0.000	**0.141**	0.000
10	I believe AI improves the quality of education.	0.001	0.000	**0.171**	**0.114**
11	Using AI tools in my studies makes me feel more competent.	0.023	0.000	**0.709**	0.008
12	AI tools allow me to explore new topics of interest.	**0.552**	0.000	**0.115**	**0.658**
13	I tend to copy and paste information provided by AI into my assignments.	0.005	0.000	0.000	**0.971**
14	I find it difficult to find the information I need without the help of AI.	**0.121**	0.000	0.000	**0.052**
15	I feel more confident using information provided by AI than information from any other source.	0.017	0.000	0.000	**0.121**
16	I have become dependent on AI tools.	**0.124**	0.000	0.000	0.000
17	Navigating AI tools is intuitive.	0.011	0.000	0.000	**0.162**
18	AI tools are easy to use without prior instructions.	**0.471**	0.000	**0.283**	**0.077**
19	The interfaces of AI tools are easy to understand.	0.023	0.000	0.020	0.018
20	AI tools respond quickly to my requests.	0.001	0.000	0.000	0.000
21	The adoption of AI in learning makes it more interesting.	**0.485**	0.000	0.005	**0.072**
22	I have developed new study skills through the use of AI tools.	0.005	0.000	0.000	**0.072**
23	AI tools stimulate my curiosity and desire to learn.	**0.156**	0.000	0.000	0.001
24	AI tools help me understand my academic strengths and weaknesses.	**0.687**	0.000	**0.077**	0.001
25	AI tools effectively complement traditional teaching methods.	0.011	0.000	**0.200**	**0.802**
26	AI tools allow me to learn at my own pace.	**0.054**	0.000	0.000	**0.103**
27	I feel that with AI I learn at my own pace.	**0.302**	0.000	0.000	**0.234**
28	AI helps me overcome difficulties in my studies more easily.	**0.159**	0.000	0.017	**0.419**
29	Using AI in my education makes me feel more connected to current technological trends.	0.002	0.000	0.000	**0.304**
30	AI personalizes my learning experience.	0.003	0.000	0.009	**0.465**
31	I find it exciting to discover new AI tools for my studies.	**0.149**	0.000	0.010	**0.225**
32	AI tools provide accurate information.	**0.305**	0.000	0.007	**0.206**
33	AI tools provide up-to-date and relevant data.	0.005	0.000	0.001	**0.525**
34	AI tools present consistent information.	**0.775**	0.000	0.039	**0.120**
35	AI tools provide reliable information.	**0.205**	0.000	0.004	**0.759**

Source: Prepared by the authors.

The results of the Kruskal-Wallis test applied to students' perceptions according to age (H1) reveal no clear trend across the 35 items analyzed. For 19 items, the significance level (p) was greater than 0.05, indicating that students' perceptions of these aspects are homogeneous and do not vary significantly according to age. However, significant differences ($p < 0.05$) were identified for the remaining 16 items.

To analyze the data according to sex, the Mann-Whitney U test was used to test the equality of the two distributions, as shown in Table 1. The null hypothesis was rejected when the significance level was less than or equal to 0.05. All items had a significance level of $p < 0.001$. Therefore, the null hypothesis (H2) was rejected for all 35 items analyzed. In other words, there were significant differences between men's and women's perceptions of AI adoption.

Regarding the results of the Kruskal-Wallis test applied to the degree program students were enrolled in (H3), 21 of the 35 items had a value below 0.05, indicating significant differences in students' perceptions according to the degree program they were enrolled in. For the remaining 14 items, however, there were no differences in perceptions regardless of the degree program students were enrolled in.

The results of the Mann-Whitney U test showed that 24 of the 35 items had a significance value less than 0.05, indicating that, for most items, there were significant differences in students' perceptions according to the region where they studied (H4). However, for 11 items on the scale, there were no significant differences between the two geographic regions where these schools were located.

