Chapter 05 / Capítulo 05

New literacies in the age of AI: Ethics, teaching, and writing (English Version)
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Classroom experiences with generative AI

Experiencias de aula con IA generativa

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ABSTRACT

The use of generative Artificial Intelligence (AI) has taken special relevance within educational centers and among students of any academic level, this has allowed the deepening of topics and content in a broader way. The main objective of the study was to analyze the classroom experiences with generative AI between n=100 students and n=60 teachers at university level in undergraduate and graduate, using a quantitative, non-experimental approach with a transversal, correlational and descriptive design, which showed that the most used AI is ChatGPT in 48 % and 46,7 %, Gemini 20 % and 25 %, Copilot 17 % and 20 %, also, a strong positive correlation was evidenced between classroom experiences with generative AI by the student of r=0,875** with a shared variance r^2=76,60 % and for the teacher r=0,851** with r^2=72,50 % with the pedagogical use that is currently given, concluding that digital tools favor in some way educational practices, however, it is necessary to consider the ethical and developmental implications that these may derive among the main users in educational environments.

Keywords: Generative AI; Ethics; Virtual Environments; Didactic Planning; Scientific Research; Pedagogical Use; Technologies; Learning.

RESUMEN

El uso de la Inteligencia Artificial (IA) generativa ha tomado especial relevancia dentro de los centros educativos y entre los alumnos de cualquier nivel académico, ello ha permitido la profundización en temas y contenidos de una manera más amplia. El objetivo principal del estudio fue analizar las experiencias del aula con IA generativa entre n=100 alumnos y n=60 docentes a nivel universitario en pregrado y posgrado, mediante un enfoque cuantitativo, no experimental con un diseño transversal, correlacional y descriptivo, el cual permitió evidenciar que la IA más utilizada es ChatGPT en un 48 % y 46,7 %, Gemini 20 % y 25 %, Copilot 17 % y 20 %, también, se evidenció una correlación positiva fuerte entre las experiencias de aula con IA Generativa por el alumno de r=0,875** con una varianza compartida r^2=76,60 % y para el docente r=0,851** con r^2=72,50 % con el uso pedagógico que se le da actualmente, concluyendo que las herramientas digitales favorecen en cierto modo las prácticas educativas, sin embargo, es necesario considerar las implicaciones éticas y de desarrollo que estas puedan derivar entre los usuarios principales en los entornos educativos.

Palabras clave: IA Generativa; Ética; Entornos Virtuales; Planificación Didáctica; Investigación Científica; Uso Pedagógico; Tecnologías; Aprendizaje.

INTRODUCTION

Artificial intelligence (AI) is an increasingly important tool in classrooms in all areas of education, whether private or public, at the elementary, middle, and high school levels. Its incorporation allows new technologies to be integrated into pedagogical and teaching spaces, further enriching the educational culture among the student community. This facilitates the growth of new generations adapted to emerging changes in the face of the disruptions demanded by society, with broad tolerance for globalization and international competition.

This transformation brings both advantages and challenges, as it offers ample opportunities to personalize teaching and learning styles, with a view to optimizing educational management by applying forms of knowledge assessment across the various areas of knowledge. However, challenges arise in every environment in which it is used, which can compromise professional ethics with its uses and applications, technical implications for its management and mastery; also, at the pedagogical level, teachers must be prepared to understand its administration and master the teaching techniques aimed at its use in the classroom (Peñafiel Arteaga et al., 2025).

The new generations bring with them a thirst for knowledge, work, and mastery of new tools, as they are born, grow, and develop in an increasingly technological and changing environment driven by new global trends demanded by labor and education markets. Given this scenario, teaching professionals must prepare for these demands by continually training to support the educational programs developed in academia, aiming to create, educate, and transform teaching into a pillar of intellectual enrichment.

The technological evolution that has emerged and reached different educational institutions at the click of a button via computers, smartphones, and other electronic devices used in everyday life has made it possible to rethink the role of education and educational centers in light of the existing need to develop cognitive abilities in line with the advancement of technologies and machines that are doing so at an unprecedented speed. The opportunities to develop educational skills and to develop them towards the growth of human abilities, which at this point are irreplaceable by a machine as such, require the creation of a synergy between what AI can do and what humans can manage (Sevilla et al., 2025).

Faced with the increase, evolution, and paradigm shift from traditional education to one better adapted to technology, the challenges are becoming increasingly complex because many people of low socioeconomic status do not have access to these devices, the internet, and other tools essential to developing classroom content. Added to this is conformism and a lack of training. A report by the Microsoft Education Team (2025) compiled a series of statistics that should be considered relevant to this study:

1. 86 % of educational organizations currently use generative AI, and its use has increased among both students and educators.
2. Forty-five percent of educators worldwide and 52 % of U.S. students say they have not received any training.
3. Students are concerned about being accused of plagiarism (33 %) and dependence on AI (30 %).
4. The primary concern among educators is plagiarism (31 %), followed by excessive dependence (21 %), misinformation (20 %), security (20 %), and insufficient training (20 %).
5. Leaders are concerned about ethical weaknesses (21 %), lack of technological preparedness (20 %), and equitable access (18 %).
6. 47 % of business leaders believe their employees' AI literacy needs improvement,

and 66 % would not hire someone without this knowledge and mastery.

