An Analysis of Student and Educator Perceptions on the Educational Applications of ChatGPT in Secondary Schools.

Jesenia Cristina Bonilla Guzmán

Departamento de Ciencias Humanas y Sociales

Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros

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Msc. Vásconez Torres, Boris Eduardo

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Dedicatoria

I would like to dedicate this work to my mother, Ana Cristina Guzmán Iturralde, and my grandparents, Victoria Marcela Iturralde Arias and Germán Rodrigo Guzmán Armas, who have been most present during this academic stage of my life. They have been there since I began my studies, both at school and now at university.

I dedicate this work to my uncles Belén Guzmán, Richard Guzmán, and Viviana Guzmán; my sisters Alisson Taipe, Abigail Erazo, and Dayana Erazo, who have also been with me every step of the way; to the rest of my family, Mishell Romero and Génesis Guzmán, who are my cousins; my great-grandfather Wilsson Iturralde, who is still alive, and currently my brothers Carlos Bonilla, Evhan Bonilla, and Anny Bonilla, who have been present throughout my latest endeavor. I also dedicate this to my father, Carlos Lautaro Bonilla Enriquez, who, despite the distance between us, is now also present with his words of encouragement to move forward with this final step.

I dedicate this once again to my mother, Ana Guzmán, who has never let me down and has been with me since the beginning of my life, giving me her unconditional support.

I dedicate this to my partner, Steven Borja, who has been with me for almost six years, also with his words of encouragement and helping me every day to be better.

Finally, I dedicate my efforts to my angel Raquel Armas, who has been present at every programmed and/or event since I started school. Sadly, she left us too soon, but I will always be grateful for her presence.

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ÍNDICE

RESUMEN

La presente investigación tiene como énfasis estudiar el uso de la inteligencia artificial, concretamente ChatGPT, como herramienta de apoyo en el proceso de enseñanza y aprendizaje en los alumnos de educación secundaria de la institución Miguel de Santiago, ubicada en el sur de Quito, Ecuador. Este estudio se enfoca en conocer las percepciones de los alumnos sobre la utilidad de esta tecnología, sus beneficios en el desarrollo de actividades académicas y las posibles problemáticas vinculadas a su uso dentro del ámbito educativo.

Este estudio se desarrolló bajo un enfoque cuantitativo, con un punto de vista descriptivo. Para la recaudación de datos se aplicó una encuesta estructurada a una muestra de 33 alumnos, la cual permitió adquirir información vinculada con la utilización, los fines académicos y la valoración general del uso de ChatGPT en el curso. La información adquirida fue analizada mediante estadísticas descriptivas, específicamente a través de frecuencias y porcentajes, lo que facilitó un análisis claro y objetivo de los resultados.

A su vez el marco teórico aborda conceptos fundamentales relacionados con la inteligencia artificial, su evolución y su impacto en el ámbito educativo, así como el rol de las tecnologías digitales en los procesos escolares. Además, se estudia la importancia del acompañamiento docente y del uso responsable de estas herramientas para incentivar el pensamiento crítico y el aprendizaje autónomo.

Para concluir, esta estudió pretende contribuir a la reflexión pedagógica sobre la implementación de la inteligencia artificial en la educación, destacando su potencial como recurso complementario que puede fortalecer el aprendizaje, siempre que su implementación se realice de manera ética, planificada y orientada al desarrollo integral de los estudiantes en el ámbito educativo.

Palabras clave: Inteligencia artificial, ChatGPT, Aprendizaje, Tecnología educativa, Percepción estudiantil.

ABSTRACT

This research focuses on studying the use of artificial intelligence, specifically ChatGPT, as a support tool in the teaching and learning process for secondary school students at the Miguel de Santiago institution, located in southern Quito, Ecuador. This study focuses on understanding students' perceptions of the usefulness of this technology, its benefits in the development of academic activities, and the possible problems associated with its use in the educational setting.

This study was conducted using a quantitative approach with a descriptive design. Data was collected using a structured survey administered to a sample of 33 students, which provided information on the frequency of use, academic purposes, and overall assessment of ChatGPT use in the classroom. The data obtained was analyzed using descriptive statistics, specifically, frequencies and percentages, which facilitated a clear and objective interpretation of the results.

In turn, the theoretical framework addresses fundamental concepts related to artificial intelligence, its evolution and its impact on education, as well as the role of digital technologies in school processes. In addition, it studies the importance of teacher support and the responsible use of these tools to encourage critical thinking and independent learning.

In conclusion, this study aims to contribute to pedagogical reflection on the implementation of artificial intelligence in education, highlighting its potential as a complementary resource that can strengthen learning, provided that its implementation is carried out in an ethical, planned manner and oriented towards the comprehensive development of students in the educational sphere.

Keywords: Artificial intelligence, ChatGPT, Learning, Educational technology, Student perception.

CHAPTER I

1. INTRODUCTION AND STATE OF THE ART

The educational environment changed with the incorporation of technology, in this case referring to artificial intelligence, known as CHATGPT, which transformed the way students prepared their knowledge. Technological advances, characterized by significant events such as the introduction of the Internet and the emergence of digital platforms for education, radically transformed the methods by which students accessed and managed information. The adaptation of artificial intelligence (AI) in education was one of the most notable and discussed changes in the progress of students and teachers.

Research carried out in Costa Rica has shown us that AI has a significant impact on education. In this case, university students used ChatGPT to answer exam questions, which led to them failing (Villanueva, 2023). This research not only showed us the capacity and scope of artificial intelligence in education, but also brought to the fore the ethical challenges and problems for academic integrity. It underscored the importance of a deeper understanding of the responsible use of these technologies and emphasized the gaps that exist in terms of regulation and guidance for AI tools in educational settings.

This research shows us that AI is increasingly being adapted in the field of education. The emergence of AI is not accidental; it is a creation of technological advancement that is important and encourages the desire to change the education process. The implementation of this AI leads to significant educational challenges.

Today's young people, who have grown up with technology in their environment, face a great difficulty as they have technological tools at their fingertips to improve their education. In this case, they are basically in direct contact with AI,

meaning that students no longer know how to use logical reasoning or constructively critique themselves without first consulting this technology directly.

The implementation of AI in education, mentioned by Rodríguez Torres et al. (2023), shows us its transformative potential and ethical challenges. Ibarra Beltrán et al. (2023) focus on the dilemma of plagiarism, while Seldon & Abidoye (2018) discuss guidance on its use. All the authors mentioned above agree that the use of AI should be completely balanced and that it should be handled responsibly in the educational sphere.

STATE OF THE ART

This tool has brought about a radical change in the field of AI and transformed the world. Society has begun to realize the capabilities of this technology with the arrival of ChatGPT, especially children and/or young people within their educational environment, as pointed out by Goldman (2022, cited in Rudolph et al., 2023). According to research, Italy has banned the use of this technology in order to thoroughly examine how this tool affects privacy and various areas of everyday life (McCallum, 2023).

As a result of this debate, researchers and education professionals have begun working to make ChatGPT an ally in the field of education. They began analyzing its advantages as a tool in educational practice and its disadvantages to establish limits on its use in classrooms (Kasneci et al., 2023).

According to Zhai (2022), this application is making significant contributions in terms of creativity and automation, as it can perform complex tasks that require both knowledge and creative intelligence. ‘It is capable of answering questions as if it were in an exam, doing schoolwork and writing academic essays’ (Zhai, 2022). These ChatGPT functions will require education to be modified to teach students to become citizens in a world dominated by artificial intelligence. According to various authors (Carless, 2023; Fernández-Ferrer, 2023; Zhai, 2022), teachers will have to modify

their learning goals, classroom assignments, and assessments, as they need to find more innovative methods that engage students' creative thinking.

In this debate, it has been suggested that assessments be carried out through oral presentations or group work. Tlili et al. (2023) propose oral debates, such as those held in ancient Greece and Rome, in order to assess students' argumentation and persuasion skills, as well as their ability to reason and think critically. Carless (2023) proposes giving short, precise oral presentations, producing podcasts to present work, and providing rapid feedback on work in progress.

However, other types of research carried out by experts who have begun to analyze and break down some of the many functions that ChatGPT can offer teachers in the classroom may also be included. According to Qadir (2022), for example, this AI can directly assist in the creation of classroom resources, such as detailing a topic and creating a quiz or presentation, or even directly helping to calculate grades. In addition, this tool can help with ideas or directly form paragraphs to structure an essay.

The same author (Qadir, 2022) confirms that this technological tool can be adapted to the needs of students within the school environment, as it allows activities to be proposed and broken down according to the specified educational requirements. Finally, Qadir (2022) mentions that this AI promotes language learning by offering support in writing and facilitating oral expression in the classroom.

Continuing with the research, UNESCO achieved the first global agreement on ethics in AI in 2021. In the case of education, member states are recommended to investigate the use of AI so that teachers and students can strengthen and benefit from their variety of educational experiences. While taking advantage of this technology, it is also advisable to set limits for its appropriate use and to mention that AI cannot replace the social and relational aspects offered by traditional education (UNESCO, 2021).

