Online-Journals.org

iJET International Journal of Emerging Technologies in Learning

iJET | eISSN: 1863-0383 | Vol. 18 No. 17 (2023) | OPEN ACCESS

https://doi.org/10.3991/ijet.v18i17.39019

PAPER

The Perception by University Students of the Use of ChatGPT in Education

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ABSTRACT

ChatGPT, a generative language model recently created by OpenAI, has drawn a lot of criticism from people all around the world. ChatGPT illustrates both potential opportunities and challenges in education. This study aims to investigate how university students perceive using ChatGPT for learning, including benefits, barriers, and potential solutions. To determine how students felt about using ChatGPT in their learning, a questionnaire was distributed to 200 students via an online survey, and 30 students participated in semi-structured interviews. The research results showed that, in general, students had a favorable opinion of ChatGPT's application. The benefits of ChatGPT, according to students, included saving time, providing information in various areas, providing personalized tutoring and feedback, and illuminating ideas in writing. Also, several barriers to using ChatGPT were recognized, and some solutions were suggested for improvement of using ChatGPT in education. The most concerning issues for students while using ChatGPT were inability to assess the quality and reliability of sources, inability to cite sources accurately, and inability to replace words and use idioms accurately. To address these concerns, some potential solutions can be implemented; for example, verifying ChatGPT's responses with reliable sources; using ChatGPT as a reference source or a consultant tool; providing guidelines for use; and promoting academic integrity to ensure ethical uses of ChatGPT in an academic context.

KEYWORDS

chatGPT, education, perception, benefits, barriers

1 INTRODUCTION

The integration of artificial intelligence (AI) technologies in education has been an area of study for several decades [1]–[3]. In recent years, the widespread use of AI in various educational contexts, including teacher training, online tutoring, and curriculum development, has grown exponentially. The increasing prominence of AI technologies in classrooms raises important questions and challenges. Researchers and educators are concerned about the effective implementation of AI

Ngo, T.T.A. (2023). The Perception by University Students of the Use of ChatGPT in Education. *International Journal of Emerging Technologies in Learning (iJET)*, 18(17), pp. 4–19. https://doi.org/10.3991/ijet.v18i17.39019

Article submitted 2023-02-20. Revision uploaded 2023-06-27. Final acceptance 2023-06-28.

and its long-term impact on teaching roles. Of utmost importance is the potential impact of AI on education itself and whether it will enrich or undermine students' intellectual development [4].

ChatGPT (generative pre-trained transformer), developed by OpenAI in late 2022, is an advanced AI technology that has gained considerable attention. Its impressive performance in producing well-structured, logical, and informative responses has gained worldwide attention [5]. As the foremost natural language processing (NLP) model, ChatGPT exhibits human-like response-generation abilities, with an emphasis on personalized and interactive assistance. Notably, it can provide tailored recommendations for educational resources based on individual learning objectives and preferences [6]. Since its official launch on November 30, 2022, ChatGPT has rapidly emerged as a revolutionary user application, experiencing an unprecedented rate of growth. Within an exceptionally short span of two months, ChatGPT amassed an exceptional user base of 100 million active users as of January 2023 [7]. This extraordinary surge in user adoption highlights the significant impact and widespread acceptance of ChatGPT in the domain of NLP, solidifying its transformative position within the field. Hence, ChatGPT holds promise as a valuable tool to support students in their educational journeys, generating significant interest from learners worldwide.

However, despite the potential benefits, ChatGPT also presents novel challenges and risks to education [4], [8], [9]. The capability to provide precise responses to user inquiries gives rise to apprehensions about the possibility of AI-enabled academic dishonesty, as it can be exploited for completing assignments and exams on behalf of students [10]. Educators have expressed worries that students might rely excessively on ChatGPT to rapidly generate acceptable texts, potentially outsourcing their work to the AI system [11]. Furthermore, concerns have been raised regarding issues such as plagiarism, incorrect information, and inaccurate referencing [12]. It is essential to address the implications of integrating ChatGPT into the learning process in order to maximize its benefits while minimizing its drawbacks [10].

