


Article

# Informational and Academic Transformations in the Age of Artificial Intelligence: Perspectives of Students at the Federal University of Minas Gerais

Douglas Silva de Sá<sup>1</sup> 

Victória Cecilia Ruiz Lima<sup>2</sup> 

Patrícia Nascimento Silva<sup>3</sup> 

**Abstract:** Given the significant use of Artificial Intelligence (AI) in the academic environment, this article investigates the use of these tools by students at the Federal University of Minas Gerais (UFMG). The analysis was structured around three main areas: usage profile; tools and their applications; and perceptions and ethical implications. To this end, the results of a *survey* conducted in June 2025 were analyzed, mapping the use of these technologies at the Institution. Regarding the first axis, the results reveal significant adoption of AI in academic activities, both at the undergraduate and graduate levels, with a particular emphasis on the Humanities and, by academic unit, the Institute of Exact Sciences, based on the respondents to this survey. In the second axis, it was found that the most widely used tool in both groups was generative model chats. The activity with the highest adoption rate in undergraduate programs was data retrieval, while, in graduate programs, it was text correction. In both categories, the majority of students reported using AI for information search and retrieval, always emphasizing the need for verification. Finally, in the third axis, it was observed that most students prefer clearer rules regarding the use of AI, but, despite this, they demonstrate awareness of the risks and possibilities of its use. In this regard, the study seeks to contribute to the debate on academic integrity and institutional policies in higher education in light of the expansion and role of AI in academia.

**Keywords:** artificial intelligence; higher education; undergraduate; graduate; students.

*Transformações informacionais e acadêmicas na era da Inteligência Artificial: perspectivas de discentes da Universidade Federal de Minas Gerais*

**Resumo:** Considerando o expressivo uso de Inteligência Artificial (IA) no ambiente acadêmico, este artigo investiga a utilização dessas ferramentas por discentes da Universidade Federal de Minas Gerais (UFMG). A análise estruturou-se a partir de três eixos: perfil de uso; ferramentas e suas aplicações; e percepções e implicações éticas. Para tanto, foram analisados os resultados de uma pesquisa do tipo

<sup>1</sup> Master's student in Knowledge Management and Organization, Federal University of Minas Gerais, douglasdesa@gmail.com.

<sup>2</sup> Master's student in Political Science, Federal University of Minas Gerais, victoriacrlima@ufmg.br.

<sup>3</sup> Ph.D. in Information Science, Federal University of Minas Gerais, patricians@ufmg.br.

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*survey*, realizada em junho de 2025, que mapeou o uso dessas tecnologias na Instituição. Quanto ao primeiro eixo, os resultados revelam uma significativa adesão amostral de IA em atividades acadêmicas, tanto na graduação quanto na pós-graduação, com maior destaque para a área de conhecimento das Humanidades e, por unidade acadêmica, para o Instituto de Ciências Exatas, considerando os respondentes desta pesquisa. No segundo eixo, constatou-se que a ferramenta mais utilizada em ambos os grupos foram os *chats* de modelos generativos. A atividade de maior adesão amostral na graduação foi a obtenção de dados, enquanto, na pós-graduação, foi a correção de textos. Nas duas categorias, a maioria dos discentes demonstrou usar IA para busca e recuperação da informação, ressaltando sempre a necessidade de fazer conferências. Por fim, no terceiro eixo, observou-se que a maior parte dos estudantes prefere regras mais claras sobre o uso de IA, mas, apesar disso, demonstra consciência quanto aos riscos e às possibilidades de uso. Nesse aspecto, a pesquisa busca contribuir para o debate sobre integridade acadêmica e políticas institucionais no ensino superior diante da expansão e do papel da IA na academia.

**Palavras-chave:** inteligência artificial; ensino superior; graduação; pós-graduação; estudantes.

### *Transformaciones informáticas y académicas en la era de la inteligencia artificial: perspectivas de los estudiantes de la Universidad Federal de Minas Gerais*

**Resumen:** Considerando el expresivo uso de la Inteligencia Artificial (IA) en el entorno académico, este artículo investiga la utilización de estas herramientas por parte de los estudiantes de la Universidad Federal de Minas Gerais (UFMG). El análisis se estructuró a partir de tres ejes: perfil de uso; herramientas y sus aplicaciones; y percepciones e implicaciones éticas. Para ello, se analizaron los resultados de una investigación de tipo *survey* (encuesta), realizada en junio de 2025, que mapeó el uso de estas tecnologías en la institución. En cuanto al primer eje, los resultados revelan una significativa adopción muestral de la IA en actividades académicas, tanto en el grado como en el posgrado, destacando principalmente el área de conocimiento de las Humanidades y, por unidad académica, el Instituto de Ciencias Exactas, considerando a los encuestados de este estudio. En el segundo eje, se constató que la herramienta más utilizada en ambos grupos fueron los *chats* de modelos generativos. La actividad con mayor adopción muestral en el grado fue la obtención de datos, mientras que, en el posgrado, fue la corrección de textos. En ambas categorías, la mayoría de los estudiantes demostró usar la IA para la búsqueda y recuperación de información, resaltando siempre la necesidad de realizar verificaciones. Por último, en el tercer eje, se observó que la mayor parte de los estudiantes prefiere reglas más claras sobre el uso de la IA, pero, a pesar de ello, demuestra conciencia respecto a los riesgos y las posibilidades de uso. En este aspecto, la investigación busca contribuir al debate sobre la integridad académica y las políticas institucionales en la educación superior ante la expansión y el papel de la IA en la academia.

**Palabras-clave:** inteligencia artificial; educación superior; pregrado; posgrado; estudiantes.

## 1 Introduction

Among the technological advances that have been reshaping human existence itself, Artificial Intelligence (AI) seems to add new layers of complexity, possibilities and challenges. AI has been permeating different spheres of social life, silently and profoundly transforming the way people work, communicate and navigate the world (Bahroun *et al.*, 2023).

With the emergence of Generative Artificial Intelligence (GenAI) tools, new possibilities and perspectives have been observed across different domains, particularly in the

field of education. More specifically in higher education, AI tools are one of the main agents of transformation, affecting the academic landscape in general, including administrative processes, research dynamics and pedagogical practices (Cavalcante *et al.* 2025). In this context, students have also been using AI systems to facilitate and navigate the academic experience in new ways. This dynamic has already been discussed in the literature, in studies that highlight, for example, how students have been using AI tools as a source of support in the learning process (Baidoo-Anu; Owusu Ansah, 2023; Rahman; Watanobe, 2023; UNESCO, 2024a).

Given that students are already using AI tools in an academic context, with both potential benefits and risks, it is essential to map these practices in order to understand how they are used, their effects and their implications. The case chosen for this study regards the Federal University of Minas Gerais (UFMG), given that it was the first federal university in the country to establish a committee dedicated exclusively to discussing and addressing the use of AI tools in the university setting<sup>4</sup>, which has facilitated broader debates and the dissemination of information on the topic.

In this context, this research poses the following question: How have students been using AI in academic activities at UFMG? Thus, the study presents a brief analysis of AI use by UFMG students, based on a sample, with the objective of mapping students' use of AI, investigating profiles and types of use, as well as tools, perceptions and ethical implications concerning its use. To this end, the study analyzes the results of a *survey*, conducted in June 2025 at UFMG, which collected data on the use of AI at the Institution.

It is important to emphasize that emerging technologies such as AI tools are still in a continuous process of development and refinement, so that understanding their impacts and possibilities needs to be ongoing, in order to keep pace with a debate that is constantly evolving. Therefore, investigating the use of AI tools is fundamental not only to understand their functionalities, but also to map how they are reshaping and reorganizing academic activities.

## 2 Artificial Intelligence in the Academic Context

In recent years, AI has redefined its role from that of a utilitarian tool with little impact to an instrument of great relevance in mediating between students and information, bringing about transformation in both social and academic dynamics (Caballero Mariscal;

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<sup>4</sup>Available at: <https://www.ufmg.br/ia>.

Segura; Pinto, 2025), making it possible to improve, automate and personalize different facets of the educational process (Gârdan *et al.*, 2025).

As noted by Sampaio (2024), AI applied to the academic context acts as a tool that assists researchers in their tasks and in different aspects of scientific research, enabling the creation of texts, images, analyses and suggestions, as well as facilitating process automation, the personalization of informational experiences and increasing accessibility, making it essential for creating inclusive learning environments (Sousa; Fujita, 2025).

