ChatGPT as an academic support tool on the academic performance among students: The mediating role of learning motivation

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Abstract

Purpose: This study aimed to investigate the mediating role of learning motivation in the association between ChatGPT, which was employed as an academic support tool, and students' academic performance.

Methodology/approach: This study employed a mixed-method triangulation research design to investigate the correlation between the use of ChatGPT for academic support, learning motivation, and student performance. The study utilized a mediation analysis employing K.. Preacher and Hayes 's(2008) Approach. The study comprised a sample of 178 learners enrolled in a secondary educational institution in Lal-lo, Cagayan, the Philippines, and was selected using purposive sampling.

Results: The research findings demonstrated that the influence of ChatGPT as an educational aid on students' academic performance is fully mediated by their learning motivation. The utilization of the ChatGPT has been observed to have a positive impact on academic performance by enhancing learning motivation. Effective and ethical employment of ChatGPT plays a significant role in promoting educational progress and enhancing academic achievement among students, thereby fostering their motivation to acquire knowledge.

Limitations: This study did not incorporate additional variables that may impact the association between ChatGPT as an academic support tool, learning motivation, and students' academic performance.

Contribution: Understanding the mediating role of learning motivation can offer valuable insights for educational professionals and policymakers to develop effective interventions that utilize AI-based tools to strengthen students' motivation and, as a result, improve their academic performance.

Keywords: *Artificial Intelligence, ChatGPT, Learning Motivation, Academic Performance*

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1. Introduction

Recently, the incorporation of artificial intelligence (AI) technology into education has presented novel opportunities for facilitating student learning. An illustrative instance pertains to the utilization of ChatGPT, an AI-driven conversational agent, as an academic aid tool. ChatGPT provides students with personalized support and access to appropriate resources through its conversational interface and immediate feedback mechanisms. Nevertheless, the influence of ChatGPT on students' scholastic achievements extends beyond immediate assistance. The mediating role of learning motivation, a significant psychological factor, is essential to the association between ChatGPT as an academic support

tool and academic performance. Learning motivation refers to students' internal inclination, aspirations, and enthusiasm toward engaging in educational activities and pursuing educational goals (Khaneghahi et al. 2022). The concept contains various elements, including intrinsic motivation, which refers to the enjoyment and interest of one learning experience. Extrinsic motivation, which involves external rewards or pressure, has also been considered. Lastly, self-efficacy beliefs, which pertain to an individual's confidence in their ability to achieve academic success, are another essential factor to consider. When students are motivated to acquire knowledge, they exhibit elevated levels of active involvement, tenacity, and exertion, all of which contribute to their academic achievement.

The utilization of the ChatGPT as an educational aid tool has the potential to impact students' motivation to learn in diverse ways. First, ChatGPT offers personalized and easily accessible support, enabling students to seek clarifications, pose inquiries, and obtain guidance about academic subjects. Individualized assistance can bolster students' self-assurance and faith in their capabilities, cultivating a perception of proficiency and an internal drive to confront scholastic obstacles. Moreover, the continuous availability of the ChatGPT guarantees that students can access academic assistance at any given time, accommodating their varied learning requirements and timetables. Flexibility enables students to assume responsibility for their learning processes, fostering self-sufficiency and self-regulation, which are fundamental aspects of intrinsic motivation. A positive correlation exists between students' self-perception as self-directed learners and their inclination to actively participate, establish ambitious objectives, and persevere in obstacles (Rasdi, Hamzah, & Yean, 2020). Furthermore, using ChatGPT as an academic aid can cultivate feelings of interconnectedness and social bonding. While ChatGPT may not fully emulate the social interaction experience facilitated by human instructors, it provides a semblance of companionship and guidance throughout the learning journey. Providing a sense of connectedness and support by ChatGPT can potentially augment students' motivation to engage in learning activities, as it fulfills their requirements for social connectedness and a sense of belonging within the educational environment.

