Revista InovaEduTech
INOVAÇÃO EM EDUCAÇÃO, ENGENHARIA E COMPUTAÇÃO

Revista InovaEduTech
Ibiá - MG
v.1 n.2 p.50-73
Jan/Dez

ISSN – 3085-6558

BETWEEN HUMAN AND ARTIFICIAL INTELLIGENCES*
A STUDY ON CO-INTELLIGENCE AND INFORMATIONAL CURATION

Arthur Marques de Oliveira [1]

Jordana Kunsler Zatti [2]

Greici Espindola Ferreira [3]

ABSTRACT

This research investigates how students enrolled in Information Technology programs at a higher education institution located in Cachoeirinha, Rio Grande do Sul, perceive and utilize practices of co-intelligence and informational curation in their academic routines. The approach combines quantitative and qualitative methods, applying an online questionnaire to 145 students. The theoretical framework discusses different levels of artificial intelligence and the foundations of critical pedagogy, situating curation as an essential form of mediation capable of transforming algorithmically generated information into ethical, contextualized, and meaningful knowledge. The results show frequent use of artificial intelligence tools for text synthesis, idea organization, and initial source verification, as well as the presence of co-authorship and informational curation practices—though often performed intuitively. A conceptual gap regarding co-intelligence was also identified, along with a limited understanding of the biases and constraints of these technologies. It is concluded that the consolidation of co-intelligence as an educational paradigm requires strengthening critical digital literacy, developing activities centered on reflective processes, and formulating institutional policies for the ethical and responsible use of such tools, in favor of a more critical, creative, and innovative education.

Keywords: Information Technology; Co-intelligence; Information Curation.

* submitted in 26/09/2025 - accepted in 29/10/2025

[1] Arthur Marques de Oliveira, Brasil – e-mail: arthurbp2@gmail.com
[2] Jordana Kunsler Zatti, Brasil – e-mail: jordana.zatti@gmail.com
[3] Greici Espindola Ferreira, Brasil – e-mail: greici.espindola@gmail.com

1 INTRODUCTION

In recent decades, artificial intelligence has consolidated itself as one of the main vectors of technological innovation, transforming paradigms in productive, academic, and social spheres. The advancement of cloud storage, deep neural networks, and the reduction of processing costs have expanded its capacity to analyze large volumes of data, reaching performance superior to that of humans in tasks such as medical diagnosis, pattern recognition, and decision-making.

More recently, the emergence of generative language models and hybrid architectures, which combine symbolic and statistical learning, has expanded AI's reach into creative and cognitive domains. Studies (Buruk, 2023; Trindade and Oliveira, 2024; Garcia, 2025) indicate that tools such as ChatGPT are already transforming research and academic writing practices, requiring new informational competencies and criticality in their use.

In this context, the concept of co-intelligence emerges, describing the collaboration between humans and intelligent systems, combining creativity, ethical judgment, and human context with the speed and scale of algorithmic processing (Liu; Fu, 2024; Jarrahi et al., 2022). Co-intelligence manifests itself in various fields (from health to education) as a sociotechnical paradigm that enhances human action and promotes more efficient and sustainable decisions.

This model also redefines informational curation by integrating humans and algorithms in the filtering and validation of content, requiring ethical governance and critical practices in the face of system biases (Halpin, 2025). Thus, understanding and applying co-intelligence implies forming individuals capable of acting with discernment, transforming automated data into contextualized and socially relevant knowledge.

Given this, this study investigates how Information Technology students at a higher education institution perceive and use co-intelligence and informational curation practices, analyzing their familiarity with the concept, their concrete practices, and the role attributed to AI in collaborative learning. The research seeks to contribute to critical digital education and to the ethical and reflective use of AI, in line with the principles of inclusion, equity, and educational

Revista InovaEduTech Ibiá - MG, v.1 n.2 p. 50-73, Jan/Dez – DOI 10.63103/8zdh3h10 e-ISSN 3085-6558

innovation.

2 THEORETICAL FRAMEWORK

Human intelligence, in a broad and interdisciplinary perspective, can be understood as a plural and multifaceted capacity that is expressed through creative and efficient adaptation to life's challenges. More than a fixed repertoire of skills measurable by tests, intelligence encompasses the integration of cognitive, emotional, social, and cultural processes, which enable individuals to interpret the world and act meaningfully within it (Miranda, 2002). From this perspective, there is no single definition or model that represents it in its entirety; each approach—whether psychological, educational, sociological, or anthropological—reveals particular aspects of an equally complex phenomenon (Roazzi; Souza, 2002).

The definition of AI has always been linked, since its beginnings, to aspirations that unite technical and philosophical aspects. Bolter (1984, p. 1, our translation) revisits Marvin Minsky's initial formulation, which describes AI as "the science of making machines perform things that would require intelligence if done by men." In developing this discussion, Bolter (1984) highlights that this original conception was not limited to the automation of repetitive tasks, but aimed to create systems that surpassed human cognition. At the time, many scientists viewed the brain as a "meat machine" whose logic could be replicated in electronic circuits, giving rise to a new form of intelligence on the planet.

The initial vision of completely replacing human beings with machines gradually gave way to a more pragmatic perspective: AI as a tool to support and enhance human abilities, instead of competing directly with them. The experience with symbolic systems and expert systems in the 1970s and 1980s showed that replicating human cognition in its entirety was much more complex than initially assumed (McCorduck et al., 1977; Nilsson, 2010). This led to a shift in direction: from projects seeking to simulate intelligence in its fullness to the development of specialized tools capable of solving specific problems more efficiently than humans in certain contexts (Russell; Norving, 2020).

In this way, contemporary AI can be defined as an interdisciplinary field that combines computer science, mathematics, statistics, and knowledge from various

Revista InovaEduTech Ibiá - MG, v.1 n.2 p. 50-73, Jan/Dez – DOI 10.63103/8zdh3h10 e-ISSN 3085-6558

areas to create systems capable of performing tasks traditionally associated with human intelligence. This view recognizes that, far from completely replacing human beings, AI functions as an extension of their capabilities, enhancing analyses, speeding up processes, and enabling approaches previously impossible (McCorduck et al., 1977; Russell; Norving, 2020). At the same time, it presents ethical, technical, and epistemological challenges that require critical reflection on its applications and limits (Nilsson, 2010).

