

## Effect of Chat GPT on the digitized learning process of university students

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### *Abstract*

*This study's main objective was to determine how the use of ChatGPT has impacted the digitalized education system among Peruvian university students. This study used descriptive statistics and linear regression analysis using the data collected randomly from 216 students' responses on the Twitter website on the various experiences they have of ChatGPT. According to this research, 71.30% of participants who participated in the discussion agreed that they use ChatGPT as it is fast and provides the most accurate answers. Fifty participants representing 23.15% of the total indicated in the discussion that they use ChatGPT since it is free and easy to use. Additionally, the linear regression analysis to determine its cost, recommendation, rate of task completion and preference as any impact on the usage of ChatGPT and how this affects the digitalized learning process. And from the result, there was a positive correlation between the independent variable of student use of ChatGPT and the dependent variables of the rate of assignment completion, cost, and preference for using ChatGPT because of its services.*

*Given that most students may access ChatGPT for no cost, and its estimated cost variable was 0.379, it is widely used by them. These results prove that ChatGPT significantly impacts the digitalized learning process as many students prefer to use ChatGPT to handle tasks. Therefore, it is clear that institutions should come up with ways of dealing with students' growing use of AI bots.*

*Keywords: ChatGPT, Education, AI model, Training facilities, University student.*

## **Introduction**

Open AI's ChatGPT is a language model that can interpret and carry on conversations in natural human language (Eaton, Brennan & McDermott, 2023). Through extensive training on various text data, it can now produce a wide range of text and code. ChatGPT is a computer application miming human speech and comprehension (Haluza & Jungwirth, 2023). It knows how to combine words into phrases since it has read many books and articles. It can complete a sentence, answer questions, and generate new content based on input. According to García-Peñalvo (2023), it is malleable enough to be customized to translate languages, summarize texts, and answer specific inquiries. You can find some answers there, but you should verify the data before using it. While ChatGPT may look like the perfect educational tool, remember that it can't replace the need for students to develop their critical thinking and interpersonal skills. Depending on how it's managed in classrooms, ChatGPT could have a wide range of effects on students and educators (Kumar et al., 2022).

Intelligent services have been aggressively implemented in information technology alongside big data, machine learning, and artificial intelligence (AI) growth. As a result of the educational constraints brought on by the coronavirus disease (COVID-19) pandemic, artificial intelligence has been implemented in clinical practice and nursing education (Arias et al., 2022; Puma et al., 2022). Plus, traditional classes have been replaced by online video lectures and other forms of distance education (Thurzo et al., 2023; Castillo-Acobo, et al., 2022). Therefore, initiatives are required to promote interactions between instructors and students and ways to boost students' self-directed learning. As a result, there has been a surge of curiosity about implementing chatbots in classrooms. As shown in the study by Henrickson (2023), a chatbot, or "talking bot," is an increasingly popular piece of software in information technology; it can hold natural-sounding conversations with human users and fulfill their requests in a Q&A format.

A chatbot's usefulness in the classroom is multifaceted since it allows students to study wherever and whenever they like. In addition to

boosting the efficacy of self-directed learning, students' reduced stress levels while interacting with chatbots and practicing new skills are another benefit. In addition, it allows for real-time user feedback through discussions during the learning process and responds with tailored information based on that input (Korngiebel & Mooney, 2021). As a result, thanks to advances in artificial intelligence, a chatbot can educate people who would otherwise be unable to do so for many reasons. Many students, teachers, lecturers, researchers and the public have different views on ChatGPT, whether positive or negative. As shown in the research by Mhlanga (2023), various institutions can assist and guarantee that AI is used responsibly and beneficially. Teaching students about artificial intelligence (AI) and its limitations is crucial, including encouraging ethical and responsible use of AI, fostering critical thinking, and providing students with the tools they will need to adapt to a rapidly evolving technological landscape. In this regard, this research is conducted to determine the impact of ChatGPT on students, especially in Peru, by i) showing how the cost of chatGPT, rate of task completion and assessment of why students prefer ChatGPT impacts the usage of ChatGPT.