This vast ecosystem of changes, opportunities for improvement, needs, and intellectual enrichment within the educational and work spheres is becoming increasingly evident, significant, and necessary for educators, students, and academic institutions. However, any limitations that may be present must be addressed to turn them into strengths in the training of future professionals, so that they can develop the skills demanded by an increasingly competitive and demanding world of work.

The acceleration of AI applications in education is facilitating increasingly efficient, diverse, and personalized learning environments tailored to the academic area being addressed, enabling the identification of learning patterns and individualized recommendations for performance. However, challenges such as heavy reliance on this tool, its unethical use for plagiarism, and the failure to develop critical thinking because students ask the tool to do it for them, among others, create difficulties in its use and application (Puche-Villalobos, 2024).

Consequently, AI is a powerful tool that can serve as a strategic ally for educational institutions, teachers, and students. When used well, it amplifies their ideas, simplifies their work, and unlocks new teaching and learning opportunities, accelerating their education. It should also be noted that AI has not come to replace traditional learning methods, but rather to boost creativity and support training through experience towards the development of increasingly competent professionals in the responsible use of AI, as required by business leaders. Hence, there is a need to analyze classroom experiences with generative AI.

Faced with this new digital scenario, driven by the Covid-19 pandemic, virtual classrooms became the focus of attention in different educational institutions, generating a lot of uncertainty for those who had never participated in these environments. as well as using new tools or devices that changed their view of education, not only for learners, but also for teachers who had to coordinate their content and activities in such a way as to avoid stress, connectivity difficulties, adaptation to digitization, and distractions that were not previously present in a face-to-face classroom. This leads to verifying the importance of a virtual classroom in the teaching and learning process.

It is essential to understand that the emergence of generative artificial intelligence in education has transformed teaching and learning, creating more dynamic training models that can be customized to the needs of each professional, academic area, and job market. Tools such as ChatGPT, Copilot, and Gemini have transformed the way teachers and students perform tasks, including writing, summarizing, problem-solving, and generating academic content. Studies show that AI is critical in 52,6 % of cases because it optimizes time spent searching for educational information; in 41,4 % of cases, it is almost always important; and in 6 % of cases, it is not relevant (Menacho Ángeles et al., 2024).

It is essential to recognize that the Technology Acceptance Model (TAM) developed by David (1989) applies to this study, as perceived usefulness and ease of use of new technologies determine the capacity for adaptation, adoption, and technological application. Precisely in the context of generative artificial intelligence, all of this allows students to understand that it will improve their academic performance and, therefore, their professional development. This underscores the need to understand students' perceptions of the use of generative AI in the classroom for their learning.

Based on the above, the use of generative AI will allow users to interact extensively with various forms of knowledge representation within the library, each tool offering them greater active engagement, thus promoting autonomy and creativity among students.

In this sense, it is accepted as a tool that facilitates the personalization of learning inside and outside the classroom, as it generates an automated feedback process and a high reproduction of new, innovative, and easily replicable educational content, thus transforming the conservative academic role of the teacher into that of a facilitator and mediator (García-Peñalvo et al., 2024). Therefore, it is feasible to determine the level of pedagogical use of generative AI by students.

It is essential to mention that the impact of generative AI on knowledge acquisition is directly related to the theory of meaningful learning developed by David Ausubel in 1968, who highlighted the need to be able to make a direct connection between new content and previously acquired knowledge, which can be directly linked thanks to the ease with which this tool offers personalized contributions through examples of current and comparative contexts that can be drawn from past events. This will enable students to develop competent critical thinking skills (Pinzón Arteaga, 2024).

Therefore, it is necessary to specify the impact that AI has when implemented in the classroom, because it contributes significantly to student learning, as its use in academic content and subject development can act as a cognitive mediator to facilitate meaningful learning between users and the teacher who has prepared the academic load based on the thematic structure of the subject being taught.