Correlation of Items Across Dimensions

Given that the instrument assesses university students' perceptions of AI use, correlations among the dimensions were analyzed. For this purpose, seven composite variables were constructed, representing the arithmetic mean of the items associated with the seven dimensions comprising the instrument: effectiveness of AI use (items 1–8), learning improvement (items 9–12), cognitive and technological dependence (items 13–16), ease of use (items 17–21), learning support (items 22–26), emotional reactions to AI (items 27–31), and AI accuracy (items 32–35).

Table 2 presents the results of Spearman's correlation analysis, which assesses the associations among these dimensions. A strong positive correlation was observed between effectiveness of AI use and learning improvement ($r = 0.773$). This finding suggests that as participants perceive AI use to be more effective, they also tend to experience greater improvements in their learning. Likewise, there was a strong positive correlation between learning support and emotional reactions to AI ($r = 0.708$), indicating that perceptions of AI as a learning support tool are closely related to positive emotional responses to it.

The results of Spearman's correlation analysis reveal a network of relationships among the different dimensions studied (H5). Perceptions of the effectiveness and ease of use of AI, as well as its support for learning, appear to be strongly related to improvements in learning and positive emotional reactions to AI. However, correlations between cognitive and technological dependence and the other dimensions are weaker,

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indicating that although they are related, dependence itself is not as strong a predictor of the other perceptions as effectiveness, ease of use, or learning support.

Table 2 – Spearman's Correlation Test Across Dimensions

Dimension	Spearman's Correlation Coefficient	Effectiveness of AI Use	Learning Improvement	Cognitive and Technological Dependence	Ease of Use	Learning Support	Emotional Reactions to AI	AI Accuracy
Effectiveness of AI Use	Correlation Coefficient	1.000	0.773**	0.255**	0.458**	0.608**	0.580**	0.384**
	Sig. (Two-tailed)	.	0.000	0.000	0.000	0.000	0.000	0.000
Learning Improvement	Correlation Coefficient	0.773**	10.000	0.287**	0.454**	0.609**	0.553**	0.433**
	Sig. (Two-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cognitive and Technological Dependence	Correlation Coefficient	0.255**	0.287**	10.000	0.270**	0.260**	0.324**	0.373**
	Sig. (Two-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ease of Use	Correlation Coefficient	0.458**	0.454**	0.270**	10.000	0.515**	0.560**	0.446**
	Sig. (Two-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
Learning Support	Correlation Coefficient	0.608**	0.609**	0.260**	0.515**	10.000	0.708**	0.476**
	Sig. (Two-tailed)	0.000	0.000	0.000	0.000	.	0.000	0.000
Emotional Reactions to AI	Correlation Coefficient	0.580**	0.553**	0.324**	0.560**	0.708**	10.000	0.500**
	Sig. (Two-tailed)	0.000	0.000	0.000	0.000	0.000	.	0.000
AI Accuracy	Correlation Coefficient	0.384**	0.433**	0.373**	0.446**	0.476**	0.500**	10.000
	Sig. (Two-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	.

** Correlation is significant at the 0.01 level.
Source: Prepared by the authors.

Discussion

This section compares the study results with the findings reported in the literature for each dimension.

Effectiveness of AI Use

Along the same lines, the results indicate that five out of ten students believe that AI tools allow them to learn faster. This is consistent with the findings of Blahopoulou and Ortiz (2025), who identify ChatGPT's speed as one of its greatest advantages, allowing

students to have their questions answered and make progress on their assignments at any time without having to wait for human assistance.

Several studies indicate that this technology can help students gather information more efficiently (Iwasawa; Kobayashi; Otori, 2023) and can have a positive impact on academic performance, particularly by optimizing the time available to complete assignments and solve problems (Molina-Montalvo; Macías; Haces, 2025). The findings are also consistent with those of Ríos *et al.* (2024), who report that students believe AI can improve the efficiency of the teaching and learning process.

This is consistent with the findings of several authors (Chou *et al.*, 2022; Falebita; Kok, 2024; Wang; Li, 2024; Zhang; Xu, 2025), who argue that the use of these technologies can improve students' efficiency in their learning processes, particularly when they have high technological self-efficacy and positive experiences of human–machine interaction. Likewise, the effectiveness of AI is influenced by perceived usefulness, ease of use, information accuracy, and the pedagogical fit of the tools, as well as by emotional and motivational factors (Acosta *et al.*, 2024b; Dahri *et al.*, 2024; Falebita; Kok, 2024; Wang; Li, 2024).