To understand the evolution of artificial intelligence, the criterion of levels of capability is adopted, reflecting different degrees of autonomy, learning, and reasoning in machines. Based on this parameter, three categories are distinguished: Narrow AI, General AI, and Artificial Superintelligence. Narrow AI (or Weak AI) encompasses systems designed for specific tasks, such as translation, image classification, or voice recognition, without broad contextual understanding (Bergmann; Stryker, 2024). These are tools operated by a conscious mind, not autonomous entities. General AI (or Strong AI) corresponds to a hypothetical stage in which systems would be capable of performing any human cognitive task, learning and solving problems adaptively. However, there is no evidence of its practical existence—all current applications remain within the scope of Narrow AI. Artificial Superintelligence, in turn, would represent a higher level, capable of surpassing human cognition in all aspects—from creativity to strategic thinking—raising profound ethical and existential challenges (Raman et al., 2025).

In view of the definitions of intelligence and AI presented in the previous sections, it is time to define a central concept for this study: co-AI. The term, also referred to in international literature as hybrid intelligence or mutual augmentation, describes a paradigm in which human agents and artificial systems act synergistically, exploring their complementary capacities to solve complex problems and create knowledge (Liu; Fu, 2024; Jarrahi et al., 2022).

Unlike approaches that aim to replace human action with total automation, co-AI presupposes active collaboration between people and machines, combining attributes such as creativity, ethical judgment, and contextual understanding (humans) with the speed, scalability, and precision of algorithmic processing. In this sense, according to Liu and Fu (2024, p. 2, our translation), it is the “combination of human intelligence and AI systems, using their respective advantages to achieve more

efficient and accurate decision-making and sustainable work outcomes."

This collaborative model has direct implications in multiple fields, from healthcare, with AI-assisted diagnoses, to education, in which adaptive systems personalize learning paths according to the student's profile and progress. In the educational context, such systems not only offer content recommendations but also act as mediators of metacognitive processes, promoting reflection on one's own learning. From this perspective, AI ceases to be a mere "automated tutor" to become a co-learning agent, capable of dialoguing with the student, proposing personalized challenges, and expanding the repertoire of teaching resources available to educators.

Halpin (2025) adds that this integration is not only technical but epistemological: the knowledge produced in the context of co-AI emerges from sociotechnical networks in which the final result cannot be attributed exclusively to humans or machines, but to the continuous interaction between both. This means that learning, when mediated by co-AI, becomes the result of an ecosystem of joint construction, in which data, algorithms, and human competencies intertwine to create innovative and socially contextualized solutions.

From this perspective, co-AI also differs from traditional models of collective intelligence by structurally incorporating the role of algorithmic agents in decision-making and creative processes. Instead of considering AI merely as an instrumental tool, it is understood to participate as a "cognitive partner" (Jarrahi et al., 2022), influencing and being influenced by the human context in which it is embedded. In education, this implies rethinking methodologies, assessment practices, and even curricular organization so that the potential for human–machine collaboration can be effectively explored in favor of critical and reflective learning.

Thus, understanding co-AI involves recognizing that value lies not only in the sum of the parts (human + machine) but in the dynamic interdependence that emerges from this collaboration. This perspective is especially relevant in higher education, where co-AI can support everything from advanced content curation to the development of interdisciplinary projects that simulate real professional scenarios. Such an approach, however, requires critical digital training for both instructors and students, capable of integrating technical, ethical, and pedagogical aspects in the use of these technologies.

Another central aspect is the capacity of co-AI to enhance formative and

summative assessment practices. By analyzing performance and participation patterns, hybrid systems can provide rapid and personalized feedback, allowing educators to identify learning gaps in real time. This favors more precise and equitable pedagogical interventions, especially in large classes or in hybrid and distance learning modalities. In this sense, co-AI can contribute to achieving the goals of SDG 4 (Quality Education), expanding access and personalization of teaching without compromising academic rigor.

Finally, the use of co-AI in educational environments must be grounded in principles of transparency, ethics, and inclusion. This implies making system decision criteria explicit, ensuring that the data used respect user privacy, and preventing biases that may reinforce educational inequalities. By adopting such measures, an ecosystem is created in which humans and machines not only collaborate but do so responsibly, fostering an academic culture that values both critical thinking and technological innovation.

Curation, in its origin, refers to the act of caring for and safeguarding something. In the digital field, the concept broadens to encompass practices of management, preservation, and valorization of data and content throughout their life cycle, ensuring access, use, and reuse in different contexts (Costa; Araújo, 2020). In a society marked by information overload and the diversity of digital formats, curation is configured as a critical and interdisciplinary practice aimed at constructing meaning and transforming information into significant knowledge.

3 METHODOLOGY

This research fits as an applied study, as it is not limited to the production of theoretical knowledge, seeking to offer practical solutions to specific problems related to the perception and use of artificial co-intelligence and informational curation in the educational and technological context. It aims to generate direct impact on higher education — especially among students of Centro Universitário Cesuca — while contributing to the theoretical consolidation of an emerging field (Paiva, 2019).

A quantitative–qualitative approach was adopted, aligned with the logic of mixed methods (Creswell, 2007; Creswell; Clark, 2007), articulating the objectivity of statistical data with the interpretive depth of qualitative analysis (Bogdan; Biklen,

1994). The study integrates closed-ended questions, which enabled statistical analyses and graphical representations, and open-ended questions, aimed at identifying emerging categories and meanings attributed by participants to the use of AI and co-AI. Regarding its objectives, the research is exploratory, as it seeks familiarity with still incipient concepts, and descriptive, as it reports perceptions, curation practices, and meanings associated with AI in the process of collaborative learning.