However, just as AI tools emerge with the potential to support successful practices, increase student engagement and offer new resources for *feedback* and forms of interaction, they also raise issues related to ethics, equity and the preparation of professionals and the institution (Noroozi; Khalil; Banihashem, 2025). According to Nascimento Silva (2025), due to the recent emergence of GenAIs, the social changes resulting from these tools are irreversible, making it an institutional role to learn to use them ethically, promote guidelines on the proper use of these technologies and create training initiatives and research. In this sense, it is necessary to promote AI literacy and an understanding of the ethical use of these tools, since everyone needs to be aware of the implications, risks and benefits, enabling the sustainable and balanced use in an efficient manner (Spivakovsky *et al.*, 2023). Therefore, training in these competencies is fundamental for the development of critical skills and for the optimal use of the tools.

The use of AI in the academic environment is characterized as a subject of study in Information Science, given that its use impacts the flows of knowledge production. In this regard, the conscious use of these tools requires the development of Information Literacy, which, according to Belluzzo (2023), aims to empower people to identify, seek, evaluate and use information ethically and legally. Thus, promoting training and professional development for educators is a crucial prerequisite for fair and responsible integration into teaching. It is essential that the academic community align with the guidelines, values, and sociocultural norms related to GenAI models (UNESCO, 2024b), providing educators with opportunities to rethink their practices and usage while encouraging the mindful use of AI technologies across different academic fields (University of Granada, 2024).

In this context, the creation of regulations is one of the pillars for enabling institutions to safely utilize these technologies, given that, to better harness the potential of AI tools, the involvement of public sectors in the fields of health and education is essential (Brazilian Academy of Sciences, 2023).

With regard to international regulations and guidelines for the use of AI, UNESCO, the European Union and the Organization for Economic Cooperation and Development (OECD) stand out as the main formulators of guidelines for AI in education, through regulatory frameworks, policy guidelines and frameworks, contributing to aspects such as innovation and accountability (ANDIFES, 2025). At the national level, as a reference for the regulation of AI in Brazil, this is grounded in strategic documents created during the 5th National Conference on Science, Technology and Innovation, which have been jointly adopted by the Ministry of Education (MEC) and ANDIFES to create the ‘Framework for the Development and Responsible Use of Artificial Intelligence in Education<sup>5</sup>’, published in February 2026, which aims to establish principles and guidelines for the use of AI at different levels of education (ANDIFES, 2025).

### 3 Methodology

The study involves the analysis of institutional data collected, with authorization from the Office of the President, between May and June 2025, regarding the academic community’s views on the use of AI in activities related to UFMG, conducted by the Permanent AI Commission. Among the instruments and techniques, data collection was conducted using direct documentation via a questionnaire, characterized as a public opinion survey, without the identification of the participants.

The LimeSurvey tool was used to configure the questionnaire, ensuring that the data was stored on the University’s own servers. To structure the data collection, organizing and grouping the questions according to their purpose, the questionnaire was divided into an initial section, containing the Informed Consent Form, which emphasizes voluntary participation and the academic purpose of the research, and requested general information from volunteer respondents, such as their relationship with the University and their respective academic or administrative unit, as well as their broad field of study (in the case of students and faculty), followed by three additional sections with specific questions (Figure 1). The research report<sup>6</sup> contains a detailed breakdown of the questionnaire, including the questions and a general analysis of the data.

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<sup>5</sup>Available at: <https://www.gov.br/mec/pt-br/media/segape/referencial-oficial-pt.pdf>.

<sup>6</sup> NASCIMENTO SILVA, Patrícia; LIMA, Victória Cecília Ruiz; MENDONÇA, Ricardo Fabrino; REIS, Zilma Silveira Nogueira; UNIVERSIDADE Federal de Minas Gerais. **Inteligência artificial na UFMG: percepções da comunidade acadêmica – relatório da consulta à comunidade acadêmica da Universidade Federal de Minas Gerais no primeiro semestre de 2025**. 2. ed. Belo Horizonte: Universidade Federal de Minas Gerais, 2025. 1 recurso online. Disponível em: [https://www.ufmg.br/ia/wp-content/uploads/2025/12/Inteligencia-Artificial-na-UFMG\\_-percepcoes-da-comunidade-academica-2-1-1.pdf](https://www.ufmg.br/ia/wp-content/uploads/2025/12/Inteligencia-Artificial-na-UFMG_-percepcoes-da-comunidade-academica-2-1-1.pdf). Acesso em: 01 mar. 2026.

The target audience for this survey was the entire academic community: students, faculty, educational support staff (TAEs) and contracted employees. The form was released via the mass messaging service, provided by UFMG's Information Technology Directorate (DTI), and through institutional channels (social media and printed posters), as part of a dissemination plan created by UFMG's Communication Center (Cedecom). Although the survey used convenience sampling, a representative sample size for the UFMG academic community was calculated, taking into account the population size indicated on the University's website in terms of numbers<sup>7</sup> (students, faculty and administrative staff) = 52,486, an anticipated response rate (p) of 50%, a confidence level of 5 (absolute precision) and a design effect of 1.0 (for random samples). The calculation was performed using the Open Epi tool<sup>8</sup>, which calculated a sample size of 382 for a 95% confidence interval. Considering a 30% attrition rate, the sample size was adjusted to 497 respondents.

Considering only valid responses, the final survey sample consisted of 2,441 respondents, including 967 undergraduate students, 541 graduate students, 595 faculty members and 338 technical-administrative staff or outsourced employees, distributed across all major fields of study in 20 academic units.

Within the scope of methodological limitations, it is important to clarify that the actual scope and boundaries of this study do not have external validity, as the research is restricted to the context of UFMG. Therefore, the data presented here should not be generalized as a standard for other institutions. This limitation imposes inferential restrictions, since convenience sampling does not allow for probabilistic predictions across the entire student body. The impact of self-selection bias on questionnaire responses is also noteworthy, as the topic may have previously attracted interested respondents or frequent users of the technology. Thus, the percentages from this study should be interpreted as a diagnosis of this specific group, not as representative of the entire academic community. For this study, access to a pre-existing institutional database was facilitated through the institution's official channels, which helped engage a significant number of respondents across different academic units.

For this study, a sample was drawn exclusively from respondents with a student profile, as highlighted in Figure 1. In this manner, based on the collected data, this study was structured around a sample of 1,508 respondents, comprising both undergraduate and graduate students, to address three central dimensions of analysis: usage profile; tools and the types of use associated with them; and perceptions and ethical implications regarding their use.

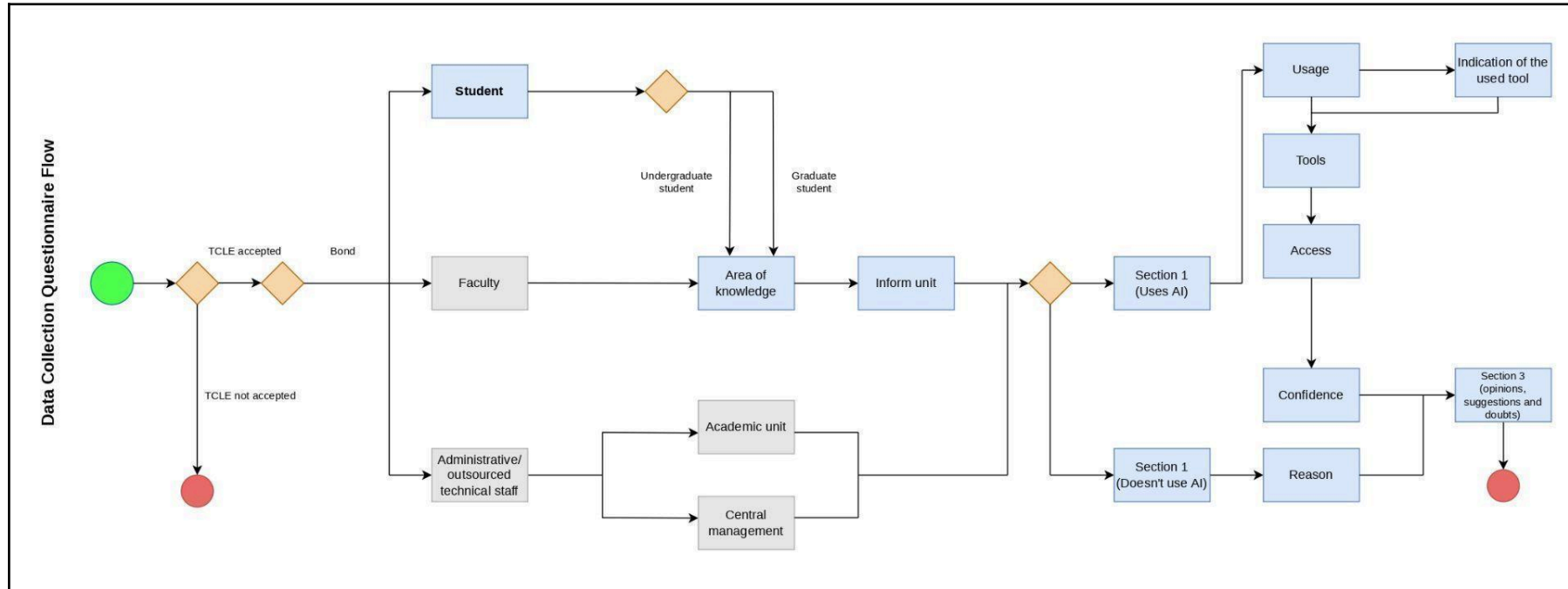
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<sup>7</sup> Available at: <https://www.ufmg.br/dai/noticia/ufmg-em-numeros/>.

