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Main contact:
Author: *Yazid M. Wahas*
Phone: +967772194949
Published Email: yazeedwahas@gmail.com

Organization/University/ Center:
Affiliation: Hajjah University
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Investigating the Effectiveness, Benefits and Challenges of ChatGPT as a Learning Tool

A Quantitative Case Study

Yazid M. Wahas [1] ***Ruqayya Y. Al-Radhi*** [2]

[1] *Assistant Professor, Hajjah University.*
[2] *Lecturer, Al-Razi University.*

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Abstract:

Artificial Intelligence tools like ChatGPT have significantly impacted higher education, serving as an effective tool for enhancing learning experiences. ChatGPT facilitates personalized and collaborative learning, fostering creativity, motivation, and student engagement. It aids in analyzing and summarizing learning materials while providing accurate responses to students' inquiries. However, its use presents challenges such as academic integrity concerns, over-reliance, and masking students' learning deficiencies.

This study aims to investigate the effectiveness, benefits, and challenges of ChatGPT as a learning tool from students' perspectives. A quantitative approach was adopted, utilizing an online questionnaire distributed to 231 undergraduate students from five universities. The survey focused on three key areas: students' attitudes toward ChatGPT, its effectiveness, and the challenges associated with its use.

The findings revealed that students hold positive attitudes toward ChatGPT, considering it a valuable tool that enhances interactive learning and improves learning outcomes. However, challenges such as the potential masking of students' academic weaknesses and threats to educational integrity were identified. This study provides valuable insights into the role of ChatGPT in education and contributes to the development of strategies for its effective utilization.

Keywords:
ChatGPT, Benefits, Effectiveness, Challenges, Learning tool, Attitudes

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ترجمة الى العربية

التحقيق في فعالية وفوائد وتحديات ChatGPT كأداة تعليمية

دراسة حالة كمية

يزيد مفتاح وهاس [1] رقية الرضي [2]

[1] أستاذ مساعد، جامعة حجة، حجة، اليمن.

[2] عضو هيئة التدريس، جامعة الرازي، صنعاء، اليمن.

2024

الملخص

شهدت أدوات الذكاء الاصطناعي، مثلChatGPT ، تطورًا كبيرًا في مجال التعليم العالي، حيث أصبحت وسيلة فعالة لتعزيز تجربة التعلم من خلال توفير تعلم شخصي وتعاوني. يساهم ChatGPT في تحفيز الإبداع، وزيادة التفاعل بين الطلاب، وتحليل وتلخيص المواد التعليمية، إضافةً إلى تقديم إجابات دقيقة لاستفسارات الطلاب. ومع ذلك، فإن هناك تحديات تواجه استخدامه، مثل تأثيره على النزاهة الأكاديمية، الاعتماد المفرط عليه، وإخفاء أوجه القصور التعليمي لدى الطلاب.

تهدف هذه الدراسة إلى استكشاف فعالية وفوائد وتحديات ChatGPT كأداة تعليمية من منظور الطلاب. تم اعتماد نهج كمي عبر استبيان إلكتروني شمل 231 طالبًا جامعيًا من خمس جامعات، حيث ركز الاستبيان على ثلاثة محاور رئيسية: مواقف الطلاب تجاه استخدامChatGPT ، مدى فعاليته، والتحديات المرتبطة باستخدامه.

أظهرت النتائج أن الطلاب لديهم مواقف إيجابية تجاهChatGPT ، حيث يعتبرونه أداة تعليمية فعالة تدعم التعلم التفاعلي وتحسن مخرجات التعلم. ومع ذلك، تم تحديد تحديات مثل إخفاء أوجه القصور الأكاديمية والتهديدات المحتملة للنزاهة التعليمية. تقدم هذه الدراسة رؤى هامة حول دور ChatGPT في التعليم وتسهم في تطوير استراتيجيات لاستخدامه بشكل أكثر فعالية.

الكلمات المفتاحية

ChatGPT، الفوائد، الفعالية، التحديات، أداة التعلم، المواقف.

