



ORIGINAL

Investigating the attitude of university students towards the use of ChatGPT as a learning resource

Investigando la actitud de los estudiantes universitarios hacia el uso del ChatGPT como recurso de aprendizaje

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ABSTRACT

Introduction: currently, the integration of innovative technologies plays a crucial role in students' academic formation. In this context, ChatGPT emerges as a cutting-edge tool with the potential to transform the educational experience.

Objective: to assess the attitude of university students towards the use of ChatGPT as a learning resource.

Methods: a quantitative study, non-experimental design and observational and descriptive type. The sample was determined through simple random sampling and consisted of 269 university students of both genders who were administered the Attitudes towards the Use of ChatGPT Scale, an instrument with adequate metric properties.

Results: the attitude towards the use of ChatGPT as a learning resource was predominantly rated at a medium level, as were the affective, cognitive, and behavioral dimensions. This suggests that students enjoy using ChatGPT as a tool in their learning process and consider it facilitates and improves their educational experience. However, they expressed concern about the possibility of this tool generating inaccurate results.

Conclusions: the attitude of university students towards the use of ChatGPT as a learning resource was rated at a medium level. Likewise, it was determined that as students progressed in their academic training, they developed a more favorable attitude towards the use of ChatGPT.

Keywords: Artificial Intelligence; ChatGPT; University Students; Attitude; Chatbot.

RESUMEN

Introducción: en la actualidad, la integración de tecnologías innovadoras desempeña un papel crucial en la formación académica de los estudiantes. En este contexto, el ChatGPT emerge como una herramienta de vanguardia con el potencial de transformar la experiencia educativa.

Objetivo: evaluar la actitud de los estudiantes universitarios hacia el uso del ChatGPT como recurso de aprendizaje.

Métodos: estudio cuantitativo, diseño no experimental y de tipo observacional y descriptivo. La muestra fue determinada mediante un muestro aleatorio simple y estuvo conformada por 269 estudiantes universitarios de ambos sexos a quienes se les aplicó la Escala de Actitudes hacia el Uso del ChatGPT, un instrumento con adecuadas propiedades métricas.

Resultados: La actitud hacia el uso del ChatGPT como recurso de aprendizaje fue valorada predominantemente en un nivel medio, al igual que las dimensiones afectivas, cognitivo y conductual. Esto sugiere que los estudiantes disfrutaban utilizando ChatGPT como herramienta en su proceso de aprendizaje y consideran que facilita y mejora su experiencia educativa. Sin embargo, expresaron preocupación por la posibilidad de que esta herramienta pueda generar resultados inexactos.

Conclusiones: la actitud que tenían los estudiantes universitarios hacia el uso del ChatGPT como recurso de aprendizaje fue valorada en un nivel medio. Asimismo, se determinó que conforme los estudiantes avanzaban en su formación académica, desarrollaban una actitud más favorable hacia el uso del ChatGPT.

Palabras clave: Inteligencia Artificial; ChatGPT; Estudiantes Universitarios; Actitud; Chatbot.

INTRODUCTION

In recent decades, artificial intelligence (AI) has emerged as one of the most fascinating and transformative disciplines in the field of technology and science.⁽¹⁾ It is defined as a multidisciplinary approach that merges computer science and linguistics for the purpose of creating machines capable of performing tasks that usually require human intelligence.⁽²⁾ These tasks range from learning and adaptation to rationalization and understanding of abstract concepts, as well as the ability to react to complex human attributes such as attention, emotions, and creativity.⁽³⁾ AI has evolved rapidly, overcoming traditional boundaries and offering innovative solutions in a variety of fields, from healthcare and education to the financial sector and the entertainment industry.⁽⁴⁾

In the educational context, the rapid advances of AI and its increasing adoption for teaching and educational purposes could mark a new era of innovation in academia.⁽⁵⁾ The successful integration of AI in higher education has the potential to catalyze transformative changes that could redefine traditional pedagogical methods and open up new learning opportunities.⁽⁶⁾ These changes are not only limited to classroom teaching but also encompass personalizing learning, optimizing assessment, and creating more inclusive and accessible educational environments for all students.