Data were collected in the first semester of 2025 through an online questionnaire (Google Forms) composed of 17 questions, divided between sociodemographic data and practices related to AI. A total of 145 students from the Analysis and Systems Development and Computer Science programs at Cesuca participated, selected by accessibility and convenience, with voluntary and anonymous participation. The instrument was based on specialized literature (Bozal, 2006; Morales, 2000; Sulbarán, 2009) and used a Likert Scale to measure levels of agreement, complemented by open-ended questions to enrich the interpretive analysis.

Data analysis was conducted in two stages: (a) descriptive statistics and graphical representation of the closed-ended responses; (b) qualitative categorical analysis of the open-ended responses, identifying perceptions and meanings attributed to co-AI and informational curation. This methodological integration made it possible to construct a broad and consistent understanding of the practices investigated, reconciling quantitative evidence with qualitative interpretations. Of the total questionnaires distributed, a final sample of N = 145 respondents was obtained, considered sufficient for the purposes of this study. Data analysis was structured in two stages: (a) examination of sociodemographic information based on questions 1 to 7; and (b) analysis of the remaining questions according to their relevance to the scope of the research (questions 8 to 17). The questions included in the questionnaire were as follows:

Table 1: Questionnaire Questions.

Nature	Questtion	Content
Sociodemographic	1	What is your program?
	2	In which semester are you currently enrolled?
	3	What is your age?
	4	You identify as: (gender identity options)
	5	Do you currently work?
	6	In which city of RS do you reside?
Specific	7	Have you participated in any course, workshop, or class that addressed the topic of AI?
	8	On a scale from 0 to 5, what is your level of familiarity with the concept of AI?
	9	Have you heard of the term co-AI?
	10	If you answered "yes," how do you understand the term co-AI?
	11	Mark below the AI-based tools you have already used.
	12	How frequently do you use AI tools?
	13	When you search for information on the internet, which of these actions do you adopt most frequently?
	14	Have you used any AI tool to organize or verify information?
	15	When you used an AI tool to curate or organize information, what was your main objective?
	16	Overall, how do you evaluate the use of AI in the academic research process?

Source: prepared by the authors (2025).

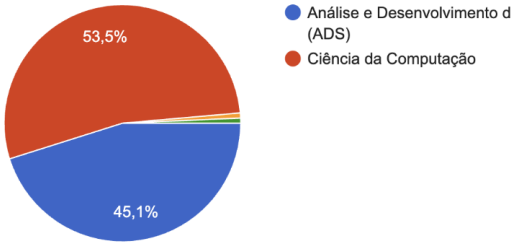
It is important to highlight that this is a convenience sample which, according to Lakatos and Marconi (2017), is composed of the elements most readily available to the researcher, being widely used in exploratory studies due to the speed and cost-effectiveness it provides. The sample size was conditioned by the voluntary participation of the students invited to answer the questionnaire, administered via Google Forms, which naturally resulted in the non-return of part of the forms distributed. Despite the limitations inherent to the lack of resources

to broaden the scope of the research and the restriction related to the institutional profile of the participants, the sample can be considered adequate and representative in relation to the object investigated, allowing for a consistent analysis of the perceptions, curation practices, and uses attributed to AI and to the concept of co-AI in the academic context.

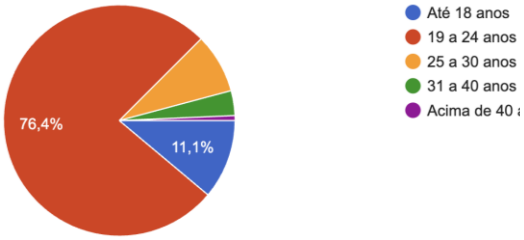
4 ANALYSES AND RESULTS

The results of the questionnaire are presented below, accompanied by their respective analysis:

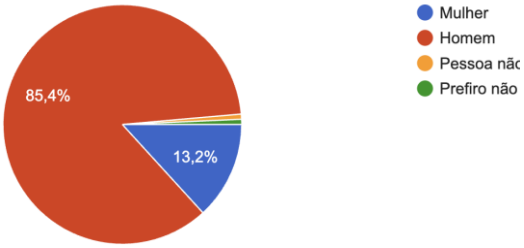
Q.1 – What is your program?



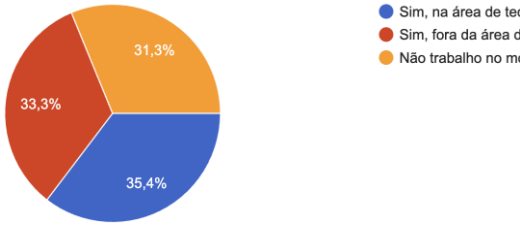
Q.3 – What is your age?



Q.4 – How do you identify yourself?



Q.5 – Do you currently work?

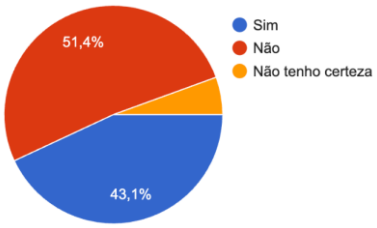


The data reveal that the sample is composed almost entirely of students enrolled in the Analysis and Systems Development (ASD) and Computer Science (CS) programs, which together represent more than 98% of the participants, demonstrating the focus of the investigation on fields directly associated with the technological area. The analysis of the semester in which the students are currently enrolled shows a relatively balanced distribution, with emphasis on the 4th semester (27.8%) and the 2nd semester (23.6%), indicating that the research includes students in both the early and intermediate stages of their academic trajectory. From an age perspective, the predominance lies in the 19 to 24 age group (76.4%), followed by students aged 18 or younger (11.1%), configuring a predominantly young audience, a characteristic

coherent with the period of entry and consolidation in undergraduate studies.