Introduction

ChatGPT (Chat Generative Pre-Trained Transformer) is an advanced chatbot developed by OpenAI on November 30, 2022. As a natural language processing system, ChatGPT employs massive language models including GPT-4 and 4.o to generate human-like conversations using deep learning techniques [1,2]. It has 300 billion words, 570 GB of data, and almost 175 billion parameters [3]. ChatGPT can be seen as a significant advancement in technology, showcasing its remarkable capabilities across various areas. The use of ChatGPT in education has become very popular as it offers many benefits for students such as improving their core skills, writing essays and content, answering assignments, solving difficult questions and analyzing topics [2,4] and helping in detecting style and grammar mistakes and offering suggestions for improvements [5,6] claim that ChatGPT increases students' motivation and facilitates a deeper understanding of ideas. It provides personalized and customized learning [7,8]. Other benefits of ChatGPT include paraphrasing, summarizing articles, promoting self-learning and improving communication, offering instant feedback for difficult contexts. Additionally, it helps both teachers and students to improve teaching and learning experiences [9,10], increasing access to information and developing critical thinking skills [11],[12] highlight its simplicity and accessibility, allowing for immediate classroom incorporation. To conclude, ChatGPT is likely to be an effective tool with the potential to reshape the world of education. It fosters collaborative learning by facilitating group discussions, peer feedback, and knowledge sharing.

Despite the noticeable benefits of ChatGPT in higher education, its utilization is associated with many challenges. One of the major challenges of ChatGPT is the threat to academic and educational integrity. Failing to cite texts generated by ChatGPT can result in academic dishonesty, as many studies have shown that advanced AI tools bypass traditional plagiarism software like Unicheck and Turnitin. According to Eke (2023), “The concern in academia however is not limited to its open and free availability, it is also rooted in the lack of availability of tools to detect people using this viral chatbot” (p. 2). Over-reliance on ChatGPT by students can hinder the development of critical thinking, creativity, and essential academic and professional skills [13–16]. Furthermore, generating inaccurate data by ChatGPT can pose a challenge for students who fully depend on it during their learning process [12]. Bias regarding race, gender, culture and politics is another challenge while using ChatGPT [17,18] as it generates a massive corpus of texts that may contain biases. Unfamiliarity, quality control, generalization, explainability, security and privacy concerns are also

challenges associated with using ChatGPT [18,19]. ChatGPT's potential to mask students' learning deficiencies presents a significant challenge as it might hinder teachers' assessing students' performance accurately. Thus, the gap in this study can be in ChatGPT's effectiveness, benefits, accessibility and challenges. Therefore, the questions that guide this study are:

Q1. What are students' attitudes toward using ChatGPT as a learning tool?

Q2. How effective is ChatGPT in improving learning outcomes?

Q3. What are the perceived benefits and challenges of using ChatGPT as a learning tool?

To address the study's gap and answer its questions, a thorough review of existing literature concerning ChatGPT's effectiveness, benefits, and challenges was conducted and compared these findings with those obtained from the present study. A questionnaire also was carried out and collected data were analyzed with SPSS. The study gap is relevant for some reasons, including investigating the effectiveness of ChatGPT as a learning tool, academic integrity threats and technological accessibility. This study provides valuable insights for students, aiming to overcome ChatGPT's challenges.

This study can contribute to the existing literature on the effectiveness, benefits and challenges of ChatGPT as a learning tool. The findings of the study can help students understand ChatGPT benefits and challenges and contribute to improving learning outcomes. The findings also provide an important contribution to future studies. Thus, this study aims to investigate the effectiveness, benefits and challenges of ChatGPT as a learning tool from students' perspectives.

2. Literature Review

Utilizing artificial intelligence tools including ChatGPT for educational purposes has gained increasing attention in recent years. However, this technological advancement was not without its challenges. Thus, this section presents a review of the effectiveness, benefits, and challenges associated with ChatGPT as a learning tool.