Numerous scholarly investigations have examined the correlation between academic support tools, learning motivation, and academic performance to explain the intervening influence of learning motivation. Ran, Kim, and Secada (2022) conducted a meta-analysis that discovered the positive impact of intelligent tutoring systems on learning motivation and academic performance. Another study conducted by Nichter (2021) revealed that the association between academic performance and a mobile learning environment is mediated by self-regulated learning. These studies indicate that learning motivation is a mediating factor in determining the influence of educational support tools on academic performance. In summary, this study sought to examine the role of learning motivation as a mediator in the relationship between ChatGPT (utilized as an academic support tool) and academic performance. The objective is to offer significant insights into the underlying mechanisms by which ChatGPT affects student outcomes. Comprehension of the mediating effect of learning motivation can provide valuable insights for educational professionals and policymakers when developing interventions that utilize AI-based tools to bolster students' motivation and consequently enhance their academic achievements.

2. Literature Review
The integration of artificial intelligence (AI) technologies, such as chatbots, in educational settings has gained significant attention in recent years. One prominent AI chatbot system is ChatGPT, which uses advanced natural language processing algorithms to support students academically. This literature review examined existing research on the influence of ChatGPT as an academic support tool on high school students' academic performance, with a specific focus on the mediating role of learning motivation.

2.1. ChatGPT as an Academic Support Tool
Prior research has investigated the efficacy of chatbot systems as academic support tools. A study was conducted by Wardat, Tashtoush, AlAli, and Jarrah (2023) to examine the effectiveness of a chatbot in enhancing students' comprehension of mathematical concepts. It was indicated that the academic performance of students who engaged with the chatbot exhibited a noteworthy enhancement compared to those who did not avail themselves of the resources. H. Lee (2023) conducted a study to examine the

effects of a chatbot-based learning platform on students' understanding of science and medical topics. The study indicated that the platform positively affected both knowledge acquisition and engagement. According to Hassani and Silva (2023), the ChatGPT provides a conversational interface that enables students to inquire about academic topics, obtain explanations, and receive guidance. ChatGPT can produce timely and pertinent responses by utilizing its vast database and proficient language models, as per the findings of Zaremba and Demir (2023). According to Aithal and Aithal (2023), this technology can complement conventional methods of academic assistance by providing tailored and convenient aid to students.

The advantages of employing the ChatGPT as a tool for academic assistance are noteworthy. The continuous availability of academic support allows students to access it anytime, even beyond regular school hours, accommodating their varied learning needs and schedules (Ahmadi 2023). Javaid, Haleem, Singh, Khan, and Khan (2023) asserted that ChatGPT offers personalized assistance by customizing its responses to suit students' unique inquiries while adjusting to their learning preferences and speed. Implementing a personalized approach to instruction has been shown to improve students' comprehension and involvement with scholarly materials and offers the benefit of immediate feedback to its users. According to Ekin (2023), prompt responses enable students to attend to their academic inquiries promptly, promoting an uninterrupted learning experience. Additionally, the digital platform of ChatGPT guarantees accessibility and inclusivity by catering to diverse communication styles and facilitating the engagement of students with physical disabilities or learning differences via typing or voice commands, as Ray (2023) stated.

Moreover, the ChatGPT is an additional educational tool that extends beyond conventional pedagogical methods. According to Cheng (2023), providing supplementary elucidations, illustrations, and materials helps learners elucidate complex ideas, broaden their scope of knowledge, and enhance their comprehension of scholarly disciplines. According to Dai, Liu, and Lim (2023) and Mhlanga (2023), ChatGPT facilitates self-directed learning among students by functioning as a readily accessible knowledge repository, fostering critical thinking, problem-solving abilities, and independent research. Although ChatGPT has potential as an academic aid, various obstacles and factors require attention and resolution. The precision and dependability of ChatGPT replies are contingent upon the calibration of its training data, as per the research conducted by Rahman and Watanobe (2023). Consistent monitoring and timely updates are imperative to uphold precision and prevent potential bias or inaccuracies. Furthermore, the absence of interpersonal communication poses a constraint given that human educators offer effective assistance, tailored direction, and refined elucidations that an artificial intelligence mechanism may encounter difficulty in emulating (Y. K. Lee, 2022; Mhlanga, 2023).

On the other hand, implementing AI-based chatbots, such as ChatGPT, raises significant ethical and privacy concerns. Data privacy protection, security maintenance, and prevention of the potential misuse of personal information are crucial elements that require attention (Sebastian, 2023). Moreover, the potential of ChatGPT can be constrained by the present conditions of artificial intelligence technology. The system may encounter difficulties in comprehending detailed inquiries. These furnishing responses are specific to the context or managing language open to interpretation, as Roumeliotis and Tselikas (2023) have considered. Frequent updates and progress in artificial intelligence (AI) technology are imperative for overcoming these constraints.