Learning Improvement

At least half of the students believe that AI improves the quality of education, consistent with the literature indicating that users of these tools report improvements in learning and retention (Ngo, 2023) and academic performance (Orok *et al.*, 2024), as well as a positive impact on the quality of higher education (Ríos *et al.*, 2024). This is also consistent with several authors (Jaboob *et al.*, 2024; Sun; Zhou, 2024), who report that the integration of this tool has been shown to improve students' academic achievement, with a significant positive effect, particularly when used for independent learning and text generation.

In turn, four out of ten students believe that using AI tools in their studies makes them feel more competent. This is consistent with the findings of Essel *et al.* (2022), who found that most students reported that AI use had a positive impact on their academic performance because it gave them greater understanding and confidence in completing the course. Similarly, AI can help students improve their writing by identifying typographical, spelling, and coherence errors.

This study found that six out of ten students believe AI tools improve the quality of their assignments. This is consistent with the findings of Xu *et al.* (2024), who found that most university students perceived ChatGPT as providing substantial support in their studies by offering suggestions and hints and guiding their writing, thereby facilitating their studies and research. Similarly, this is consistent with several authors (Zhai; Wibowo; Li, 2024; Zhang; Xu, 2025), who report that frequent use of these technologies can strengthen university students' confidence in completing their academic tasks.

Cognitive and technological dependence

The results of this study differed in this dimension, as two out of ten students reported that they usually copy and paste information provided by AI into their assignments. This

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contrasts with the findings of Azevedo, Tibúrcio, and Pereira (2024), who found that seven out of ten students admitted to partially copying ChatGPT responses for assignments or rewriting AI-generated responses.

At least half of the university students disagree that they have become dependent on AI tools. However, several authors (Jin *et al*., 2023; Zhang; Xu, 2025) highlight the risk of students becoming dependent on these technologies. Likewise, several authors indicate that the use of these technologies increases students' dependence, which may weaken cognitive skills such as critical thinking, creativity, and independent decision-making (Zhai; Wibowo; Li, 2024; Zhang *et al*., 2024; Zhang; Xu, 2025). In addition, overuse of AI may lead to reduced memorization and in-depth understanding of content, as well as increased procrastination and intellectual laziness (Krsmanovic; Deek, 2025; Mukhtar *et al*., 2025; Zhang *et al*., 2024).

Ease of use

The results indicate that six out of ten students believe that AI tools are easy to use without prior instructions. This is consistent with various studies reporting that users find generative AI tools easy to use, with their simplicity and convenience representing key advantages (Das; Madhusudan, 2024; Nagah; Salah, 2024), which in turn increases the frequency of their use (Acosta *et al.,* 2024b; Terblanche *et al*., 2022). Several authors (Boubker, 2024; Duy *et al*., 2024; Li, 2023; Osman *et al*., 2024; Wu; Wang; Wang, 2024) likewise found that perceived ease of use significantly and positively influences students' attitudes toward AI, as well as their intention to use it and their actual usage behavior.

The findings indicate that seven out of ten students believe that AI tools respond quickly to their requests, consistent with studies reporting that students value AI's rapid responses (Terblanche *et al*., 2022; Klimova; Luz de Campos, 2024), which can have a positive impact on their academic performance by providing instant feedback (Essel *et al*., 2022). This represents an advantage, as students receive responses almost immediately when asking AI questions, facilitating their understanding and learning of various topics.

In turn, five out of ten students reported that the adoption of AI in learning makes it more interesting. This is consistent with the findings of Essel *et al*. (2022), who report that most students indicated that AI use had a positive impact on their academic performance because they found learning more interactive and engaging.

Learning support

More than half of the students believe that AI tools stimulate their curiosity and desire to learn. This is consistent with several authors (Naseer *et al*., 2024; Rajesha; Nirmala, 2025), who report that these technologies have been shown to significantly increase motivation and improve academic performance by up to 25% compared with traditional methods.