Despite the growing concerns and the need for thorough investigation, there is a scarcity of studies that delve into students' actual experiences with using ChatGPT in an educational context. Therefore, this study aims to assess students' perceptions of using ChatGPT in learning, focusing on their overall perception, the benefits they perceive, the barriers they encounter, and potential solutions for effective utilization of this tool. By conducting this research, we seek to bridge the existing research gap and contribute to the scientific understanding of AI in education. Moreover, gaining insights into students' perceptions of ChatGPT is vital since they are the primary users and beneficiaries of these technologies. The insights gained from this study will be valuable for educational practitioners, researchers, and policymakers, helping them understand the implications of integrating ChatGPT into educational settings and guiding responsible and effective utilization of this technology.

2 LITERATURE REVIEW

2.1 AI technologies

The concept of AI pertains to the creation of machines capable of executing tasks that typically necessitate human intelligence, as originally proposed by McCarthy et al. [13]. AI is a subfield of computational science that relies on algorithms, programs, and big data to develop intelligent systems that emulate human intelligence [14]. As an interdisciplinary field, AI integrates knowledge and technologies from diverse

areas, including "computational science, statistical analysis, information theory, and mathematical modeling" [15]. It encompasses theories, methodologies, and techniques that analyze, simulate, and explore human thinking and behaviors using machines, particularly computers [16]. AI has had a profound impact on various domains, such as "robotics, computer vision, expert systems, pattern recognition, and machine learning" [17].

2.2 Chatbots

Chatbot systems are widely employed AI technologies to facilitate teaching and learning endeavors. A Chatbot, functioning as an intelligent agent, engages with users by providing answers to their queries and delivering suitable responses [18]. Acting as a virtual conversational partner, it comprehends user input, including social and emotional cues [19]. The efficacy of a Chatbot is contingent upon the scale and precision of its databases, as larger databases tend to enhance performance [20]. NLP technology is utilized to develop Chatbots, empowering machines to comprehend, analyze, and interpret human languages. Pioneering Chatbots, such as Eliza, Parry, and Alice, emerged several decades ago, and with technological advancements, contemporary Chatbots, such as Apple Siri, Microsoft Cortana, and Google Assistant have been introduced [21]. These modern Chatbots have exhibited increasingly sophisticated communication capabilities when interacting with users.

2.3 ChatGPT

ChatGPT is an NLP model developed by OpenAI based on the Generative Pre-trained Transformer (GPT-3) architecture, which was originally established for language generation tasks, such as machine translation [22], [23]. ChatGPT is designed to create human-like text based on a specific request or dialogue that enables natural, open-ended conversations [22]. It can also generate code, stories, poems, and other things in addition to just text. GPT-3 is the largest language model, which is capable of handling these jobs at a respectably high level, thanks to its 175 billion training parameters [24]. Unlike previous AI language models, ChatGPT is a generative AI that can create new content and ideas through enhanced learning from human feedback and express them in real-time conversations. The new development approach has enabled ChatGPT to respond to follow-up questions, acknowledge mistakes, refuse false assumptions, and reject inappropriate queries [25]. ChatGPT offers "more creative" responses than traditional AI language tools such as dubbed RoBERTa or Meta's language tool [26]. However, as a text-to-text generative AI, ChatGPT cannot convert text into images like other AI models, such as DALL-E [27]. The capacity of ChatGPT to retain a "conversational style" with a consistent personality during a discussion is one of its important features. Instead of just responding at random, this enables a more realistic and genuine discussion. In order to accomplish this, ChatGPT has been trained on substantial databases of conversational text such as chat transcripts, forum records, and social media posts [27].

2.4 The application of AI technologies in education

AI technologies have revolutionized the field of education, offering new possibilities for learning [28]. In education, AI can be applied in two main ways: (1) the creation

of AI-powered tools for classrooms and (2) leveraging AI for insights, learning assessment, and educational process enhancement [29]. These applications encompass a range of AI technologies, including intelligent tutoring systems, chatbots, robots, learning analytics dashboards, adaptive learning systems, and automated assessment, all of which aim to support and enhance the educational experience [28]. Intelligent tutoring systems (ITS), an example of AI applications in education, provide simulated one-on-one tutoring experiences. A meta-analysis examining their impact indicated a generally positive effect on college students' academic achievement [30].