Finally, ChatGPT confers advantages such as round-the-clock availability, customized assistance, immediate feedback, ease of access, and supplementary learning materials, as reported by Loh (2023). Despite the potential benefits of automated systems, it is essential to recognize and address various obstacles that may impede their effectiveness. These obstacles include issues about precision, the absence of interpersonal communication, ethical implications, and technological constraints, as noted by AlAfnan, Dishari, Jovic, and Lomidze (2023) and Roumeliotis and Tselikas (2023). By meticulously addressing these factors, the incorporation of ChatGPT has the potential to supplement the conventional methods. Technology tools have the potential to augment academic performance through their ability to grant students access to extensive quantities of information and resources, thereby facilitating more efficient research and learning processes (K. Caratiquit, 2022b; K. Caratiquit & Pablo, 2021;

Khaneghahi et al., 2022; Sarker, 2023). Studies on the determinants of academic performance among high school students have underscored the importance of multiple factors. Asika (2021) research underlined the importance of self-efficacy and academic self-concept in predicting intellectual achievement among high school students. The results of this study indicated that the convictions held by students regarding their aptitude and assessments of their academic competencies are pivotal factors in determining their academic achievement.

Scholarly inquiry has investigated the influence of technology, particularly ChatGPT, on the scholastic achievement of secondary school students. D. Lee and Yeo (2022) study examined the impact of chatbot-based tutoring systems on students' academic performance in mathematics. The results indicated that students who interacted with the chatbot exhibited noteworthy enhancements in their comprehension of mathematical concepts, which consequently led to better performance in the evaluations. The above proposition implies that ChatGPT, functioning as an academic aid, has the potential to enhance high school students' academic achievements through the provision of customized and readily available support. In addition, the relationship between ChatGPT and academic performance was investigated in terms of the mediating role of learning motivation. Chiu, Moorhouse, Chai, and Ismailov (2023) conducted a study examining the impact of an AI-based learning support system on student academic achievement and motivation. According to the survey, learning motivation greatly aided the effects of interventions, such as ChatGPT, on educational results. The results indicate a positive correlation between elevated levels of learning motivation and enhanced academic performance. This implies that students who exhibit a solid drive to utilize ChatGPT as academic aid are more prone to achieving favorable academic results. In addition, extensive research has been conducted on the correlation between learning motivation and academic achievement among high-school students. Liu et al. (2020) study examined the impact of intrinsic and extrinsic motivation on students' academic performance. The results indicated that students who exhibited more significant levels of intrinsic motivation, characterized by sincere interest and pleasure in the learning process, were more inclined to achieve superior academic performance. Likewise, individuals with elevated levels of extrinsic motivation, propelled by external incentives or demands, demonstrated superior academic achievement. The results underscore the significance of cultivating internal and external motivation to augment secondary school students' scholastic achievements.

The impact of educational settings on student motivation and academic achievement has been a subject of investigation. Duchatelet and Donche (2019) and Agapito (2023) investigated the effects of learning environments that support autonomy on student motivation and academic performance. The results revealed that learners who were enrolled in classrooms that fostered freedom by providing them with options, independence, and a perception of authority over their education exhibited more significant levels of inherent motivation, which led to superior academic achievement. This proposition implies that integrating ChatGPT as an educational aid tool in a learning environment that promotes autonomy may result in a mutually beneficial outcome for student motivation and academic achievement. Furthermore, the effects of personalized learning approaches on student motivation and academic performance were investigated. The study by Juhász, Mooney, Hochmair, and Guan (2023) investigated the impact of a growth mindset intervention on students' academic performance and motivation with chatbots. The intervention centered on cultivating a growth mindset and prioritizing the conviction that one's intelligence and competencies can be enhanced through exertion and persistence. This research revealed that students with a growth mindset demonstrated heightened motivation and improved academic achievement. The incorporation of ChatGPT as an academic aid that creates a growth-oriented attitude and instills in students the conviction that difficulties may be transformed into opportunities for personal development has the potential to produce positive results in terms of academic motivation and performance. Multiple factors can impact students' academic achievement, such as using the ChatGPT as a tool for academic assistance and the degree of motivation toward learning. According to existing research, the ChatGPT has the potential to enhance academic performance by providing tailored support. In addition, learning motivation is a critical mediator given that heightened motivation levels have been linked to enhanced academic achievement. Integrating ChatGPT into learning environments that promote individuality, intrinsic and extrinsic motivation, and a growth mindset can strengthen student motivation and improve academic performance.

