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Digital literacy and ethics in the use of generative artificial intelligence: student perceptions and academic challenges in a Mexican university

Alfabetización digital y ética en el uso de la inteligencia artificial generativa: percepciones estudiantiles y desafíos académicos en una universidad mexicana

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Abstract

Introduction: This study explored university students' perceptions about the use of Generative Artificial Intelligence and digital and ethical competencies, derived from the excessive use of this tool that poses educational challenges. Methods: This paper used a qualitative methodology based on hermeneutics, analyzing 58 texts generated by undergraduate students (17 men and 41 women). The methodological validation was based on the objective hermeneutics model that includes theoretical-empirical validation, levels of validation and criteria for contextual applicability. Results: Students are concerned about the loss of research skills, among which are critical thinking, evaluation of sources and, above all, the ethical management of the use of digital technologies to avoid plagiarism and foster meaningful learning. Students recognize the need for digital literacy that not only teaches technical skills, but also recognize that digital literacy should be incorporated into the university curriculum to promote intellectual virtues such as curiosity and critical thinking. They also highlighted the need for clear institutional policies to regulate the use of generative artificial intelligence in higher education settings, with the aim of enhancing meaningful learning. Conclusions: This study provides empirical evidence from a humanistic perspective, useful for the formulation of educational strategies and public policies that respond to the challenges of the use of generative artificial intelligence in university contexts.

Key words: Digital literacy, Generative Artificial Intelligence, Digital competencies, Ethics in GAI, Critical thinking.

Resumen

Introducción: Este estudio exploró las percepciones de los estudiantes universitarios sobre el uso de la Inteligencia Artificial Generativa y las competencias digitales y éticas, derivadas del uso desmedido de esta herramienta que plantea desafíos educativos. Métodos: Este escrito empleó una metodología cualitativa con base en la hermenéutica analizando 58 textos generados por estudiantes de licenciatura (17 hombres y 41 mujeres), la validación metodológica se sustentó en el modelo de hermenéutica objetiva que incluye validación teórico-empírica, niveles de validación y criterios de aplicabilidad contextual. Resultados: Los estudiantes muestran una preocupación por la pérdida de habilidades de investigación, entre los cuales se encuentra el pensamiento crítico, la evaluación de fuentes y, sobre todo, el manejo ético del uso de las tecnologías digitales para evitar el plagio y el fomento de aprendizajes significativos. Los estudiantes reconocen la necesidad de una alfabetización digital que no solo enseñe competencias técnicas, además reconocen que la alfabetización digital debe incorporarse en el currículo universitario fomentando virtudes intelectuales como la curiosidad y el pensamiento crítico, también se debe acompañar de políticas institucionales claras que regulen el uso de la inteligencia artificial generativa en el entorno universitario para el fomento de aprendizajes significativos. Conclusiones: Este estudio aporta evidencia empírica desde una perspectiva humanista, útil para la formulación de estrategias educativas y políticas públicas que respondan a los desafíos del uso de la inteligencia artificial generativa en contextos universitarios.

Palabras clave: Alfabetización digital, Inteligencia Artificial Generativa, Competencias digitales, ética en IAG, pensamiento crítico.

INTRODUCTION

Generative Artificial Intelligence (GAI) has played a very important role in the teaching-learning process of Higher Education Institutions (HEIs), especially since ChatGPT was released in November 2022, being used massively thanks to its accessibility and free of charge (Corvalán *et al*., 2023). Because many students make use of this tool for their school activities, research on the impact of GAI on university life had an increase in 2023 (Saúde *et al*., 2024). Students in the 21st century are high consumers of new technologies as tools for entertainment and socialization, as well as for their studies. That is why this type of technology reduces the temporal-spatial limits that occur in teaching-learning and makes students find themselves immersed in an analog and virtual world (Domingo-Coscollola *et al*., 2025; Guerra-Santana *et al*., 2021). Finally, research aims to understand the use of these technologies for academic work and the impact on the teaching-learning processes (Cisternas-San Martín et al., 2025).