However, within the line of ethical and responsible thinking about the use of AI in educational environments, different positions have been generated, including the following:

1. Paguay Simbaña et al. (2024) stated that "the design and development of AI technologies must respect the ethical foundations of educational work," which aligns with this study's focus on the ethical and favorable use of these tools in teaching. However, special attention must be paid to the concerns about the application of these methods, ensuring that the private information of users and institutions is protected.
2. Molina Mera et al. (2025) stated that "in this context, fundamental ethical and social concerns arise, such as: bias and discrimination, privacy and security, technological dependence, resistance to change, and lack of training." This opinion contributes to this study, which focuses on the limitations and challenges that AI use can raise in the educational context, not only for students but also for faculty, who must be highly trained and focused on these methodologies.
3. Arteaga-Zambrano et al. (2025) identified that "in the educational field, these tools can help optimize, individualize, and make teaching and learning processes more effective; however, it was noted that it is essential that the use of this technology be carried out under standards of ethics and responsibility." In terms of the contribution to this study, it is necessary to recognize that while it is true that AI is a support, tool, or technological advisor for the educational system, it is essential to understand the role it plays in teaching and the limits that must be established with students and the extent to which it can interfere in their activities. Its role is to facilitate, not to substitute for or limit their abilities, critical thinking, and cognitive development.
4. Estrada Tigsilema (2024) highlighted "the importance of transparency and accountability in the development and use of educational algorithms, the need to address biases and ensure equity and accessibility for all students." The fundamental contribution

of this study is concerned with the appropriate use of AI: that it be equally accessible to the entire student body regardless of social position, and that it be supervised to avoid bias and ensure correct application.

These contributions demonstrate that the ethical use of generative AI in the classroom is vital. The authors warn that clear guidelines and training are needed to raise awareness of responsible use, as there are no restrictions on content use, which facilitates plagiarism, inequality, and algorithmic bias. In this regard, ethical literacy in AI is essential to promote consistent use in the academic activities of educational institutions.

Based on the above, there is a need to identify that the greater the pedagogical use of generative AI, the greater the ethical and responsible awareness among students.

The arrival and implementation of AI in the education system can present both opportunities and challenges, not only for students, but also for teachers and educational centers, because it suggests a process of change, adaptation, and monitoring of how these elements can be articulated in academic activities so that the results they contribute are valuable for overall educational performance.

Below are differences derived from the postulates of other authors, highlighting the benefits and challenges that can be addressed with AI and the ones that arise in the results.

Table 5.1 Challenges and opportunities of AI according to authors

#	Opportunities	Challenges	Authors and year	Country
1	Personalization of learning, Automation of tasks.	Ethics and responsibility	Gracia Loor, (2025)	Ecuador
2	Inclusion, sustainability, and future prospects, automation of academic tasks, and real-time content generation.	Pedagogical dynamics and teacher adaptation, assessment, ethics, and educational quality.	Acevedo Carrillo et al., (2025)	Peru
3	Automating administrative tasks, personalizing learning and improving digital competence, collaborative learning, and developing skills.	Misuse of generative tools, lack of clear guidelines and training	Gonzalez Said de la Oliva, (2025)	Peru
4	Improved content and access to information, efficiency and time optimization, creativity and productivity, administrative facilitation, educational support and complementarity, inclusivity, and diversity of viewpoints	Technical problems, ethical concerns, lack of training, resistance to change	Kroff et al., (2024)	Chile
5	Universal access, machine learning, language modeling and semantic analysis, intelligent content, content analysis, automation of management and administrative tasks	Teacher training, detection of plagiarism and AI-generated texts, ethical treatment and confidentiality of data, resource optimization	Boujenna et al., (2024)	Spain
6	Generating materials, stimulating creativity, performing systematic processes efficiently, and facilitating academic life	Ethical implications of its use, restrictions on the use of these resources, limitations on the performance of specific tasks, reduction in learning capacity.	Chao-Rebolledo and Rivera-Navarro, (2024)	Mexico

It is essential to consider that implementing processes that automate educational activities enables more personalized learning tailored to the characteristics of each academic grade. These well-managed tools, driven by AI-generated algorithms that generate new knowledge, operate in an agile, rapid manner and invigorate different educational levels. However, to preserve their efficiency, commitment, and results, they must be operated ethically, maintain trained staff and committed students, and ensure information security both inside and outside institutions to reduce any negative actions that may arise.

DEVELOPMENT

The research used a quantitative methodology, collecting statistical data on ordinal-level variables. In addition, a Likert attitude scale with five response options, ranging from strongly agree to disagree strongly, was used to collect generalizable quantitative data. A non-experimental design was also used because no experiments were conducted, and the variables were not deliberately manipulated; rather, the facts were studied as they occurred in the environment under study.

In this way, correlations and inferences were made among the main elements evaluated (variables and dimensions), which enabled us to identify the data of interest to answer the proposed questions. Similarly, a descriptive design was used to describe the main characteristics through graphical representations and tables for easier understanding. The study population consisted of 100 university students and 60 teachers at the higher education level who use AI in their academic activities.

It is worth noting that this unit of analysis was chosen because it directly corresponded to the topic under study, thereby prompting the use of the snowball sampling technique. The researchers collected data on members of the target population who used these digital tools and then asked participants to provide the information necessary to locate other colleagues who met these characteristics, thus applying the survey progressively (Hernández-Sampieri & Mendoza Torres, 2023).