### **Literature Review**

The Peruvian government has shown to be determined to narrow economic and social divides. It was widely agreed that the success of a country depended on its ability to invest in its people. The key to unlocking the full potential of low-income and vulnerable children's ongoing skill formation and future productivity was ensuring they had access to high-quality basic education. Schools in Peru graduate large numbers of children without a firm grasp of mathematics and literacy. Despite the country's near-universal primary education, it has tripled preschool enrolment in the past five years and increased secondary school enrollment beyond the regional average (Muñoz et al., 2022). All the program by the government is made to promote education in the country, with the introduction of ChatGPT, all the government efforts might go to waste as the AI enhances cheating, thus reducing the level of education as intended by the state.

Empirical literature review on how ChatGPT impacts education

Angelov et al. (2021) highlight the shocking bias against using digits in numbers within the ChatGPT community. The study's author finds that the most popular number generated by ChatGPT is also the most popular in human preference, suggesting a substantial correlation between the two. ChatGPT has advantages and disadvantages as a conversational agent, which he details.

The use of AI in the classroom is discussed by Adamopoulou & Moussiades (2020). According to the 21st International Conference on Artificial Intelligence in Education (AIED) scheduled for 2020, AIED is a rapidly growing educational technology field. How AI can be used for pedagogical objectives and its impact on higher education teaching and learning is still a mystery to many educators. The study's author reflected on how artificial intelligence (AI) has changed teaching and learning, highlighting its successes and failures. There's also some discussion of the results of AI in the classroom and a specific approach to building an AI-enabled platform for teaching (Jungwirth & Haluza, 2023).

In their research, Boateng & Tindi (2022) explored the potential outcomes of AI's classroom introduction. The research used phenomenology, a qualitative method that assessed participants' viewpoints from various fields. Conclusions suggest that introducing AI into the classroom will bring various benefits and drawbacks for students and teachers. Some suggestions about how to best utilize AI and avoid any pitfalls it may present are provided. Although most of those polled express optimism about AI, some educators and researchers are worried about what it could mean for the profession. However, engineers see AI as a tool to improve quality and benefit everyone in the education sector. At the same time, lawyers and jurists are more concerned with the legal foundations for AI in education and potential problems (Mamani, et al., 2022).

Chang et al. (2021) introduced this technology and the breadth of AI in various fields, emphasizing its application in education. She discusses its definition, search tactics, developments, and future. In a study of the results of various experimental implementations, which have been reported more thoroughly elsewhere, Chang et al. (2021) offered some tentative answers, first conceptually and then practically. We find that because AI is fundamentally different from human intelligence in how it operates and what it accomplishes, it will never "take over" the role of the teacher in the context of electronic computing techniques developed over the past three-quarters of a century (Harper et al., 2003). It may seem contradictory, but the limitations discussed here have the potential to change education in ways that make it more human.

Customized education was the focus of research by Fadhil & Villafiorita (2017). There is a two-standard-deviation improvement in performance between students who receive private tutoring and those who use more conventional teaching methods, as reported by Bloom (1984). Due to the scarcity of teachers and the high cost involved, individualized, one-on-one instruction is rarely feasible on a societal level. Exciting new possibilities for tailoring instruction thanks

to advances in machine learning are opening up. As a result, AI might be the "holy grail" for realizing the potential of one-to-one education by enabling apps to deliver individualized training to each learner (Han & Lee, 2022). The study examines AI's potential social and technological effects on individualized education. Accordingly, we investigate the potential of the technology and any variables that may affect its adoption, including legal, social, and ethical concerns. Ultimately, we suggest legislative measures for promoting AI-driven individualized learning apps.

The potential of chatbots in the classroom has been the subject of extensive study; for example, they have been used for fielding questions from students as they gain an understanding of fundamental programming concepts. Most of these analyses have concentrated on chatbots. For example, Cunningham-Nelson et al. (2019) reviewed the literature on chatbots. They presented two scenarios in which chatbots may be used in an educational context and prototype applications for each. This practice is consistent with previous research studies, which have relied on literature reviews to produce condensed summaries of current information in chatbot technology applications for education. Smutny & Schreiberova (2020) used a screening approach in a third-party online directory to analyze Facebook Messenger chatbots designed to aid education. The findings were posted to the internet in a non-official directory. After weighing the pros and cons of using chatbots in the classroom, researchers determined that the former were more substantial and resulted in a more positive learning environment for everyone involved (Yang & Evans, 2019; Mansilla, et al., 2022). In addition, Smutn & Schreiberova (2020) presented a comprehensive review of several chatbots in education, utilizing the Preferred Reporting Items for Systematic Reviews and Meta-Analyses methodology (PRISMA).