2.3. Learning Motivation as a Mediating Factor

Literature has investigated the mediating effect of learning motivation on the association between academic support tools and academic performance. The Self-Determination Theory developed by Ryan and Deci (2017), as cited in Brenner (2022), asserts that intrinsic and extrinsic motivation levels significantly impact individuals' academic involvement and accomplishment. The study conducted by Lu and Cutumisu (2022) investigated the mediating role of learning motivation in the association between learning support systems and student performance. The findings revealed that motivation plays a significant mediating role in the effect of the intervention on academic outcomes.

A scholarly inquiry examined the correlation between learning motivation, ChatGPT as academic aid, and academic achievement. Muñoz et al. (2023) conducted a study to investigate the effects of ChatGPT as an academic support tool on the academic performance of high school students, as well as the intervening role of learning motivation. The results indicated that the employment of ChatGPT as academic aid yielded enhanced academic outcomes among students. Additionally, the researchers discovered that ChatGPT utilization was linked to academic achievement through the mediating factor of learning motivation. Students who interacted with ChatGPT exhibited increased motivation toward learning, resulting in improved academic performance. The results indicate that ChatGPT has the potential to enhance students' academic performance by fostering their learning motivation through tailored assistance and support.

Few studies have specifically examined the incorporation of ChatGPT, learning motivation, and academic performance in secondary education. This study aimed to address this gap by investigating the impact of ChatGPT as a means of academic assistance on students' academic performance while considering the mediating influence of learning motivation. Through an analysis of the interrelationships between the variables, this study aimed to enhance our understanding of the mechanisms by which ChatGPT influences students' academic performance and the motivational processes that underlie this phenomenon. This undertaking was devised to add to the existing body of knowledge and to provide valuable insights for educational applications.

2.4. Research Hypotheses

The following assumptions were made using the existing body of literature and an extensive examination of pertinent studies:

H1: There is a positive correlation between ChatGPT as an academic support tool and learning motivation among high-school students.

H2: There is a positive correlation between learning motivation and academic performance among high-school students.

H3: Learning motivation mediates the relationship between ChatGPT as an academic support tool and academic performance among high-school students.

H4: There is a positive and direct correlation between ChatGPT as an academic support tool and high school students' academic performance.

The hypotheses yielded connections and impacts between the utilization of ChatGPT, motivation to learn, and academic performance. By examining these hypotheses, the present study sought to offer empirical validation regarding the mediating influence of learning motivation on the association between ChatGPT, utilized as an academic support tool, and the academic performance of high school students.

3. Methodology

The Kristopher J Preacher and Hayes (2004); K. J. This study used Preacher and Hayes's (2008) mediation analysis method. It aimed to offer significant insights into the interrelationships between the utilization of ChatGPT, motivation for learning, and academic achievement.

3.1. Research design

This study utilized a mixed-method triangulation research design to examine the association between ChatGPT as an academic support tool, learning motivation, and academic performance among high

school students. This comprehensive approach combines quantitative and qualitative methodologies to better understand the study problem. The quantitative phase uses correlational analysis to examine associations, whereas the qualitative phase offers in-depth insights. An investigation of mediation also examined the potential importance of learning motivation. Meanwhile, the qualitative aspect of the study involved gathering an in-depth understanding of high school students' perspectives, experiences, and insights into ChatGPT, learning motivation, and academic performance.

By utilizing mixed-method triangulation, this research methodology ensured a complete study by combining the advantages of both quantitative and qualitative methods. This enables a more thorough and nuanced understanding of ChatGPT, learning motivation, and academic success among high school students.

3.2. Locale and Participants of the Study

The study involved 178 high school students who attended a secondary school located in Lal-lo, Cagayan, the Philippines. Participants were selected via purposive sampling, focusing on students who utilized the ChatGPT for academic assistance. Before starting the inquiry, the educational institution management and individuals involved were given detailed information about the study. The distribution of participants is shown in table below.