Chatbots, one of the AI tools used in education, have evolved over time. Early chatbots relied on either keyword matching or NLP, but their responses were often imprecise and unreliable [31]. However, contemporary chatbots have witnessed significant improvements and are now being applied in educational contexts for purposes such as "health and wellness, language acquisition, feedback provision, metacognitive development, and addressing student inquiries" [32], [33].

ChatGPT, an advanced conversational chatbot created by OpenAI, holds the potential to facilitate the integration of AI into teaching and learning, offering instructors a user-friendly tool for educational purposes. Since its launch in November 2022, ChatGPT has promised to be a helpful tool in an educational context, for both students and teachers. ChatGPT supports students by offering constructive criticism on their work, helping with essay writing, and fostering problem solving. ChatGPT can be used by teachers to produce content such as course outlines, presentations, quizzes, coding, grading, and scientific articles [34]. ChatGPT is considered the best AI chatbot ever introduced to the public [35]. It has caused both significant excitement and confusion to educators [36], [37]. To ensure that ChatGPT is utilized for social benefit rather than social harm, it is important to take into account both potential applications and major risks associated with this AI technology [38]–[40].

2.5 Previous studies on AI technologies

AI, including chatbots and other NLP tools, has been extensively studied in the education field [41]–[43]. The integration of AI in education has exhibited diverse positive effects on students. Research has showed that AI enhances student motivation and engagement and cultivates a greater interest in learning [44]. AI tools such as Smart Sparrow create interactive learning environments that foster learner interaction [45]. According to Khan et al. [46] and Ghnemat et al. [47], the utilization of AI technologies probably results in significant improvements in academic performance.

A crucial aspect of AI in education lies in providing personalized learning experiences. AI-based tools such as ALEKS and Knewton generate personalized learning paths tailored to students' specific strengths and weaknesses. These tools not only offer students personalized tasks, but also provide instant and personalized feedback by analyzing their work and learning process [48]. For example, Grammarly, InstaText, and QuillBot offer customized feedback on written assignments, while Codecademy provides personalized guidance for coding tasks. This personalized step-by-step assistance and prompt feedback encourage self-reflection, self-directed learning, and self-regulation by enabling students to recognize and learn from their mistakes [49]. Importantly, by facilitating continuous dialogue, AI enhances communication proficiency in language-learning contexts [50]. It also fosters collaborative learning, increases learning motivation, and improves peer communication skills [51], [52].

As ChatGPT is a new tool in the field, there are limited studies on its application in higher education [36]. Some studies have explored the benefits and challenges

of ChatGPT, highlighting its capacity to provide individualized instruction based on students' needs and abilities [5], [53], [54]. ChatGPT can evaluate students' learning performance and generate personalized recommendations for content and learning materials based on their preferences and study habits [5], [55]. Nevertheless, research has identified limitations of ChatGPT, including difficulties in assessing source quality, the potential for unreliable information in topics with limited references, limitations in language use, handling complex mathematical formulas, occasional errors and contradictions in responses, declining response quality after several paragraphs, and the possibility of generating inaccurate or false factual references [56], [57].

Given the growing interest and research on ChatGPT, there is still a significant gap in understanding students' experiences when using ChatGPT in educational contexts. To address this gap, this study aims to assess students' perceptions of using ChatGPT for learning, with a focus on identifying the benefits, barriers, and potential solutions. The findings of this study will provide valuable insights for educational practitioners, researchers, and policymakers, fostering a deeper understanding of the implications of integrating ChatGPT into educational settings and guiding responsible and effective implementation of this technology.

2.6 Conceptual framework

The adoption of ChatGPT has been widely observed across various fields, including education. Therefore, researchers and educators have increasingly dedicated their efforts to investigating the advantages and challenges linked to integrating ChatGPT into educational contexts. This study aims to explore students' perspectives on the use of ChatGPT as an educational tool, with a specific focus on identifying both the benefits and barriers that impact its effective implementation for academic purposes. According to Zhai [5], Else [53], and Baker [54], one of the key benefits of utilizing ChatGPT in education is its capacity to facilitate individualized instruction, catering to students' unique needs and abilities. Additionally, ChatGPT can evaluate students' learning performance and offer targeted solutions for improvement. Notably, the system can adapt to users' preferences and study habits, generating personalized recommendations for content and learning materials [5], [55]. However, recent studies have also showed some limitations associated with ChatGPT. To establish the conceptual framework for this study, research conducted by Zhai [5], Else [53], Baker [54], Dhawan and Batra [55], Mintz [56], and Eaton et al. [57] have been integrated and synthesized. Their contributions serve as a foundation for examining the use of ChatGPT in education and shedding light on the associated benefits and challenges.