2.1 Effectiveness and Benefits of ChatGPT

Technology can significantly improve learning outcomes if used properly [20]. Many studies have attempted to explore the potential effectiveness and benefits of using ChatGPT for educational purposes. For example, [15,21] found that AI tools including ChatGPT significantly impact and play a role in improving the learning and teaching process as they offer direct and immediate responses to queries asked. ChatGPT positively improves learners' writing skills and slightly improvs grammar and motivation and increase their performance [22,23] potentially enhances student learning outcomes [24,25] makes education more accessible for all learners [26] and decreases teaching workload [2,7] concluded that ChatGPT is a helping tool for educational purposes. Similarly, [4,27,28] ChatGPT is valuable and useful learning tool and a support for educational work. Using large language models in education offers many opportunities to enhance students' learning experience and support teachers' work [29] and helps in generating summaries for complex and extensive texts [5]. This tool can increase student satisfaction and engagement and transform the role of educators [30] ChatGPT can promote the development of critical thinking [31] and facilitate collaboration and increases time efficiency and effectiveness [24] However, confining these studies to qualitative approaches and ignoring students' opinions can reduce the generalizability of the findings. Thus, the proper use of ChatGPT in education can lead to better results.

2.2 ChatGPT Challenges

Despite the benefits ChatGPT offers across various fields, including higher education, many challenges accompany its use. These challenges primarily concern academic and educational integrity, encompassing issues like plagiarism, privacy violations, authenticity, bias, and over-reliance. Many studies have highlighted these challenges. For example, [2,32,33] argue that ChatGPT is threatening educational integrity as it can answer complex questions in fields like medical and law. Using AI tools including ChatGPT in scientific is against research and publications ethics [34]. ChatGPT's ability to generate texts that match human writing raises concerns about ethics in academic work as students might use it to generate uncited content [5], especially when the generated texts are undetected by anti-plagiarism software and human readers [35]. Similarly, [36], ChatGPT has encouraged plagiarism and cheating. Authenticity is another challenge associated with the use of ChatGPT as the generated texts can spread disinformation and have negative impacts on educational materials and research studies that depend on authentic information [5,37]. As ChatGPT depends on a large amount of trained data, its generated text may be biased and inaccurate, and in turn, will affect the academic field [22,38]. Students' over-reliance on ChatGPT in learning process can affect their creativity, hinder the development of core skills and may lead to a lack of critical thinking [5,15,16] and also lead to human unintelligence and unlearning [39] Other challenges and threats identified by Farrokhnia et al. (2023) include inadequate understanding of contexts, difficulty in assessing the quality of generated responses, lack of higher-

order thinking skills and democratizing plagiarism. Moreover[40,41], originality, confidentiality, the possibility of false rumors, cheating, validity and dishonest are challenges to be reconsider when integrating ChatGPT in education. Moreover, students' lack of training in using ChatGPT can hinder its potential as an effective learning tool.

To address these challenges, ChatGPT can be used as an aid tool, not a substitute for conventional research and writing processes. To reduce the plagiarism of submitting ChatGPT generated texts, academic institutions and publishers encourages to employ advanced plagiarism detection software to check scientific articles and research studies as measures for academic integrity, as well as teachers when receiving students' take-home assignment [9,39]. Similarly, Farrokhnia et al. (2023), to reduce ChatGPT threats to education, software such as GPTZero should be utilized by educational institutions to detect students' assignments and online exams. In the same context, as the students have become more reliant on AIs including ChatGPT, it is also necessary to focus on developing greater learning outcomes such as critical thinking skills and creativity. Based on the above literature, there is a pressing need for a quantitative investigation of ChatGPT's effectiveness, benefits and challenges in education. Therefore, this study aims to address the gap in literature across diverse academic disciplines.

The remainder of this study is arranged as follows. The next section presents the methodology, and section 4 discusses the findings of the study. Sections 5 and 6 present the discussion and conclusion of the study.