Table 1. Profile Attributes of the Students

Department	Frequency	Percentage
Junior High School	21	11.8
Senior High School	157	88.2
Track and Strand (Senior High School)		
Humanities and Social Sciences	21	13.4
Science, Technology, Engineering, and Math	10	6.4
Accountancy, Business, and Management	30	19.1
Arts and Design	9	5.7
Computer Systems Servicing	38	24.2
Electrical Installation and Maintenance	29	18.5
Home Economics	20	12.7

3.3. Instrumentation

The primary tool for data collection in this study was a questionnaire developed internally by the researcher. The instrument was subjected to validity and reliability tests. The survey comprised various sectors, including demographic and academic data, inquiries concerning the use of the ChatGPT as an academic support tool, and queries regarding learning motivation. Furthermore, a section with open-ended questions was included to enable participants to offer supplementary remarks, recommendations, and apprehensions concerning the use of ChatGPT as educational support. The objective of the survey was to elicit comprehensive and detailed feedback from students to obtain valuable insights into the impact of ChatGPT on academic performance and the mediating function of learning motivation.

3.4. Analysis of Data

Descriptive statistics were used to summarize the demographic characteristics of the participants. It employed Kristopher J Preacher and examinedand Hayes (2008) mediation approach to examine the mediating effect of lthe earning motivation on the association between ChatGPT as an academic support tool and academic performance. The study also employed statistical significance, effect sizes, and confidence intervals to assess the magnitude and importance of associations. Lastly, the validity and reliability of the research instrument were evaluated using Cronbach's alpha and confirmatory analysis using Jamovi 2.2.1 statistical software package.

4. Results and Discussions
4.1. Results
4.1.1. Reliability and Validity of the Research Instrument

In measuring the usefulness and impact of ChatGPT, the scale used to rate it as a tool for academic support and learning motivation is critical. Cronbach's alpha and confirmatory analyses are two statistical methods frequently used to evaluate the validity and reliability of such measures (K. Caratiquit, 2022a; K. D. Caratiquit & Caratiquit, 2023; L. J. Caratiquit & Caratiquit, 2022). Through these analytical techniques, the researchers investigated the validity and reliability of the scale utilized for ChatGPT.

Cronbach's alpha values of 0.931 and 0.958 for both constructs indicate high internal consistency. This result shows that the scale items are highly connected and accurately measure the same construct. As a result, the scale used to evaluate ChatGPT's efficiency as a tool for academic assistance and learning motivation showed good reliability.

In addition, the factor loadings discovered in this study showed a distinct and significant factor structure. The scale items showed significant factor loadings on the corresponding variables, indicating that they successfully measured the intended structures. The factor loadings for ChatGPT as an academic support tool ranged from 0.658 to 0.776, while those for learning motivation ranged from 0.689 to 0.825, showing a substantial correlation between the items and the corresponding factors. Hence, these outcomes bolster the reliability of the scale.

In conclusion, according to Cronbach's alpha value and factor loadings, the scale used to assess ChatGPT as an academic support tool and students' learning motivation was reliable and valid. This further demonstrates a strong fit between the observed data and model, reiterating the validity of the scale.

Table 2. Cronbach's Alpha and Confirmation Factor Analysis

Constructs	Indicators	CA	SE	p-value
ChatGPT as an Academic Support Tool	1. Using ChatGPT has improved my ability to solve academic problems independently.		0.69	< .001
	2. ChatGPT has provided me with valuable resources and references for further learning.		0.738	< .001
	3. Interacting with ChatGPT has made my studying experience more interactive and engaging.		0.764	< .001
	4. ChatGPT has increased my confidence in tackling challenging academic tasks.		0.737	< .001
	5. ChatGPT has adapted well to my individual learning needs and preferences.		0.741	< .001
	6. I find ChatGPT's explanations and responses to be clear and understandable.		0.71	< .001
	7. ChatGPT has helped me stay organized and manage my academic workload effectively.	0.931	0.658	< .001
	8. ChatGPT has enhanced my critical thinking and analytical skills in academic contexts.		0.679	< .001
	9. ChatGPT has facilitated collaborative learning by promoting discussions and knowledge sharing.		0.711	< .001
	10. Using ChatGPT has saved me time finding relevant information for my academic assignments.		0.776	< .001
	11. ChatGPT has provided me with constructive feedback to improve my academic performance.		0.728	< .001
	12. I trust the accuracy and reliability of the information provided by ChatGPT.		0.674	< .001