As observed by Flores-Vivar & García-Peñalvo (2023), UNESCO, the European Union and the European Parliament have conducted research and analysis on the use of artificial intelligence (AI) in the field of education, mainly in knowing what competencies are necessary to live and develop professionally and civically effectively with the use of AI. However, AI is a high-risk technology, so the European Union itself proposes public policies for the regulation of GAI and for the training of students and teachers in digital competencies for a good management of this tool in the educational, personal, professional and civic areas (Rojas-Estrada *et al*., 2024). This training is known as educommunication or media literacy. Although there are technical differences between both concepts according to their place of origin (Santos Albardía *et al*., 2023), they can be considered synonyms if the common elements that make them up are taken into account. For the sake of convenience, in this paper we will use the term digital literacy.

Digital literacy refers to appropriately using digital technology to gain the necessary skills and develop digital competencies, such as identifying, accessing, managing, integrating, evaluating, analyzing, and synthesizing digital content, as well as creating new content (Miranda *et al*., 2018; Solmaz *et al*., 2023). However, as Miranda et al. (2018) note, the multiple definitions of digital literacy do not provide a concrete explanation of specific skills. This is why the work of Cuervo Sánchez *et al*. (2021) is so relevant, as they identify and operationalize four dimensions of digital literacy: 1) access to and use of the media; 2) media language and critical comprehension; 3) production processes; and 4) the transformation of one's own situation through communication. Each of these dimensions is composed of subcategories that can be observed and measured. In this paper, we will focus on dimensions 1 and 2 because they are the dimensions that the participants of the study expressed the most.

The dimension of media access and use refers to the interaction of users with the media, both traditional and new communication technologies. In this sense, we observe in users the cognitive development required to use the media as an extension of our senses to obtain information from the world around us. This is both a cognitive (knowing) and technical (knowing how to do) skill. On the one hand, it requires the ability to know what information is being sought, to identify the places where it can be consulted and to know how to discriminate the media where such information is consulted. On the other hand, it includes skills to use basic communication tools, such as a cell phone or a computer (Cuervo Sánchez *et al*., 2021).

On the other hand, the dimension of media language and critical thinking refers to the knowledge that users have about the codes, vocabulary and structures of messages, as well as their ability to recognize the intentions of such messages. This second dimension aims to identify that users are able to justify the decisions they make during their interaction with the media based on the objective (what is said) and subjective (how it makes me feel) analysis of the information (Cuervo Sánchez *et al*., 2021).

Digital literacy is an active process, i.e., it is not acquired automatically, but requires effort and practice. It is not enough to know how to use the tools, it is necessary to know how to use them well (Farias-Gaytan *et al*., 2023). Digital literacy aims to take users from a knowledge that allows them to use digital tools in an instrumental way to a knowledge that allows them to be responsible and critical citizens (Ferrarelli, 2021). Therefore, it is important that educational and governmental institutions develop and implement digital

literacy programs and training groups for the entire population (Farias-Gaytan et al., 2023 and Gil & Marzal-Felici, 2023).

Despite academic interest in digital literacy, research in Mexico has only gained momentum since 2020. Most of the literature reviewed tends to propose both the direction that the use of GAI should take in education, as well as strategies for teachers to integrate GAI into their educational practice (Andrade-Martínez *et al*., 2021; Gil & Marzal-Felici, 2023; Ferrarelli, 2021; Buchan *et al*., 2024). Only the work by Getenet et al. (2024) explores students' opinions on the use of GAI in their learning process. The objective of this study is, precisely, to know the perception of students about digital literacy and the use of GAI in a private IES in the State of Querétaro, Mexico. To do this, the article is divided as follows: the second section describes the research design, participants, procedures and data collection; the third section addresses the research results; and the last section discusses the new perspectives provided and the limitations of the study.

METHODOLOGY

The approach used in this research is a qualitative methodology and, since we worked with texts written by undergraduate students, hermeneutics was used as the most appropriate tool for the elaboration of this paper. Indeed, as Álvarez-Gayou (2003) mentions, conservative hermeneutics allows us to know the author's intentions. It is considered that there is a correspondence between the text and what the author says and the language of the audience is taken into account.

Quintana & Hermida (2020) state that the hermeneutic method has three dimensions: reading, explanation and translation. For the first, the reader interprets in a dialogical way, since there must be an understanding of the text which is given with the reading itself; for his part, Gadamer (1993) states that in reading there must be something that questions us and this can be manifested in a logical structure of a question. For the second, the text explains something through rationalization and clarification, for which the context, previous meanings and intentions are necessary (Quintana & Hermida, 2020); although this is considered as a pre-understanding of the text, Gadamer (1993) himself calls it horizon. The third is the mediation that exists between the translator and the researcher, in this mediation the creation of a new text is sought in which the fusion of horizons takes place, that is, the objective understanding between two languages, two messages and two cultures (Quintana & Hermida, 2020).