3 METHODOLOGY

3.1 Participants

The study comprised a sample of 200 Vietnamese university students who had previous experience using ChatGPT for academic purposes. The participants were selected through a random sampling technique. Out of the total sample, 30 students (15% of the sample) were further chosen for a semi-structured interview, aiming to gain a comprehensive understanding of the benefits, challenges, and potential solutions associated with using ChatGPT for learning in a higher education context. The demographic information of the participants is presented in Table 1.

Table 1. Demographic information of participants

Items		Number (n = 200)	Percentage (%)
Gender	Male	118	59.0
	Female	79	39.5
	Prefer not to say	3	1.5
School year	First year	36	18.0
	Second year	65	32.5
	Third year	79	39.5
	Last year	20	10.0
Program	Information Technology	73	36.5
	Business Administration	45	22.5
	Media Communication	26	13.0
	Hospitality and Tourism	23	11.5
	Linguistics	18	9.0
	Graphic Design	15	7.5

3.2 Instruments

A customized questionnaire was developed for this study based on existing research by Zhai [5], Else [53], Baker [54], Dhawan and Batra [55], Mintz [56], and Eaton et al. [57]. The questionnaire was composed of two main sections: the participants' demographic information and the questionnaire elements that address research objectives. To assess students' perceptions of the benefits and barriers of using ChatGPT, a 5-point Likert scale was employed, ranging from 1 (strongly disagree) to 5 (strongly agree). Furthermore, semi-structured interviews with open-ended questions were conducted to obtain a deeper understanding of students' perceptions regarding their use of ChatGPT in the learning process.

3.3 Data collection and analysis

The data was gathered using an online survey and a semi-structured interview. Initially, a Google Form questionnaire was distributed to students who had utilized ChatGPT in their studies, inviting them to participate in the research. To ensure the questionnaire's reliability, a pilot study was conducted with a sample of 30 responses. The questionnaire's internal consistency was assessed using the Cronbach's alpha test in SPSS software (version 25), resulting in a Cronbach's alpha value of >0.9, confirming the reliability and suitability of the questionnaire for the study. In the empirical study, a total of 200 valid responses were collected in February 2023. The collected data was analyzed using SPSS software (version 25), employing descriptive analysis and one-sample t-tests. Further, 30 out of 200 students were chosen to participate in the interview section. Their responses were transcribed, coded, and categorized to identify similar patterns and themes.

4 RESULTS

The survey was done to get an understanding of the perception of students about the recently introduced AI technology ChatGPT in educational context. The participants' overall mean score was 3.61 (see Table 2), which was greater than the average mean score of the 5-point Likert scale (mean = 3.00). In Table 3, the one-sample t-test result showed a statistically significant difference in the mean score between 3.61 and 3.00 (t = 31.868, p = 0.000). Moreover, the results in Table 2 revealed that from the students' perspective, barriers to using ChatGPT (mean = 3.64) slightly higher than the benefits of using it (mean = 3.58).

Table 2. Mean scores of participants' perceptions on the use of ChatGPT

Items	N	Mean	SD
Use of ChatGPT	200	3.62	.37
Benefits of ChatGPT	200	3.58	.45
Barriers of ChatGPT	200	3.64	.33
General mean	200	3.61	.27

Table 3. One-sample t-test of general mean (test value = 3)

	Test Value = 3					
	t	df	Sig. (2-Tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
General mean	31.868	199	.000	.60903	.5713	.6467

4.1 General perception of students of the use of ChatGPT in learning

To explore the individual perception on the use of ChatGPT in education, students were requested to select the level of their agreement on the use of ChatGPT based on a 5-point Likert scale. As displayed in Table 4, the overall mean score of perception of student of the use of ChatGPT was 3.62. The one-sample t-test indicated a statistically significant difference in the mean score between 3.62 and 3.00 (t = 23.400, p = 0.000) (see Table 5). This means that the students' perception on the use of ChatGPT was higher than the average.