Two measurement instruments were developed. The questionnaire contained 27 questions across different sections, with five additional questions per section on sociodemographic issues, all aimed at obtaining general data on perceptions of the educational community. The questionnaires were designed and administered in a digital, self-administered format, one for teachers and one for students, and were provided electronically via *Google Forms*.

To ensure the questionnaire's content validity, it was reviewed by three experts in higher education, educational technologies, and scientific research and analysis, who evaluated each item against semantic criteria, relevance, intentionality, and sufficiency. It was also supported by the literature on its development.

To test construct validity, an exploratory factor analysis (EFA) was used to confirm that the elements are correlated and to establish the relevant dimensions based on this grouping. Furthermore, based on the main results obtained through the Kaiser-Meyer-Olkin (KMO) test and Bartlett's sphericity test as statistical measures of EFA, according to Kaiser (1974), the following criteria were used to evaluate the KMO:

- Above 0,91 ⇒ Acceptable
- KMO from 0,81 to 0,90 ⇒ Good
- KMO from 0,71 to 0,80 ⇒ Average
- KMO from 0,61 to 0,70 ⇒ Mediocre

- KMO from 0,51 to 0,60 ⇒ Terrible
- KMO Below 0,50 ⇒ Unacceptable

Regarding Bartlett's sphericity test, it was proposed that:

- A significant Bartlett test (p < 0,05) indicates that the variables are significantly correlated and that factor analysis can be performed.
- A non-significant Bartlett test (p > 0,05) suggests that the variables are not significantly correlated and that factor analysis may not be appropriate.

Table 5.2. KMO and Bartlett's test for the variable classroom experiences with generative AI

KMO and Bartlett test survey for students		
Kaiser-Meyer-Olkin measure of sampling adequacy		0,833
Bartlett's sphericity test	Approx, Chi-square	1192,814
	Gl	351
	Mr,	0,000
KMO and Bartlett test survey for teachers		
Kaiser-Meyer-Olkin measure of sampling adequacy		0,861
Bartlett's sphericity test	Approx, Chi-square	1376,987
	Gl	351
	Sig,	0,000

The KMO indices were 0,833 and 0,861, respectively, and Bartlett's sphericity test was significant (p < 0,001), confirming the suitability of the instrument for an exploratory factor analysis.

Table 5.3. EFA for the variable classroom experiences with generative AI

	Rotated component matrix	Component			
Dimension	**Indicator**	**1**	**2**	**3**	**4**
Pedagogical use of generative AI	Use of AI in academic activities	0,708			
	Use of AI to facilitate students' lives	0,686			
	Use of AI facilitates learning	0,679			
	AI use impacts students	0,546			
	Use of AI as a tool of the future	0,456			
	AI use promoted by teachers	0,438			
	Use of AI in subjects	0,430			
Student perception	Satisfaction with using AI		0,816		
	Using AI promotes ideas and work		0,702		
	Improved performance		0,677		
	AI improves academic results		0,650		
	AI facilitates autonomous learning		0,626		
	AI stimulates creativity		0,558		
	AI is easy and accessible to use		0,535		
Impact on learning	Improves critical thinking			0,822	
	Facilitates collaborative learning			0,820	
	Support with complex topics			0,736	
	Improves understanding of content			0,708	
	Improves in-depth analysis			0,665	
	Development of digital skills			0,472	

Ethics and responsibility	Decreased learning ability	0,765
	Risks of plagiarism	0,719
	Restriction of use.	0,710
	Ethical implications of its use	0,685
	Penalty for lack of academic authorship	0,613
	Responsible use of AI	0,607
	Little distinction between use and plagiarism	0,497

Extraction method: principal component analysis
Rotation method: Varimax with Kaiser normalization.
a. The rotation converged in 9 iterations.

An exploratory factor analysis (EFA) was performed. The results showed consistent groupings between items and dimensions, with factor loadings greater than 0,430 in most of them. In addition, the principal component extraction method with varimax rotation was used.

Internal reliability was assessed using Cronbach's alpha statistic, which yielded the following result:

Table 5.4. Internal consistency Cronbach's alpha

Dimension	Cronbach's alpha	
	Instrument for students	Instrument for teachers
Pedagogical use	0,859	0,881
Student perception	0,912	0,776
Impact on learning	0,885	0,802
Ethics and responsibility	0,779	0,775
Total, instrument	0,920	0,879

Table 5.5. Information for interpretation correlation coefficient

Scale		Type of correlation
-1,00		= Perfect negative correlation.
-0,90	-0,99	= Very strong negative correlation.
-0,75	-0,89	= Considerable negative correlation.
-0,50	-0,74	= Average or moderate negative correlation.
-0,25	-0,49	= Very weak negative correlation.
-0,10	-0,24	= Negligible negative correlation.
0,00	-0,09	= There is no correlation between the variables.
0,00	+0,09	= There is no correlation between the variables.
+0,10	+0,24	= Insignificant positive correlation.
+0,25	+0,39	= Very weak positive correlation.
+0,40	+0,49	= Weak positive correlation.
+0,50	+0,59	= Medium or moderate positive correlation.
+0,60	+0,74	= Acceptable positive correlation.
+0,75	+0,79	= Considerable positive correlation.
+0,80	+0,89	= Strong positive correlation.
+0,90	+0,99	= Very strong positive correlation.
+1,00		= Perfect positive correlation.