One of the latest AI-based advances is ChatGPT,⁽⁷⁾ a large language model (LLM) developed by OpenAI, which emerged as a paradigm-shifting innovation for information acquisition.⁽⁸⁾ This tool possesses the ability to understand and generate human language coherently and contextually, positioning it as a powerful natural language processing tool.^(9,10)

Moreover, ChatGPT has found applications in a variety of fields, from virtual assistants and automated customer service to content generation, language translation, and question resolution, among others.⁽¹¹⁾ Its versatility and ability to learn from large data sets make it one of the most promising solutions in the field of human-machine communication and interaction.⁽¹²⁾

ChatGPT has significant potential to impact teaching and learning in practical ways.⁽¹³⁾ This impact can range from rapid access to relevant information to support research and study planning.⁽¹⁴⁾ Furthermore, these models can contribute to the personalization of learning, promoting learner autonomy and adapting the educational process to their specific needs.⁽¹⁵⁾ In addition, they offer the possibility of improving efficiency in the evaluation and assessment of students, as well as compensating for educational disadvantages.⁽¹⁶⁾ Ultimately, their application can increase the efficiency and productivity of the learning process, enriching the educational experience and contributing to the creation of a more effective and stimulating academic environment.⁽¹⁷⁾

Regarding the limitations and possible misuse of ChatGPT, several concerns arise that require attention. First, the generation of superficial, inaccurate, or incorrect content when using ChatGPT in scientific writing has been frequently observed, raising questions about its reliability and accuracy.⁽¹⁸⁾ Second, problems related to inaccurate citation, lack of proper referencing, and incorrect attribution of information to nonexistent sources have been noted.⁽¹⁹⁾ Third, because knowledge of ChatGPT is limited to data prior to 2021, its usefulness as a source of up-to-date and reliable literature review needs to be revised.⁽²⁰⁾ Finally, legal concerns have been raised, especially regarding copyright, which may arise due to the use of ChatGPT for content generation.⁽²¹⁾ These limitations and challenges underscore the need for a cautious and ethical approach to the use of this emerging technology in a variety of contexts.

Several investigations have been conducted to assess the attitude of university students towards the use of ChatGPT during their professional training, and the results are varied. In Mexico,⁽²²⁾ it was determined that higher education students had a poor attitude towards the use of ChatGPT. On the other hand, in Vietnam,⁽²³⁾ it was found that students had a favorable attitude about the ChatGPT application and its use. Similarly, in Jordan,⁽²⁴⁾ it was found that there was a positive attitude towards ChatGPT among students. These discrepancies highlight the importance of considering cultural context, prior experiences, and individual expectations when assessing attitudes toward this technology in different educational settings.

The present research is relevant for several reasons. First, ChatGPT represents an emerging technology that is increasingly being integrated into educational settings to enhance the learning experience. Assessing students' attitudes toward this tool provides valuable information about their acceptance and willingness to adopt new ways of learning. Second, understanding student attitudes toward ChatGPT can help identify potential barriers or challenges in its implementation. This allows educators and technology developers to adjust their teaching

strategies and tool design to address students' needs and preferences more effectively. Finally, assessing the attitude towards the use of ChatGPT provides information on its perceived effectiveness compared to other traditional learning methods. This may influence the adoption and continued integration of this technology into curricula and educational practices.

The objective of the present research was to assess the attitude of university students toward the use of ChatGPT as a learning resource.

METHODS

Design

The research belongs to a quantitative approach since it focuses on numerical measurement and the use of statistics to determine students' behavior patterns. As for the design, it was non-experimental since the study variable was not deliberately manipulated but simply observed. As for the type, it was descriptive cross-sectional, given that the characteristics of the variable were analyzed and data were collected on a single occasion.⁽²⁵⁾

Participants

The research was carried out in a private university that offers educational services in the Madre de Dios region (Peru). The study population included all enrolled students, while the sample consisted of 269 students, a number determined by probability sampling with a confidence level of 95 % and a significance level of 5 %. Inclusion criteria were students of both sexes who were enrolled. On the other hand, as exclusion criteria, students who did not agree to participate in the research and those who were not in the Whatsapp groups of the different courses were considered.