<sup>8</sup> Available at: [https://www.openepi.com/Menu/OE\\_Menu.htm](https://www.openepi.com/Menu/OE_Menu.htm).

The first dimension concerns the participants' profile and the characterization of the responses, with three aspects analyzed: 1) whether tool use is more frequent among undergraduate and graduate students; 2) which disciplinary areas show greater use of AI tools among respondents; and 3) the distribution of AI use across academic units, in order to compare usage between undergraduate and graduate students.

Figure 1 - Information flow in the questionnaire used in the survey



Source: Adapted from Nascimento Silva *et al.* (2025).

Note: the path marked in gray was not included in the analysis, which was restricted to the responses provided by the students, highlighted in blue.

A second dimension of analysis focuses on understanding which AI tools are used by students and how they are used, comparing undergraduate and graduate students, being also divided into three axes of analysis: 4) which tools are most frequently used; 5) the identification of which activities are prioritized in the use of AI; and 6) the frequency of AI use for information search and retrieval;

The third and final dimension of analysis focused on investigating students' perceptions and the ethical implications arising from its use, structured around two axes: 7) whether the level of academic training influences the process of academic rigor through source verification; and 8) identifying students' expectations regarding the role of an AI Commission. Table 1 presents the three sections, the related question and the corresponding data collection.

Table 1 – Research organization

Block	Questions	Correspondence with questionnaire questions
Profile	1. Is AI used more among undergraduate or graduate students?	What is your connection to UFMG? Do you use AI in any UFMG-related activities?
	2. In which fields of study is there a higher number of undergraduate and graduate students who reported using AI in academic activities?	What is your affiliation with UFMG? (Student) Select the field of study you are affiliated with Do you use AI in any activities related to UFMG?
	3. What is the distribution of AI use in undergraduate and graduate programs by academic unit?	What is your affiliation with UFMG? Student* Do you use AI in any UFMG-related activities? Which UFMG unit are you affiliated with? (Indicate the primary one, if there is more than one).
Tools and mode of use	4. What types of AI tools are most commonly used by undergraduate and graduate students?	What is your affiliation with UFMG? (Student) Do you use AI in any activities related to UFMG? Which AI tools do you use most often?
	5. Which activities are prioritized most in the use of AI by undergraduate and graduate students?	Do you use AI in any UFMG-related activities? What is your connection to UFMG? (Student) In which activities developed by or related to UFMG do you use AI tools and platforms?
	6. What is the percentage of undergraduate and graduate students who use AI for information search and retrieval?	What is your connection to UFMG? Student* Do you use AI in any activities related to UFMG? In which activities carried out at or related to UFMG do you use AI tools and platforms?
Perceptions and Ethical Implications	7. To what extent does the level of academic training—between undergraduate and graduate studies—influence perceptions of reliability and rigor in verifying results obtained by AI?	What is your affiliation with UFMG? Student* Do you trust the results presented by AI tools and platforms? Do you use AI in any activities related to UFMG?

	8. Are there differences between undergraduate and graduate students regarding expectations about the role of an AI committee at the university?	What is your affiliation with UFMG? In 2024, UFMG established a Permanent Artificial Intelligence Committee to explore the use of technology in the university's research, teaching, extension and administrative activities. What is your opinion on the role of the AI Committee at UFMG? What initiatives are expected?
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Source: Author's own work, 2026.

It should be noted that this study constitutes an initial analysis of the data. Thus, the results are predominantly descriptive, without associations between variables. In the results section, each axis was examined in detail in light of the collected data.

## 4 Results

In total, more than 4,000 people accessed the survey questionnaire. However, considering only valid responses, that is, complete responses, the final sample consisted of 2,441 respondents. Furthermore, given this study's focus on students, 1,508 valid responses were obtained (61.8% of the total sample), excluding 26 students who did not agree to participate. These students are distributed across 20 academic units and, in terms of academic level, 967 are undergraduate students and 541 are graduate students. It is important to note that of this initial sample (1,508), 1,233 indicated they use AI and 275 indicated they do not use AI.

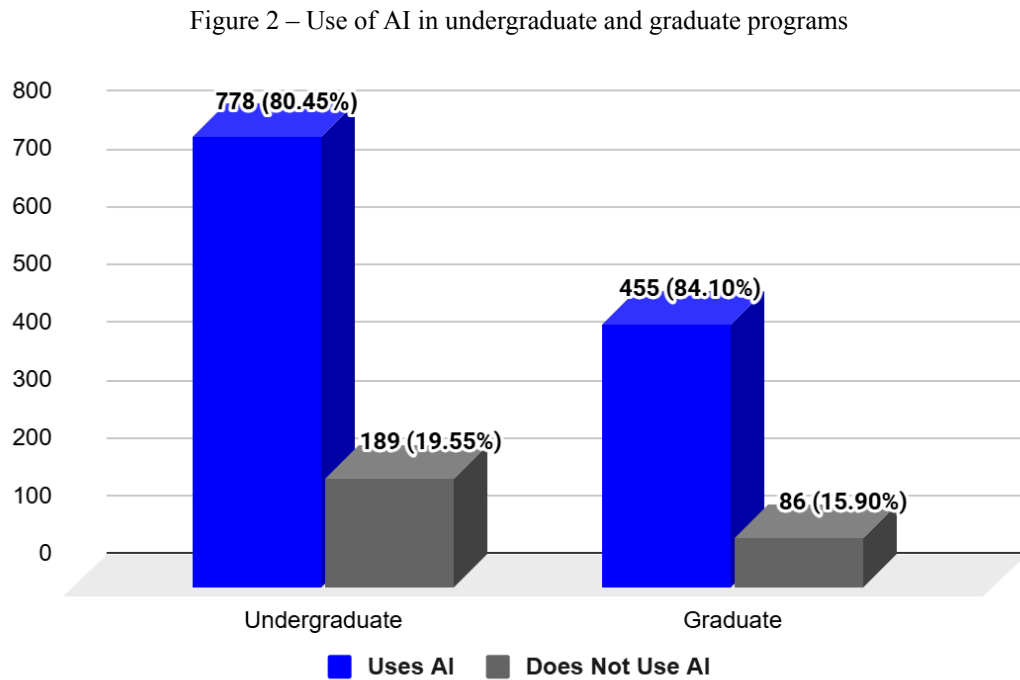
It is worth noting that the variables that allowed students to select multiple responses (tools and activities) were analyzed based on absolute frequency among the total number of students who reported using AI (1,233) in their activities, which justifies presenting isolated proportions in each analysis.

### 4.1 Analysis of usage profile

To answer the initial question: "Is AI used more among undergraduate or graduate students?", the total sample of 1,508 participants was considered, comprising 967 undergraduates and 541 graduate students.

Among undergraduate students, 778 reported using AI tools in their academic activities, corresponding to 80.45% of this group, while 189 participants reported not using AI in their activities, representing 19.55% of the total. Among graduate students, 455 students indicated that they use AI tools in their activities, corresponding to 84.10% of the sample, while 86 participants indicated that they do not use AI tools in their academic activities,

representing 15.90% of the total, as shown in Figure 2.



Source: Author's own work, 2026.

This analysis reveals a high rate of AI tool usage among students, both at the undergraduate and graduate levels, with results exceeding 80% in both groups, which indicates a subtle difference of 3.64% between them, suggesting a slight advantage for graduate students regarding the use of AI in academic activities at UFMG. In a general analysis, considering both undergraduate and graduate students, 1,233 (81.76%) students reported using AI tools in activities at UFMG, while 275 (18.24%) students reported not using them, which also points to high usage. It is evident that, even with the rapid advancement of AI tools, a considerable percentage of students (18.24%) reported not using AI in academic activities, a stance that can be explained by various factors. In this regard, Pinto, Longhi and Behar (2026), in their study, point out that some of the greatest challenges hindering the adoption of AI tools are linked to a lack of infrastructure and ongoing training, as well as difficulties in technological adaptation.

Given the diversity across different fields of knowledge, the frequency of AI use may vary when segmented by different levels and areas of the academic community. From this perspective, to answer the question: “In which fields of knowledge is there a greater number of undergraduate and graduate students who reported using AI in academic activities?”, the

data for analysis are presented in Table 2.