3. Methodology

3.1. Study design

A quantitative approach was used to achieve the objectives of this study which were to investigate the effectiveness, benefits and challenges of using ChatGPT as a learning tool. "Quantitative methods involve the processes of collecting, analyzing, interpreting, and writing the results of a study" [42]. The aim of using the quantitative approach in this study was pragmatic to know whether ChatGPT is a beneficial and effective learning tool and what challenges were associated with its utilization.

3.2. Participants

The study surveyed a sample of 231 undergraduate students from five universities, representing eleven majors. Sana'a and Hajjah are public universities and Saba, Al-Razi and Azal are private. The participating majors were Medicine, Dentistry, Engineering, Commerce, Law, Languages, Management Information System, IT, Business Administration and Graphics. 52.4% of participants were female and 47.6% were male. The participating students had the same cultural background and different educational backgrounds and their ages varied between 19 to 25. The participants from Saba University were 100; 28 Dentistry, 23 Law, 13 Business Administration, 20 Commerce and 16 Management Information systems. The participants from Sana'a University were 61; 26 Medicine, 20 IT and 15 Science. The participants from Hajjah University were 26 from the department of English. The participants from AlRazi University were 24 from the faculty of Dentistry and 20 from Azal University: 9 Graphics and 11 Engineering.

Students' participation in the study was freely. Before effecting and distributing the questionnaire, the participants (students) were informed about the nature and objectives of the study and the significance of their participation. They also were assured that their marks would not be affected if they did not participate in the study. Consents from participants were also requested and obtained. The data analysis process was done anonymously and confidentiality.

3.3 Demographic characteristics of participants (N= 231)

Table 1 Demographic characteristics of participants (N= 231)

Characteristics	Frequency N (%)
Gender	
Female	52.40%
Male	47.60%
Age in years	
19-20	38.50%
21-22	21.70%
23-24	14.80%
25 above	25.10%
University	
Saba	43.30%
Sana'a	26.40%
Hajjah	11.20%
AlRazi	10.30%
Azal	8.60%
Department	
Dentistry	22.50%
Medicine	11.20%
Languages	11.20%
Law	9.90%

Characteristics	Frequency N (%)
Commerce	8.60%
IT	8.60%
Management Inf	6.90%
Science	6.50%
Business Adm	5.60%
Engineering	4.80%
Graphics	3.90%

3.4 Instruments

An online questionnaire consisting of 22 items was designed to collect data for this study and a five-point Likert scale ranging from 1 to 5 (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree) was employed to assess participants' responses.

3.5 Questionnaire

Based on the objectives of the study, which were to investigate the effectiveness, benefits, and challenges of using ChatGPT as a learning tool, an online questionnaire was designed. The questionnaire comprised three parts and included 22 items. The first part addressed students' attitudes toward ChatGPT and included seven items (1–7). The second part addressed the effectiveness and benefits of ChatGPT and included eight items (8–15). The third part presented the challenges of ChatGPT and included seven items (16–22). The questionnaire's layout was checked by an expert and then uploaded to Google Forms. Its link was shared with the co-author for distribution among students through WhatsApp groups during the holidays of the second semester of the academic year 2024–2023. Participants were requested to fill out the questionnaire within 20 days. It was completed between March 28 and April 16, 2024.

3.6 Validity and reliability of the questionnaire

The validity and reliability of the questionnaire according to Cronbach's Alpha score were checked as follows.

Table 2 Cronbach's Alpha score

Cronbach's Alpha	N of Items
.722	22

3. 7 Results of one-way ANOVA test

Table 3 Results of one way ANOVA test

		Sum of Squares	Df	Mean Square	F	Sig.
Attitudes	**Between Groups**	.046	1	.046	0.140	0.709
	Within Groups	75.448	228	.331		
	Total	75.494	229			
Effectiveness	**Between Groups**	.077	1	.077	0.158	0.691
	Within Groups	110.975	228	.487		
	Total	111.052	229			
Challenges	**Between Groups**	.119	1	.119	0.271	0.603
	Within Groups	100.146	228	.439		
	Total	100.265	229			