Regarding gender variables, there is a predominance of men (85.4%), followed by women (13.2%) and, in smaller proportion, non-binary individuals, raising relevant reflections about gender representativeness and diversity in the field of technology, which has historically been marked by inequality in this regard. Concerning occupational status, a relatively balanced distribution is observed: 31.3% work professionally in the technology area, 33.3% work in other sectors, and 35.4% are not currently employed, indicating different socioeconomic realities coexisting within the student group investigated. Finally, regarding geographic location, the concentration of residents in the Metropolitan Region of Porto Alegre stands out, particularly in municipalities such as Canoas, Cachoeirinha, and Alvorada, revealing a regional centrality that must be considered in the analysis of the results, given the strategic role of this area in training professionals for the technological sector.

Q.7 - Have you taken any course, workshop, or class that addressed the topic of AI?

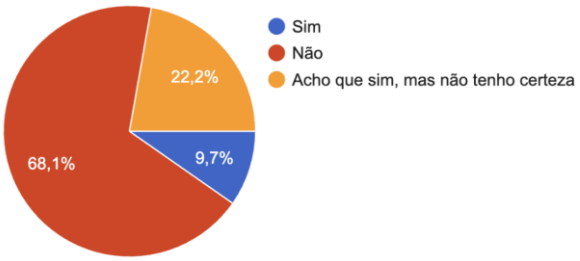


Q.8 - On a scale from 0 to 5, what is your level of familiarity with the concept of AI?

The results indicate that 51.4% of the students have participated in courses, workshops, or classes involving AI, while 43.1% had never had prior contact with the topic. This shows that, although the majority have some initial experience with the subject, a significant portion still lacks structured training in the area. Regarding the self-declared level of familiarity, it is observed that 69.4% state that they know what AI is, but have never used the tools; in contrast, only 17.4% have never heard of the concept, and a small fraction (about 10%) claim to use AI frequently combined with a reasonable level of understanding. These data reveal that knowledge about AI is still predominantly situated on a superficial conceptual level, with limited practical and technical appropriation.

Revista InovaEduTech Ibiá - MG, v.1 n.2 p. 50-73, Jan/Dez – DOI 10.63103/8zdh3h10 e-ISSN 3085-6558

Q.9 - Have you heard of the term artificial co-intelligence?



The data reveal that the concept of artificial co-intelligence (Co-AI) is still little known among the students investigated: 68.1% stated that they had never heard the term, while 22.2% were unsure, and only 9.7% indicated that they knew it. This result indicates a significant conceptual gap, considering that Co-AI has been discussed in academic and professional contexts as an emerging approach capable of overcoming the logic of human–machine substitution, promoting instead collaborative forms of problem-solving and learning.

The open responses provided by the few participants who claimed to know the term show fragmented and sometimes imprecise understandings, varying from simplistic interpretations (“intelligence collaboration”) to explicit statements of unfamiliarity (“I answered no,” “I don’t know,” “it’s cool”). This diversity of perceptions indicates that Co-AI has not yet been consolidated as a structured theoretical or practical reference in the students’ repertoire, functioning more as a vague notion than as an operative concept.

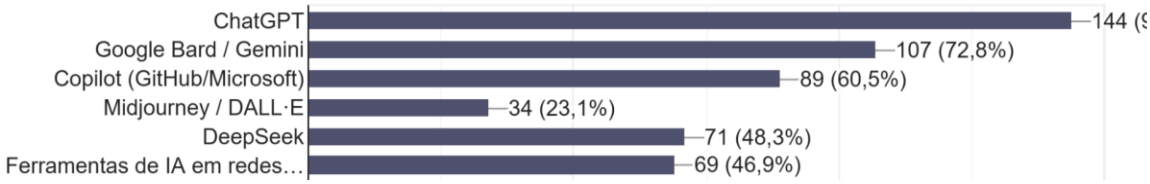
From a theoretical perspective, authors such as Pierre Lévy (2015) have already discussed the notion of collective intelligence, understood as the capacity of human groups to share knowledge and produce networked information. The idea of artificial co-intelligence dialogues with this perspective, as it presupposes an articulation between human, collective, and artificial intelligence, in a model in which technology does not replace but expands the potential for analysis, creativity, and decision-making (Vicari, 2021; Bacich, 2025). However, the lack of conceptual clarity among the students reinforces the need for systematic training that incorporates such perspectives into academic curricula and pedagogical practices.

Furthermore, the fact that more than two-thirds of respondents are unfamiliar with the term suggests that, even in programs directly linked to the technological area, the hegemonic discourse on AI is still centered on instrumental applications

(automation tools, text and image generation, assisted programming), without advancing toward more critical, ethical, and collaborative dimensions that Co-AI proposes. This finding opens space for reflections on the role of universities in mediating this process, broadening the understanding of AI not only as a technical resource but as a sociotechnical phenomenon that reconfigures teaching, research, and work practices.

In this sense, the inclusion of the Co-AI topic in academic and curricular activities may contribute to shifting students from a merely utilitarian perspective to a broader understanding of its epistemological and social implications. As highlighted by Hess and Swartz (2023), “the uncritical integration of AI may reinforce existing inequalities, rather than promote equity” (p. 350), which also applies to Co-AI: if not discussed in its complexity, it risks becoming a slogan or empty concept, without real formative impact.

Q.11 - Mark below the AI-based tools you have used:

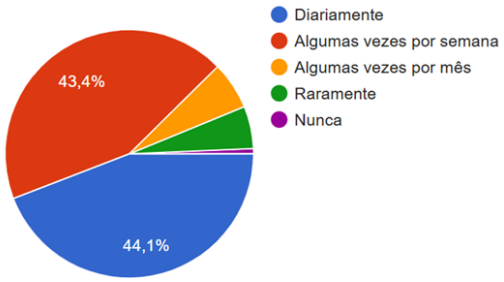


The data regarding the artificial intelligence tools used by the students reveal a scenario marked by the predominance of resources widely employed in academic and technological routines. ChatGPT emerges as the absolutely dominant tool, mentioned by 98% of respondents, confirming its central role in the students’ instrumental repertoire. Following this, significant use of Google Bard/Gemini (72.8%) and Microsoft/GitHub’s Copilot (60.5%) is observed, the latter being extensively used by students with greater familiarity and engagement in programming practices. In contrast to this dominant trend, the presence of DeepSeek is noted, a tool that recently saw a surge in popularity, with a mention rate of 48.3%.