The responses were organized across the three major fields of study (Humanities, Exact Sciences and Life Sciences), considering the total number of respondents in each field, and presented in Table 2. In the Humanities, 567 responses were recorded (45.98%), with 354 (45.50%) from undergraduate students and 213 (46.81%) from graduate students. In the Life Sciences, 271 responses were obtained (21.98%), with 162 (20.82%) from undergraduate students and 109 (23.96%) from graduate students. In the Exact Sciences, 395 responses (32.04%) were obtained, with 262 (33.68%) from undergraduate students and 133 (29.23%) from graduate students.

Table 2 - Use of AI by field of study

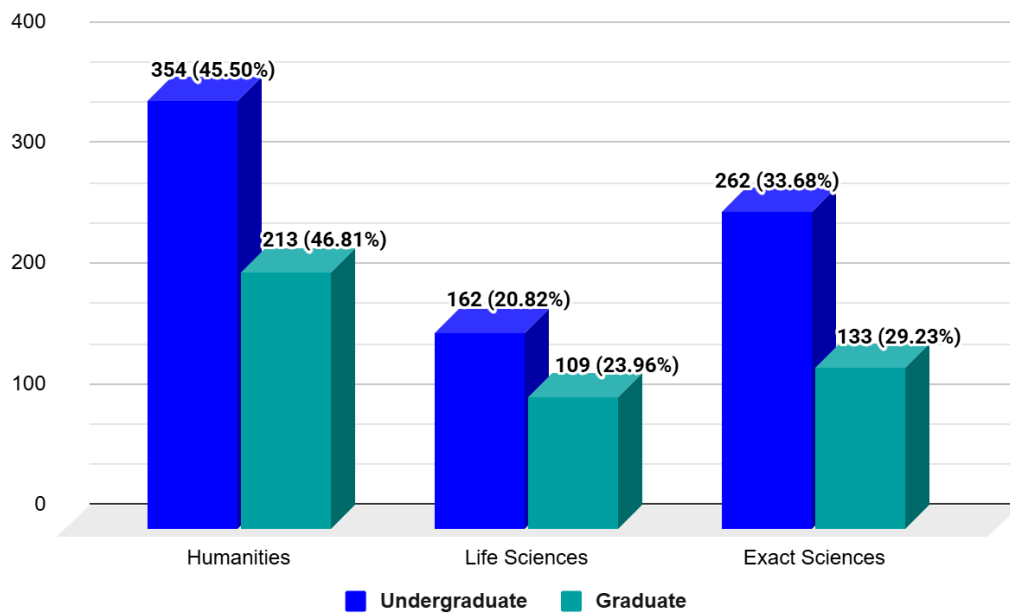
Field of study	Undergraduate	Graduate	Total
Humanities	354 (45.50%)	213 (46.81%)	45.98%
Life Sciences	162 (20.82%)	109 (23.96%)	21.98%
Exact Sciences	262 (33.68%)	133 (29.23%)	32.04%

Source: Survey data, 2026.

The scenario presented in Figure 3 shows the percentage distribution of undergraduate and graduate students across each field of study. Among the three fields of study, graduate programs stand out for having a higher proportion of users who reported using AI compared to undergraduate programs, with the Humanities at 46.81% of users and Life Sciences at 23.96%. In contrast, the Exact Sciences field showed a higher proportion of users at the undergraduate level compared to graduate studies, with 33.68% of AI users.

Given the data presented, it is possible to identify, based on the number of respondents in each field, that the Humanities field has a higher proportion of users in both undergraduate and graduate programs, compared to other fields, whereas the Life Sciences indicate lower proportions in both groups.

Figure 3 – Distribution of use by fields of study



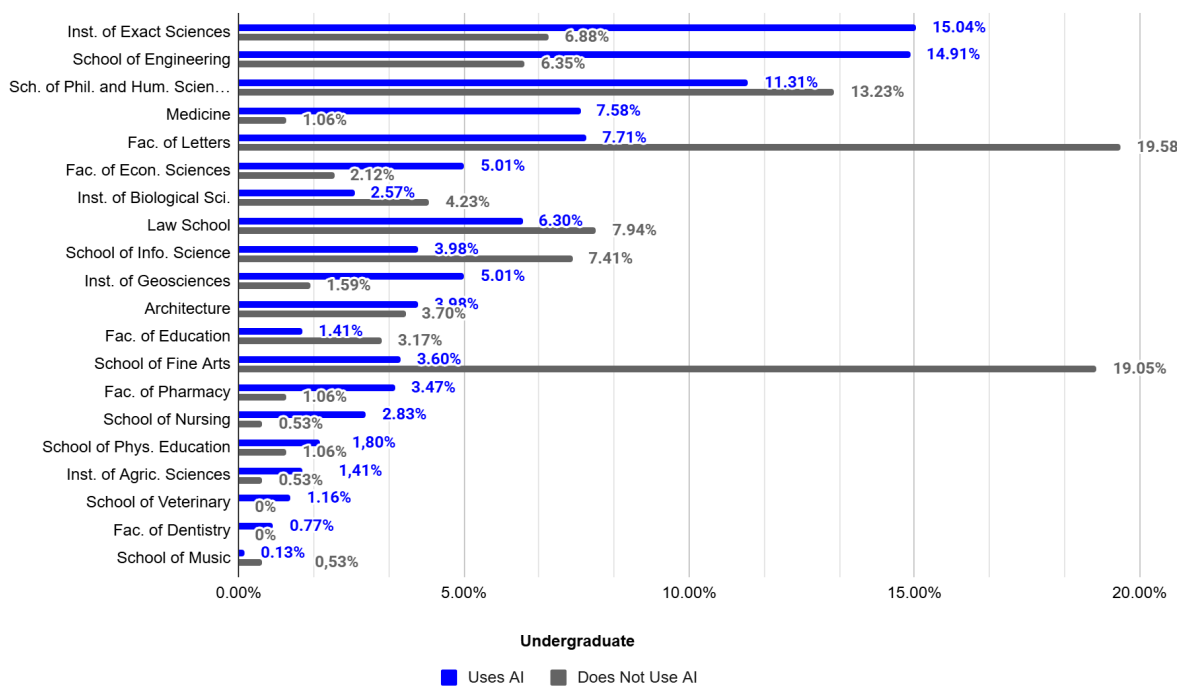
Source: Author's own work, 2026.

The use of AI tools in higher education is already bringing about social changes whose full impact is not yet fully understood. In this context, it is essential that educational institutions rethink their pedagogical approaches in order to more effectively meet the needs of the academic community. This adoption of AI by undergraduate students, provided it is properly guided, can positively impact the academic performance of undergraduate students (Almeida; Penha; Rendeiro, 2025). However, determining how this guidance and mediation should be carried out has emerged as one of the major challenges faced by faculty and academic administrators. In their studies, Serzedello *et al.* (2025) point out that AI optimizes students' potential through personalized instruction when employed critically and by policies that ensure the ethical and equitable use of the tool and the preparation of teachers. However, to this end, higher education institutions must be accompanied by critical reflections on the possible ethical and social implications arising from the implementation of AI (Pineiro; Costa; Vitoriano, 2025).

Given the varying levels of AI use across different fields of study and in order to answer the question: "What is the distribution of AI use in undergraduate and graduate programs according to academic units?", Figures 3.1 and 3.2 detail this distribution across the different academic units at UFMG, presenting a breakdown between students who do and do not use AI tools in their academic activities.