	13.	ChatGPT has motivated me to dive deeper into specific academic topics and subjects.	0.661	< .001
	1.	I am driven to learn and acquire knowledge in my academic subjects.	0.769	< .001
	2.	I am motivated to set and achieve challenging academic goals.	0.743	< .001
	3.	I enjoy the process of learning and find it intrinsically rewarding.	0.775	< .001
	4.	I am excited about expanding my understanding of academic concepts and topics.	0.79	< .001
	5.	I am enthusiastic about participating in class discussions and engaging with the material.	0.742	< .001
	6.	I believe that putting effort into my studies will lead to positive outcomes.	0.825	< .001
	7.	I am determined to overcome obstacles and persevere in my academic pursuits.	0.783	< .001
	8.	I have a strong desire to excel academically and achieve high grades.	0.75	< .001
Learning Motivation	9.	I am curious and actively seek additional resources and information related to my studies.	0.689	< .001
	10.	I feel a sense of pride and satisfaction when I make progress in my academic performance.	0.769	< .001
	11.	I am motivated by the opportunity to apply my knowledge and skills in real-world contexts.	0.813	< .001
	12.	I am driven by the belief that education will open doors to future opportunities and success.	0.788	< .001
	13.	I am self-motivated to take responsibility for my own learning and academic progress.	0.794	< .001
	14.	I am inspired by the positive feedback and recognition I receive for my academic achievements.	0.823	< .001
	15.	I am motivated by the prospect of making a meaningful contribution through my academic pursuits.	0.822	< .001

Note: The value 0.958 appears centered in the Learning Motivation block, aligned at item 9.

4.1.2. Mediation Model Estimates

This study utilized path analysis to investigate the association between ChatGPT as an academic support tool, learning motivation, and academic performance. The results demonstrated a statistically significant and direct relationship between the use of ChatGPT and students' learning motivation. The same is true of the relationship between learning motivation and academic performance. Furthermore, the association between ChatGPT and academic performance was mediated by learning motivation. A detailed analysis of the model is presented in the following discussion.
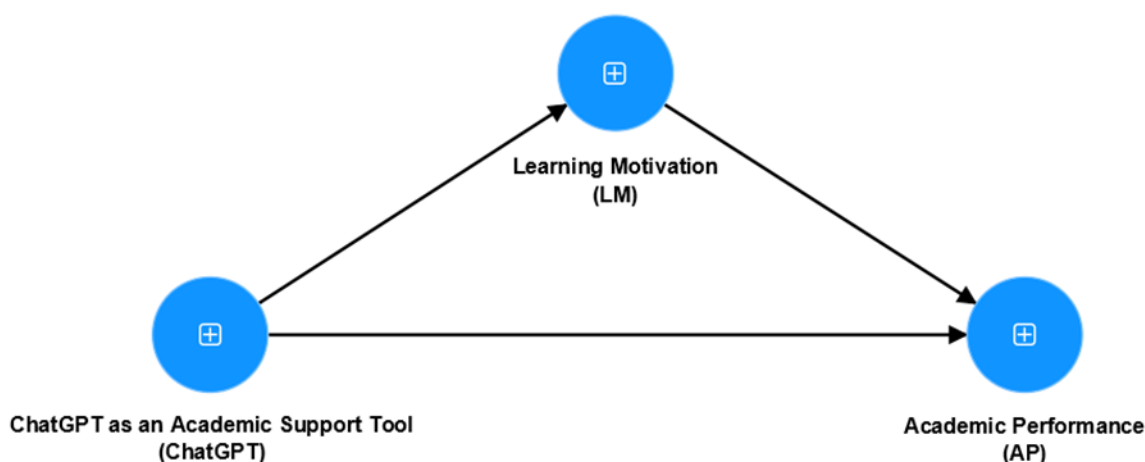
Figure 1. Mediation Model

4.1.3. Indirect and Direct Effects of the Mediation Model

The table presents the results of a path analysis that specifically examines the relationship between ChatGPT's direct and indirect effects on academic performance (AP), emphasizing the mediating role of learning motivation (LM). Effect sizes, p-values, and 95 percent confidence intervals (CIs) were calculated for each path in the analysis.