Variables

Attitude towards the use of ChatGPT was considered as a study variable, which was categorized into 3 levels: low, medium, and high. In addition, the sociodemographic and academic variables included were gender (male and female), age (between 16 and 25 years, between 26 and 35 years), professional career (Administration, Accounting, and Law), and year of study (first, second, third, fourth and fifth).

Instruments

For data collection, a virtual survey was used, structured using the Google Forms platform and consisting of two sections. In the first part, sociodemographic and academic information was collected from the participants. The second part consisted of the application of the ChatGPT Attitude Scale.⁽²⁴⁾ This scale is composed of 22 items organized into three dimensions: affective, cognitive, and behavioral. Participants evaluated each item quantitatively using a 3-point Likert scale, ranging from "disagree" (score 1) to "agree" (score 3). To ensure the validity and internal consistency of the scale in the context of the present research, a validation and reliability process was carried out. In this sense, it was determined that the scale had an adequate level of content validity (Aiken's V = 0,739) and reliability ($\alpha = 0,808$).

Procedures

Data collection was carried out between May and June 2023 once the corresponding permissions were obtained from the university authorities. Subsequently, students were invited to participate through the WhatsApp messaging application, where they were provided with a link to the survey. These messages were distributed to all WhatsApp groups of the courses in which the students were enrolled. The purpose of this method was to ensure as much student participation as possible. Participants were clearly explained the purpose of the research and were provided with detailed instructions for completing the survey items. The total duration of the procedure was approximately 20 minutes. Once the participation of the 269 students was confirmed, access to the instrument was disabled.

Data analysis

Regarding data analysis, SPSS version 25 software was used to carry out the process. In the first phase, the percentage distribution of the variables and dimensions of the study was calculated. Subsequently, we proceeded to the inferential analysis using the nonparametric Chi-Square test (χ^2). The purpose of this analysis was to determine whether there was a significant association between the student's attitudes toward the use of ChatGPT and the proposed sociodemographic and academic variables. This procedure made it possible to evaluate the association between these variables and to provide a deeper understanding of the factors that might be related to the attitude toward ChatGPT.

Ethical Aspects

Following the ethical principles established in the Declaration of Helsinki, this study was conducted with strict adherence to ethical standards. Informed consent was obtained from all participating students, who were fully informed about the purpose and procedures of the research. In addition, the confidentiality of the data collected was assured, and the welfare of the participants was protected at all times.

RESULTS

Table 1 presents the distribution of the sample. There was greater participation of male students, who were between 16 and 25 years old, who belonged to the professional career of law and were in their first year of study.

Variables		n= 269	%
Gender	Male	146	54,3
	Female	123	45,7
Age	Between 16 and 25 years old	170	63,2
	Between 26 and 35 years old	62	23,0
	More than 35 years old	37	13,8
Professional Career	Administration	78	29,0
	Accounting	88	32,7
	Law	103	38,3
Year of study	First	75	27,9
	Second	59	21,9
	Third	52	19,3
	Fourth	44	16,4
	Fifth	39	14,5

Figure 1 shows that 46,1 % of the students rated their attitude towards the use of ChatGPT as an educational resource at a medium level, 31,6 % at a high level, and 22,3 % at a low level. When evaluating the affective, cognitive, and behavioral dimensions, it was also determined that the predominant level was medium.