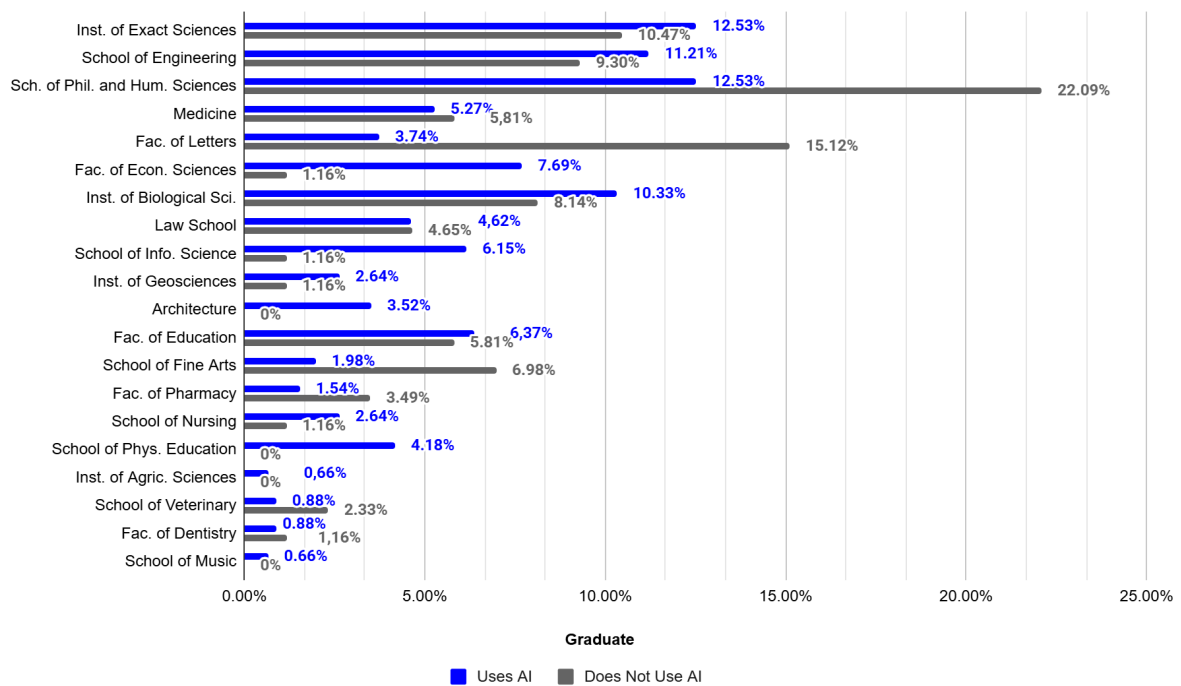
For this assessment, the total number of respondents was 1,508 students, comprising 1,233 students who reported using AI. Of this total, 778 are undergraduate students and 455 are graduate students; in addition to 275 students who reported not using AI, of whom 189 are undergraduates and 86 are graduate students. For the quantitative analysis of respondents in this sample, the data are presented in Figures 3.1 and 3.2, separated respectively by “Undergraduate” and “Graduate,” with their values subdivided into student categories labeled “uses AI” and “does not use AI.”

Figure 3.1 – Use of AI by Academic Unit in Undergraduate Programs



Source: Author's own work, 2026.

Figure 3.2 – Use of AI by Academic Unit in graduate studies



Source: Author's own work, 2026.

Based on the information presented in Figures 3.1 and 3.2, it was observed that, in the sample used in this study, when distributed by the number of responding users, the units that stand out most in the use of AI in academic activities at the undergraduate level are: first, the Institute of Exact Sciences, with 15.04% of students; second, the School of Engineering, with 14.91%; and, third, the Faculty of Philosophy and Human Sciences, with 11.31%. In graduate studies, the units with the highest proportion of students who reported using AI tools are: the Institute of Exact Sciences and the Faculty of Philosophy and Human Sciences, both with 12.53% of respondents, followed by the School of Engineering, with 11.21% of students who reported using AI in their academic activities.

Conversely, it is also possible to analyze the distribution of students by unit who stated they do not use AI in academic activities at UFMG. At the undergraduate level, the units with the highest proportion of non-users are: first, the Faculty of Letters, with 19.58%; second, the School of Fine Arts, with 19.05%; and third, the Faculty of Philosophy and Human Sciences, with 13.23% of students. In graduate programs, the units with the highest proportion of respondents who reported not using AI are: the Faculty of Philosophy, with 22.09%; second, the Faculty of Letters, with 15.12%; and third, the Institute of Exact Sciences, with 10.47%.

Given the variation in the adoption of AI tools across different academic units, this

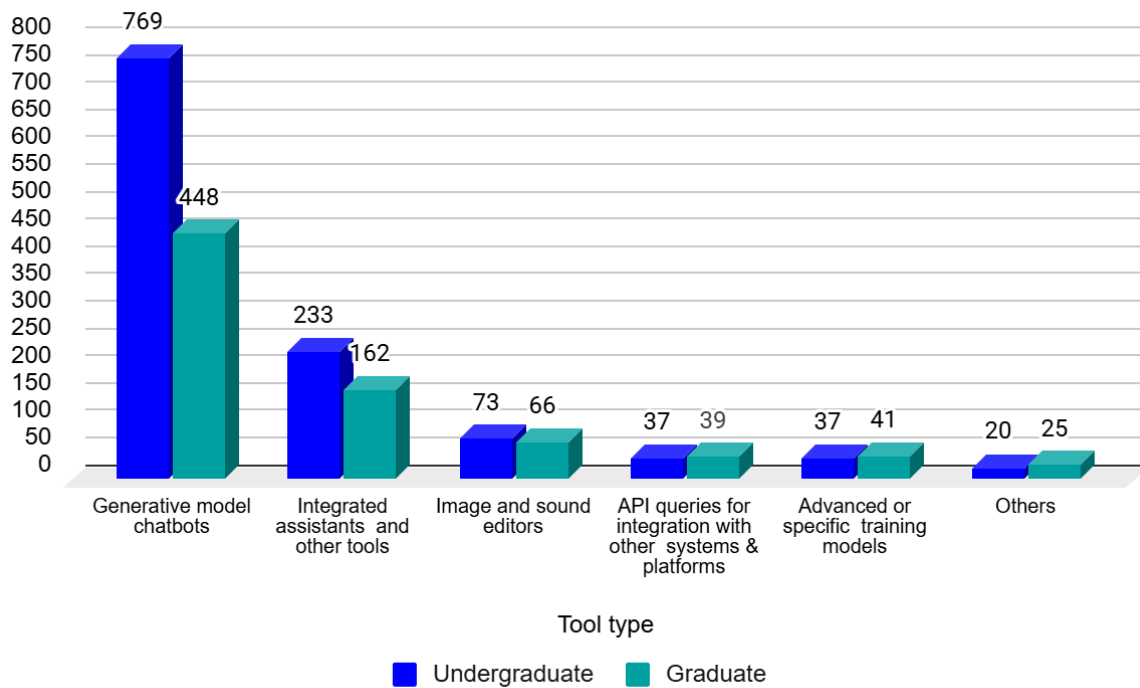
aspect may also reflect a preference for AI tools, depending on the complexity of tasks in each field, as new tools aimed at supporting and optimizing different academic demands in technical or informational contexts are constantly emerging. Aganette *et al.* (2024) point out in their study that the use of AI models in fields such as Healthcare, the Exact Sciences and academia has contributed to the performance of more advanced tasks and analyses. In this regard, the potential for use across different fields is evident, addressing specific demands that can be optimized through the use of AI tools.

#### **4.2 Analysis of the tools and types of use**

To answer the question: “What types of AI tools are most commonly used by undergraduate and graduate students?”, participants’ choices were analyzed based on five groups of tools: a) Generative model chatbots (ChatGPT, Gemini and DeepSeek); b) Integrated assistants and other tools (e.g., browser extensions, Office, WhatsApp and Copilot); c) Image and audio editors; d) API queries for integration with other systems and platforms; e) Advanced or specific models for training.

Since the question allowed for multiple-choice responses, the results indicate the frequency with which each type of tool is used by respondents. The first option, corresponding to generative model chats, appears most frequently among both undergraduate (769) and graduate students (448). Among undergraduate students, integrated assistants and other tools (233) rank second, followed by image and sound editors (73), while practices involving API queries (37) and advanced models for training (37) are less commonly used. Among graduate students, integrated assistants and other tools (182) rank second, followed by image and sound editors (66) and advanced training models (41). Tools related to API queries, however, appear less frequently (39). Figure 4 shows the most commonly used tools within students, depending on their level of education.

Figure 4 – Most commonly used AI tools



Source: Author's own work, 2026.

Open-ended responses from the “Others” category were also considered, allowing participants to share the tools they use most frequently or those not included on the available options. A total of 20 responses from undergraduate students and 25 responses from graduate students were recorded. The AI tool NotebookLM was mentioned most frequently, cited seven times across both groups. Among undergraduate students, tools such as Perplexity and Consensus appeared most frequently, each being cited three times. Among graduate students, SciSpace and Elicit appeared most frequently, both being cited three times, while Elicit appeared as a commonly used tool in the graduate context, not being cited within undergraduate students.

Currently, various AI tools are available for use in educational settings, performing different functions. In this regard, Sousa and Cardoso (2025) note that students have been integrating GenAI tools into various aspects of the academic context, whether in teaching, learning or research. These different applications also reflect students' preferences. Regarding the most widely used tools, the preference for and reliance on tools such as ChatGPT is striking. The authors suggest that this preference can be explained by factors such as the tool's user-friendly interface, its free availability, versatility across various academic tasks and extensive media coverage, all of which contribute to widespread adoption among students.