To begin with, Path ChatGPT $\Rightarrow$ LM showed that ChatGPT as an academic support tool substantially affected learning motivation (β=0.0827, 95% CI:0.562 to 0.886, p=<.001), supporting Hypothesis 1. The effect size was large (f^2=0.6579), implying that ChatGPT as an academic support tool directly affected students' learning motivation. Meanwhile, Path LM $\Rightarrow$ AP confirmed Hypothesis 2 by demonstrating a direct and significant impact of learning motivation on academic performance (β=0.4605, 95% CI:0.948 to 2.753, p=<.001). The effect size suggested a large influence (f^2=0.3618), indicating that learning motivation significantly impacts students' academic performance.

Moreover, Path ChatGPT $\Rightarrow$ LM $\Rightarrow$ AP demonstrated that ChatGPT as an academic support tool had a statistically significant indirect effect on academic performance via learning motivation as a mediator (β=0.4196, 95% CI:0.518–2.163, p=0.001), supporting Hypothesis 3. The effect size was medium (f^2=0.238), emphasizing the substantial mediating effect of learning motivation on the association between ChatGPT as an academic support tool and academic performance. Furthermore, in Path ChatGPT $\Rightarrow$ AP, when disregarding the mediating impact of learning motivation, the analysis revealed a non-significant direct effect of ChatGPT as an academic support tool on academic performance (β= 0.5994, 95% CI: -0.91, 1.44, p=0.706). Thus, Hypothesis 4 was rejected. The effect size (f^2=0.0394) had a small influence. This non-significant direct effect implies that learning motivation fully mediates the relationship between ChatGPT as an academic support tool and students' academic performance.

This finding also corroborates the qualitative responses of other participants. Students 1, 2, and 3 mentioned, *"Ang ChatGPT ay isang oportunidad sa aking pag-aaral na nagpapataas ng aking motibasyon sa pag-aaral dahil pinapaliwanag nito ang mga aralin na mahirap intindihin. Sa ChatGPT, natatanggap ko ang agarang personalisadong feedback nito. Bilang karagdagan, maaari akong humingi sa ChatGPT para sa sunud-sunod na mga paliwanag at mga halimbawa ng aking mga aralin at takdang-aralin. Binibigyan ako ng ChatGPT ng mabilis at kapaki-pakinabang na mga sagot sa lahat ng tanong ko, ito man ay impormasyon o pag-unawa sa isang mahirap na konsepto."* [ChatGPT is an opportunity in my learning that increases my motivation to study because it explains lessons that are difficult to understand. With the ChatGPT, I received immediate personalized feedback. In addition, I can ask ChatGPT for step-by-step explanations and examples of lessons and assignments. ChatGPT gives me quick and helpful answers to all my questions, whether it's information or understanding a difficult concept.]

Table 3. Mediating effect of Learning Motivation on the relationship between ChatGPT as an Academic Support Tool and the Academic Performance of the students

Type	Path	Effect	β	95% CI (a)		f^2	p-value
				Lower	Upper		
Indirect	Path AB	ChatGPT ⇒ LM ⇒ AP	0.4196	0.518	2.163	0.238	0.001
Component	Path A	ChatGPT ⇒ LM	0.0827	0.562	0.886	0.6579	< .001
	Path B	LM ⇒ AP	0.4605	0.948	2.753	0.3618	< .001
Direct	Path C'	ChatGPT ⇒ AP	0.5994	-0.91	1.44	0.0394	0.706

Source: Processed data by Caratiquit (2023) using Jamovi
f^2 is Cohen's (1988) effect size:0.02 = small, 0.15 = medium, 0.35 = large; β=standardized path/regression coefficient.

4.2. Discussion

The findings suggest that ChatGPT, as a tool for academic support, increases students' motivation to learn. This is accomplished by offering helpful tools, immediate feedback, and engaging features that encourage students' interest and participation in their academic endeavors. This relationship between ChatGPT and learning motivation suggests that ChatGPT positively affects students' motivation to perform well in class. Furthermore, ChatGPT indirectly contributed to better academic performance by directly increasing learning motivation. This is accomplished by encouraging students' curiosity, enthusiasm, and motivation to learn. As a result, students put forth more effort, participated more actively in their studies, endured difficulties, and adopted a proactive attitude toward their academic tasks. This improved academic performance resulted from an increased learning drive.