Among the different approaches that can be found in qualitative methodology, hermeneutics was chosen, since the objective was to understand the discourses generated by students in a text, as well as their ability to critically dialogue with another text. In comparison with symbolic interactionism, which focuses on how individuals socially construct meaning in day-to-day interactions; phenomenology, which describes lived experiences; or grounded theory, which seeks to generate a new theory from data (Alvarez-Gayou, 2003), hermeneutics allows for internal consistency in text interpretation (Zehnpfennig, 2021), maintains coherence with the original text provided to students, and fosters dialogue and enrichment among interpreters (Linden & Cybulski, 2006). Trede et al. 2009), and that contextual relevance is given, specifically in relation to ethical, educational, and technological issues (Hoffmann and Borenstein, 2013; Hejna and Seeling, 2022).

The problem identified based on the literature reviewed is that students at the university level lack adequate training for the critical use of GAI, as well as knowledge of the limitations of this tool and the impact on knowledge due to its inappropriate use, generating new plagiarism practices. Therefore, the objective of this research was to explore how students at a particular university in Mexico understand, criticize and propose issues regarding the use of generative artificial intelligences in the field of higher education related to digital literacy from a humanistic theoretical basis.

Participants

The participants were undergraduate students from Universidad Anáhuac Querétaro. Of the 33 bachelor's degrees offered in the school semester mode, students from 22 bachelor's degrees participated. The students have taken subjects from a humanistic block called the Anahuac Block, where they are taught theory of knowledge, fundamentals of philosophical anthropology, ethics, philosophy of religion, and classical and

contemporary humanism. The students, up to the time of the research, have taken the first three subjects. In addition, 79 undergraduate students participated in this research, of which 29 (36.7%) are men and 50 are women (63.3%). Table 1 shows the representation of students distributed in the 22 undergraduate degrees, where the Economics and Business division had a higher participation with 31 students.

Table 1.
Representation of undergraduate students

Health sciences			
	Men	**Women**	**Total**
Medical Surgeon	2	5	7
Nutrition	0	2	2
Creative studies			
	Men	**Women**	**Total**
Architecture	1	2	3
Communication	0	2	2
Entertainment business management	1	3	4
Industrial design	2	5	7
Fashion design and innovation	0	1	1
Legal and social sciences			
Law	3	3	6
Gastronomy	0	1	1
Psychology	0	1	1
Engineering			
Environmental engineering	0	2	2
Civil engineering	3	0	3
Industrial engineering for management	2	4	6
Mechanical engineering for innovation	1	0	1
Mechatronics engineering	0	1	1
Chemical engineering	0	1	1

Economy and business			
Business administration and management	3	1	4
Sports management	2	0	2
Financial management	2	1	3
Finance and public accounting	3	3	6
Strategic marketing	0	2	2
International business	4	10	14

Procedures

Following the hermeneutic methodology, for the first step, students were assigned to read the article by Gutiérrez-González & Ocádiz-Amador (2024) that deals with the importance of digital literacy and the ethical problems generated by the use of AI. Subsequently, students were instructed to write: two ideas from the paper with which they agreed and argue why each idea; two ideas from the article with which they disagreed and argue why each idea; and, finally, a question to delve deeper into the text.

For the second step, in addition to the contents of the subject of theory of knowledge, anthropology and ethics, at the end of the reading there was a dialogue with the students so that they could comment on the selected ideas and their arguments; there was feedback and enrichment of the text by their peers and by the teacher. The last step of the hermeneutic method is this writing.

Data collection

Borim-de-Souza *et al*. (2020) propose a qualitative validation of an objective hermeneutic. In the first instance, they mention theoretical-empirical validation. This validation seeks to ensure that the interpretations are consistent with existing theories and that they are validated through empirical data. Secondly, they propose levels of validation, which are the theoretical framework, systematized concepts, indicators and results; for the interpretation to be relevant, each level must be validated. Finally, the validation stages ensure that the interpretations are consistent and applicable to different contexts; to ensure this stage, content validity, convergent validity and nomological validity are necessary.