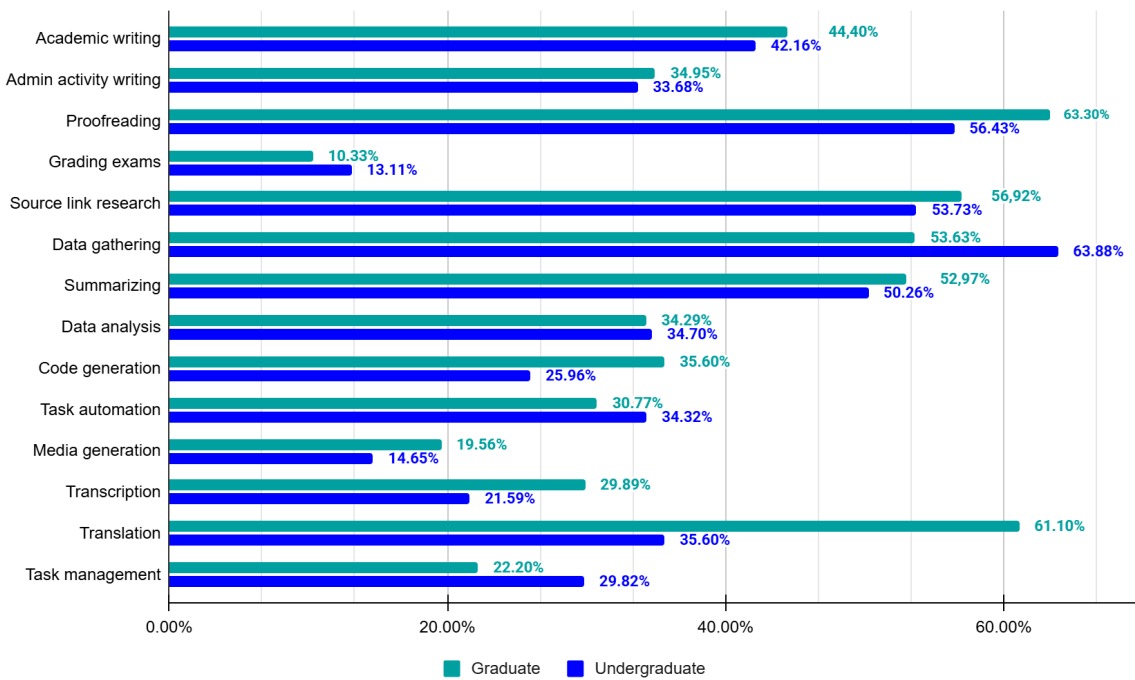
Similarly, Von Garrel and Mayer (2023), in conducting a quantitative study with

students in Germany, note that generative models appear most frequently within participants. Tools such as ChatGPT, DeepL and Dall-E are some of the most frequently used, with ChatGPT, or the GPT-4 model, standing out as adopted by nearly half of the participants. In the case of this study, generative model chats appear with a significant difference compared to other groups of AI tools, particularly in the undergraduate context. Even among the responses provided under the “Others” option, this group of AI tools also appears frequently. By mapping the most commonly used tools, it is also possible to understand in which activities and tasks students prioritize the use of AI, thereby establishing a parallel between the type of tool and its intended use.

To answer the question: “Which activities are prioritized most in the use of AI by undergraduate and graduate students?”, in addition to considering only the responses of students who stated they use AI for some academic activity, being 778 undergraduate students and 455 graduate students, only the most frequent responses (always and frequently) were considered for the priority analysis, as this was a multiple-choice question. The distribution of tasks prioritized by undergraduate and graduate students can be observed in greater detail in Figure 5.

Among graduate students, the activities of text correction and revision (63.30%), translation (61.10%) and searching for sources and links related to a specific issue or topic of interest (56.92%) stand out as those for which AI tools are most frequently used. Among undergraduate students, however, the use of AI tools is predominantly oriented toward activities involving the retrieval of relevant data and information (63.88%), in addition to a priority given to the use of AI for text correction and revision (56.43%) and the search for sources and links related to a specific issue or topic of interest (53.73%).

Figure 5 – Prioritized activities in the use of AI



Source: Author’s own work, 2026.

According to the survey results, the high adoption rate of AI among graduate students for text revision and translation activities can be understood as a reflection of the need to produce and consume texts and information with greater consistency and volume. In contrast, undergraduate students showed higher results in data and information retrieval activities, which may indicate that this group uses the tool as an information search engine, replacing traditional sources. The third activity with the highest adoption rate among the two groups was the search for sources and links, indicating frequent use of the tool for searching and retrieving information.

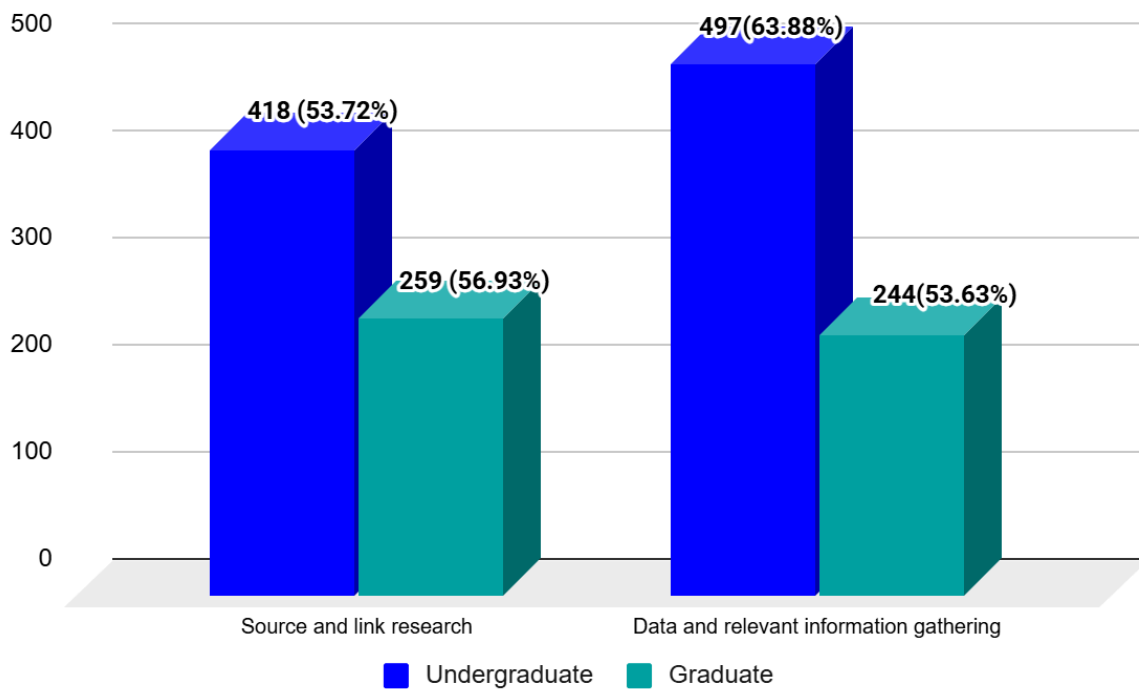
In the context of proofreading and editing, a particularly sensitive situation arises, especially since it involves original, unpublished scientific works. Although certain tools claim to adopt privacy policies and data handling guidelines, it is necessary to consider that submitted content may be incorporated into databases managed by large technology companies, the Big Techs (Morozov, 2018). This circumstance raises significant concerns regarding copyright protection, the confidentiality of academic works and the strengthening of technological surveillance practices, with potential ethical, legal and institutional ramifications. This is because such technologies are constantly performing a variety of activities and making decisions on different issues in social and political life (Mendonça; Filgueiras; Almeida, 2023).

Still in the context of use for information retrieval, to answer the question: “What is the percentage of sample adherence to the use of AI for information search and retrieval among undergraduate and graduate students?”, only the most frequent responses (always and frequently) were considered, involving 778 undergraduate students and 455 graduate students. Two activities were analyzed: the first concerns the search for sources and links related to a specific issue or topic of interest; and the second refers to obtaining data and information relevant to my activities by asking the tool a direct question.

Regarding activities involving the search for sources and *links* related to a specific issue or topic of interest, 53.72% of undergraduate students reported using AI tools for this activity, totaling 418 students. Among graduate students, 56.93% reported using AI tools, totaling 259 students. As for activities involving obtaining relevant data and information by asking the tool directly, 63.88% of undergraduate students indicated they use AI tools, totaling 497 students, while, among graduate students, the percentage is lower, at 53.62%, representing a total of 244 students. The distribution between the two groups is shown in Figure 6.

Já entre os estudantes de pós-graduação, 56,93% indicaram utilizar ferramentas de IA, contabilizando 259 alunos. Quanto às atividades envolvendo a obtenção de dados e informações relevantes por meio de pergunta direta à ferramenta, 63,88% estudantes de graduação indicaram utilizar ferramentas de IA, totalizando 497 alunos, enquanto, entre estudantes de pós-graduação, a porcentagem é menor, 53,62%, representando um total de 244 alunos. A distribuição entre os dois grupos está representada no Gráfico 6.

Figure 6 – Information search and retrieval among students



Source: Author's own work, 2026.