Similarly, the findings are consistent with several authors (Grájeda *et al*., 2024; Lin; Chen, 2024), who report that the use of these technologies in the classroom can foster

positive emotions such as joy and surprise, enhancing student participation and engagement. However, these authors highlight that repetitive and impersonal interactions with AI can lead to emotional disengagement, performance-related anxiety, and technical frustration.

At least half of the university students agree that AI tools allow them to learn at their own pace. This is consistent with several authors (Jin *et al*., 2023; Lan; Zhou, 2025; Zhang; Xu, 2025), who report that these technologies facilitate self-regulated learning.

Emotional reactions to AI

Five out of ten students reported that AI helps them overcome difficulties in their studies more easily. This is consistent with the findings of Orok *et al*. (2024), who found that students associate AI with more effective learning because it allows them to quickly access explanations of difficult concepts and study at their own pace.

Likewise, half of the students reported that AI allows them to personalize their learning by addressing their specific needs and generating appropriate responses based on the context they provide. In this regard, Terblanche *et al*. (2022) found that some students consider personalization to be one of the advantages of AI use. Similarly, several authors found that most students believe AI makes an important contribution to personalizing their educational process (Ríos *et al*., 2024; Chan; Hu, 2023).

AI accuracy

Despite the recent surge in AI use, it is important to consider that this technology is not always accurate, as it can make "errors," fabricate information, or "hallucinate." However, the results of this study indicate that only two out of ten students considered that AI tools do not provide accurate information. This finding contrasts with those of several authors, whose studies found that students identified one of the main disadvantages of using ChatGPT as the fact that the information it provides is not always accurate (Nagah; Salah, 2024; Das; Madhusudan, 2024), or that AI does not provide accurate answers to specific questions or specific statistics (Klimova; Luz de Campos, 2024). In addition, students expressed concerns about the limitations of GenAI in producing accurate (Chan; Hu, 2023) and high-quality content (Chan; Lee, 2023).

Although AI can provide information quickly, this information is not always up to date or relevant. In this regard, the results show that four out of ten students consider that AI tools provide up-to-date and relevant data. However, Klimova and Luz de Campos (2024) found that students reported that ChatGPT does not provide up-to-date information or accurate references. This highlights the importance of students learning to create detailed prompts as a means of mitigating this limitation.

Another concern regarding the use of artificial intelligence in education is the reliability of the information it provides, although AI can be prompted to use reliable sources or indicate the references consulted. At times, these tools may generate inaccurate information because they have been trained on large amounts of data, some of which may be "biased." In this regard, only three out of ten students consider the information provided by AI tools to be reliable.

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This is consistent with the findings of several authors, whose study participants rated AI as relatively reliable or gave it a low rating on the reliability factor (Iwasawa; Kobayashi; Otori, 2023; Das; Madhusudan, 2024). Similarly, Ngo (2023) found that many students agreed that ChatGPT can sometimes produce inaccurate or false factual references, as well as make errors or fabricate information (Klimova; Luz de Campos, 2024).

Conclusions

The results indicate significant differences in students' perceptions of the adoption of AI in education according to sex across all items. Significant differences were also found for most items according to degree program, age, and school.

Regarding the statistically significant associations among the dimensions, the results reveal a group of strongly interconnected dimensions comprising effectiveness of AI use, learning improvements, support for learning, and emotional reactions toward AI. These dimensions are positively associated and operate jointly. Ease of use and AI accuracy are moderately associated with this core group, suggesting a secondary but relevant role. In contrast, cognitive and technological dependence emerges as the most peripheral dimension, showing only weak associations with most dimensions, except for moderate correlations with emotional reactions and AI accuracy.

The use of AI is undeniably increasing, and some students recognize both its potential and the associated risks. They acknowledge the need to strengthen these emerging AI competencies, which are becoming a key component of their future professional and even personal lives. Higher education institutions therefore need to intensify their efforts to integrate AI responsibly and ethically.

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