Unlike other chatbots, ChatGPT can produce outstanding prose in seconds. It has generated much buzz and doomsday predictions regarding assessing students in higher education, among other things. Regarding language models, Rudolph et al. (2023) claim that ChatGPT is at the cutting edge. It is based on a version of OpenAI's Generative Pretrained Transformer (GPT) language model, designed to generate writing indistinguishable from the human-written text. Users can have conversations with ChatGPT that seem natural and uncomplicated, according to Rudolph et al. (2023). A brief overview of OpenAI, the company that created ChatGPT, was provided by Rudolph et al. (2023). This transition from a non-profit to a for-profit business model is something we feel strongly about and want to highlight. This review is one of the first peer-reviewed articles on the importance of ChatGPT for higher education, notably in the areas of assessment, instruction, and research, as Rudolph et al. (2023) stated. Artificial intelligence

chatbots like ChatGPT are the subject of discussion by Rudolph et al. (2023), who examine the potential benefits and drawbacks of this technology for higher education and speculate on its impact on the future of higher education (Gavilán, et al., 2022).

#### How ChatGPT works

OpenAI's GPT system. It can process various textual tasks, from simple questions and answers to more involved ones (Han & Lee, 2022). ChatGPT, developed by OpenAI, is a large-scale language model optimized for natural conversation. As a large-scale language model, ChatGPT is taught to make sense of enormous datasets (Jamovi, 2021). If you're having trouble putting together a message to a coworker, for instance, ChatGPT can help you quickly craft one that conveys your intended meaning. ChatGPT is also helpful if you must confront a coworker about their lack of productivity but are at a loss for words. ChatGPT's massive data warehouses and efficient design allow it to write dissertations on topics like the value of AI. The unique benefit of ChatGPT for scholars is this very thing.

The ChatGPT language model can generate natural-sounding text in response to an input or environment, making it sound like a human authored it. It can handle most text-generating tasks, including those for natural language expression. Such tasks include text completion (email and report writing), paraphrasing, summarizing, machine translation, and question answering (Han & Lee, 2022). Conversational AI applications, such as chatbots and virtual assistants, can also profit from their use in the correct setting. ChatGPT has also shown promise as a code writer, a nice bonus. However, ChatGPT isn't the best choice for tasks that require critical thinking, in-depth knowledge, or up-to-date information. ChatGPT may not fully acquire logic, as evidenced by its alleged inability to perform arithmetic computations or sophisticated mathematical calculations.

According to OpenAI, "the ChatGPT model uses Reinforcement Learning from Human Feedback (RLHF), which takes the same approaches as InstructGPT but with subtle modifications in the data gathering configuration. As an example, this study posted the question "impact of ChatGPT on education in Peru," and figure 1 below shows the response of the AI.