Given the percentages presented, there is greater adoption of AI tools for information search and retrieval among undergraduate students. These tools tend to retrieve information more quickly, conveying a sense of efficiency and expanded coverage. This is made possible by generative systems capable of performing rapid reviews, synthesizing large volumes of documents and mapping trends (ANDIFES, 2025). These systems are particularly useful when difficulties arise in performing searches using traditional methods, enabling users to conduct semantic searches (Sampaio, 2024). However, this process can often become an obstacle for students due to the difficulty in verifying the authenticity of this information (Pineiro; Costa; Vitoriano, 2025).

From this perspective, it is possible to understand that the efficiency of AI in information retrieval lies in its ability to mediate the search process between students and various information sources, enabling an automated search. This mechanism has the potential to democratize access, as it allows users to conduct simple searches in more specialized information sources that require technical expertise. However, this search capability requires greater discernment and rigor in verifying results, since AI-generated results are prone to hallucination, that is, data and information outside the context specified by the user, as well as

errors, such as false references, making it essential for the institution to take a stance in promoting information on the ethical use of these tools.

Still regarding the existence of false data and information generated by AI, government action is needed to propose policies requiring transparency regarding the creation of AI models in education systems, as well as models that are subject to inspection and intervention (U.S. Department of Education, 2023).

Given that data are the foundational structures of AI applications, it is important that they be unbiased, accurate and well-analyzed to properly feed the models. From this perspective, institutional action is essential in promoting technological innovation and ensuring ethical and regulatory integrity.

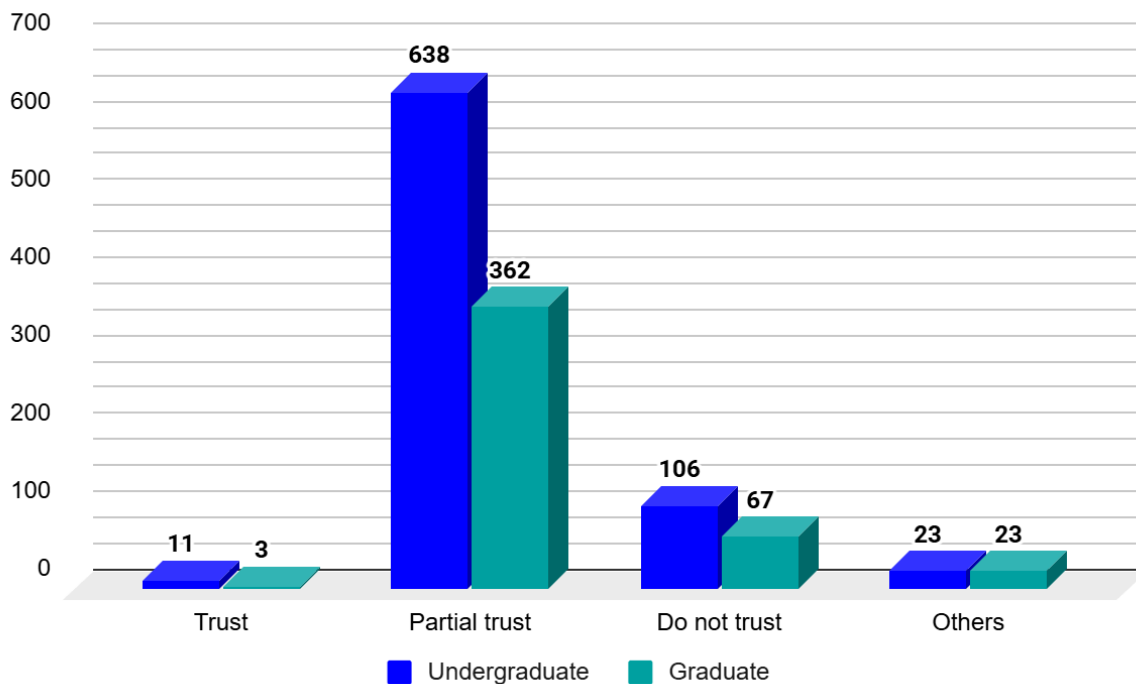
This aspect further reinforces the importance of institutional guidelines that encourage the development of students' competencies, since this skill fosters critical thinking, which facilitates the analysis of results generated by AI, preventing the passive acceptance of results without knowing the source or questioning issues related to biases and the reliability of information (University of Granada, 2024). This issue is even more sensitive when it comes to the training of researchers and professionals, since, in this case, it is essential, from the very beginning, to know, understand and carry out all training processes without skipping steps or "outsourcing one's thinking", in order to avoid harm to teaching and learning (Nascimento Silva, 2025).

#### **4.3 Analysis of Perceptions and Ethical Implications Regarding the Use of AI**

With regard to the reliability of information, to answer the question: "To what extent does the level of academic training between undergraduate and graduate studies influence the perception of reliability and the rigor in verifying results obtained by AI?", the level of trust placed by students in the answers provided by AI tools and platforms was taken into account. The options available to students consist of four levels: a) I trust them; b) I trust them partially, but I perform some checks; c) I do not trust the tools; I use them only for tests or superficial comparisons; d) other.

Of the 778 undergraduate students who reported using AI tools in their activities, 82% stated they trust them partially and verify the results, totaling 638 students. Among the 455 graduate students who reported using AI tools in their activities, 79.56% verify the answers provided by such tools, totaling 362 students, as shown in Figure 7.

Figure 7 – Conference Index



Source: Author's own work, 2026.

Participants could also express their level of trust in the results of AI tools using the “Other” option, resulting in 46 responses: 23 from undergraduate students and 23 from graduate students. In this last option, one of the undergraduate responses was discarded due to lack of consistency with the question, resulting in a total of 22 responses. Among the 22 undergraduate responses, upon categorization, all of them indicated that students trust the tool to some extent, but perform some verification. As for the 23 graduate responses, upon categorization, 21 indicated that students partially trust the tool but verify the results and 2 indicated a lack of trust in the tool, using it only for testing.

Based on the data presented in Figure 7 and the analysis of responses to the “Other” option, it is evident that both undergraduate and graduate students demonstrate some level of uncertainty regarding the use of AI tools. In this context, what has become popularly known as hallucinations (Alkaiissi; McFarlane, 2023) may, among other factors, represent an element of distrust within students, most of whom indicated that they perform some kind of review of the results. As Jung *et al.* (2024) point out, we frequently encounter some crucial issues when using so-called Large Language Models (LLMs), such as the editing process, ethical decision-making, defining and declaring the use and verifying the results. This is because these steps directly impact the reliability, integrity and ethical implications of AI-generated content. The authors note, however, that the process of verifying information can be

considered the most important issue, especially when it comes to ensuring scientific standards and academic integrity.

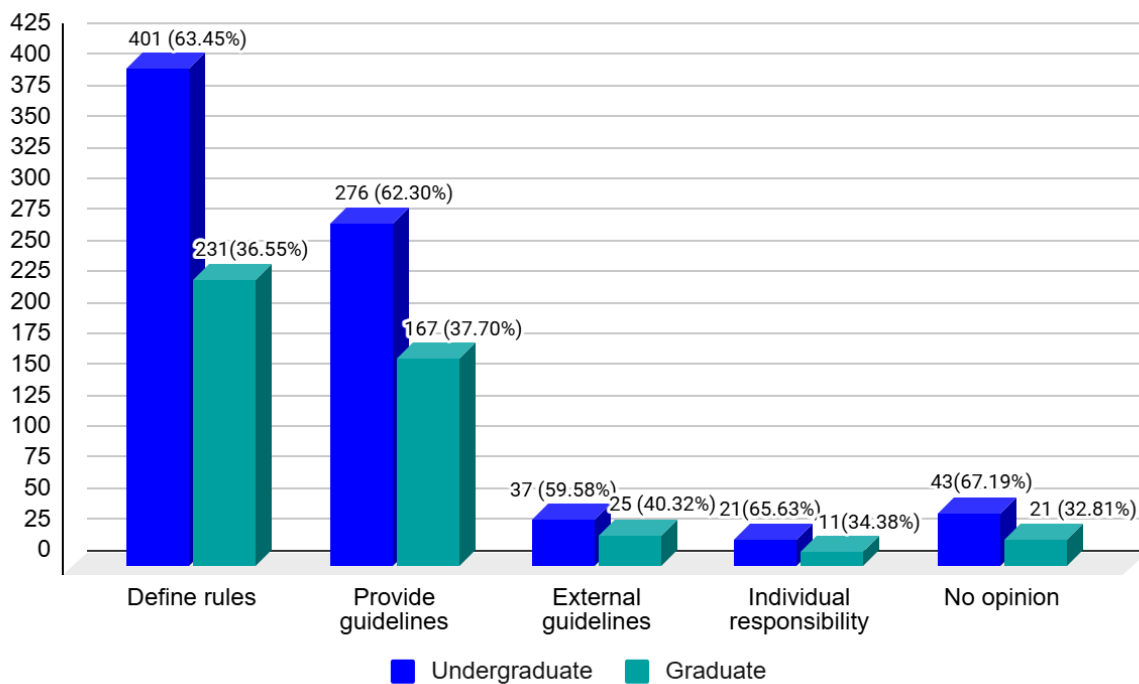
Beyond knowledge and technical rigor, to ensure the responsible use of AI tools, users must be aware of the risks associated with the inappropriate use of the tool, which may constitute ethical and moral misconduct. In this regard, sound institutional guidance can foster good academic practices. However, without institutional governance and regulatory policies, the improper and uncritical use of AI tools can compromise individual and collective rights (Paixão, 2025).