The table above presents the F-value for the students' attitudes toward using ChatGPT as a learning tool is (0.140) and the p-value is (0.709) which is greater than the typical significance level of (0.05). This suggests that there are no significant differences in the mean values of the students' attitudes toward using ChatGPT as a learning tool. Concerning the effectiveness of ChatGPT, the F-value is (0.158) and the p-value is (0.691), which is greater than the typical significance level of (0.05). This suggests that there are no significant differences between the mean values of ChatGPT effectiveness. Regarding the challenges of ChatGPT, the F-value is (0.271) and the p-value is (0.603), which are greater than the selected significance level of (0.05), which suggests that there are no significant differences in the mean values of ChatGPT's challenges. Thus, the hypothesis can be accepted.

3.8 Data Analysis

After collecting questionnaire's data in Google Form, SPSS-22 'Statistical Package for Social Sciences' was employed to analyze the collected data of the study. The next section explains the study's results.

4. Results

Table 4 presents a summary of students' attitudes toward using ChatGPT as a learning tool results. The cumulative mean of (3.63) shows a high level of positive attitudes toward employing ChatGPT in the learning process, with a standard deviation of (0.99). The results demonstrate students' awareness of ChatGPT, but they still require further experience. For them, ChatGPT may replace the traditional teaching methods and satisfy their learning needs. Notably, the highest mean score received from respondents was item 7, which asserts "I need more experience in using ChatGPT," with a mean of (3.961) and a standard deviation of (0.93866) followed by item 5 which asserts "ChatGPT satisfies the learning needs of students" with a mean of (3.809) and a standard deviation of (0.93627), while the item 4, which declares "I am familiar with ChatGPT and I know features and benefits," received the lowest mean score with a mean of (3.168) and a standard deviation of (1.15). The literature on students' attitudes toward using ChatGPT as a learning tool closely aligns with the findings of the current study. Studies such [27,43] have confirmed students' positive attitudes toward using ChatGPT in education. Despite students' positive attitudes toward utilizing ChatGPT in education, they still need more training to be more proficient and achieve better results. Thus, the lack of prior training should be considered and added to the literature.

Table 4 Descriptive Statistics of Students' Attitudes Toward ChatGPT as a Learning Tool

Item	Mean	St. Dev	Rank
1. I think that technology will eventually replace traditional teaching methods	3.6840	1.02561	4
2. ChatGPT is easy to use	3.7922	.84449	3
3. I feel comfortable when using ChatGPT in the learning process	3.6320	1.01665	5
4. I am familiar with ChatGPT and I know features and benefits	3.1688	1.15423	7
5. ChatGPT satisfies the learning needs of students	3.8095	.93627	2
6. I feel nervous when I can't access ChatGPT services	3.3939	1.06557	6
7. I need more experience in using ChatGPT	3.9610	.93866	1
Overall Score	**3.63**	**.997**	

Table 5 presents ChatGPT's effectiveness results. The results indicate that ChatGPT significantly enhances learning outcomes and increases engagement, motivation, and writing skills among students. Moreover, it fosters students' creativity and critical thinking skills and helps in the summarization and analysis of educational materials. The study found that ChatGPT's effectiveness in education was highly significant, with a cumulative mean of (3.58) and a standard deviation of (0.848). The results illustrate ChatGPT's efficacy as a learning tool. Specifically, the highest mean score, as rated by respondents, was for item 10, which affirms that "ChatGPT makes the learning process easier," achieving a mean of (3.90) with a standard deviation of (0.874), followed by item 8, stating that "ChatGPT is a highly effective learning tool," which received a mean of (3.89) and a standard deviation of (0.988). On the other hand, item 15, asserting that "Adopting ChatGPT in the learning process is necessary," received the lowest level of respondent agreement, with a mean of (3.27) and a standard deviation of (1.02). Therefore, the results of this section match with existing literature on ChatGPT's effectiveness in education, as proven by studies by Alenizi et al. (2023) and Haleem et al. (2022) [19,44].