Table 4. Students' perception on the use of ChatGPT

Items	Mean	SD
ChatGPT is easy to use	4.56	.741
ChatGPT can give answers quickly	3.26	.589
ChatGPT makes me lazy to think	3.37	.596
ChatGPT has functions as a search engine	3.64	.650
ChatGPT can be used with various input languages	3.44	.677
ChatGPT is a useful tool for study	3.43	.630
Use of ChatGPT	3.62	.37

Table 5. One-sample t-test of the use of ChatGPT (test value = 3)

	Test Value = 3					
	t	df	Sig. (2-Tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Use of ChatGPT	23.400	199	.000	.61583	.5639	.6677

Based on the findings in Table 4, ChatGPT's simplicity of use is the most remarkable feature, with a significantly higher mean score (mean = 4.56) compared with others. The result of the one-sample t-test illustrated a significant difference in the mean score of 4.56, with the test value of 4.00 ($p < 0.05$). High levels of student perception were found in the statements regarding using ChatGPT as a search engine, with various input languages, and as a useful study tool, with the mean scores of 3.64, 3.44, and 3.43, respectively. The one-sample t-test results illustrate that there were statistically significant differences between these mean scores and the test value of 3.00 ($p < 0.05$). This means that from the viewpoint of students, ChatGPT is a helpful tool that can be used as a search engine with a wide range of languages. On the other hand, the statements "ChatGPT makes me lazy to think" and "ChatGPT can give answers quickly" received the lowest mean scores, but still above the average level (mean = 3.37 and mean = 3.26, respectively).

To further investigate the students' perception on the use of ChatGPT, 30 participants were interviewed and the answers were recorded. All of the interviewees agreed that ChatGPT is a helpful study tool. Their responses included the following:

"ChatGPT is a useful tool for searching for information. It gave answers for any given questions very fast."

"I found it very interesting to use this AI chatbot to support learning as it can understand different languages and provide knowledge in a variety of study fields. Especially, it can argue with me as a real person."

4.2 Students' perception on benefits of using ChatGPT in learning

In this section, the participants needed to determine the level of their agreement on the benefits of ChatGPT. The results showed an overall mean score of 3.58 of students' perception on the benefits of using ChatGPT (see Table 6). A result of the one-sample t-test in Table 7 demonstrated a statistically significant difference in the mean score between 3.58 and 3.00 ($t = 18.051$, $p = 0.000$). This means that students perceived the benefits of using ChatGPT in learning.

Table 6. Mean scores of benefits of using ChatGPT

Items	Mean	SD
ChatGPT can help students save time	3.74	.750
ChatGPT can provide information in diverse fields	3.66	.699
ChatGPT can be used to translate learning materials into different languages, making them easy to access	3.47	.625
ChatGPT can help students better understand theories and concepts	3.53	.722

(Continued)

Table 6. Mean scores of benefits of using ChatGPT *(Continued)*

Items	Mean	SD
ChatGPT can illuminate ideas in writing thus improving efficiency and productivity	3.53	.708
ChatGPT can provide personalized tutoring and feedback based on the student's learning needs and progress	3.56	.707
ChatGPT can help enhance students' learning by offering them personalized and adaptive learning experiences	3.54	.722
Benefits of ChatGPT	3.58	.45

Table 7. One-sample t-test of benefits of using ChatGPT (test value = 3)

	Test Value = 3					
	t	df	Sig. (2-Tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Benefits	18.051	199	.000	.57500	.5122	.6378

According to the results shown in Table 6, "help save time" (mean = 3.74) and "provide information in diverse fields" (mean = 3.66) had higher mean scores than other items. From the results of the one-sample t-test, there was a statistically significant difference in these mean scores with 3.00 ($p < 0.05$). This suggested that students were highly aware of ChatGPT's ability to save them time and provide them with a wide variety of knowledge. The benefits of "providing individualized tutoring and feedback to students" (mean score of 3.56) and "helping students better their learning and retention" (mean score of 3.54) were what led to the subsequent high mean score. The remaining statements all received mean scores above 3.00. A one-sample t-test revealed that these mean scores differed significantly from the value of 3.00 ($p < 0.05$). This shows that students' opinions of ChatGPT's educational advantages were above the average level.