Source: prepared by Aaron Umanzor, adapted from the authors (Hernandez-Sampieri & Mendoza Torres, 2023) .

Based on the results obtained, it was determined that the instrument, has an acceptable level of reliability and is free of bias. To interpret the correlational analysis using Pearson's statistic (table 5.5).

The interpretation of bilateral significance will be based on:

1. Significant at the 0,05 level with 95 % certainty that the correlation is accurate and a 5 % margin of error.
2. Significant at the 0,01 level with a 99 % probability that the correlation is accurate and a 1 % margin.

It should be noted that using this entire statistical process ensured the data were robust and reliable, confirming their acceptability. Furthermore, there were no limitations before, during, or after the research, so logical conclusions were reached and supported by empirical data that can be replicated using a widely accepted scientific method.

RESULTS

Regarding student participation, 60 % were female, which is a reasonably high proportion. This allows us to determine that their inclusion in academic training is highly participatory, leaving behind the paradigms of patriarchy. In contrast, 40 % were male, suggesting that some topics are less interesting or less relevant in this era of change and adaptation to new technological trends.

Student interest is also evident, with high participation rates among undergraduate students (35 %) and master's students (65 %). Furthermore, these data highlight the relevance of how new technologies can benefit academic processes by gender and level of study. In terms of faculty participation, it was found that women predominate, with 51,7 % teaching at the higher education level, demonstrating that women have increasingly taken control of processes that were more complex in the past and are now more widely considered (table 5.6).

Table 5.6. Cross-tabulation table: Gender and academic level studied

Gender	Academic level studied				Total	
	Undergraduate		Master's			
	No.	%	No.	%	No.	%
Female	17	48,6	43	66,2	60	60
Male	18	51,4	22	33,8	40	40
Total	35	100	65	100	100	100

Men account for 48,3 % of participation, demonstrating that gender diversity in education is strong and inclusive, suggesting that opportunities have opened up in almost equal measure for both genders (table 5.7).

It was determined that the use of AI is conditioned by certain moments or needs, and also that students and teachers do not use the same type (table 5.8). Of these, the most used is ChatGPT 48 % with a usage factor of 18 % weekly and 14 % monthly, Gemini with 20 % is the second most used with 8 % weekly, the others (daily, monthly, and rarely) 4 % each, in third place, Copilot with 17 % and 6 % monthly usage, 5 % daily, and other AIs at 15 % with weekly usage of 8 %.

Table 5.7. Cross-tabulation table Gender and academic level of teaching staff

Gender	Academic level of teaching				Total	
	Undergraduate		Master's			
	No.	%	No.	%	No.	%
Female	21	50	10	55,6	31	51,7
Male	21	50	8	44,4	29	48,3 %
Total	42	100	18	100	60	100

Table 5.8. Type of AI used by students and teachers

Type of AI	Students		Teachers	
	No.	%	No.	%
ChatGPT	48	48	28	46,7
Gemini	20	20	15	25
Copilot	17	17	12	20
Other	15	15	5	8,3
Total	100	100	60	100

On the other hand, the AI most used by teachers is ChatGPT, with 46,7 % using it weekly, 9 % monthly, and 7 % almost never. In addition, Gemini is used by 25 % weekly, Copilot by 20 % weekly, and others by 8,3 % with a frequency of use of 2 % almost never, This shows that for both participants, the use of AI has become relevant according to the needs that drive them to consider its application in their academic activities, thus stipulating that although some are not used sequentially, they are used when a need arises, which is in agreement with (Menacho Ángeles et al., 2024) .

Based on this, to analyze classroom experiences with generative AI, the participation of both genders has been considered relevant for both teachers and students. However, it is necessary to know how they use the tool:

Table 5.9. Uses of AI by students and teachers

Type of use according to students	No.	%	Type of use according to teachers	No.	%
Search for general information	21	21	General inquiries	14	23,3
General inquiries	19	19	Generating ideas for teaching classes	11	18,3
Support for understanding class content	16	16	Show examples of its use in class	8	13,3
Generation of ideas and inspiration	16	16	Designing teaching materials	8	13,3
Search for scientific research	13	13	Scientific research	8	13,3
To carry out their tasks or assignments	12	12	Support for lesson planning	7	11,7
To avoid doing schoolwork on their own	3	3	To evaluate work	4	6,7
Total participation	100	100	Total, participation	60	100

Students showed a predominance of information search (21 %) and general queries (19 %), indicating that they require tools to facilitate the acquisition of specific knowledge. In addition, content comprehension (16 %) and idea generation (16 %) were prominent, suggesting that creativity can be boosted with this tool. 13 % of searches are for scientific documents, demonstrating the growing relevance of research in this field. On the other hand, 12 % use it to complete their assignments, and 3 % to avoid doing tasks themselves, so it is a support tool for combining their activities and the help they require.