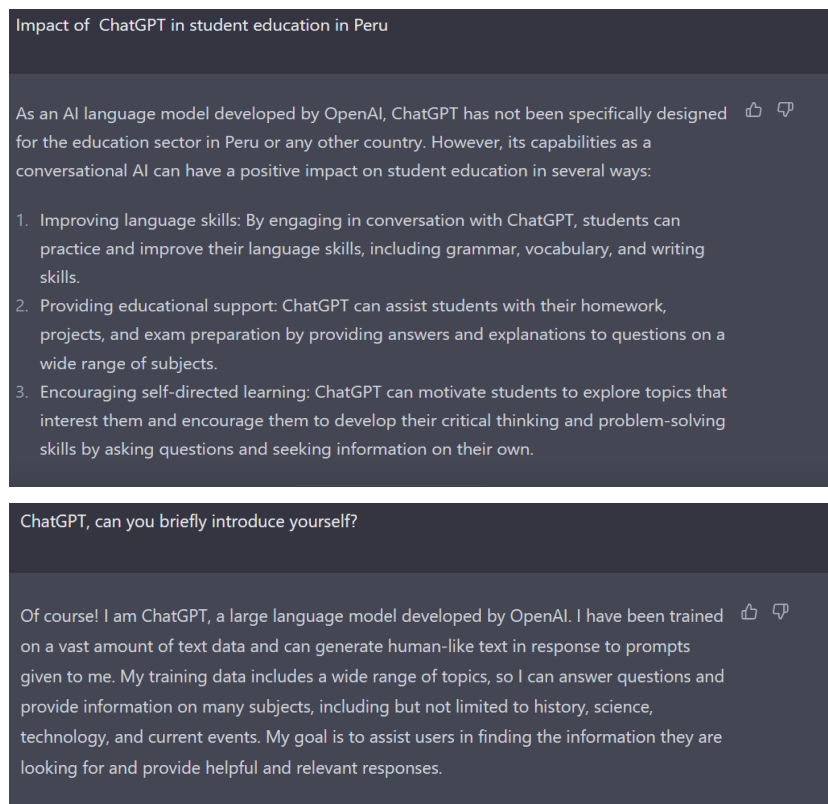


Figure 1: ChatGPT response

## Methodology

This used data set from randomly collected students' responses from Twitter, with a sample size of 216 representing different responses to their interactions with ChatGPT. This research employed the data randomly collected from Peruvian university public websites on the perception, ChatGPT usefulness, motivation, and engagement in digitalizing the learning process. The data was refined in Microsoft excel and imported to SPSS for further analysis of descriptive statistics of the quotative analysis process.

## Data analysis

This study focuses on the linear relationship between the dependent Y and the independent X. For the dependent variable, the linear regression model uses a straight line with equation  $Y = a + bX + \dots + u$ , where a is the line's y-intersect and b is the slope. Using statistical techniques, values for Y, X and Care were initially used to estimate the regression line's parameters a and b. Using the regression line, one can extrapolate the value of the dependent variable Y from the value of

the independent variable X. Hence, for instance, after doing a linear regression, one may extrapolate a person's weight (dependent variable) from their height (independent variable). To determine the relationship between the Y variable (Impact variable) and independent variables (ChatGPT preference by students, assignment completion by student variable, recommendation and cost). Thus, the regression model is represented as:

$$\text{Impact of ChatGPT} = A + b_1 \text{ ChapGPT\_preference} + b_2 \text{ Assignment completion rate} + b_3 \text{ Cost} + b_4 \text{ Recommendation} + \epsilon$$

Additionally, the study will follow ethical principles, including informed consent, confidentiality, and privacy. The information from this study is explicitly used for research purposes.

### Result and Discussion

Table 1: Descriptive statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
user_followers	216	0	287332	10693.47	41251.518
user_favourites	216	0	140506	10551.63	21590.367
Valid N (listwise)	216				

As shown in the table above, ChatGPT on Twitter alone has over 287,000 followers in discussion groups. Students across the University of Peru acknowledged that they prefer ChatGPT to handle various tasks like answering questions and doing assignments. ChatGPT provides students with direct responses and it has been programmed with a specific set of information sources and the rules for generating these responses. For instance, when we asked ChatGPT to respond whether it is appropriate to use ChatGPT in doing school exams, the following was its response.

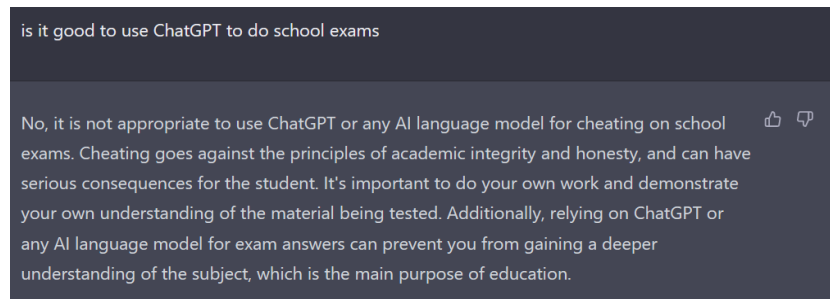


Figure 2: ChatGPT's response



The ChatGPT model is an AI-trained model not to be used in schools to promote cheating but enhance knowledge and promote educational skills. As stated above, the Peruvian government has worked hard to ensure quality education in various fields. Still, ChatGPT poses a significant challenge in meeting this objective since reliance on ChatGPT will stifle the creative mindsets of students not only in Peru but across the world. Additionally, the AI might sometimes provide inaccurate responses to learners.