The participants of the interview mentioned the advantages they saw in using ChatGPT for learning as follows:

"ChatGPT gives explanations for the theories to assist me better comprehend them, which helps me with my problems in class."

"I used ChatGPT to generate ideas for my writing tasks. It can critique my writing and make suggestions for development."

"This AI technology can create highly accurate code for developing apps and software."

4.3 Students' perception on barriers of using ChatGPT in learning

The analysis results of students' barriers to using ChatGPT in learning are shown in Table 8. There was an overall mean score of 3.64, with a statistically significant difference in the mean score between 3.64 and 3.00 ($t = 27.331$, $p = 0.000$) by one-sample t-test analysis (see Table 9). This means that students had above-average awareness of the difficulties associated with using ChatGPT.

Table 8. Mean scores of barriers of using ChatGPT

Items	Mean	SD
ChatGPT can provide unreliable information on topics with few citations	3.61	.736
ChatGPT can produce inaccurate or false factual references	3.63	.717
ChatGPT is unable to cite sources accurately	3.59	.678
ChatGPT is unable to replace words and use idioms wisely	3.72	.811
ChatGPT can produce responses weakens after several paragraphs	3.52	.679
ChatGPT is unable to examine quality and reliability of sources	3.73	.750
ChatGPT can exhibit logical errors and contradictions	3.60	.672
ChatGPT is unable to measure the value of difficult mathematical formulas	3.72	.736
Barriers of ChatGPT	3.64	.33

Table 9. One-sample t-test of barriers of using ChatGPT (test value = 3)

	Test Value = 3					
	t	df	Sig. (2-Tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Barriers	27.331	199	.000	.63625	.5903	.6822

The results in Table 8 revealed the top three obstacles to using ChatGPT included "unable to examine quality and reliability of sources" (mean = 3.73), "unable to replace words and use idioms wisely" (mean = 3.72), and "inability to measure the value of difficult mathematical formulas" (mean = 3.72). The one-sample t-test results also confirmed a statistically significant difference in these mean scores with 3.00 ($p < 0.05$). In contrast, "produce responses weakens after several paragraphs" was the least concerning barrier, with mean score of 3.52, just above the average level.

Even though a majority of students (over 86%) had a high level of satisfaction with the use of ChatGPT, some challenges were recognized:

"I was really concerned about the credibility of the information provided by ChatGPT. Because it was unable to cite sources, which makes me question its accuracy."

"The biggest problem of using ChatGPT was knowing how to write the right questions to get the correct answers I wanted."

"Sometimes, the ChatGPT wording made me confused about its meaning."

4.4 Potential solutions for better use ChatGPT in learning

Despite the fact that students found numerous problems with using ChatGPT in their studies, all students stated that they would continue to use ChatGPT as a support tool. They made some recommendations to overcome barriers and improve efficiency of this tool.

First, to address the issue of information reliability, most students proposed double-checking ChatGPT's responses by verifying them from reliable sources, such as scientific articles.

Second, ChatGPT should be used as a reference source or a consultant service, instead of directly copying its answers. This helps promote students' critical thinking and prevent them from heavy dependence on this AI technology.

Third, a clear guideline of ChatGPT's use should be developed and introduced to students, making sure that they are aware of acceptable and non-acceptable use of this tool in school.

Fourth, there is a need to promote academic integrity among students to ensure ethical uses of ChatGPT in academic contexts.

5 DISCUSSION

The main objective of this study was to examine the perception of university students on the use of ChatGPT in education. The study results revealed that students' perception of using ChatGPT was above the average level. In general, students were positive about of the application of this AI chatbot in their learning.

Regarding students' perception of ChatGPT's use, "ease to use" was the feature with the highest mean score, followed by "can function as a search engine," "can be used with various input languages," and "be a useful tool for study." The majority of participants preferred using ChatGPT due to its simplicity and convenience. They could ask questions in a variety of languages, including English and Vietnamese. These characteristics of ChatGPT have been acknowledged by several researchers [9], [58], [59].