Delving deeper into the topic of AI use in education, UNESCO has worked to develop agreements and recommendations between countries so that new technology in education provides universal access to teaching, improved training and methodologies with the aim of achieving the educational goals of the 2030 Agenda for Sustainable Development approved by the UN (UNESCO, 2021).

The research is based on studying the degree of impact of AI, in this case ChatGPT, on secondary school teachers and students worldwide. The degree of interest arises from the spread of these technologies at the end of 2022, which has raised millions of questions about the role of teachers and students in the face of this new technology. According to Giannini, UNESCO Assistant Director-General for Education (2023), the increase in this AI is too high and is generated with limited control by educational procedures, in addition to insufficient training in digital skills for its proper use by teachers.

The application of AI in education has generated opinions regarding its current impact. The results of studies such as those conducted by Aparicio (2023) and Flores and García (2023) show that AI has the ability to analyze extensive information and efficiently extract key components, facilitating understanding and transforming the way it is accessed.

However, Siemens & Leal (2004) develop this vision by considering that knowledge is divided into linked technological networks, where artificial intelligence such as ChatGPT, Khanmigo, and other learning platforms facilitate the creation of methods in the education system in real time. Thus, AI-driven education not only reduces the role of the teacher in the classroom, but also extends the boundaries of the traditional classroom, thereby adapting a human-machine interface that lowers students' IQ scores, i.e. they let this AI work for them, neglecting their reasoning and critical thinking skills.

This study makes an innovative contribution to the field of artificial intelligence and education in Ecuador, a technology which, despite its global growth, still relies on

practical analyses organized at the national level. Unlike much international research that focuses on specific teaching paradigms such as adaptive learning (Engelbrecht & Borba, 2023; Li, 2024), this research analyses the problem from a comprehensive perspective, structuring the pedagogical, technological, ethical and social dimensions of AI in the Ecuadorian educational environment.

The AI best known as ChatGPT has proven to be a practical pedagogical tool that, as documented by Cajo-Torres et al. (2024), has a positive impact in three key areas: 1) It helps with creative ideas for academic topics, 2) It develops detailed structures for projects, and 3) It reinforces collaborative work. These developments coincide in indicating that AI not only improves processes, but also helps to increase opportunities for the growth of cognitive self-awareness skills adaptable to the management of educational projects.

However, as García Mendoza et al. (2024) point out, ‘despite all the benefits it brings to the educational process, the use of AI, both for teachers and learners, also presents challenges and limitations’ (p. 80).

At the same time, Gonzáles Torres et al. (2024) highlight that ‘the use of AI in education brings with it major ethical challenges, especially with regard to data privacy and the protection of students' digital identity’ (p. 10).

It should also be borne in mind that AI has many positive factors, but it should not be forgotten that it also has limitations in education. For this reason, care must be taken when using AI tools, as they are prone to errors, which must be prevented.

OBJECTIVES:

GENERAL OBJECTIVE

Analyze and study the impact of the use of artificial intelligence, especially the ChatGPT tool, which constitutes the fundamental basis of the research in the field of education, with the aim of understanding how this technology has modified or transformed teaching, learning, and assessment processes.

SPECIFICT OBJECTIVE

- Study the most notable pros and cons of ChatGPT in the educational field, based on the opinions of experts and teachers.
- Identify potential ethical conflicts and academic integrity implications that may arise from students' use of ChatGPT.
- Verify the changes in learning objectives and the skills that students must acquire in order to adapt to an educational environment affected by artificial intelligence.

CHAPTER II

THEORETICAL FRAMEWORK

Within the theoretical framework, the theoretical origins of the research will be developed, incorporating the most current scientific evidence related to the study. Firstly, a brief overview of AI in education will be provided, followed by an overview of chatbots in education, concluding with a clearer perspective on the challenges posed by ChatGPT in the classroom.

The interpretation of AI has changed over the years in line with updates. The term Artificial Intelligence was first used in 1956 at a workshop at an Ivy League university in the United States. Initially, the term AI was understood as 'the study and engineering of the manufacture of intelligent machines, specifically intelligent computer programs' (McCarthy et al., 2006, p. 2, cited in UNESCO, 2021).

According to Jara and Ochoa (2020), in the beginning, the term AI was associated more with the field of Information and Communication Technologies (ICT), which focused on intelligent machines that simulated human reasoning and behavior.

This definition is closer to that offered by UNESCO's World Commission on the Ethics of Scientific Knowledge and Technology (COMEST): 'technology capable of imitating certain functions of human intelligence, including traits such as perception, study, understanding, conflict resolution, linguistic interaction and even the production of creative works. (UNESCO, 2021, p.8).

Over time, AI applications have emerged that have enabled great advances in the community, facilitating and improving the quality and ease of life. Clear examples include medical approaches, self-driving vehicles, personal assistants on smartphones, credentials with facial and fingerprint features, and automatic translation between languages (UNESCO, 2021).

It has also had a major influence on the field of education, which has progressed hand in hand with these innovations, although, according to Jara and Ochoa (2020), the use of this technological tool has been more limited than in other areas.

AI IN THE FIELD OF EDUCATION.

In the study on AI systems in education, three categories are identified (UNESCO, 2021): Applications focused on study and management, such as monitoring assistance and managing timetables, admissions or school studies. Chatbots are used for this purpose. Some examples provide guidance to students when enrolling.

Applications focused on study and assessment have also emerged, allowing more users to access quality, personalized education. Continuous and adaptive assessments are also provided. In this category, the best-known innovations are intelligent tutoring systems, self-sufficient writing feedback, and language and reading study tools.

Applications focused on training teachers and improving teaching that reduce automated tasks such as assessment, plagiarism detection, management, and feedback. Thus, there are systems that monitor discussion forums, take attendance, answer the same questions, or correct assignments.

Although technology can be a useful tool for teachers in performing their educational and pedagogical functions, it is important to bear in mind that it cannot change the role of the teacher. This view is supported by UNESCO (2019), which considers the relationship between teachers and students to be an important aspect of the study, one that cannot be dispensed with, and that AI cannot perform.

This international organization suggests (2019) that member countries reorient the role of teachers in the face of technological advances and provide training to develop the necessary skills in an environment with a strong AI presence.

This same line of thinking is supported by other authors, such as Zhai (2022): ‘AI provides unique opportunities for educators to design study tasks that implement AI so that students can learn these systems.’

However, international organizations, governments and scientists have expressed ‘concerns’ about the pedagogical approach and ethical issues surrounding AI (Holmes et al., 2018b, 2019, cited in UNESCO, 2021). To address these uncertainties, according to Zhai (2022), it is important to understand what AI can do and to motivate students to contribute to improving its performance.

CHATBOTS.

One of the best-known AI applications in recent years is chatbots, due to their natural ability to generate dialogue. When looking for a more specific definition, it can be argued that these are computer applications that use a linguistic interface to simulate intelligent human dialogue. (Allison, 2018, cited in Garcia-Brustenga et al., 2018).

The flexibility of this technology and its ability to adapt to the pace of each user have enabled its growth in all fields (Arredondo, 2020). The current environment is characterized by the constant presence of stimuli between chatbots and people. For example, it searches for and processes information, writes an email autonomously with your voice, or requests a song.

In the field of education, these computer programmers were initially implemented to replace automatic tasks or functions with a low cognitive level. However, the capabilities of these systems have advanced to the point where they can perform tasks related to the learning and teaching process.

García Brustenga et al. (2018) show us these tasks and highlight two types of chatbots: those that perform academic tasks independently and those that have the power to assist with academic objectives.

WHAT IS CHATGPT?

ChatGPT is an interactive chatbot based on the GPT-3 language model developed by OpenAI. This program creates human-like text based on a given dialogue and is capable of generating natural conversations on a wide range of topics. This is one of the concepts that many authors, such as Zhai (2022), refer to, and it is the one offered by ChatGPT itself when asked for its description.

In November 2022, a US laboratory focused on researching and developing artificial intelligence systems, Open AI, launched this chatbot based on GPT-3. Within a week, it had gained a million subscribers (Baidoo-Anu and Owusu, 2023).

The success of this application, which produces texts similar to those of a human being and maintains natural dialogues, is due to the fact that this system uses natural language processing and Generative Artificial Intelligence (GAI) (Tlili et al., 2023).

Along the same lines, Zhai (2022) confirms that the difference between ChatGPT and other natural language programmes or applications is that its responses are more authentic. An example of this would be that this tool responds to follow-up questions, allows for errors, questions erroneous premises, and rejects inappropriate inquiries.

In 2018 was launched the first version of ChatGPT, and the company has released two other versions. Recently, (ET online, 2023) the latest GPT-4 update has been announced and is considered one of the most innovative in the field of language models. To access this version, you have to pay, which differentiates it from the GPT-3 version, which is free and accessible to any user.