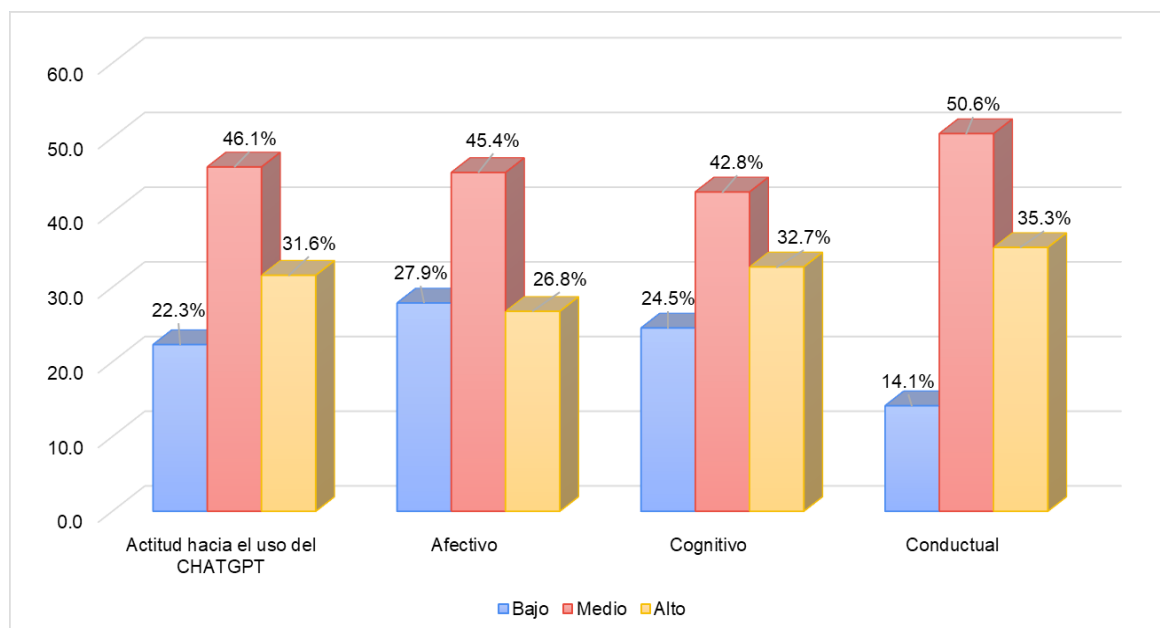


Figure 1. Percentage distribution of the attitude towards the use of ChatGPT and its dimensions
Source: Surveys.

Table 2 highlights that students expressed enjoyment in using ChatGPT as a tool in their learning process, indicating that they feel comfortable doing so. However, it is essential to note that they also expressed a

concern that this tool may generate inaccurate results.

Table 2. Responses to the items of the affective dimension

Items	Disagree		Neither agree nor disagree		Agreed	
	n	%	n	%	n	%
I like to learn about ChatGPT.	57	21,2	132	49,1	80	29,7
I enjoy using ChatGPT in the learning process.	83	30,9	104	38,7	82	30,5
I feel comfortable using ChatGPT during my learning process.	52	19,3	128	47,6	89	33,1
I feel at ease using ChatGPT in the development of my tasks.	80	29,7	131	48,7	58	21,6
I feel annoyed to use ChatGPT because there is no human interaction.	96	35,7	128	47,6	45	16,7
I am concerned about using ChatGPT in tasks because it could generate inaccurate results.	48	17,8	96	35,7	125	46,5
I get nervous if I can't access ChatGPT services.	109	40,5	135	50,2	25	9,3

Source: Surveys.

Table 3 shows that the students considered that the ChatGPT facilitates and enhances the learning experience. Similarly, they consider that it meets their individual learning needs. These findings reflect the students' positive perception of ChatGPT as a valuable educational resource that is adaptable to their learning requirements.

Table 3. Responses to the items of the cognitive dimension

Items	Disagree		Neither agree nor disagree		Agreed	
	n	%	n	%	n	%
Skills to use ChatGPT in learning are necessary for students.	79	29,4	145	53,9	45	16,7
ChatGPT facilitates the learning process.	47	17,5	99	36,8	123	45,7
ChatGPT enhances the learning experience.	63	23,4	107	39,8	99	36,8
ChatGPT increases academic self-confidence.	93	34,6	92	34,2	84	31,2
ChatGPT develops writing skills.	94	34,9	83	30,9	92	34,2
ChatGPT meets my individual learning needs.	80	29,7	99	36,8	90	33,5
ChatGPT supports lifelong learning.	41	15,2	142	52,8	86	32,0
ChatGPT improves higher order skills, i.e., evaluation and creativity.	31	11,5	153	56,9	85	31,6

Source: Surveys.