As for teachers, general consultations (23,3 %), idea generation (18,3 %), and classroom examples have been the most prevalent. In this regard, it is appreciated that AI contributes to creativity and support for improving these teaching materials (13,3 %) by using innovative ideas and quality information, reliability for their subjects, and also carrying out scientific research (13,3 %), promoting the generation of new knowledge in academia and the scientific community, relying on this for teaching planning (11,7 %) on how to integrate all these processes into their syllabus, and some carry out the evaluation of work (6,7 %), which shows that they still prefer to do it directly and not let a tool do it for them, except for this percentage, which is still low in relation to the other results. This confirms a broad adaptation to new trends, in line with (Palmera Quintero et al., 2025).

All of this made it possible to verify the level of importance of a virtual classroom in the teaching and learning process for students and teachers, within which it has been understood that this new adaptation allows for synergy between the use of electronic devices with applications that improve educational quality and facilitate the acquisition of new knowledge.

Table 5.10. Experiences with generative AI and its pedagogical use at the student and teacher level

Correlations		Pedagogical use of generative AI by students	Pedagogical use of generative AI by teachers
Classroom experiences with generative AI (GAI)	Pearson correlation	0,875**	0,851**
	Sig. (two-tailed)	0,000	0,000
	N	100	60
	r squared	0,766	0,725
	Anova regression Sig.	0,000	0,000
**. The correlation is significant at the 0,01 level (bilateral).			

The results showed a strong positive correlation between the experiences of both the student 0,875** and the teacher 0,851 ** in the classroom with the use of generative AI, which has allowed for significant and high pedagogical use, in accordance with the results obtained with a P-value < alpha value 0,01, demonstrating that they are statistically significant with a shared variance r^2=76,6 % for students and r^2=72,5 % for teachers, which reinforces the link between the use of digital tools and the experiences that can occur within a classroom.

Regarding the regression model used, the ANOVA results showed that the effect is statistically significant, confirming that the variable classroom experiences with AI-G has a tangible impact on the variable pedagogical use. As classroom experiences with generative AI increase, so does its pedagogical use by students. This confirms that a virtual classroom in the teaching and learning process has taken on special importance for both students and teachers, so their experiences with AI-G have been extensive, in line with (Puche-Villalobos, 2024).

To understand students' perceptions of the use of generative AI in the classroom for learning, it was necessary to identify the elements directly related to it, given that its pedagogical use yielded favorable results. However, some elements were more significant than others.

The results showed an acceptable positive correlation with the use of Generative AI in academic activities (0,709** with r^2=50,3 %), in facilitating students' lives (0,623** with r^2=38,8 %), facilitating learning (0,731** with r^2=53,4 %), and use in subjects (0,683** with r^2=46,7 %).

Table 5.11. Perception of the use of generative AI in student learning

Correlations between the use of AI-G							
Pedagogical use of generative AI	**Academic activities**	**Makes students' lives easier**	**Facilitates learning**	**Student impact**	**Tool of the future**	**Promoted by teachers**	**Use in subjects**
Pearson correlation	0,709**	0,623**	0,731**	0,777**	0,855**	0,869**	0,683**
Sig. (bilateral)	0,000	0,000	0,000	0,000	0,000	0	0
N	100	100	100	100	100	100	100
R squared	0,503	0,388	0,534	0,604	0,731	0,755	0,467
Anova regression Sig.	0,000	0,000	0,000	0,000	0,000	0	0

**. The correlation is significant at the 0,01 level (two-tailed).

This demonstrated a significant perception of how all these processes can be integrated into academic activities without compromising results, provided that they are regulated and well managed by educational institutions and teachers.

There was also a considerable positive correlation with the impact these tools can have on students (0,777**), with an r^2=60,4 %, which provides a clear picture of how these tools are viewed by students in academic training. In addition, there is a strong positive correlation with the future (0,855** with r^2=73,1 %) and with these being promoted by teachers (0,869** with r^2=75,5 %). In this sense, it can be seen that AI will continue to evolve, making it necessary for teachers to apply and manage it appropriately in educational environments, as evidenced by their relationships and the high levels of shared variance.

Regarding the regression model used, the result of the ANOVA showed that it is statistically significant, thus confirming that the variable pedagogical use of generative AI has a real effect on the variables use of AI in academic activities, use of AI as a s that facilitates students' lives, use of AI that encourages learning, use of AI that impacts students, use of AI as a tool of the future, use of AI promoted by teachers, and use of AI in subjects. As the pedagogical use of the tool increases, it favors all these processes related to student learning. This acceptance is consistent with the theory of technology acceptance (TAM) (Davis, 1989).