Additionally, there are expressive references to AI tools embedded in social networks, such as image filters, automatic content summarizers, and caption generators, cited by 46.9% of participants. This last data point shows that students’ appropriation of AI transcends strictly academic uses, also permeating personal and entertainment spheres.

With significantly lower frequency, image-generation tools such as Midjourney and DALL·E (23.1%) are mentioned, as well as several emerging tools—e.g., BlackBox, muso.ai, Galaxy AI, Grok, Manus AI, Cursor, and Claude AI—each with rates below 1%. Although residual, this set of citations indicates that some students seek to explore resources beyond the textual field, expanding their interaction with multimodal generative technologies.

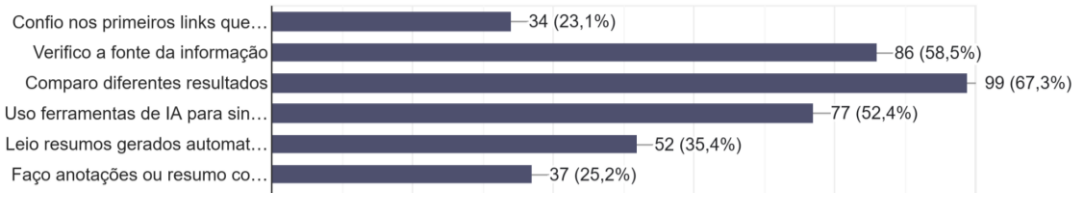
Q.12 - How often do you use AI tools?



The data regarding the frequency of use of artificial intelligence tools indicate that a significant portion of students maintains constant contact with these technologies. The most expressive group is the one using AI daily, representing 44.1% of the sample, demonstrating the integration of these tools into academic, professional, and personal routines. Next, 43.4% reported using them a few times per week, confirming that, for most students, interaction with AI already occurs regularly and recurrently.

In contrast, 5.4% use AI only rarely, and 6.1% a few times per month, whereas only 0.7% stated they never use it. These numbers show that, although frequency varies among respondents, there is a predominance of continuous use, with more than 85% of the sample reporting that they use artificial intelligence tools at least a few times per week.

Q.13 - When you search for information on the internet, which of these actions do you adopt most frequently? (Select more than one if desired)

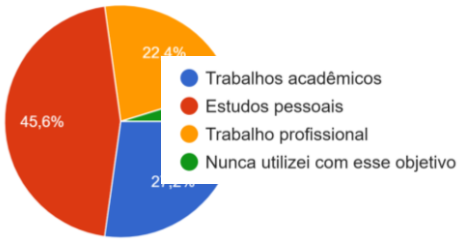


The data obtained show that most students adopt critical or reflective behaviors

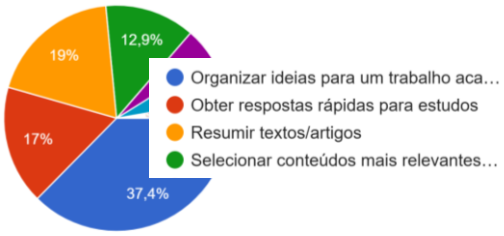
when searching for information online, although a portion still relies on less rigorous strategies. The most frequently mentioned behavior was comparing different results found, a practice adopted by 67.3% of respondents. Next, 58.5% stated that they check the source of information before using it, demonstrating concern for credibility and reliability.

Additionally, 52.4% reported using AI tools to summarize content, while 35.4% often read summaries automatically generated by AI, indicating an increasing integration of these technologies into their search and selection routines. Meanwhile, 25.2% described the habit of taking notes or writing summaries based on what they find, showing an active effort to organize and appropriate knowledge. Finally, 23.1% stated that they trust the first links that appear in search engines, revealing a more immediate practice that may limit access to more diverse or in-depth content.

Q.14 - Have you used any AI tool to organize or verify information for:



Q.15 - When you used an AI tool to curate or organize information, what was your main objective?

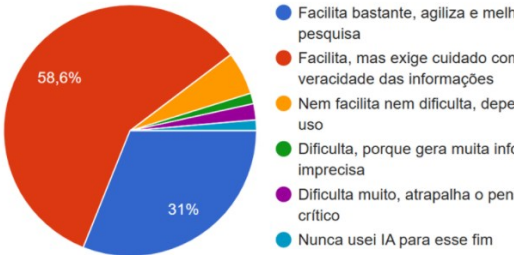


The responses to these two questions reveal that students not only use artificial intelligence tools frequently, but also assign to them functions directly related to curation and information organization. When asked about the contexts in which they have used AI for such purposes, three major areas stood out: personal studies (45.6%), academic work (27.2%), and professional activities (22.4%). These data show that, although the use is strongly associated with individual learning, there is also a significant movement toward incorporating AI into formal academic tasks and work-related demands, expanding the reach of the technology across different spheres of students' lives.

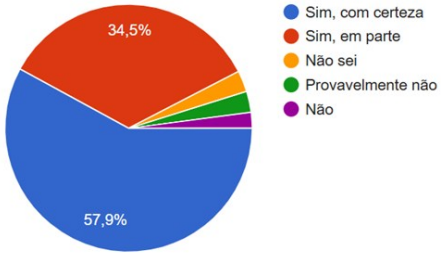
Regarding the purposes guiding this use, students pointed to diverse objectives that converge toward the pursuit of efficiency and practicality. The most cited purpose was organizing ideas for an academic assignment (37.4%), followed by summarizing texts and articles (19%) and obtaining quick answers for studying (17%). Other purposes

included selecting the most relevant content from multiple sources (12.9%) and creating presentations or visual materials (4.8%). This distribution shows that, in practice, students use AI as an ally in managing informational overload, seeking to save time, better structure their assignments, and optimize academic production processes.

Q.16 - Overall, how do you evaluate the use of AI in the academic research process?



Q.17 - Do you believe AI can help develop critical thinking if used with proper guidance?