To cover the theoretical-empirical validation, the responses that were focused on digital literacy or the use of GAI in the educational context were selected. For the other two items, it was considered that the argumentation was consistent and provided relevant information on the topic. Responses that did not include content on digital literacy or the use of GAI in the educational context in higher education institutions, that the argumentation was simple and sparse, as well as responses that were generated by any GAI were discarded.

RESULTS

After the discrimination process in data collection, 58 valid responses (17 men and 41 women) were selected from the 79 students, which addressed digital literacy or the use of GAI. From the responses obtained, some of the variables highlighted in the texts, which have been catalogued as follows and were extracted manually with a deductive approach (Mantzavinos, 2005):

Table 2.
Frequency of concepts

Word/Concept	Frequency	Interpretation
Digital literacy	32	Integrate, evaluate and analyze digital content
Misinformation	19	GAI does not provide authoritative data
Verification	21	Users do not review or collate information
No ban on GAI	6	Some institutions prohibit the use of GAI
Risks of GAI use	26	GAI can steal sensitive personal information
Training on correct use of GAI	21	Users must be trained to have competencies
Ethical issues	18	Users are in moral dilemmas
Liability	15	Users are responsible for use
Plagiarism	9	Users may commit academic plagiarism

Before addressing the aforementioned topics, one element to highlight is that, within the discussion proposed by the students, one student mentioned that, despite the fact that many consider this generation as the most technologically prepared, in reality they are not experts in digital skills and competencies. However, another student considers that young people are indeed the most skilled and knowledgeable in the operation of these technologies. Furthermore, she believes that, compared to older generations, young people are the ones who can have a quicker and easier understanding of these technologies.

This situation of conflicting opinions can be contrasted with the information provided by the students themselves. Indeed, some students mention that there is a lack of training for students and teachers in the use of GAI. This is manifested in the fact that some students consider that *they do not make good judgments in the use of this tool*. The above statement is confirmed by the fact that most students consider that when using the IAG, *they do not understand or question the information provided by this tool*, which means that many users are unable to discern *whether the information provided by the IAG is reliable or not*, since they come to consider, according to the same students, that the information obtained is an absolute truth and do not question it.

Furthermore, many students believe digital literacy is important because we are *losing skills we previously possessed*. First, one student's observation is that the loss of these skills is not the fault of GIS*, but rather that this had been happening before the technological tool's dissemination. Specifically, students have not been adequately taught how to research and are not delving deeper into the research being conducted*. On the other hand, another student comments that *education on technological issues is unnecessary, as students can question themselves about the information provided by GIS, especially on security issues. Similarly, other students believe digital literacy is important*

because the use of GIS leads them to make errors due to failure to verify information. They also state that *digital literacy helps them understand how to evaluate the information obtained and how it should be handled*.

A final element that emerges is that students consider that *digital literacy is not only about equipping users with skills/capabilities to use GAI, but also that digital literacy needs basic principles of ethics*. Many students note that the use of GAI in education has several drawbacks, for example, *there is a risk that the authorship of writings is not their own but that of GAI, which facilitates plagiarism and does not reflect the effort and learning that students should have*. They consider this to be complex, since the GAI is not a rational being, but takes the information available on the network provided by human beings.

Although it is common for students to use GAI for plagiarism purposes, it is also true that it has several benefits for students, teachers and administrators, such as, for example, the development of academic programs, curricular planning and helping teachers in the evaluation process. Therefore, students believe that *its use should not be prohibited, but that university authorities should regulate its use inside and outside the classroom*. In addition to the above, students consider that *responsibility should be promoted, so that they make good use of GAI by declaring when and how they made use of this tool in their school activities*. Finally, they consider that, if this is taught in student life, they will be able to solve problems that they experience as citizens and professionals, especially addressing the problems of privacy, security and welfare of people.