Previous studies also coincide with these findings. As an academic support tool, ChatGPT elevates students' motivation to learn by providing helpful tools, immediate feedback, and engaging features. This positive influence on learning motivation increases effort, active participation, and academic performance (Rahman & Watanobe, 2023; Muñoz et al., 2023).

According to Javaid et al. (2023) and Mohamed (2023), the ChatGPT is a technological instrument designed to assist students in their academic pursuits. Using immediate feedback and virtual tutor support fosters a learning environment that promotes student engagement and facilitates knowledge acquisition. ChatGPT fostered enhanced student engagement and dedication towards academic pursuits by encouraging comprehension, active participation, and cultivating curiosity. Academic achievement in educational settings is positively correlated with students' motivation levels. This association can be attributed to the proactive approach adopted by highly motivated students, who demonstrate resilience in the face of challenges, persevere through adversity, and exhibit genuine enthusiasm for acquiring knowledge. The ChatGPT essentially functions as a catalyst in fostering students' passion for education and enhancing their intrinsic motivation to excel academically.

Nevertheless, ensuring the ethical utilization of ChatGPT in education is of utmost importance, despite its potential benefits. The imperative nature of guaranteeing fairness, accuracy, and privacy cannot be overlooked. The principles of transparency, objectivity, and fostering critical thinking are of paramount importance. Teachers and students must perceive the ChatGPT as a supplementary instrument rather than a replacement while adhering to ethical principles to encourage a responsible and inclusive educational setting (Chan, 2023).

In conclusion, the mediating effect of learning motivation implies that ChatGPT indirectly improves students' academic performance through its impact on learning motivation in addition to having a direct impact on learning motivation. When ChatGPT is employed responsibly and ethically, it plays a crucial role in fostering favorable educational results and facilitating academic achievement by bolstering students' motivation to engage in learning.

5. Conclusion

5.1. Conclusion

This study proved that learning motivation fully mediates the relationship between ChatGPT as an academic support tool and students' academic performance. ChatGPT fosters student interest, curiosity, and intrinsic motivation to study by offering helpful resources, advice, and interactive elements. As a result, students engage more fully, put in more effort, and approach their academic work with greater initiative. ChatGPT positively affected academic performance through the mechanism of increased learning motivation. Through appropriate utilization, ChatGPT assumes a critical function in fostering educational advancement and facilitating superior outcomes in students' scholastic pursuits, thereby sustaining their motivation to acquire knowledge.

5.2. Limitation

The primary goal of this study was to investigate the mediating role of learning motivation, while excluding other relevant variables that could potentially affect the relationship between ChatGPT and academic achievement. Furthermore, the research was dependent on data that were self-reported by the participants, possibly introducing response bias or inaccuracies. Moreover, it is essential to note that the analysis was conducted within a particular educational framework, thereby restricting the applicability of the results to alternative environments. Subsequent investigations should focus on these constraints to provide a more comprehensive understanding of the function of the ChatGPT as a tool for educational assistance.

5.3. Suggestion

Based on the identified limitations, several recommendations for future research can be proposed. First, it is imperative to conduct longitudinal studies to investigate the enduring impact of ChatGPT on learning motivation and academic performance. Utilizing the ChatGPT as an academic support tool would yield a more comprehensive understanding of its enduring influence. To ensure the ethical utilization of ChatGPT in educational settings, teachers should adopt a supplementary approach rather than a substitutive one, thereby complementing human instruction. Educators must also foster critical thinking skills, tackle bias, promote inclusivity, safeguard student privacy, and consistently assess and revise content to uphold accuracy and pertinence.

Moreover, future research endeavors should investigate other intervening variables that could impact the association between ChatGPT, motivation for learning, and scholastic achievement. These variables may encompass individual dissimilarities, socioeconomic circumstances, and the educational environment. Ultimately, using qualitative research methods, such as in-depth interviews or focus groups, can yield a more profound understanding of students' experiences and perceptions of the use of ChatGPT as a tool for academic support. These recommendations will enhance the comprehension of the efficacy and possible effects of ChatGPT in educational environments.

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