Furthermore, the inappropriate use of GenAI may also be associated with a lack of data literacy, which enables users to understand and critically evaluate data and information (Nascimento Silva, 2025). To avoid this scenario, it is essential to promote ongoing training initiatives, as well as to establish an effective dialogue with students. In this context, it is the teacher's responsibility to clearly explain the limits, possibilities and appropriate ways to use these tools. However, implementing these practices poses a significant challenge, since validating students' appropriate use is a complex process that is difficult to verify and, in many cases, practically impossible for the teacher to monitor in detail. Consequently, consistent AI education through training programs is essential, from elementary school through graduate school, along with professional retraining to meet new market demands (Brazil, 2025).

Given the institutional role in raising awareness about the use of AI in the academic community, Figure 8 illustrates students' expectations regarding the work of an AI committee at the university, showing the absolute value and its respective percentage. In this regard, to answer the question: "Are there differences between undergraduate and graduate students regarding expectations about the role of an AI committee at the university?", the analysis considered a sample of 1,233 students (778 undergraduates and 455 graduate students) who reported using AI for academic purposes. Participants could choose among the following options: a) UFMG needs to specify what is permitted and what is prohibited, as well as provide recommendations and best practices for the use of these technologies; b) UFMG should provide only recommendations and best practices for the use of these technologies, without creating rules and limitations; c) definitions should be established by institutions and bodies broader than the University. It is up to the Commission only to disseminate them; d) definitions regarding the use of AI are very specific and personal, and there is no need for a specific commission; and e) I do not know how to respond.

According to the data presented in Figure 8, the first option, related to the need for a clear delineation of what is permitted and what is prohibited, in addition to recommendations and best practices from UFMG, received the most votes from undergraduate students (401, 63.45%) and graduate students (231, 36.55%). Regarding the second option, which concerns only the provision of recommendations without the creation of defined rules, undergraduate students (276, 62.30%) showed a greater preference than graduate students (167, 37.70%). The third option, which indicates a greater inclination toward guidelines established by institutions and bodies broader than the University, was preferred by 37 (59.68%) undergraduate students and 25 (40.32%) graduate students. The option indicating opposition to the actions of a specific committee was chosen by 21 (65.63%) undergraduate students and 11 (34.38%) graduate students. Meanwhile, the “I don’t know” option was selected by 43 (67.19%) undergraduate students and 21 (32.81%) graduate students.

Figure 8 – Expectations regarding the Permanent AI Committee at UFMG



Source: Author’s own work, 2026.

Taking into account the most frequently selected response, it is evident that the majority of students are awaiting usage guidelines and clearer definitions.

The debate on the democratization of algorithmic systems (Mendonça; Filgueiras; Almeida, 2023) and, specifically, the regulation of AI has gained prominence in the current context due to the dynamic nature and rapid advancement of such technologies. In the realm

of higher education, advances in the use of AI tools point toward the creation of multidisciplinary ethics committees at universities, research institutions and funding agencies with the aim of promoting oversight of the tool's development and applications (Sampaio, 2024). According to Cavalcante *et al.* (2025), in this regard, the creation of institutional observatories to monitor potential impacts caused by AI can provide input for the creation of guidelines and policies adaptable to the institution's academic needs.

Recent documents, such as the Framework for the Development and Responsible Use of Artificial Intelligence in Education (Brazil, 2026a) and Ordinance No. 2,664/2026, which establishes the Policy on Integrity in Scientific Activity of the National Council for Scientific and Technological Development (CNPq) (Brazil, 2026b), represent important advances in establishing guidelines for the use of AI in teaching and scientific research. In this context, it is up to universities to adopt these guidelines and promote the necessary adaptations to their institutional realities, taking into account local specificities and the country's regional diversity. Furthermore, the implementation of investigation and sanction mechanisms in cases of violation is essential to ensure the effectiveness of these standards, as well as to provide institutional support to faculty members and strengthen the role of the universities themselves, prioritizing the ethical and responsible use of AI, without neglecting innovation.

## **5 Concluding Remarks**

This article aimed to map the use of AI by students (undergraduate and graduate), investigating profiles and types of use, tools and ethical perceptions and implications regarding its use at UFMG based on data collected through direct and institutional documentation in June 2025, regarding the consultation of the academic community conducted by UFMG's Permanent AI Commission. In this study of the University's students, it was possible to structure an analysis based on three dimensions: 1) usage profile; 2) tools and modes of use; and 3) perceptions and ethical implications regarding usage.

In relation to the first dimension of analysis, concerning the usage profile, it can be stated that the use of AI tools is widespread among students in general, as well as when undergraduate and graduate contexts are considered separately. However, the use of AI tools is more frequent in graduate programs, with a percentage of 84.10%, compared to 80, 45% among undergraduate students. Furthermore, a higher concentration of AI use was identified in the Humanities, according to the number of survey respondents, taking into account both undergraduate and graduate students. Considering the three fields of study, Humanities, Life

Sciences, and Exact Sciences, in the sample used in this study, graduate students lead in the use of AI tools.

In the second dimension of analysis, regarding the types of tools and modes of use, a preference among students for generative model chats was observed, both at the undergraduate and graduate levels. For the activities in which AI is used most frequently, the search for sources and links related to a specific question or topic of interest, along with the correction and revision of texts, stand out. Moreover, the use of AI tools in activities such as obtaining relevant data and information is more commonly prioritized among undergraduate students, while, at the graduate level, their use is prioritized in translation activities. The mapping of activities in which AI use is prioritized enabled a discussion of the information search and retrieval process, with greater adoption among undergraduate students.

The third dimension of analysis, regarding perceptions and ethical implications of use, points to a conscious stance on the part of students, such that the vast majority indicate they partially trust the results provided by AI tools, cross-checking the answers, with a slight advantage among undergraduate students. With respect to students' perceptions and expectations regarding the role of a committee tasked with addressing issues involving the use of AI at the University, both undergraduate and graduate students hold a favorable stance. In this context, students believe that the university should specify what is permitted or prohibited, as well as establish recommendations and best practices for the use of AI.

It is concluded that this study allowed not only for mapping the frequency or types of applications adopted, but also for observing practices and rethinking the boundaries that guide students' interaction with these technologies. In this context, the study can contribute to supporting informed discussions, in order to guide the development of institutional regulations and educational policies, aligned with responsible and critical technological advancement.

Although the results of this research engage with broader debates, they portray the reality of a specific institution, a context that must be considered by institutions when defining rules for the use of AI. Taking local and regional aspects into account is essential to ensure that the definitions are aligned with realities and are effective. In addition, based on students' experiences, the new configurations of the academic experience resulting from the emergence of these technologies are not limited to this group alone. Thus, the research can help researchers, faculty, staff and other stakeholders in the university context become aware of these new dynamics and rethink their actions, especially regarding teaching and learning. Besides, the study's results point to directions for the Permanent AI Commission, noting

students' desire for "clearer rules", which also impacts the need for faculty training, given all the challenges involved in navigating this new educational context.

As future work, it is important to emphasize the need for frequent studies that seek to deepen and contribute to the discussion on the use of AI tools in the academic setting, thereby fostering a greater understanding of the changes and challenges in this rapidly evolving context.

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## NOTES

### AUTHOR'S CONTRIBUTION

**Conception and drafting of the manuscript:** D. S. de Sá, V. C. R. Lima, P. Nascimento Silva

**Data collection:** D. S. de Sá, V. C. R. Lima, P. Nascimento Silva

**Data analysis:** D. S. de Sá, V. C. R. Lima, P. Nascimento Silva

**Discussion of the results:** D. S. de Sá, V. C. R. Lima, P. Nascimento Silva

**Review and approval:** P. Nascimento Silva

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The authors.

### TRANSLATOR

Roberta Ker Elias.

### RESPONSIBLE EDITOR

Patricia Nascimento Silva (<https://orcid.org/0000-0002-2405-8536>).

### SUPPORT TEAM

Daiane Campos Procópio (<https://orcid.org/0000-0002-9006-191X>)

Danielle Teixeira de Oliveira (<https://orcid.org/0000-0002-1958-9113>)

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