Finally, some questions developed by the participants are transcribed below:

- What strategies could be implemented in education to teach ethics and responsibility in the use of GAI, so that students become more responsible and empathetic, even without the presence of a "face"?
- If we are already with the use of AI in our daily lives and it generates information gaps, when will it be time to teach the right ways to use them?
- If the content of the text refers to the correct use of this type of AI in terms of ethical use and application, then why is it still being prohibited, instead of starting to look for and implement techniques that promote what is mentioned in the text, such as digital literacy and critical thinking?
- What would be the first step in getting started with digital literacy training programs?
- How can principles of ethics and empathy be effectively integrated into digital literacy to specifically address AI-related issues in education?
- What practical methods could be used in class to teach students to recognize ethical boundaries when working with generative AI?
- What role do educational institutions and governments play in regulating the use of AI in classrooms, and how can it be ensured that these regulations are effective rather than restrictive?
- What would be the best way to educate about these tools in low-income schools? How can this information be made available to all?
- How could we ensure that educational institutions strike a balance between ethical use of GAI and authenticity in student learning?
- What steps are being taken to ensure that we do not fall into reliance on AI in critical areas such as healthcare?
- What are the specific criteria that define when the use of GAI is considered ethical, especially in educational contexts?
- How would digital literacy be integrated into the school curriculum without overloading the existing educational program?
- How could the use of AI be effectively implemented in schools without affecting knowledge and assessment in schools?
- How could digital literacy be implemented at different educational levels to match the ages and abilities of students?
- How can we improve digital literacy so that we are not vulnerable to misinformation, computer security or privacy issues?

- How could digital literacy be effectively implemented that not only trains students in the technical use of AI, but also fosters critical and ethical understanding of its impact on humanity, without resulting in information overload that ends up generating more technological dependence rather than empowering individuals?
- How can we ensure that teachers are prepared to integrate AI into current teaching methods?

DISCUSSION

In the first section of this research, it was mentioned that of the four dimensions proposed by Cuervo Sánchez *et al*. (2021), the discussion would focus on the first two: 1) access to and use of the media and 2) media language and critical thinking.

Considering the first of these dimensions, it is possible to observe in the students' answers a conflict of opinions about their ability and competence to access and use the media. Some of them think that they can obtain these skills in a self-taught way, since considering themselves as a technological generation in a native way, it is not necessary to have any training or formation to know how to use social networks, digital media or GAI. However, it should be noted that social networks such as Facebook has existed since 2004, Instagram since 2010, Tiktok since 2016 and, even so, a lack of digital literacy is still perceived in students, such as sharing fake news, and this deficiency is also identified by the students themselves. Therefore, it is valid to question why students continue to mention that they do not have the ability to discriminate reliable from unreliable information, that they continue to believe the first information that appears to them as truthful and that they still do not have the necessary ethical skills to interact with digital technologies. For this reason, the research of Farias-Gaytan *et al*. (2023) becomes relevant, as they observe that the skills for this type of technologies are not acquired in a passive/self-taught way, but must be taught and developed actively, consciously and with practice. If there are not enough digital literacy programs in educational centers (Rojas-Estrada *et al*., 2024; Farías-Gaytán *et al*., 2023) it is to be expected that university students will not possess the competence of digital literacy, even if they have interacted with digital technologies for a considerable time. As Ferrarelli (2021) states, it is not enough to be functional users; it is necessary to know how to use these technologies well.

It is important to reflect on the role of teachers in this first dimension. In the students' contributions, it can be observed that they question the digital literacy of teachers. The students themselves recognize that if their teachers do not have this competence, it will be very difficult for them to share it with the students. Teachers are a key piece in the digital literacy of students (Ferrarelli, 2021); but, as mentioned by Gil & Marzal-Felici (2023), there is little formal training for them, rather they are teachers who individually are interested in these technologies and do their best to learn how to use them. However, this is not enough, as many teachers are left adrift who, not understanding how these technologies work or not recognizing their potential, tend to see them as something negative and prohibit them (Chiu, 2024).

The second dimension involves media language and critical thinking. In relation to this second dimension, four of the most important skills that digital literacy helps to achieve are 1) identifying reliable sources, 2) questioning the provenance of information, 3) contrasting information with other sources and 4) critical thinking. Finally, thanks to these digital competencies of students, teaching-learning can be enriched and cognitive development helps to know when and how to use these tools in the classroom and the integral development of the student can take place.

Under the heading of media language, the creation of prompts can be considered in the use of GAI, something that students also mention in this study. Creating prompts requires training and practice if one wishes to get the most out of the GAI. This requires, first, that the students know what they want to know and, second, that they can describe it clearly and accurately (Walter, 2024). Because of this, courses and training in prompt engineering have become so important. Again, Walter (2024) notes that the role of teachers as guides is fundamental in teaching students to know how to ask questions. Among the contributions, students questioned what would be the strategies for training in digital literacy. A first step could be, according to Walter (2024), to improve communication skills for better engineering prompts.