THE IMPACT OF CHATGPT ON EDUCATION.

The chatbot programmed called ChatGPT, being an AI application, as demonstrated by initial scientific analyses (Firat, 2023; Susnjak, 2022; Zhai, 2022,

cited in Tlili et al., 2023), has the potential to change the education sector, both in teaching and learning.

According to Zhai in 2022, this application is making significant contributions in terms of automation and creativity, as it has the ability to perform complex tasks that require knowledge and creative intelligence. ‘It can answer test-style questions, handle school assignments, and write academic essays’ (Zhai, 2022).

These ChatGPT functions will require changes in education to teach students to be citizens in a world dominated by AI. According to several authors (Carless, 2023; Fernández-Ferrer, 2023; Zhai, 2022), teachers will be forced to modify their learning objectives, as well as their classroom activities and assessments, as they must seek more innovative ways that require creative reasoning from students.

Taking all the above into account, this debate has proposed conducting analyses through oral presentations or group work. Tlili et al. (2023) suggest oral debates, as in ancient Greece, to assess students' critical and logical reasoning, as well as their ability to argue and persuade. Carless (2023) argues that in order to generate brief feedback on a piece of work, short and specific oral presentations should be given, as well as the development of podcasts to present the work.

If Microsoft implements ChatGPT in its products, this application will be in everyday use in a very short time (Rudolph et al., 2023; Warren, 2023, cited in Baidoo-Anu and Owusu, 2023). For this reason, experts demonstrate the importance of educating education professionals to understand and use this tool for the benefit of society. ‘It would be essential to reinstate the requirement for greater training of professionals for the inclusion of chatbots in the classroom’ (Fernández-Ferrer, 2023).

However, all technology has its pros and cons. As it is a new programmed, it should be used with caution. According to Tlili et al. (2023), limits should be set on its safe use in education. Taking this issue into account, Fernández-Ferrer (2023)

advises including an in-depth reflection on the pedagogical significance of these tools before they are implemented in the market. Along the same lines, the improvements offered by ChatGPT in education and learning are examined, as well as its challenges.

DIFFERENT USES OF CHATGPT.

Although it is a recently launched tool, several scientists have commented on the possibilities that ChatGPT can offer teachers in order to work more efficiently and productively. Initial assessments of its use have been favorable. According to some studies, teachers who have used artificial intelligence systems positively value the inclusion of these applications as tools in their classrooms (Kasneci et al., 2023; Baidoo-Anu and Owusu, 2023).

According to what is mentioned in the theoretical review, this scientific study is based on the premise that AI represents an improvement for society, particularly in terms of its positive impact on education. AI systems provide universal access and facilitate learning and teaching processes (UNESCO, 2021).

The launch of the latest application, ChatGPT, has sparked interest in the world of education, as it is considered an innovative and disruptive tool in the field of educational content creation (UNESCO, 2023). In order to increase scientific knowledge about ChatGPT, which is currently limited, this scientific study is being conducted to support teachers in their adaptation to this new technology.

Onrubia and Minguela (2020) stipulate the role of study intervention as a tool for articulating inclusion and innovation in study centers and avoiding the risk of creating exclusion or including without modifying educational practices. In this sense, this study aims to provide analysis to guide secondary school teachers in the different uses of this AI application as a resource in their classes and also as a tool in their professional tasks outside the classroom.

In this way, it aims to contribute to the community by addressing the challenges faced by teachers in the ChatGPT programmed, with the aim of better adapting the teaching process to the new reality of AI.

Taking into account the ongoing international debate on the advantages and disadvantages of using ChatGPT in research (Qadir, 2022; McCallum, 2023; Future of Life Institute, n.d.) and the lack of scientific evidence (UNESCO, 2021; Giro and Sancho-Gil, 2022; Rudolph et al., 2023; García-Peñalvo, 2023), This study seeks to contribute to the existing literature and offer new perspectives on how to improve the use of this application within secondary education and analyze the difficulties of its use.

Based on professional ethics, I can assure you that my research will uphold ethical principles in order to obtain valid results. Measures will be implemented to comply with the standards of sincerity, respect, reliability, and effectiveness set forth in the European regulations for supported research (All European Academies, 2017).

Continuing with Blaxter, Hughes, and Tight (2010, cited in Rodriguez-Gómez, 2021), it is possible to discuss with participants how their data will be used and how the results will be presented. They will then read and sign the consent form that includes these points. In addition, at the beginning of the surveys, the privacy and anonymity of the data contributed by the participants will be ensured in order to maintain research ethics, as advocated by Bell and Waters (2014, cited in Rodríguez-Gómez, 2021).

Secondary school teachers' perspectives and actions on artificial intelligence at the outset of the study, it is essential to avoid spreading the notion that all teachers' perceptions are identical.

The specific context, both territorially and educationally, plays a specific role in shaping practices related to artificial intelligence. In a study conducted by Cabrera Loayza (2024) in Ecuador, opposing trends in the implementation of AI were

associated with gender and age, with women showing greater familiarity with AI at the initial levels.

However, the study conducted by Nja et al. (2023) in Nigeria showed that demographic factors such as gender, age and place of residence (rural or urban) do not significantly influence teachers' intention to use artificial intelligence tools.

Teachers stated that they agree with the adaptation of AI due to certain key factors, such as its ease of use, its intelligence in streamlining teaching and learning, and its contribution to improving educational quality (Rojas Lema et al., 2024). However, as explained initially, not all scenarios allow teachers to obtain this openness, since in one of the studies conducted in Nigeria, teachers' impressions of the usefulness of 'AI for social good' and their level of 'belief' in technology affect most of the relationships in the research model.

Therefore, these are two key integrating factors of a teacher's idea of educating about AI (Sanusi et al., 2024). Similarly, among teachers in Ecuador, a tendency to reject the adaptation of artificial intelligence by a high percentage of teachers is analysed (Quintanchala Taquez et al., 2025).

This refusal is mainly due to the inappropriate use of artificial intelligence and the lack of critical research on the results it produces (Frutos et al., 2024). although teachers recognize artificial intelligence as a powerful tool for personalizing information and providing immediate assistance, they simultaneously express strong concern about the likely heavy dependence of students, particularly those with low motivation (Pratiwi et al., 2025), leading to erroneous analysis of AI studies. This leads to the conclusion that teacher training is essential (Quintanchala Taquez et al., 2025), so that teachers can adequately inform students about the use of this tool and encourage them to be analytical when using it.

Contrary to what might be assumed, concerns about artificial intelligence and the level of knowledge do not restrict teachers' purpose of teaching on the subject

(Jatileni et al., 2024). Similarly, in the findings of Osorio Salazar (2024), in the Colombian context, teachers were optimistic about the use of technology (80% had a positive attitude), but with educational concerns about knowledge: 70% had problems with the most current digital tools and 70% had not received an education based on the use of technological tools, this related to the use of ICT that are not necessarily based on artificial intelligence.

In several Latin American countries, teachers working in rural areas have reported that AI-based tools are particularly useful to them. According to Jiménez Zambrano and colleagues (2024), these teachers feel more satisfied when they use AI for tasks such as keeping track of grades, developing work plans, organizing meetings, or carrying out coordination and follow-up activities.

For many teachers, this type of technology serves as an aid that streamlines their energy-consuming administrative tasks that are not directly related to teaching. These tasks often become a burden and ultimately distract them from what is really important: strengthening pedagogy. This is even more important in rural educational institutions, where maintaining student motivation and close relationships with the community are an essential part of the educational process.

It is striking that, in the United States, many teachers in rural areas admitted to having very little or no knowledge of artificial intelligence, despite the fact that this country is one of the leaders in its development (Vandenberg et al., 2023). Furthermore, it was observed that teachers were also unclear about what skills students could acquire through the use of AI, highlighting the need to include these topics directly and specifically in teacher training (Cheah et al., 2025).

Based on the initial findings, it is clear that teachers tend to view AI positively and are willing to include it in their teaching activities. The problem is not usually rejection, but rather a lack of knowledge about how to use it properly, which is

understandable considering that they will be the ones who must guide and accompany students in its use.

Just as access to the Internet transformed the way students researched and found information; artificial intelligence is beginning to change the way learning occurs. Although artificial intelligence helps speed up the analysis process, this does not mean that students stop thinking for themselves. Those who learn to use these tools in a balanced way will find it easier to navigate an academic and work environment that demands ever-increasing skills.

CHALLENGES OF AI IN SECONDARY EDUCATION

As the analysis deepens, a second category emerges related to the challenges of integrating artificial intelligence into secondary education. Many teachers have expressed concerns related to ethics, honesty in schoolwork, and the fear that students will stop exercising their critical thinking skills by relying too heavily on these tools (López Costa, 2025).

These concerns end up slowing down the incorporation of AI into educational activities, especially when some students limit themselves to generating texts without questioning the information or checking for errors that these models still tend to present.