In terms of benefits of ChatGPT's use in learning, the author discovered that the participants were highly aware of advantages of ChatGPT, with a mean score of 3.58. From the students' perspective, the application of ChatGPT in learning was a great opportunity that provided them numerous benefits. Many students agreed that ChatGPT can help them save time, provide them a wide range of information, give them individualized tutoring and feedback, and help them better their learning and retention. The study findings were in accordance with the results of research by Zhang [4], Zhai [5], Kasneci et al. [9], Qadir [27], and Baidoo-Anu and Owusu Ansah [60]. According to these authors, ChatGPT can be used as "a virtual intelligent tutoring service" that allows students to ask questions and receive personalized answers, and make suggestions based on their past performance, their needs, interests, and learning progress [4], [5], [27], [60]. Additionally, they acknowledged ChatGPT's ability in generating fast and accurate writing, and creating summaries and outlines of given texts that promote learners' understanding of a text and illuminating their ideas for writing [5], [9].

Although ChatGPT was thought to be a helpful study tool to students, it was discovered to have a number of risks for its practice in educational settings. In general, students acknowledged ChatGPT's drawbacks for their learning purposes (with a mean score of 3.64). Many of them agreed that ChatGPT was unable to examine the quality and reliability of sources, to replace words and use idioms wisely, and to measure the value of difficult mathematical expressions. It can sometimes provide unreliable information on topics with few citations and can produce inaccurate or false factual references. Previous studies by Zhang [4], Zhai [5], Kasneci et al. [9], and Qadir [27] identified several similar issues with ChatGPT's utilization, such as lack of reliability, incorrect information and bias content, inability to assess source credibility, absence of ethical considerations, lack of human interaction, and high level of learners' dependence on the chatbot.

To improve ChatGPT's use in learning, students recommended some potential solutions, such as verifying ChatGPT's responses with reliable information sources, using ChatGPT as a reference or a consultant tool, providing guideline for use, and promoting the academic integrity and ethical uses of ChatGPT in academic context. In fact, many scientists are aware of the risks that ChatGPT could pose to education; in response, they have proposed a number of strategies to make ChatGPT a useful tool for teaching and learning; for example, identifying AI-generated information, training students on how to use ChatGPT appropriately, and promoting academic integrity among students [4], [60].

6 CONCLUSION AND RECOMMENDATION

The purpose of this study was to determine what university students thought about using ChatGPT for learning. Data analysis revealed that students had generally positive attitudes toward using ChatGPT for learning. Aside from the benefits of ChatGPT, such as saving time, providing information in various fields, providing personalized tutoring and feedback, and illuminating ideas in writing, students encountered several barriers, such as inability to examine the quality and reliability of sources, inability to cite sources correctly and accurately, inability to replace words and use idioms wisely, and so on. There are several potential solutions that can be employed to address these concerns, such as verifying ChatGPT responses with reliable sources; using ChatGPT as a reference source or consultant tool; providing guidelines for ChatGPT use; and most importantly, promoting academic integrity among students to ensure ethical uses of ChatGPT in an academic context.

This study has several limitations that should be acknowledged when interpreting the findings. Firstly, the focus on university students may limit the generalizability of the results to other educational levels and age groups. To enhance the external validity of future research, it is recommended to include participants from diverse educational backgrounds and age ranges to capture a broader representation of learners. Secondly, the reliance on self-report measures, such as questionnaires and interviews, introduces the possibility of response biases and subjective interpretations. To mitigate these limitations, future studies could incorporate additional objective measures or observational methods to provide a more comprehensive and objective assessment of ChatGPT's effectiveness in educational contexts. Lastly, the study primarily focused on exploring students' perceptions and recommendations for using ChatGPT in an educational context, but it did not extensively examine the feasibility or practical implementation of the proposed solutions. Future research should investigate the practical implications, challenges, and student satisfaction associated with integrating ChatGPT into real educational settings. This would enable a better understanding of the factors that influence the successful utilization of ChatGPT and guide its effective implementation in diverse educational environments. By addressing these limitations in future studies, researchers can contribute to a more comprehensive understanding of the application of ChatGPT in education and provide practical insights for its successful integration and utilization in various educational contexts.

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