Based on this, it was possible to determine the level of pedagogical use of generative AI by students, demonstrating that the tools offer opportunities across different areas and that these are the ones that favor their learning, which was highly significant at the 0,01 level. Based on this data, the impact of AI on classroom learning, especially on students, was specified.

Table 5.12. Impact of AI on learning in a classroom

Correlations		**Student perception**
Impact of AI on learning in the classroom	Pearson correlation	0,716**
	Sig, (two-tailed)	0,000
	N	100
	r squared	0,513
	Anova regression Sig,	0,000

**. The correlation is significant at the 0,01 level (bilateral).

The results showed that AI benefits learning according to students' perceptions, with an acceptable positive correlation of 0,716** and a shared variance of r^2=51,3 %. In addition, the regression model used in the ANOVA showed that the result is statistically significant, confirming that these variables are highly related, as indicated by the P-value (99 % probability that the correlation is accurate and a 1 % margin of error). Therefore, the more AI is used in the classroom, the greater its impact on students, consistent with Pinzón Arteaga (2024).

Undoubtedly, these tools make students' lives easier in many ways; however, they create a lot of work for teachers, who must constantly update and monitor the technical aspects, criteria for use and implementation of the tools, as well as the ethics with which they are used to avoid plagiarism and recognition problems. This makes it imperative to clarify the ethical role AI plays in all this work. It was found that the greater the pedagogical use of generative AI, the greater the students' moral and responsible awareness.

The results (table 5.13) showed that there is a very weak positive relationship (0,257**) between the variable "educational use of generative AI" and ethics and responsibility in students, as well as a shared variance of r^2=6,60 %, which indicates a low explanatory capacity of the model and that work needs to be done on the ethical development of students with AI. Although the relationship is statistically significant at the 0,01 level (P-value), the strength of the link is limited. Despite this, the ANOVA shows that the regression model is statistically significant; however, the low r^2 value limits its predictive usefulness, as noted above.

Table 5.13. Educational use of generative AI, greater ethical and responsible awareness

Correlations		Ethics and responsibility
Educational use of generative AI	**Pearson correlation**	0,257**
	Sig. (two-tailed)	0,010
	N	100
	r squared	0,066
	Anova regression Sig.	0,01

**. The correlation is significant at the 0,01 level (bilateral).

These results have made it clear that, although the relationship between these two variables evaluated is statistically significant, its practical impact is limited. The use of AI in education can shape students' ethics and sense of responsibility. Nevertheless, the finding suggests that elements such as teacher support in the use of AI, instructions, and training may play an essential role in ensuring its proper application, consistent with (Paguay Simbaña et al., 2024).

Among the indicators that may influence this result are penalties for lack of academic authorship 0,656** r^2=43,03 %, the lack of distinction between use and plagiarism by teachers 0,619** r^2=38,32 %, the ethical implications of its use 0,615** r^2=37,82 %, decreased learning ability 0,613** r^2=37,58 %, restrictions on use 0,577** r^2=33,29 %, the risks of plagiarism 0,535** r^2=28,62 %, and the responsible use of AI 0,395** r^2=15,60 %, which is consistent with (Molina Mera et al., 2025).

The most attractive benefits for students (table 5.14) were identified as improved content through access to information (17 %), simplification of academic life (16 %) due to the amount of studies and other documents they have access to with AI, optimization of time and productivity (16 %) because it favors them in terms of openness of use and management, fostering learning development (15 %), content analysis (14 %), automating the search for information for their

tasks (11 %), and 11 % believe that it allows them to develop their collaborative learning and skills. Therefore, AI for students is an effective and important tool.

Teachers favor (table 5.14) it for personalizing learning according to the type of student (16,7 %), helping them optimize time, creativity, and productivity (16,6 %), facilitating better planning of their activities, developing collaborative learning with better skills (15 %), and supporting them with the generation of intelligent content 15 %, automate academic management and administration tasks 13,3 %, facilitate access to information 11,7 %, and academic life 11,7 %. However, if these benefits are not well managed and developed ethically, they can generate conflicts and difficulties within the classroom, consistent with (García-Peñalvo et al., 2024).