The data obtained reveal that most students view artificial intelligence as an ally in the academic research process, although its use requires discernment. For 58.6% of participants, AI represents a resource that significantly accelerates and improves research stages. Another 31% recognize its usefulness but emphasize the need for caution regarding the reliability of the information generated. Only a minority stated that AI does not interfere, hinders, or has not been used for this purpose. These results indicate broad acceptance of the technology, accompanied by a reflective and critical stance toward its use. Thus, it becomes evident that the effectiveness of artificial intelligence in academic research is intrinsically linked to human mediation, particularly in the curation, interpretation, and validation of the data obtained.

Regarding AI's contribution to the development of critical thinking, 57.9% of students believe the technology can play a decisive role in this process, while 34.5% consider it partially useful in this aspect. Only a small minority does not recognize this potential. This perception suggests that, far from representing a threat to critical thinking, AI can, in fact, stimulate it—provided it is embedded within a formative context in which human reflection, judgment, and analysis remain central elements.

Revista InovaEduTech Ibiá - MG, v.1 n.2 p. 50-73, Jan/Dez – DOI 10.63103/8zdh3h10 e-ISSN 3085-6558

5 DISCUSSION

The interpretation of the empirical data, grounded in the theoretical framework adopted, reveals that students' understanding of artificial intelligence still remains, for the most part, at a superficial conceptual level. Although 69.4% state that they know what AI is, most do not have structured practical experience, which demonstrates an incipient appropriation of the potentials and limits of this technology. Regarding artificial co-intelligence (Co-AI), the data show a significant conceptual gap: 68.1% of participants had never heard of the term, while only 9.7% reported being familiar with it. This finding is particularly relevant given the potential of Co-AI to break with the logic of human–machine substitution, proposing instead collaborative forms of problem-solving and knowledge construction. The lack of familiarity with this concept points to the urgency of inserting it into academic and curricular discussions, especially in higher education, as a strategy to form critical subjects prepared to deal with the challenges of digital culture.

Another noteworthy aspect concerns informational curation practices. The data indicate that most students adopt critical and reflective stances, such as comparing different sources (67.3%) and verifying the credibility of information (58.5%). Such behaviors align with the notion of curation mediated by Co-AI, in which humans and machines collaborate in filtering, organizing, and validating content. This perspective dialogues with Freirean pedagogy, which values criticality and autonomy as pillars of the educational process. However, the presence of more immediate practices, such as relying on the first search links available (23.1%), reveals ongoing challenges in consolidating a more consistent investigative posture.

Students' perception of AI's contribution to the development of critical thinking is also relevant: 57.9% consider it decisive in this process, and 34.5% see it as partially useful. These numbers suggest that, when situated in formative contexts grounded in dialogue and problem-posing, AI can take on a significant pedagogical role, expanding the capacity for reflection, analysis, and critical judgment.

More broadly, the results point to a discrepancy between the theoretical conception of Co-AI and students' actual practices. While the literature describes it as a collaborative process in which humans and algorithmic systems act as cognitive partners in complex tasks, the reported use is limited to instrumental functions such as

quick searches and automatic summaries. Thus, although 44.1% use AI tools daily, this contact does not translate into co-creative experiences or reflections on the metacognitive processes involved.

This scenario becomes strategically relevant for higher education. If, on one hand, students recognize the importance of AI for critical thinking and information mediation, on the other, the lack of structured understanding of Co-AI limits its integration as an effective learning agent. Such a gap reinforces the need for pedagogical practices that encourage more sophisticated, reflective, and collaborative uses of technology, overcoming merely instrumental and utilitarian views.

In this context, critical digital education emerges as an essential condition. More than ensuring access to tools, it involves developing technical, ethical, and pedagogical competencies that foster creative and conscious interactions between humans and AI. Only in this way will it be possible to bring everyday practice closer to the theoretical conception of Co-AI, exploring its potential for personalized learning, qualified content curation, and the construction of formative trajectories aligned with the demands of contemporary digital culture.

In summary, the analysis shows that the effective integration of Co-AI in higher education is still a horizon to be achieved. The use of AI is already present and consolidated in students' daily routines, but its exploration remains superficial. Overcoming this mismatch will require institutional and pedagogical efforts capable of promoting Co-AI as an educational paradigm, supporting both efficiency and criticality, as well as the depth of the learning experience.

6 FINAL CONSIDERATIONS

This study revealed that Co-AI already manifests itself as a concrete reality in students' daily lives, even if frequently mobilized in an instrumental and minimally reflective way. The evidence points to an intense use of AI-based tools, especially for synthesis and organization of information, but also to a conceptual gap regarding Co-AI as a collaborative paradigm between humans and machines. This discrepancy reinforces the urgency of educationally rethinking this new condition: how to train individuals capable of co-producing knowledge with AI while maintaining criticality and intellectual autonomy as founding principles.

Revista InovaEduTech Ibiá - MG, v.1 n.2 p. 50-73, Jan/Dez – DOI 10.63103/8zdh3h10 e-ISSN 3085-6558

This study revealed that Co-AI already manifests itself as a concrete reality in students' daily lives, even if frequently mobilized in an instrumental and minimally reflective way. The evidence points to an intense use of AI-based tools, especially for synthesis and organization of information, but also to a conceptual gap regarding Co-AI as a collaborative paradigm between humans and machines. This discrepancy reinforces the urgency of educationally rethinking this new condition: how to train individuals capable of co-producing knowledge with AI while maintaining criticality and intellectual autonomy as founding principles.

Co-AI, in this context, should not be understood as mere technological support, but as a space for informational co-authorship, where the human plays an active role as curator, selecting, filtering, validating, and reinterpreting what is produced by generative systems. Curation, therefore, ceases to be an accessory stage and becomes the epistemic core of this interaction: it is what transforms automated data into meaningful, ethical, and contextualized knowledge. In this sense, Co-AI must be understood as an emerging methodology that articulates algorithmic generation and human judgment in a continuous cycle of production, evaluation, and re-signification of information. Its educational value does not lie in automation, but in the possibility of thinking with AI, exercising discernment, ethics, and authorship. Curation thus acts as a formative device that ensures the presence of subjectivity, critique, and meaning in the relationship with increasingly autonomous technologies.