Added to this is a frequent situation in rural secondary education in Colombia: teacher overload. In many schools, a single teacher must accompany all secondary courses, from sixth to eleventh grade, within the same school day and even sharing the same physical space. In some areas, the ratio is as high as 22 students per teacher, a figure that can affect the quality of the educational process (Laboratory of Education Economics, 2024).

In these cases, difficulties arise in adapting lessons, planning activities suitable for each student, or properly supervising how AI is used. Even basic tasks,

such as grading, become challenging when it comes to recognizing whether these tools have been used unnecessarily.

Another point mentioned by teachers is that AI is often reduced solely to applications that generate text. This can lead to problems such as plagiarism, lack of effort, and a dependence on technology that does not always promote learning. Another recurring challenge is the actual capacity of countries to secure the minimum resources needed to incorporate artificial intelligence tools. Although the studies reviewed come from very different regions, they agree that the infrastructure gap remains a central obstacle.

The differences between contexts are evident: while teachers in Singapore are confident that AI can be adapted to their needs, those in Myanmar and Laos still face severe limitations due to a lack of adequate infrastructure (Payadnya et al., 2025).

Similar situations can be observed elsewhere. In Cape Verde, for example, the main problems are related to the quality of basic services and the availability of high-speed internet, which complicates any attempt at implementation (Gomes & Gonçalves, 2024). In Chile, internet access remains the factor that most influences the use of technology in schools (Espejo Aubá, 2024).

Added to this is what is happening in rural areas of Catalonia, where the lack of stable connectivity and the scarcity of digital devices continue to mark significant differences between educational centers (López Costa, 2025). In Colombia, the situation is not very different: in rural areas, limited access to the internet deepens inequality, because although AI could help to close gaps, it can also widen them if only some students can use it on a daily basis.

This is one of the most serious challenges for rural secondary education, as only about 30% of rural educational establishments have an internet connection (Education Economics Laboratory, 2024), a basic requirement for any AI tool to work.

Unfortunately, a common mistake in introducing new technologies has been to prioritize the tool before ensuring that the necessary conditions for its proper use are in place.

The integration of artificial intelligence into secondary education is not merely a technological process, but rather a complex challenge dependent on multiple interrelated factors. A review of the literature indicates that effective implementation requires addressing four fundamental areas: teacher training, technological infrastructure, institutional frameworks, and pedagogical aspects.

Among all those mentioned above, the most frequently cited is the need to strengthen teacher training. Most studies agree that, although many teachers show interest in AI, they often start from a position of misinformation or even misconceptions, which generates doubts, insecurity and resistance to change.

Therefore, training programmed should not be limited to teaching the technical use of the tools; it is more useful to promote confidence, clarify their educational and social value, and explain their possible risks or biases, as these elements directly influence teachers' willingness to integrate AI into their classrooms (Sanusi et al., 2024).

Likewise, training should include content on ethics and critical thinking, so that teachers can address issues such as plagiarism, algorithmic bias, and data protection. It is important to remember that it is not only students who can make mistakes when using these tools; teachers can also make errors of judgement if they do not receive adequate guidance.

Finally, the information must be tailored to the context in which each teacher works, specifically in rural areas, and take into account the educational level at which it will be applied. In this way, it will be possible to design realistic pathways for teachers that facilitate the integration of AI into educational processes.

Furthermore, the implementation of artificial intelligence does not depend solely on the motivation or initiative of teachers. For its use to be equitable and sustainable, institutional support is needed to guarantee minimum resources and basic conditions for access. When there are no clear policies or guidelines within the education system, uncertainties often arise that hinder the safe, consistent and responsible integration of AI into school practices.

The literature reviewed highlights the importance of establishing regulatory frameworks to govern its use, especially to ensure fundamental aspects such as privacy, equity and transparency. In this regard, it is worth noting that Colombia is among the five countries in Latin America that have a national roadmap for artificial intelligence. In February 2025, Conpes 4144 was published, a document that establishes 100 concrete actions within a public policy projected until 2030.

These actions implement initiatives to strengthen telecommunications infrastructure in rural and remote locations, as well as measures to prepare the country for new technologies and services that will expand broadband Internet access in large cities, population centers, and dispersed regions (Vanegas et al., 2025). This policy also implements ethical guidelines based on World Health Organization recommendations, enhancing the country's commitment to the appropriate use of AI.

The analysis of the literature shows that, in secondary education, artificial intelligence is mainly used as a support tool for teachers, rather than as a direct learning resource for students. Its use tends to focus on tasks such as text generation and content detection, for example, to plan lessons, develop materials (López Costa, 2025), translate documents, create illustrations, design presentations, or incorporate it into robotics projects (Dúo Terrón et al., 2023). In these cases, AI acts as a significant support in the preparation of activities that teachers develop with their students.

In other contexts, such as the United States and Ecuador, the studies reviewed show that AI is mainly applied in processes such as the creation of assessment tools, the recording of grades, and the management of administrative tasks. This reflects a search by teachers for greater efficiency and time savings.

In truth, while the usual activity focuses on facilitating education, theoretical literature and studies on the potential of artificial intelligence paint a different picture of what these tools can directly incorporate into student learning. This difference suggests a gap between current uses, aimed at optimizing teaching management, and uses that could truly transform the educational experience of students.

An example of this can be seen in a study conducted in Peru, in which students' grades showed a significant improvement, especially among those who used artificial intelligence more frequently. The authors conclude that, while AI can promote academic progress, it is essential to guarantee equitable access to technology (Cobos-Gutiérrez, 2024).

Similarly, studies such as those by Gomes & Gonçalves (2024) and Espejo Aubá (2024) point to the enormous potential of AI to offer personalized learning paths, provide immediate feedback and generate activities adapted to the pace and level of each student.

Digital literacy must also prepare students to recognize the risks associated with the use of artificial intelligence-based technologies. One of the most significant risks is that of hallucinations, i.e., responses generated by models that are not derived from the information with which they were trained. This problem has been widely documented in the literature. For example, Cao et al. (2017) found that about 30% of the outputs produced by advanced neural network-based summarization systems exhibit some form of hallucination.

Similarly, Falke et al. (2019) analyzed more technologically sophisticated models and reported about 25% of errors of this type in the summaries generated.

Similarly, Maynez et al. (2020) observed that more than 70% of single-sentence summaries exhibited intrinsic or extrinsic hallucinations in systems based on recurrent, convolutional, and Transformer architectures.

Shuster et al. (2021) studied neural retrieval mechanisms in models designed to maintain open conversations and found that these architectures were able to generalize to situations not included in the training and reduce the occurrence of hallucinations in advanced chatbots.

Similarly, Bang et al. (2023) analyzed ChatGPT's performance on various reasoning tasks, including logical, non-textual, and common-sense reasoning. The results showed an average accuracy of 63.41%, highlighting significant limitations of the model and confirming its tendency to generate incorrect or inconsistent responses, known as hallucinations.

Finally, digital literacy must consider the risk of plagiarism associated with the use of chatbots. Ghosal (2023) warns that tools such as ChatGPT do not have internal plagiarism verification mechanisms and that, on occasion, they can reproduce phrases taken from the data with which they were trained. For their part, King and ChatGPT (2023) review the historical development of AI and chatbots and highlight the risk of misuse in educational settings, especially in higher education, where concerns about plagiarism have increased significantly.

Teachers have various options for reducing the risk of cheating when students use tools such as ChatGPT. These include implementing varied assessments and using plagiarism detection programmed, such as those developed by GPT-2 Output Detector Demo (2022), OpenAI (2023), Originality (2023), the Allen Institute for AI (n.d.), Crossplag (n.d.) and Writer (n.d.).

The incorporation of ChatGPT into the educational sphere was not without controversy and generated debates in various educational institutions and public entities. According to Lukpat (2023), several educational units in New York City

decided to restrict access to this tool on their institutional networks and devices, due to concerns that students would use it to answer assessments, complete assignments, or write academic essays. Similarly, Soper (2023) notes that public educational institutions in Seattle adopted preventative measures and opted to prohibit its use, given concerns related to academic integrity.

Cassidy (2023) reports that several Australian universities had to rethink their assessment methods due to the risk of students using AI to write their papers. As a result, several institutions explicitly stated that the use of these tools constitutes a form of cheating.

In Europe, McCallum (2023) explains that Italy temporarily suspended access to ChatGPT due to privacy concerns, arguing that there were insufficient guarantees regarding the processing of personal data used to train the models. Along the same lines, Brodkin (2023) highlights that OpenAI's limited transparency regarding its architecture, training methods, hardware, and data sources has increased concerns about its use.

Many people feel uneasy about the advancement of artificial intelligence, partly because they see it as a factor that could profoundly transform various productive sectors and, consequently, lead to job losses. There is also a persistent fear that these systems will become so sophisticated that they end up making decisions for people or even surpassing human control. The possibility of machines or robots replacing tasks previously performed by workers can be worrying for a large part of the population. Likewise, some believe that an AI with too much power could pose a risk to humanity (OpenAI, 2022).