In table 4, it is evident that students intend to use ChatGPT as a tutor, as well as to practice and prepare for their exams. In addition, they express their willingness to inform their friends and peers about the benefits of employing this tool during their learning process. These data underscore the potential of ChatGPT as a versatile educational resource and the student's willingness to take full advantage of it and share their positive experiences with others.

Table 4. Responses to the behavioral dimension items

Items	Disagree		Neither agree nor disagree		Agreed	
	n	%	n	%	n	%
I would follow the improvements in ChatGPT.	48	17,8	132	49,1	89	33,1
I would inform friends and colleagues about the benefits of using ChatGPT in the learning process.	42	15,6	130	48,3	97	36,1
I would use ChatGPT as a tutor.	27	10,0	137	50,9	105	39,0
I would use ChatGPT as an educational resource.	44	16,4	128	47,6	97	36,1
I would use ChatGPT to practice and prepare for exams.	33	12,3	126	46,8	110	40,9
I would use ChatGPT to summarize and analyze the educational material.	39	14,5	155	57,6	75	27,9
I would continue to use ChatGPT to achieve my learning objectives.	33	12,3	144	53,5	92	34,2

Source: Surveys.

Table 5 shows that the year of study was the only academic variable that was significantly associated with the student's attitude toward the use of ChatGPT ($p < 0,05$). In that sense, as the students advanced in their professional training, they had a better attitude toward that educational resource.

Table 5. Association between attitude towards the use of ChatGPT and sociodemographic and academic variables

Sociodemographic and academic variables		Attitude towards the use of ChatGPT			p-value (X ²)
		Under	Medium	High	
Gender	Male	32 (21,9 %)	69 (47,3 %)	45 (30,8 %)	$p > 0,05$
	Female	28 (22,8 %)	55 (44,7 %)	40 (32,5 %)	
Age	Between 16 and 25 years old	38 (22,3 %)	79 (46,5 %)	53 (31,2 %)	$p > 0,05$
	Between 26 and 35 years old	13 (21,0 %)	28 (45,2 %)	21 (33,8 %)	
	More than 35 years old	9 (24,3 %)	17 (45,9 %)	11 (29,7 %)	
Professional Career	Administration	14 (18,0 %)	39 (50,0 %)	25 (32,0 %)	$p > 0,05$
	Accounting	16 (18,2 %)	42 (47,7 %)	30 (34,1 %)	
	Law	30 (29,1 %)	43 (41,7 %)	30 (29,1 %)	
Year of study	First	19 (25,3 %)	39 (52,0 %)	17 (22,7 %)	$p < 0,05$
	Second	17 (28,8 %)	25 (42,4 %)	17 (28,8 %)	
	Third	13 (25,0 %)	20 (38,5 %)	19 (36,5 %)	
	Fourth	7 (15,9 %)	20 (45,5 %)	17 (38,6 %)	
	Fifth	4 (10,2 %)	20 (51,3 %)	15 (38,5 %)	

Source: Surveys.

DISCUSSION

Subsequent to its launch, ChatGPT experienced impressive growth as it became the fastest-growing consumer application, attracting a user base of 100 million users.⁽²⁶⁾ Known for its ease of use and partially free accessibility, ChatGPT stands out for its ability to interact with users on a wide variety of topics.⁽²⁷⁾ Given the disruptive potential of this technology in various sectors, including education and health sciences,⁽²⁸⁾ it is critical to understand how to improve the integration of this technology into the learning process and how to address possible concerns or resistance on the part of students.