Table 2: ChatGPT preference response by students

		Why prefer ChatGPT			Cumulative Percent
		Frequency	Percent	Valid Percent	
Valid	It is fast	92	42.59	42.59	42.59
	Provide the most accurate answers	62	28.70	28.70	71.29
	It is free	50	23.15	23.15	94.44
	Others	12	5.56	5.56	100.0
Total		216	100.0	100.0	

The table above shows that most student who participates in various groups' discussion about AI tools prefer ChatGPT due to the abovementioned factors. For example, ChatGPT is fast and provides accurate answers, according to most students who participated in the discussion, with 154 participants representing 71.30 percent. Others prefer it because it is free with 50 participants representing 23.15%. These students' responses were expressed in the figure below (see figure 3).

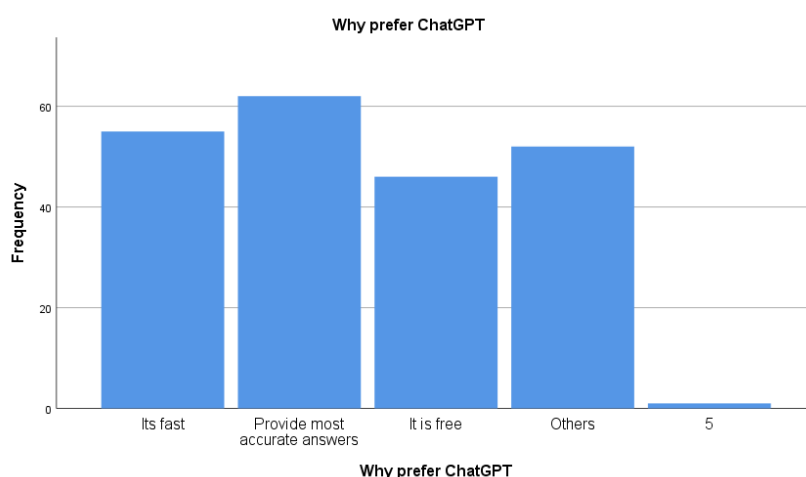


Figure 3: ChatGPT preference responses

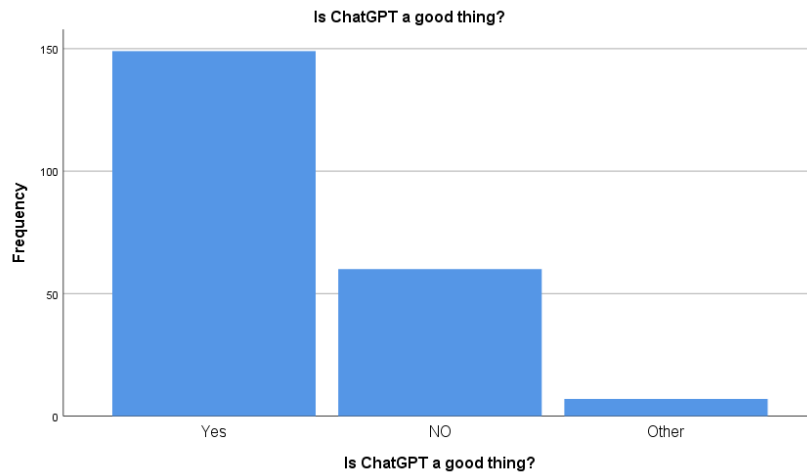


Figure 4: Impact of ChatGPT on student

To determine the impact of ChatGPT, most students in the groups answered, “Is ChatGPT a good thing?” Many students responded yes (150 students). Only 50 students choose not as shown in the figure above.

Table 3: Regression result

		Coefficients <sup>a</sup>				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.908	0.394		2.283	0.023
	Rate of assignment completion	1.480	0.000	0.113	1.287	0.199
	Recommendation of ChatGPT from friends	-4.72	0.000	-0.092	-1.039	0.300
	ChatGPT preference	0.027	0.033	0.057	0.822	0.412
	Cost	0.379	0.039	0.067	0.982	0.327
R-sqr.		0.565				

a. Dependent Variable: Use of ChatCPT

The result above shows the result from the linear regression model with R-squared at 0.565, implying that the general model is statistically significant as the variables explain 56.5% of the problem stamen.

Additionally, from the result above, the rate of assignment completion, cost and ChatGPT preference due to its services had a positive relationship with the independent variable ChatGPT usage by students. The cost variable estimate was determined as 0.379 which is significant at 5% level with 0.00 standard error implying that students highly use ChatGPT since it is free and most students can easily access it at no cost.