Regarding the fears associated with advanced chatbots—such as ChatGPT—the reasons are varied, although there is still not enough statistical data to confirm them conclusively; for now, only isolated experiences and preliminary reports can be cited. A report by Stanford University’s AI Index Steering Committee (2023) shows

that 36% of the experts surveyed believe that decisions made by AI systems could lead to “nuclear-level catastrophes” (p. 337). While most specialists agree that AI will bring profound changes to society, they also point to the need for caution regarding the risks that accompany this type of technological advancement.

Several studies show that the latest versions of language models have significantly improved their performance. For example, ChatGPT-4 outperformed ChatGPT-3.5 on various specialized assessments, such as the Medical Knowledge Self-Assessment Test, the 2022 USABO Semifinal Exam, the 2022 USNCO Local Exam, and even sommelier tests (OpenAI, 2023).

The GPT-4 Technical Report indicates that this model achieved near-human performance in various assessments. These included a bar exam specifically designed for its measurement, in which it ranked among the top 10%. Furthermore, GPT-4 demonstrated superior performance compared to other language models in a wide range of natural language processing tasks, even outperforming systems previously considered state-of-the-art.

On the other hand, the advancement of these technologies has increased uncertainty due to their impact on human employment. A Goldman Sachs essay (Hatzius et al., 2023) predicts that ChatGPT and other generative AI tools could change around 300 million jobs worldwide. In the United States, researchers estimate that AI could change approximately 7% of jobs, support or complement 63%, and have no impact on the remaining 30%. They also predict that its global adoption could increase global GDP by 7%.

According to Taulli (2019), automation will play an increasingly important role in repetitive tasks, especially in areas such as programming and debugging. In contrast, professions that require complex human skills—such as empathy, critical decision-making, problem-solving, and social interaction—for example, social work,

healthcare, and marketing strategy, remain fields where AI has greater difficulty offering a true replacement.

Bubeck et al. (2023) maintains that the advancement of GPT-4 and other advanced linguistic models is beginning to challenge the traditional perception of human expertise in various professional and academic fields. According to these authors, the capabilities of these systems can generate intrigue, especially in areas where specialized knowledge is highly valued, as there is concern that AI will minimize the role or importance of certain workers. Furthermore, they warn that unequal access to these technologies could widen the so-called 'AI gap', disproportionately helping those who can use high-performance models and disadvantaging those who do not have access to these tools, which could exacerbate existing inequalities.

Similarly, an essay shared by GESTIÓN (2023) shows the results of a survey conducted by ResumeBuilder.com of 1,000 business CEOs in the United States. The study shows that almost half of companies already use ChatGPT and another 30% are considering implementing it.

According to the data analyzed, 48% of the organizations that implemented this tool replaced some of their staff and reported savings exceeding $75,000. Despite these changes, the perception of its performance is largely positive, with 55% of business owners rating it as "excellent" and 34% as "very good."

Among the most frequent uses of this tool are code generation (66%), content creation (58%), customer service (57%), and preparing summaries of documents or meetings (52%). It is also widely used in human talent management processes, such as writing job descriptions (77%), preparing interview questions or exercises (66%), and responding to applicants (65%).

Eloundou et al. (2023) present a similar analysis, examining the impact of GPT and other large-scale language models on a total of 19,262 tasks and 2,087

work processes compiled from the O*NET 27.2 database. The study's results indicate that approximately 80% of workers in the United States could experience changes in at least one-tenth of their job functions as a result of these technologies. Furthermore, approximately 19% of the workforce would be exposed to substantial changes in half or more of their activities.

The study also notes that around 15% of the tasks performed by employees could be completed more quickly thanks to LLMs, and this percentage could increase to 47–56% if software tools based on these models are incorporated. The least affected areas tend to be linked to science and critical thinking, while tasks related to programming and writing are more susceptible to automation. Another key finding is that higher-paying jobs have greater exposure to these technologies, although this is not directly related to employment level. Similarly, individuals with incomplete university studies are among those most exposed to the advancement of LLMs.

Taking these findings into account, several economic, social and political issues arise. For higher education institutions, this knowledge could serve as a basis for updating their education plans, prioritizing skills that artificial intelligence cannot easily replicate, such as problem solving, critical thinking and decision making. It is also proposed that universities teach students to understand, use and develop AI tools so that they can better adapt to an ever-changing job market and remain professionally competitive.

CHAPTER III

METODOLOGY

Given that the study method was quantitative, as the results came directly from the students' responses to the survey. This approach was chosen because it facilitated the collection of accurate and clear information on how students view the use of ChatGPT in education.

The study adopted a descriptive approach, as its purpose was not to test theories or analyze relationships between variables, but rather to understand a specific reality. In this sense, the main objective was to describe and characterize students' opinions regarding a technological tool that is currently being incorporated into the educational field.

The study design was objective and non-experimental. No interference was applied, nor were the conditions of the educational environment changed, as the information was collected as it presented itself at a specific point in the academic year.

The community consisted of secondary school students from Miguel de Santiago Public School. Given that the number of students who could be accessed was limited, it was decided to work with all of them. For this reason, the sample was based on a survey and consisted of 33 students who voluntarily participated in the research.

Only surveys were used to collect data. A closed-ended, structured survey using a Likert scale was used. This programmed was created considering the research objectives and the students' level of understanding to avoid confusion when responding.

At the beginning of the process, data on artificial intelligence and its application in the field of education was analyzed. Next, a survey was created, and the necessary authorization was requested from the educational institution. Once the surveys were approved, they were distributed among the students and their responses were collected.

It is important to bear in mind that the use of descriptive statistics is highly relevant for the study, and that the data was collected manually. Frequencies and percentages were also used to facilitate understanding.

Throughout the entire research process, fundamental ethical principles were respected. Participation was entirely voluntary, the anonymity of responses was ensured, and the information obtained was used solely for academic purposes.

RESEARCH TECHNIQUES

To begin this part of the study, a survey was conducted, which I considered the most appropriate method for obtaining quantitative results on their perceptions regarding the use of ChatGPT as a study tool. This method helped me to collect more accurate and individual results, as the study is based in the academic field.

The study was the main foundation of the research because, as I mentioned earlier, it allowed us to obtain individual results from all the students. Since these were subjective opinions, it was necessary to use a method that allowed participants to adequately express their opinions without external interference and without interfering with their normal school activities.

Considering the number of people surveyed in the study, the survey was also adequate. This approach ensured that data from each participant was collected consistently and under the same conditions, as data from all 33 students was gathered within a short period of time.

Each student answered the survey based on their own experiences and perceptions of using ChatGPT in the classroom. This approach was crucial, as it avoided the influence of external opinions and encouraged more thoughtful and honest responses.

Another important aspect of the study was its structured and accessible nature. The use of closed-ended questions with a Likert scale facilitated students' understanding of the concepts, taking into account their academic level. This format also allowed for clear and comparable responses, which facilitated a more organized and precise data analysis.

The study addressed various aspects related to the appropriate use of ChatGPT in education, including its perceived usefulness for learning, ease of use, student interest, and its potential application as a support tool for academic activities. Thus, the technique employed was not limited to a single dimension, but rather allowed for a broader understanding of the phenomenon analyzed.

It is important to note that the survey technique was chosen based on the institutional context in which the research was conducted. Since it was a public educational institution, it was necessary to use an instrument that would not interfere with the normal flow of classes or place an additional burden on the students or the institution. In this sense, the survey emerged as a practical, viable, and accessible alternative.

Before the study began, the students were briefly informed about the purpose of the survey and that their responses would be anonymous and used solely for academic purposes. This information helped create an atmosphere of trust and ease, allowing participants to feel more comfortable answering. As a result, the likelihood of biased or conditioned responses was reduced.

Since all students were asked the same questions and the study was conducted under similar conditions for everyone, the information collected was more consistent, making it easier to organize and compare the responses.

Since the survey results were numerical, the study could be conducted using basic descriptive statistics, including frequencies and percentages. Since the survey was conducted during a specific stage of the school year, students' answers reflected their recent experiences with educational technology. This allowed for the assurance that the information collected more accurately reflected the status of schooling at the time the study was conducted.

While the study has certain limitations, such as the inability to delve deeper into more extensive individual responses, the methodology employed was sufficient to achieve the proposed objectives. The technique used provided an overview of students' perceptions of ChatGPT's use in their educational process, representing a significant contribution to the analysis of this topic.

RESEARCH DESIGN

The research was conducted using a non-experimental approach, as no variables were manipulated nor were any interventions applied throughout the process. The study focused solely on gathering students' opinions about the use of ChatGPT, based on their own experiences in the academic context.

The aim of the study was not to measure results or changes in academic performance, but rather to understand how students perceive the educational use of this technological tool. For this reason, it was considered that the most appropriate option was to observe the situation as it normally occurs in the classroom. Students continued with their classes as usual, and no changes were made to their learning routines.