In summary, informational co-authorship through curation represents the pedagogical key for an education that does not reject AI, but reinserts it from a humanizing perspective. Educating for Co-AI means educating for dialogue between intelligences (human and artificial), promoting a way of learning and teaching that combines scientific rigor, ethical awareness, and intellectual protagonism. This is the task imposed on today's educators: teaching how to think with AI, and not in its place, ensuring that technology expands—rather than replaces—the individual's creative potential.

The experts interviewed highlighted the need for clearer regulations for the use of sensitive data and the inclusion of accessible technologies for marginalized populations. It was also observed that integration with artificial intelligence improves the accuracy and usefulness of devices, but increases risks related to data security,

requiring robust protection mechanisms.

Revista InovaEduTech Ibiá - MG, v.1 n.2 p. 50-73, Jan/Dez – DOI 10.63103/8zdh3h10 e-ISSN 3085-6558

Revista InovaEduTech Ibiá - MG, v.1 n.2 p. 50-73, Jan/Dez – DOI 10.63103/8zdh3h10 e-ISSN 3085-6558

BIBLIOGRAPHIC REFERENCE

ALBUQUERQUE, Rômulo; AZEVEDO, Glícia; MENDONÇA, Márcia. Curadoria humana na produção de recursos educacionais digitais com inteligência artificial generativa. Revista de Estudos de Cultura, São Cristóvão, v. 11, n. 27, p. 143–162, jan./jun. 2025. Disponível em: https://periodicos.ufs.br/revec/article/view/22742/17291. Acesso em: 16 ago. 2025.

ANDRADE, Eduardo Augusto de. Em busca da estabilização numa rede sociotécnica: a intervenção de robôs conversacionais (bots) em decisões comerciais. 2022. Tese (Doutorado em Ciência da Informação) – Programa de Pós-Graduação em Ciência da Informação, Universidade Federal de Minas Gerais, Belo Horizonte, 2022. Disponível em: https://repositorio.ufmg.br/handle/1843/49125 . Acesso em 11 jul. 2025.

BARTELLE, Liane Broilo; GUEDES, Aníbal Lopes. Reflexões de Pierre Lévy sobre a IA. Revista Brasileira em Tecnologia da Informação, Campinas, v. 4, n. 2, p. 1–48, jul./dez. 2022.

BARTELLE, Liane Broilo; GUEDES, Aníbal Lopes. Reflexões de Pierre Lévy sobre a IA. Revista Brasileira em Tecnologia da Informação, Campinas, v. 4, n. 2, p. 1–48, jul./dez. 2022.

BERGMANN, Dave; STRYKER, Cole. What is artificial general intelligence (AGI)? 17 set. 2024. Disponível em: https://www.ibm.com/think/topics/artificial-general-intelligence#From+narrow+AI+to+general+AI. Acesso em: 30 jul. 2025.

BOLTER, J. David. Artificial intelligence. Daedalus, Jstor, [s.l], v. 113, n. 3, p. 1-18, 1984. Disponível em: http://www.jstor.org/stable/20024925. Acesso em: 9 ago. 2025.

BURUK, Oğuz 'Oz'. Academic Writing with GPT-3.5: reflections on practices, efficacy and transparency. arXiv preprint arXiv:2304.11079 [cs.CL], 12 fev. 2023. Disponível em: https://arxiv.org/abs/2304.11079. Acesso em: 11 jul. 2025.

COSTA, Luani Messias da; ARAÚJO, Alessandra dos Santos. Perspectiva atual da curadoria digital na Ciência da Informação. Disponível em: .https://ler.letras.up.pt/uploads/ficheiros/20111.pdf. Acesso em: 16 ago. 2025.

CUI, Hao; YASSERI, Taha. AI-enhanced Collective Intelligence: the state of the art and prospects. In: ACM Collective Intelligence Conference, Boston, MA, USA, 26–29 Jun. 2024. New York: ACM, 2024. 27 p. https://doi.org/10.1016/j.patter.2024.101074. Disponível em: https://www.sciencedirect.com/science/article/pii/S2666389924002332. Acesso em 11 jul. 2025.

FERREIRA, C. da C. et al. (org.). Educação e inteligência artificial: tecnologias, desafios e possibilidades. Formiga: Editora Ópera, 2025. Disponível em: https://educapes.capes.gov.br/bitstream/capes/921716/4/Educa%C3%A7%C3%A3o%20e%20intelig%C3%AAncia%20artificial.pdf. Acesso em: 30 ago. 2025.

FILGUEIRAS, Fernando; MENDONÇA, Ricardo Fabrino; ALMEIDA, Virgílio. IA e democracia: humanos, máquinas e instituições algorítmicas. Estudos Avançados, São

Paulo, v. 39, n. 113, e39113075, 2025. Disponível em: https://doi.org/10.1590/s0103-4014.202539113.005. Acesso em: 17 jul. 2025.

FREIRE, Paulo. Educação como prática da liberdade. 22. ed. São Paulo: Paz e Terra, 1983.

FREIRE, Paulo. A importância do ato de ler: em três artigos que se completam. 23. ed. São Paulo: Autores Associados; Cortez, 1989. (Coleção Polêmicas do Nosso Tempo; v. 4).

GARCÍA, Manuel B. ChatGPT as an Academic Writing Tool: factors influencing researchers' intention to write manuscripts using generative artificial intelligence. ssrn electronic journal, 2025. Disponível em: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5242823. Acesso em: 11 jul. 2025.

HALPIN, Harry. Artificial intelligence versus collective intelligence. AI & Society, Cham, 2025. DOI: 10.1007/s00146-025-02240-x.

HALPIN, Harry. Artificial intelligence versus collective intelligence. AI & Society, Cham, p. 1–16, mar. 2025. Disponível em: https://link.springer.com/article/10.1007/s00146-025-02240-x. Acesso em: 11 jul. 2025.