First, it was found that the attitude towards ChatGPT was predominantly rated at a medium level. In addition, the affective, cognitive and behavioral dimensions were also predominantly rated at a medium level. This indicates that students have a moderately positive attitude towards the use of ChatGPT, showing interest and willingness to use the tool. However, they may harbor some reservations or doubts, mainly due to the reliability of the content it generates. The willingness of students to use ChatGPT reflects an openness to the adoption of innovative technologies in their academic training, indicating an interest in exploring new ways of learning and taking advantage of the opportunities offered by AI in education.

In this regard, there is research that agrees with what has been previously reported. In the United Arab Emirates,⁽²⁹⁾ student views on the use of ChatGPT in higher education were analyzed, concluding that it has both valuable and concerning effects on educational integrity. However, the implementation of practical guidelines could help to make informed decisions and develop institutional policies. In Mexico,⁽²²⁾ the use and perception of ChatGPT in higher education were evaluated, finding a mixed perspective on the part of students. Although some used it, it needed to be fully adopted in their academic activities, which generated concerns about its convenience, accuracy, and adaptability. In Spain,⁽³⁰⁾ they found that students were aware of the impact of AI and were willing to continue their education by using such a tool, although their knowledge was limited due to a lack of training.

Another interesting finding shows that, as students advanced in their academic training, they tended to develop a more favorable attitude towards the use of ChatGPT. The above suggests that as they gain more experience and knowledge, students may better perceive the value and advantages offered by this tool in their educational process. The presented result is congruent with a study conducted in Spain,⁽³¹⁾ which revealed that university students' experience with the use of ChatGPT influences their perception of the facilitating conditions, motivation, and behavioral intention to use this tool. This finding underscores the importance of considering students' level of familiarity and comfort with the technology to better understand their attitudes and behaviors toward its adoption in the educational context.

The development and implementation of technologies such as ChatGPT represent a significant milestone in

the field of AI.⁽³²⁾ These tools not only promise to simplify communication and improve access to information but also offer revolutionary potential in areas as diverse as education and training.⁽³³⁾ However, when reflecting on the role of ChatGPT in this context, it is essential to carefully consider its ethical and practical implications.⁽³⁴⁾

In this regard, it is essential to address the challenges inherent in the use of ChatGPT proactively and collaboratively, involving all relevant stakeholders in the design and implementation of policies and practices that ensure responsible and beneficial use of these technologies in the educational setting and beyond.

One of the strengths of the present research lies in its contribution as one of the first to assess university students' attitudes towards the use of ChatGPT as a learning resource. In addition, it highlights the use of a validated instrument that integrates subscales designed to measure the affective, cognitive, and behavioral aspects that make up the attitude toward this technology. This approach allows a more complete and nuanced understanding of student perception, providing a more accurate view of the acceptance and adoption of ChatGPT in the educational environment.

However, it is necessary to specify certain limitations that could influence the interpretation of the results. The sample, being small and specific to a single university, could restrict the generalization of the findings to other populations. In addition, the use of a self-administered instrument could have introduced social desirability biases, which may affect the accuracy of the responses. For future research, it is suggested to employ more extensive and more diverse samples, covering different contexts and student profiles, and to complement quantitative approaches with qualitative methods to obtain a more complete and detailed understanding of participants' attitudes and perceptions. This strategy would allow an in-depth exploration of individual experiences and the underlying factors influencing attitudes toward the use of ChatGPT as a learning resource.

CONCLUSIONS

It is concluded that the attitude that university students had towards the use of ChatGPT as a learning resource was rated at a medium level. This means that students have a moderately positive attitude towards the use of ChatGPT, i.e., they are interested or willing to use the tool but may have some reservations or doubts. Likewise, it was determined that as students advanced in their academic training, they developed a more favorable attitude toward the use of ChatGPT.

Based on the results obtained in the present research, efforts should be made aimed at promoting a more favorable attitude towards the use of ChatGPT as a learning resource among university students. This could be achieved by implementing training and awareness programs on the advantages and benefits offered by this tool in the educational process. Finally, it is recommended that universities establish clear guidelines and ethical policies for the responsible use of ChatGPT, ensuring academic integrity and avoiding practices such as plagiarism or misrepresentation of information.

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