Within this same dimension is also critical thinking, which is fundamental to achieve effective prompts that yield the answers students are looking for (Farrelly & Baker, 2023; Reyes Cabrera & Pinto Sosa, 2024; Rudolph *et al*., 2023). Certainly, there is much literature regarding the promotion of critical thinking. However, we consider that in this specific study critical thinking is directly linked to the field of ethics, since it is also considered important if we want to have a quality education as the Sustainable Development Goals point out (Flores-Vivar & García-Peñalvo, 2023). As can be seen in the students' responses and reflections, the ethical use of new digital technologies is something that concerns them due to the consequences that may arise. On this topic, the works of Buchan et al. (2024), Walter (2024), Plata *et al*. (2023) and Gil & Marzal-Felici (2023) are relevant.

We observed an important relationship between knowing how GAI works (first dimension) and the ethical component (second dimension). Chiu (2024) shows that there is a general lack of knowledge on the part of users about how GAI works (e.g., how personal data are acquired, who has access to them, or for what purposes companies use the collected data), which leads to ethical risks such as computer identity vulnerability or information theft (Buchan *et al*., 2024). These same concerns emerged in the questions that students proposed during the study.

A final point that is important to highlight is the request from the students themselves for the creation of regulations for the use of AGI, mainly in the educational setting. This student concern is consistent with research conducted by Bannister et al. (2024); Xia *et al*. (2024) and Chan (2023). The request of many students is not to ban the use of GAI in classrooms, but to regulate it through clear policies of educational institutions indicating how to encourage the use of this tool, what things are acceptable and what should be prohibited in order to end academic dishonesty. In this sense, with the creation of clear regulations we can expect the decrease of some unethical practices, such as requesting the GAI to generate academic texts and presenting them as their own. All this is aimed at creating a culture of GAI (Walter, 2024).

With what has been said in this section, it can be observed that there is a direct relationship between what the specialized literature says and what this sample of students at Universidad Anáhuac Querétaro says. Therefore, there are some challenges that need to be addressed in this institution, such as creating digital literacy training courses for students, but without it becoming an academic burden, as the students themselves pointed out. It is also important that the university officially publishes a regulation and policy for the use of GAI, since at the time of this writing there is no such policy. Finally, it highlights the importance of training university teachers in new technologies, especially GAI, since teachers are a key element for students to acquire digital literacy skills.

CONCLUSIONS

This study has shown that the increasing use of GAI in the university context poses many ethical challenges. The objective of this research is fulfilled with the hermeneutic analysis of texts elaborated by students, where it was identified what are their perceptions about the use of GAI in the university context. Students observe the need to train students and teachers in digital literacy, not only in the acquisition of digital skills, but also from a perspective of critical thinking and ethics.

There are some questions that remain pending as a result of this paper and that can be addressed in future research. The first question that would be worth investigating is what the level of digital literacy of teachers at Universidad Anáhuac Querétaro is. This research can be carried out either through focus groups in a qualitative setting or in a quantitative setting through specialized questionnaires that are beginning to be published (Cuervo Sánchez *et al*., 2021). Secondly, the ethical component of digital literacy can be deepened through research of a more philosophical nature. Finally, the development of a policy proposal for the use of GAI that adapts to the pedagogical model and the needs of the Universidad Anáhuac Querétaro based on the measurement of the digital literacy of its students and teachers is still pending.

Contribution to knowledge

The findings of this study are that the students themselves find it urgent that digital literacy training be incorporated into the curricula of university courses; as well as the development

and application of institutional policies that are clear for the regulation of the use of GAI without banning them outright.

Limitations

One limitation is that there is a need to work on critical digital literacy, which has different aspects, scopes, skills and purposes from digital literacy (Milković *et al*., 2025). In addition, for qualitative research it is not important the number of people who were investigated, one of the limitations of this research is that the responses of fifty-nine students were taken. It is therefore necessary to broaden the sample of students. In addition, it is necessary to know the assessment and experience of teachers because they are the main actors of transmission and teaching-learning, as they must improve specific skills and how to solve technical problems (Puebla *et al*., 2024).

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Conflicts of interest
The authors declare that there are no conflicts of interest.

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