JARRAHI, Mohammad Hossein; LUTZ, Christoph; NEWLANDS, Gemma. Artificial intelligence, human intelligence and hybrid intelligence based on mutual augmentation. Big Data & Society, Londres, v. 9, n. 2, p. 20539517221142824, dez. 2022. Disponível em: https://journals.sagepub.com/doi/10.1177/20539517221142824. Acesso em: 11 jul. 2025.

JARRAHI, Mohammad Hossein; LUTZ, Christoph; NEWLANDS, Gemma. Artificial intelligence, human intelligence and hybrid intelligence based on mutual augmentation. Big Data & Society, London, v. 9, n. 2, p. 1-6, jul./dez. 2022. DOI: 10.1177/20539517221142824.

LIU, Yuqi; FU, Zhiyong. Hybrid intelligence: design for sustainable multiverse via integrative cognitive creation model through human–computer collaboration. Applied Sciences, Basel, v. 14, n. 11, p. 4662, 2024. DOI: 10.3390/app14114662.

MCCORDUCK, Pamela; MINSKY, Marvin; SELFRIDGE, Oliver G.; SIMON, Herbert A. History of artificial intelligence. In: INTERNATIONAL JOINT CONFERENCE ON ARTIFICIAL INTELLIGENCE, 5., Anais...1977. p. 951-954. Disponível em: https://www.ijcai.org/Proceedings/77-2/Papers/083.pdf. Acesso em: 09 ago. 2025.

MIRANDA, Maria José. A inteligência humana: contornos da pesquisa. Paidéia (Ribeirão Preto), Ribeirão Preto, v. 12, n. 23, p. 19-29, 2002. Disponível em: https://www.scielo.br/j/paideia/a/YzMx8xCVBgY66WQrvLXHCns. Acesso em: 09 ago. 2025.

NILSSON, Nils J. The quest for artificial intelligence: a history of ideas and achievements. Cambridge: Cambridge University Press, 2010. Disponível em: https://assets.cambridge.org/97805211/22931/frontmatter/9780521122931_frontmatter

.pdf. Acesso em: 09 ago. 2025.

OLIVEIRA, Arthur Marques de; ARAÚJO, Arthur Silva; COSTA, Patrícia da Silva Campelo Barcellos; TORRES, Vladimir Stolzenberg. www.Educação e Inteligência Artificial.com: um estudo sobre a aplicação de IA em perspectiva docente. Informática na Educação: teoria & prática, Porto Alegre, v. 26, n. 2, p. 2–12, 2024. Disponível em: https://seer.ufrgs.br/index.php/InfEducTeoriaPratica/article/view/136448. Acesso em: 12 jun. 2025.

PAZ, Daiane Padula; PAGLIOSA CORONA, Hieda Maria. A teoria ator-rede e as tecnologias educacionais: reflexões sobre a construção coletiva da aprendizagem. Revista Tecnologias & Sociedade, Curitiba, v. 17, n. 49, p. 16-31, out./dez. 2021. Disponível em: https://periodicos.utfpr.edu.br/rts/article/view/13852. Acesso em: 11 jul. 2025.

PESCE, L.; BRUNO, A. R.; HESSEL, A. M. D. G. Paulo Freire e cultura digital: contribuições para as docências decoloniais e os processos (trans)formativos. Revista e-Curriculum, São Paulo, v. 21, p. 1-24, 2023. Disponível em: https://revistas.pucsp.br/index.php/curriculum/article/view/61429/43287. Acesso em: 30 ago. 2025.

RAMAN, Raghu; KOWALSKI, Robin; ACHUTHAN, Krishnashree; IYER, Akshay; NEDUNGADI, Prema. Navigating artificial general intelligence development: societal, technological, ethical, and brain-inspired pathways. Scientific Reports, [s.l.], v. 15, n. 8443, 2025. Disponível em: https://pubmed.ncbi.nlm.nih.gov/40069265/. Acesso em: 16 ago. 2025.

ROAZZI, Antonio; SOUZA, Bruno Campello de. Repensando a inteligência. Paidéia (Ribeirão Preto), Ribeirão Preto, v. 12, n. 23, p. 31-55, 2002. Disponível em: https://www.scielo.br/j/paideia/a/BpmxTfgcLhgc8zRrbZ3CkDk. Acesso em: 09 ago. 2025.

RUSSELL, Stuart; NORVIG, Peter. Artificial intelligence: a modern approach. 4. ed. Upper Saddle River: Prentice Hall, 2020. Disponível em: https://people.engr.tamu.edu/guni/csce625/slides/AI.pdf. Acesso em: 09 ago. 2025.

SANTO, E. do E.; SALES, M. V. S.; OTTONI, A. L. C. Inteligência artificial generativa na educação superior: aportes para uma prática pedagógica crítico-reflexiva. Revista Interinstitucional Artes de Educar, Rio de Janeiro, v. 11, n. 1, p. 23-40, 2024. Disponível em: https://www.e-publicacoes.uerj.br/riae/article/view/84894/53282. Acesso em: 30 ago. 2025.

TEIXEIRA, Simone de Mattos Martins et al. O professor como curador de ferramentas digitais nas escolhas conscientes e críticas. Revista Ibero-Americana de Humanidades, Ciências e Educação, São Paulo, v. 11, n. 8, p. 338–345, ago. 2025. ISSN 2675-3375. Disponível em: https://periodicorease.pro.br/rease/article/view/20587/12426. Acesso em: 16 ago. 2025.

TRINDADE, Alessandra Stefane Cândido Elias da; OLIVEIRA, Henry Poncio Cruz de. Inteligência Artificial generativa e competência em informação: habilidades

informacionais necessárias ao uso de ferramentas de IA generativa em demandas informacionais de natureza acadêmica-científica. Perspectivas em Ciência da Informação, Belo Horizonte, v. 29, p. e-47485, 2024. DOI: https://doi.org/10.1590/1981-5344/47485.

VICARI, R. M. I. Agora Entrevista: o poder da IA na sala de aula. Disponível em: https://www.youtube.com/watch?v=WYDyr_a3Cec. Acesso em: 15 abr. 2025