The study also adopted a cross-sectional approach, as the data were collected at a single point in the academic year. This provided a clear picture of students' opinions at a specific time, influenced by their most recent experiences. Consequently, the results reflect how students were interacting with educational technology at that particular moment.

Administering the survey simultaneously to all students ensured consistent data collection. Furthermore, because the study was conducted in comparable educational settings, the responses could be analyzed and compared without significant difficulty.

The chosen design was appropriate given the characteristics of the institution where the study was conducted. As it was a public secondary school, it was essential to avoid methods that would disrupt the normal flow of classes or place additional burdens on students. In this context, the non-experimental approach allowed the research to proceed smoothly, without affecting the daily school routine.

Also, this approach was consistent with the quantitative perspective or approach of the study. Since the responses were collected through a structured survey and subsequently analyzed using basic statistical tools, the approach greatly facilitated this clear and orderly study process. The numerical nature of the information helped to identify general trends in the students' perceptions.

From an ethical perspective, the study ensured respect for student participation. Students were never pressured regarding their responses and were completely free to express their opinions. This allowed participants to feel more comfortable sharing their viewpoints, which in turn improved the quality of the information gathered.

CHAPTER IV

This chapter presents and analyses the results obtained from a survey of 33 students at the Miguel de Santiago educational institution, located in southern Quito, Ecuador, with the aim of analysing their views on the use of artificial intelligence in the classroom, particularly the educational application of ChatGPT.

On the other hand, the growing incorporation of artificial intelligence-based tools in the field of study has generated new opportunities for learning, as well as challenges related to their responsible and ethical use, making it necessary to understand how these technologies are perceived by students.

The data collected using a structured research tool, consisting of eight closed questions, allows us to explore the level of knowledge, use, perceived usefulness, impact on learning and precautions associated with the use of ChatGPT, as well as the need for teacher training in artificial intelligence tools.

The information obtained was organised and presented in tables and graphs that include frequencies and percentages, making it easier to interpret the students' opinions clearly, accurately and objectively.

The results were analyzed using descriptive statistics, an appropriate approach for describing the perceptions of the participating student group without establishing causal relationships. Consequently, this chapter presents the main findings of the study, which provide a relevant empirical basis for the analysis and theoretical reflection developed in the following chapter, and contribute to a deeper understanding of the role of artificial intelligence and ChatGPT in the context of secondary education.

Data Collection Procedure

The results were collected through a survey consisting of eight closed questions to facilitate the process. The survey was administered to 33 students. The

survey plan aimed to ascertain the students' level of knowledge, opinions, risks and use regarding the adaptation of ChatGPT, which is currently the most common form of artificial intelligence in the educational context. The survey was conducted on 19 December 2025, in order to ensure that the responses reflected current opinions on the use of this AI. The results are presented in graphs that include percentages to facilitate analysis.

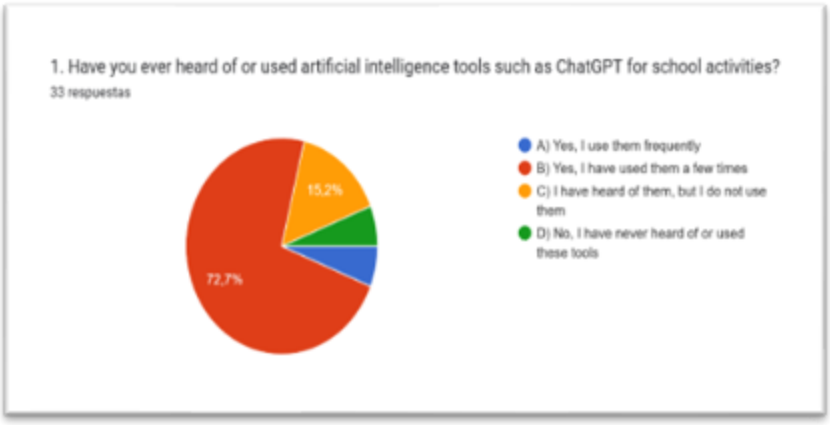

Figure 1. Have you ever heard of or used artificial intelligence tools such as ChatGPT for school activities?

Question 1: Understanding and usefulness of artificial intelligence

Statistics indicate that most of the 33 students have prior knowledge of artificial intelligence such as ChatGPT. As you can see in the graph, 72.7% (24 students) said they had used this AI sometimes, while 15.2% (5 students) said they were familiar with it but did not use it. These data show a high level of knowledge and moderate use of artificial intelligence among secondary school students.

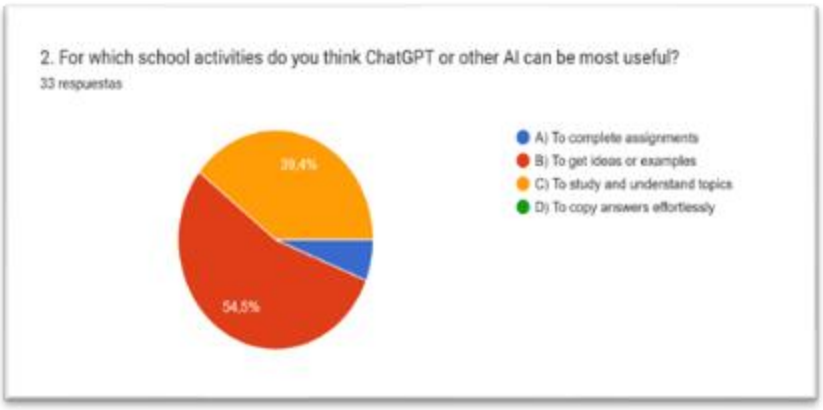

Figure 2. For which school activities do you think ChatGPT, or other AI can be most useful?

Question 2: Use of ChatGPT in school activities

Based on the usefulness of ChatGPT in school activities, the graph indicates that 54.5% of students (18 students) believe it offers benefits such as providing ideas or examples, while 39.4% (13 students) consider that it reinforces their study and understanding of certain academic topics they have found difficult in class. These results indicate that students consider ChatGPT to be a learning aid rather than a quick way to copy answers.

Figure 3. Do you think that using artificial intelligence can help you learn better at school?

Question 3: Use of AI (Artificial Intelligence) in the student environment

When asked whether artificial intelligence helps them learn better at school, 42.4% of students (14 students) said it helps very little, while 39.4% (13 students) said it helps a little. Only 12.1% (4 students) said that artificial intelligence helps them learn a lot. This shows a moderate perception of the positive impact of these tools on the educational process.

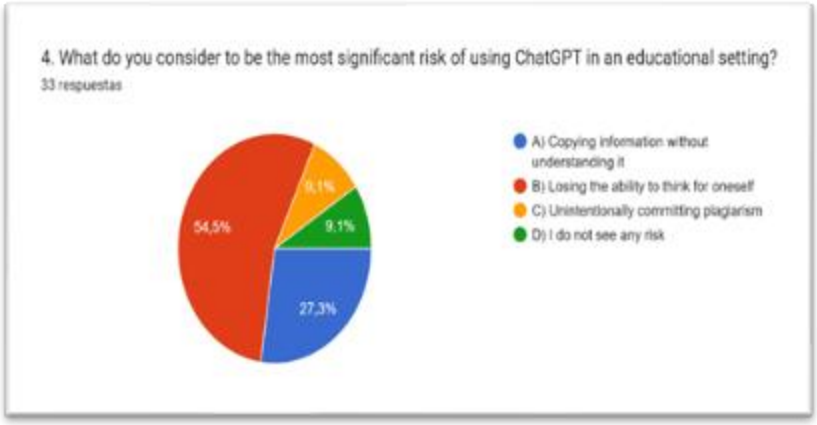

Figure 4. What do you consider to be the most significant risk of using ChatGPT in an educational setting?

Question 4: Precautions to consider when using ChatGPT in education

The precautions for using ChatGPT in education are that 54.5% of students (18 students) identified the loss of the ability to think independently as the main precaution. On the other hand, 27.3% (9 students) expressed concern about copying information without understanding it. A smaller percentage pointed to plagiarism (9.1%, 3 students) or indicated that they did not perceive any concern (9.1%, 3 students). These results show that students are aware of the possible negative effects of the inappropriate use of artificial intelligence.