The preference variable was determined to increase ChatGPT usage by 2.7% (0.027) with a standard error of 0.00 which is also significant at 5%. Additionally, the qualitative data showed that students were pleased with the chatbot, which is unsurprising given the quick feedback they received from it and its massive contribution to their education since they interacted with it more frequently and at their convenience as the rate of assignment completion has a positive relationship with ChatGPT dependent variable usage of 1.48 which is also significant at 5%.

According to Chang et al. (2021) and Essel et al. (2021), one of the goals of utilizing AI-powered teaching assistant chatbots is to provide timely knowledge to specific students to overcome challenges that develop throughout the learning process. Furthermore, feedback from the experimental cohort suggests that students gained the knowledge and self-assurance to complete the course, leading to higher grades. Learning was fun and exciting for them since interacting with the chatbot improved retention and recall of information. This result accords with the conclusion by Chang et al. (2021) that students' awareness increased because of the opportunity to understand and carry out deep thinking by studying relevant information.

## **Conclusion**

Using chatbots like OpenAI's and ChatGPT model, which provides an instant and direct response to inquiries as shown in the result above, the response rate at which the AI answers question had increase the number of users significantly, this study proved that a unit increase in rate of assignment completion increases ChatGPT usage by 1.48 units which is significant at 5% level. This also proves that artificial intelligence plays a role in strengthening the teaching and learning process. This article has determined that the use of ChatGPT has had a significant impact on digitalized learning process as many students finds it very easy at no cost to use and submit assignments using ChatGPT. ChatGPT according to this research promotes high level of laziness among students as it produces higher number of words in seconds therefore many students will wait till the last minutes and use the AI to handle and submit their work without learning anything.

The AI bots are here with us and will only improve with time. It is high time teachers and lecturers in Peru prove themselves, we need fundamentally renewed new teaching and learning settings and, above all, rethink our teaching, learning, and examination culture at German schools and universities. We in the academic community have never been more challenged to demonstrate our ability to use human ingenuity and sound judgment. No matter how you look at it, we haven't reached the halfway point yet.

To be truly effective, however, we must first overcome some challenges inherent to the AI-powered teaching assistant. Teachers need to be able to adapt and incorporate chatbots to help better their pupils learn. It is also recommended to ease the transition to using the teaching assistant chatbot, as students may already have experience with other chatbots, such as service-oriented ones. Additionally, it is suggested that various incentives be employed to encourage students to interact with the chatbot. Following the suggestions of Fadhil and Villafiorita (2017), for instance, the use of gamification to increase students' engagement and interaction with chatbots can be a reinforcer. More importantly, a micro-learning method provides a workable strategy for incorporating teaching assistant chatbots into the classroom (Angelov et al., 2021). Since many students are already comfortable with other instant messaging services (such as Telegram or WeChat), they can be used to promote student interaction with teaching assistant chatbots (Boateng & Tindi, 2022).

The results are promising for the employment of a teaching assistant chatbot in comparable circumstances, even though this study used a chatbot designed with zero coding and in only one course to engage students. Having successfully implemented such an innovation inside a small institution/country with limited resources (human and technological) gives us faith that it can bring about positive change in the classroom.

### **Recommendation**

The rapid pace of technology development and growing global interconnectedness has led to substantial changes in society, the economy, and the environment. Since its inception, artificial intelligence has come a long way, paving the way for innovative tools like Open AI's and ChatGPT. The ChatGPT language model is state-of-the-art software with the potential to radically alter the educational landscape. This article's objectives are twofold: i) to provide a thorough assessment of the appropriate and ethical use of ChatGPT in the classroom, and (ii) to stimulate more study and discussion of this crucial issue. Using a document-analytical approach, this study

determined that, before implementing ChatGPT in the classroom, several conditions must be met, including but not limited to protecting students' privacy; preventing bias and discrimination; being open and honest about how ChatGPT is being used; and meeting a few other criteria. The outcomes of this study suggest that all these suggestions should be implemented to ensure that the worldwide education system maintains its credibility and accountability.

### **Limitation of the study and suggestion for further research**

Due to the small sample size, additional quantitative research is needed to verify the experiences of those who participated in the study. Although the chatbot's initial audience was students, its use could be extended to include visitors and staff in the future. As the chatbot had been given only a little amount of data to work with, it may not be able to answer all of the user's questions.

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