Table 5.14. Benefits of using AI

Benefit for the student	No.	%	Benefits for teachers	No.	%
Improved content and access to information	17	17	Personalization of learning	10	16,7
Facilitates academic life	16	16	Optimization of time, creativity, and productivity	10	16,6
Optimization of time, creativity, and productivity	16	16	Collaborative learning and skills development	9	15
Promote learning development	15	15	Generation and analysis of intelligent content	9	15
Generation and analysis of intelligent content	14	14	Automating academic management and administration tasks	8	13,3
Automate information searches for their tasks	11	11	Improving content and access to information	7	11,7
Develops collaborative learning and skill development	11	1 1 %	Makes academic life easier	7	11,7
Totals	10	100	Totals	60	100

Table 5.15. Challenges of using AI

Challenge for the student	No.	%	Challenge for teachers	No.	%
Threat to academic integrity (facilitates plagiarism and unethical use)	17	17	Ethical implications of its use (responsibility)	12	20
Uneven AI literacy	13	13	Teaching adaptation	8	13,3
Educational quality	12	12	Educational quality	8	13,3
Isolation and lack of human interaction	17	17	Lack of clear guidelines on the use of AI	7	11,7
Lack of AI application in subjects	11	11	Lack of training	10	16,7
Biased and inaccurate information	12	12	Resistance to change	6	10
Excessive dependence and reduced critical thinking	18	18	Decreased learning ability and critical thinking	9	15
Totals	10	100	Totals	60	100

When highlighting the challenges that can be addressed with AI for students (table 5.15), the most critical ones are plagiarism and unethical use (17 %), due to the inappropriate practice of consulting, copying, and pasting. Uneven AI literacy (13 %), as many are unaware of these tools. Educational quality (12 %) is affected because they do not learn equally (11 %), they disconnect from valuable knowledge because they allow the tool to do everything for them, creating excessive dependence and reduced critical thinking (18 %), often isolating its users from reality (17 %), and creating biased and inaccurate content (12 %).

Teachers (table 5.15) should bear in mind the ethical implications of its use (20 %), especially maintaining a straightforward adaptation (13,3 %) to these new electronic and emerging processes to improve educational quality (13,3 %) without being affected by the use of AI, and issuing clear guidelines on its use (11,7 %). To do this, it is necessary to provide training 16,7 %, since a lack of knowledge can generate resistance to change 10 %. The excessive use of these technologies by students can lead to a decrease in learning and critical thinking skills 15,5 %, which is in line with Gracia Loor,(2025); Acevedo Carrillo et al.,(2025); Gonzalez Said de la Oliva,(2025); Kroff et al.,(2024); Boujenna et al., (2024); Chao-Rebolledo and Rivera-Navarro,(2024) and Arteaga-Zambrano et al.,(2025), because the use of this technology must be carried out with standards of ethics and responsibility.

CONCLUSIONS

The results showed that classroom experiences with generative AI are linked to its pedagogical use by both teachers and students, leading to the understanding that its application is driven by specific requirements in the teaching and learning processes, depending on the subject taught. The use of digital tools has enabled the generation of attractive, current, and trending content in the scientific field for teaching planning. This has led to the understanding that a virtual classroom has proven essential for integrating technologies through flexible processes in academic training. As its implementation progresses, the quality of learning will benefit. Therefore, strategic virtual environments focused on ethics and inclusive of all students must be designed.

Students' perceptions of the use of generative AI in the classroom for learning have been significant. However, although the tools are invaluable for finding relevant and innovative information in each field of study, students become dependent on them for instruction and expect to be provided with all the information without contributing their own analysis or delving deeper into what is required. This has limited the development of critical thinking and led to an increasing dependence on what is offered to them. As a result, in many cases, teachers have penalized such actions as inappropriate at different academic levels.

The pedagogical use of AI has become relevant to students and teachers in teaching and learning. However, among the limitations encountered are the prevalence of plagiarism and the difficulty in distinguishing between an original piece of writing and one produced by the tool. In addition, teachers face difficulties because they lack tools that facilitate this detection. Many of these tools are free but have limitations, and institutions have not opted to purchase the paid ones or make them available to their teaching staff.

The level of pedagogical use of generative AI by students is significant, and it has been demonstrated that the dimensions and indicators evaluated have real effects on learning, with broad potential to transform its application in higher education. This opportunity can be extended to include it in curricula as a collateral resource. However, this suggests that there is a difficulty in establishing guidelines on quality, ethics, and relevance criteria for implementation in the subjects that students must comply with, in addition to teacher supervision.

Given the proven impact of AI on learning in the classroom, educational institutions need to develop, implement, and monitor institutional policies that broadly allow for pedagogical use across curricular and academic activities. Special emphasis should also be placed on those who persist in making appropriate ethical use of these new technologies. The challenge here should focus on striking a balance between student autonomy in using the tools, critical training in their application in the academic sphere, and teachers' persistence in understanding their

relevance to the development of their classes, their own training, and progressively expanding opportunities for improvement. This will allow for greater pedagogical use and greater ethical and responsible awareness among users.

AI offers various benefits and challenges. Despite this, current academic programs must be reviewed and adapted to new educational models that integrate digital tools and generative AI to maximize the potential for improving educational quality. However, it must be borne in mind that processes are advancing significantly, and the near future must take into account that the environment directly influences technological adoption, which calls for the creation of professional profiles with high standards and experience in the use of these technologies to improve their application in the academic field. Despite everything, the challenge is to ensure that experiences are equitable and accessible to all students. That is why educational institutions must have an investment plan for infrastructure, teacher training, and innovative curriculum design.

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