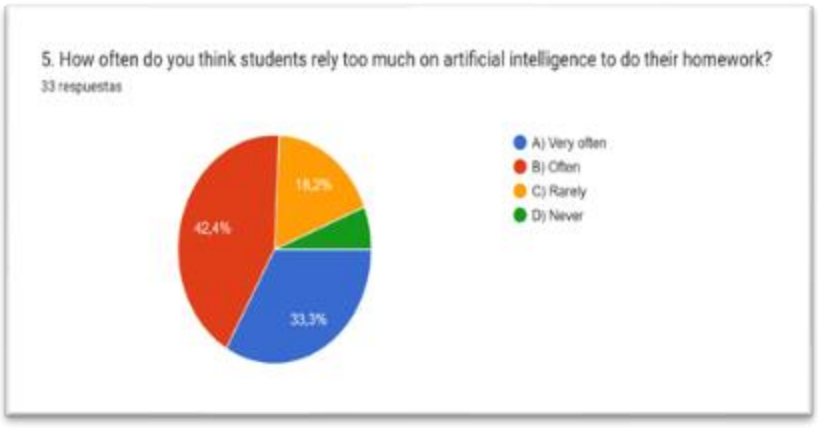

Figure 5. How often do you think students rely too much on artificial intelligence to do their homework?

Question 5: Excessive Reliance on Artificial Intelligence in the Academic Sphere

The study results show that 42.4% of students (14) consider that they frequently use artificial intelligence to complete their schoolwork, while 33.3% (11) perceive this use as very frequent. In contrast, only 18.2% (6) indicate that this practice is uncommon. Overall, these data reveal a widespread perception of dependence on the use of artificial intelligence tools.

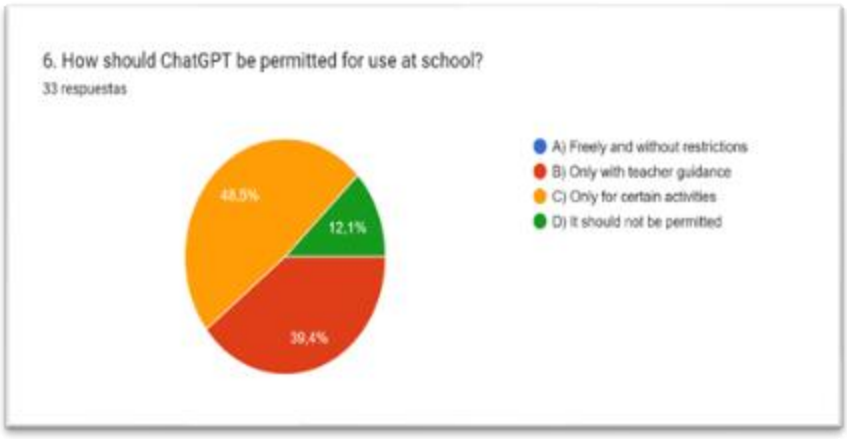

Figure 6. How should ChatGPT be permitted for use at school?

Question 6: Regulating the use of ChatGPT in the student environment

Considering the use of ChatGPT at school, 48.5% of students (16 students) understand that its use should be restricted to certain activities, while 39.4% (13 students) believe that its use should be limited to situations with teacher guidance. On the other hand, 12.1% (4 students) believe that its use should not be allowed under any circumstances. The study shows clear responses in favour of regulated and supervised use of artificial intelligence in the student environment.

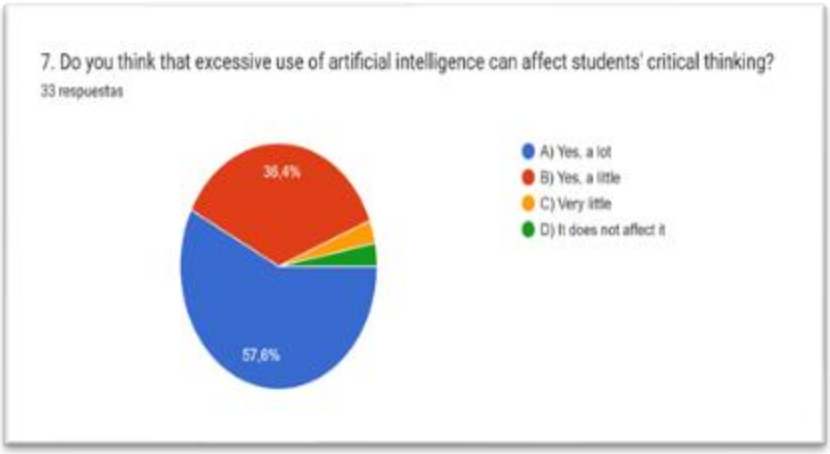

Figure 7. Do you think that excessive use of artificial intelligence can affect students' critical thinking?

Question 7: Impact of excessive use of artificial intelligence on critical thinking

Most students understand that the excessive use of artificial intelligence affects critical thinking. Specifically, 57.6% of students (19 students) indicated that it affects it greatly, while 36.4% (12 students) indicated that it affects it somewhat. This demonstrates a high level of reflection on the importance of preserving fundamental cognitive skills in the face of the excessive use of artificial intelligence.

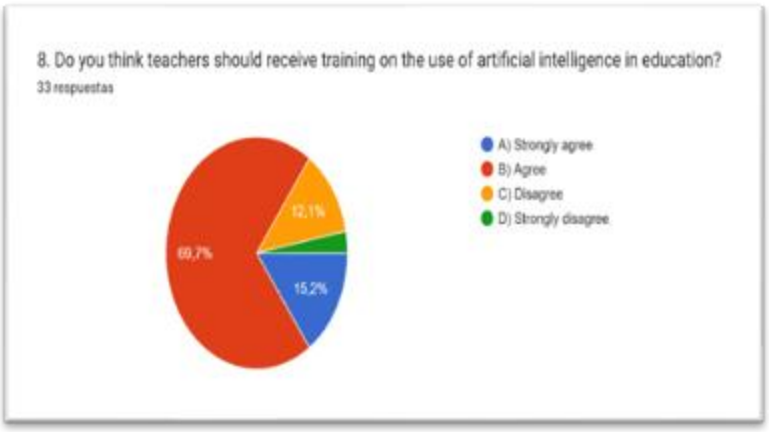

Figure 8. Do you think teachers should receive training on the use of artificial intelligence in education?

Question 8: Teacher training in artificial intelligence

Finally, the study shows that teachers have support for teacher training in artificial intelligence. 69.7% of students (23 students) confirm this fact, and 15.2% (5 students) strongly agree that teachers should receive some degree of training on the educational use of artificial intelligence. Only 12.1% (4 students) expressed disagreement. This highlights the perception that adequate preparation of teaching staff is key to the responsible integration of these tools.

Descriptive statistical analysis

This descriptive statistical study was based on responses obtained from a sample of 33 secondary school students. Absolute and relative measurements (percentages) were used to administer the responses obtained, due to the quantitative and closed nature of the questions in the study tool.

This type of study allowed the information to be organized, summarized and presented clearly, making it much easier to identify patterns and trends in students' perceptions of the use of artificial intelligence (ChatGPT) and other artificial intelligence tools in education. Absolute frequencies allow us to know the exact

number of students who selected each answer option, while percentages facilitated comparison between the different categories.

The results show that most students have prior knowledge and basic experience in the use of artificial intelligence tools, which is demonstrated by the high percentages recorded in the options related to occasional use and recognition of academic benefits. Likewise, the descriptive study identified recurring perceptions about the risks associated with the use of these tools, which would be the loss of critical thinking and excessive dependence on them for completing schoolwork.

The use of descriptive statistics was appropriate for this study, given that the purpose of the research was to describe and analyze the different viewpoints of the participants, rather than to establish causal relationships or make statistical inferences about a larger population. In this sense, the results obtained accurately reflect the opinions of the group of students who participated in the study.

Interpretation of results

Interpreting the results allows us to understand the meaning of the responses obtained and their connection to the overall objective of the study. In general, the findings show that students maintain a moderately positive attitude toward the use of ChatGPT as an educational tool, although they also express a critical stance regarding its potential negative effects.

To begin with, the high percentage of students who have used artificial intelligence tools, even if only occasionally, indicates that these study tools are already part of the current educational environment. However, the fact that a considerable percentage of students understand that artificial intelligence helps little or very little in learning suggests that it is not yet perceived as a resource that is fully integrated into the teaching-learning process.

Similarly, the results related to the concerns generated by using ChatGPT reflect a clear awareness of the consequences of the inappropriate use of artificial intelligence. Concerns about the loss of the ability to think independently and excessive dependence show that students recognize the importance of critical thinking and personal effort in their education.

Furthermore, the preference for responsible use of ChatGPT, whether restricted to specific activities or under teacher supervision, demonstrates that students do not reject technology but rather recognize the need for a regulatory framework to ensure its proper application. This view is reinforced by the broad support for teacher training, suggesting that students consider the role of teachers essential for the appropriate implementation of artificial intelligence in education.

Taking into account the results obtained, they indicate that the use of ChatGPT in the field of education has significant educational potential, provided that it is implemented appropriately, correctly, ethically, and under supervision. This shows us that it provides relevant information for the model of teaching strategies that promote the conscious use of artificial intelligence as a complement to education, rather than as a substitute for critical thinking or academic work by students.

CHAPTER V

Conclusions

The results showed that was demonstrated that a large proportion of students have a positive view of the use of artificial intelligence, specifically ChatGPT, as a learning tool in the teaching process. This shows an openness towards the implementation of new technologies in the field of education.

It is understood that ChatGPT is mainly perceived as a tool that facilitates the understanding of various subjects of study, the completion of assignments by students and clarification of doubts, which contributes to the strengthening of autonomous and meaningful learning.

Despite the identified benefits, the results show that students also recognize potential risks, such as over-reliance on the tool or its inappropriate use, highlighting the need for appropriate pedagogical guidance. Furthermore, the data analysis confirms that artificial intelligence is influencing current study practices and transforming how teachers and students access information and construct their understanding.

In conclusion, it is understood that the implementation of the ChatGPT artificial intelligence technology tool in education will not change the role of teachers, but will help them to complement their teaching methods, provided that its use is governed by guidelines for the student environment.

Recommendations

It is recommended that educational institutions promote the appropriate use of artificial intelligence tools by developing precise guidelines to engage students and teachers on their optimal use in the educational setting.

Teachers need to be trained in the pedagogical use of ChatGPT so that they can incorporate strategic teaching models into their classes as a support resource and not as a substitute for the traditional educational process.

In addition, it is recommended to encourage students to develop critical and ethical thinking by debating the information added by artificial intelligence with reliable sources of higher academic standing.

Another recommendation is to integrate academic activities that link the use of ChatGPT with active learning methodologies, such as problem-based or project-based learning, in order to strengthen students' meaningful learning.

For future research, it is suggested to increase the sample size and consider other variables for analysis, such as academic performance or the perspective of the teaching staff, in order to obtain a broader and more complete view of the impact of artificial intelligence in the educational field.

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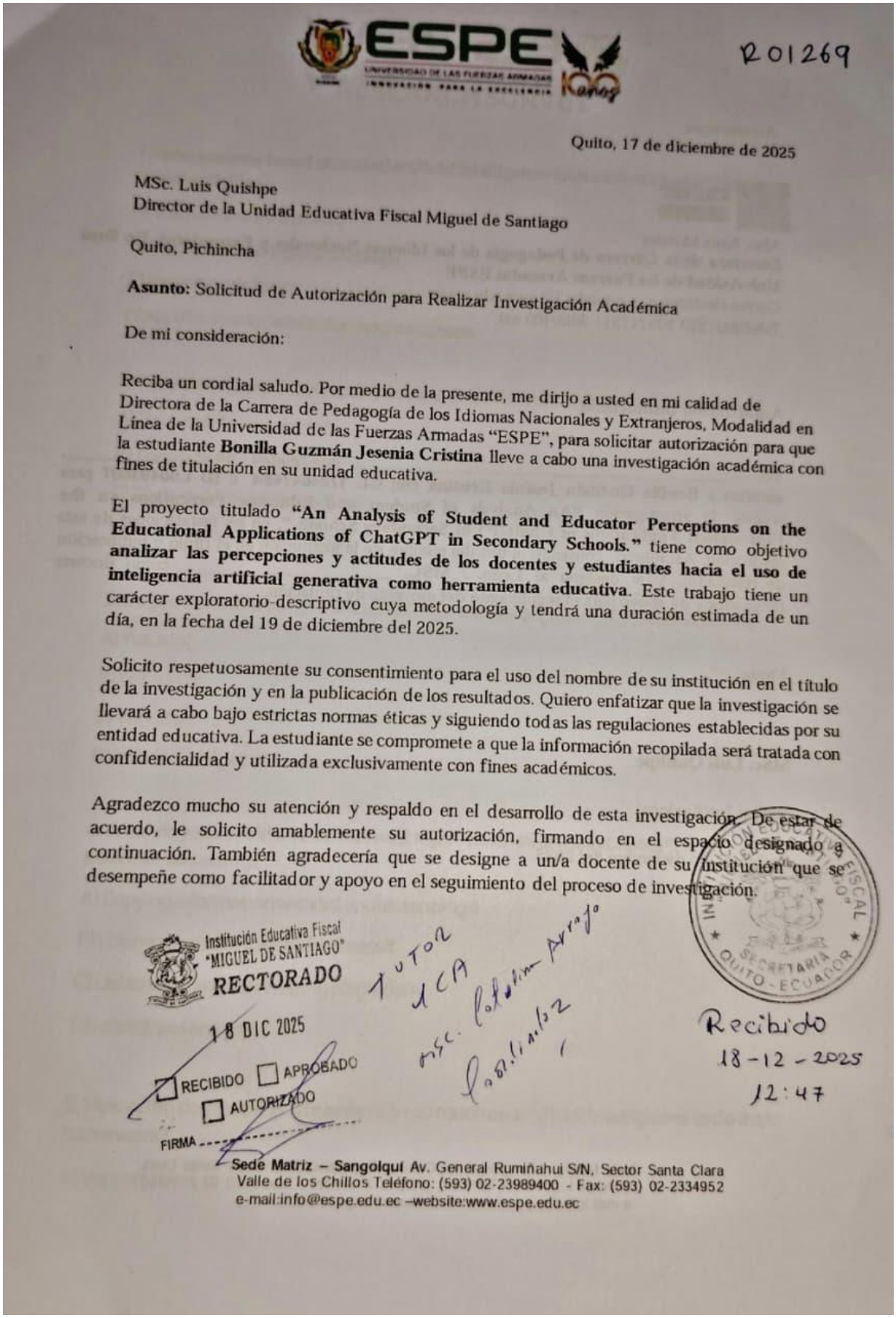
ATTACHMENTS



R01269

Quito, 17 de diciembre de 2025

MSc. Luis Quishpe
Director de la Unidad Educativa Fiscal Miguel de Santiago

Quito, Pichincha

Asunto: Solicitud de Autorización para Realizar Investigación Académica

De mi consideración:

Reciba un cordial saludo. Por medio de la presente, me dirijo a usted en mi calidad de Directora de la Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros, Modalidad en Línea de la Universidad de las Fuerzas Armadas "ESPE", para solicitar autorización para que la estudiante **Bonilla Guzmán Jesenia Cristina** lleve a cabo una investigación académica con fines de titulación en su unidad educativa.

El proyecto titulado **"An Analysis of Student and Educator Perceptions on the Educational Applications of ChatGPT in Secondary Schools."** tiene como objetivo **analizar las percepciones y actitudes de los docentes y estudiantes hacia el uso de inteligencia artificial generativa como herramienta educativa**. Este trabajo tiene un carácter exploratorio-descriptivo cuya metodología y tendrá una duración estimada de un día, en la fecha del 19 de diciembre del 2025.

Solicito respetuosamente su consentimiento para el uso del nombre de su institución en el título de la investigación y en la publicación de los resultados. Quiero enfatizar que la investigación se llevará a cabo bajo estrictas normas éticas y siguiendo todas las regulaciones establecidas por su entidad educativa. La estudiante se compromete a que la información recopilada será tratada con confidencialidad y utilizada exclusivamente con fines académicos.

Agradezco mucho su atención y respaldo en el desarrollo de esta investigación. De estar de acuerdo, le solicito amablemente su autorización, firmando en el espacio designado a continuación. También agradecería que se designe a un/a docente de su institución que se desempeñe como facilitador y apoyo en el seguimiento del proceso de investigación.

Institución Educativa Fiscal "MIGUEL DE SANTIAGO" RECTORADO
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1 TUTOR
1 CA
MSc. Patricia Arroyo

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Valle de los Chillos Teléfono: (593) 02-23989400 - Fax: (593) 02-2334952
e-mail:info@espe.edu.ec –website:www.espe.edu.ec

RESEARCH SURVEY

1. Have you ever heard of or used artificial intelligence tools such as ChatGPT for school activities?

A) Yes, I use them frequently

B) Yes, I have used them a few times

C) I have heard of them, but I do not use them

D) No, I have never heard of or used these tools

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2. For which school activities do you think ChatGPT or other AI can be most useful?

A) To complete assignments

B) To get ideas or examples

C) To study and understand topics

D) To copy answers effortlessly

---

3. Do you think that using artificial intelligence can help you learn better at school?

A) Yes, a lot

B) Yes, a little

C) Very little

D) It doesn't help at all

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4. What do you consider to be the most significant risk of using ChatGPT in an educational setting?

A) Copying information without understanding it

B) Losing the ability to think for oneself

C) Unintentionally committing plagiarism

D) I do not see any risk

---

5. How often do you think students rely too much on artificial intelligence to do their homework?

A) Very often

B) Often

C) Rarely

D) Never

---

6. How should ChatGPT be permitted for use at school?

A) Freely and without restrictions

B) Only with teacher guidance

C) Only for certain activities

D) It should not be permitted

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7. Do you think that excessive use of artificial intelligence can affect students' critical thinking?

A) Yes, a lot

B) Yes, a little

C) Very little

D) It does not affect it

---

8. Do you think teachers should receive training on the use of artificial intelligence in education?

A) Strongly agree

B) Agree

C) Disagree

D) Strongly disagree