Table 5 Descriptive Analysis of ChatGPT's Effectiveness as a Learning Tool

Item	Mean	St. Dev	Rank
8. ChatGPT is a highly effective learning tool	3.8961	.84829	2

Item	Mean	St. Dev	Rank
9. ChatGPT is an authentic source of knowledge and content	3.3203	1.09999	7
10. ChatGPT makes the learning process easier	3.9048	.87453	1
11. ChatGPT can significantly improve learning outcomes and encourages collaborating learning	3.7056	.93712	4
12. ChatGPT enhances students' engagement, motivation and writing skills	3.4416	1.06518	5
13. ChatGPT improves students' creativity if used well	3.3333	1.14462	6
14. ChatGPT is used to summarize and analyze educational materials	3.8095	.91276	3
15. Adopting ChatGPT in learning process is necessary	3.2727	1.02537	8
Overall Score	3.585	.988	

Table 6 displays ChatGPT's challenges results. This includes ChatGPT's threats to academic and educational integrity, masking students' learning deficiencies, generating inaccurate information and total reliance. Other challenges include increasing unemployment and a lack of human and emotional interaction. The average mean of ChatGPT challenges was (3.49), which elucidates availability of challenges with a standard deviation of (1.09). The findings reported challenges associated with utilizing ChatGPT in education that should be reconsidered as shown that the highest mean score was of item 17 which declares "ChatGPT may mask students' learning deficiencies," received the most agreement from respondents with a mean of (3.69) and with a standard deviation of (1.00), followed by item 16 which declares "Total reliance on ChatGPT may limit students' creativity and core skills" with a mean of (3.6450) and with a standard deviation of (1.18), while item 20 which asserts "ChatGPT is expensive for students," got lowest rate with a mean of (3.1818) and with a standard deviation of (1.11). The findings of this part are consistent with those of the existing literature on ChatGPT's challenges, including [9,12–16,45] Unlike the existing literature, this study showed that the targeted students agreed that the paid ChatGPT software is expensive for them under the current situation in Yemen. Thus, accessibility was one of the challenges associated with ChatGPT utilization. Although the existing literature extensively discussed ChatGPT's challenges, they mostly used qualitative methods. Thus, as the study included students' perceptions and used quantitative methods, it can make an important contribution to the literature.

Table 6 Summary of Challenges in Using ChatGPT as a Learning Tool

Item	Mean	St. Dev	Rank
16. Total reliance on ChatGPT may limit students' creativity and core skills.	3.6450	1.18118	2
17. ChatGPT may mask students' learning deficiencies.	3.6926	1.00256	1
18. ChatGPT's information is sometimes inaccurate.	3.5455	1.06989	5
19. ChatGPT violates the academic and educational integrity and privacy	3.2511	1.06207	6
20. ChatGPT is expensive for students	3.1818	1.11582	7
21. ChatGPT increases unemployment and causes job loss	3.5671	1.17716	4
22. ChatGPT lacks human and emotional interaction	3.6147	1.08088	3
Overall Score	**3.499**	**1.098**	

5. Discussion

This study holds significant importance due to its specific focus on using ChatGPT in education from the perspective of students in Yemen. Although the existing

literature has investigated the various aspects of ChatGPT, this study addressed a crucial gap by examining students' views on its use as a learning tool. By concentrating on the specific demographics of Yemen, this study provides a deeper understanding of ChatGPT's role in the educational process. The selection of study samples and methodology have been carefully executed to align with the study objectives. ChatGPT proves to be an effective AI tool that significantly contributes to the learning process by enhancing learning outcomes, meeting students' needs and improving writing skills, engagement, creativity and motivation. However, challenges are associated with its use as a learning tool. To comprehensively investigate students' attitudes toward ChatGPT in learning, its effectiveness, and associated challenges, students from five universities across eleven majors were surveyed. The positive attitudes observed among participants toward ChatGPT in learning (see Table 1) indicate compelling insights into its potential benefits for improving the learning process and its ability to replace traditional teaching methods, but adopting a new teaching method is challenging as it requires users to become familiar with it [46]. The findings of this study are consistent with previous studies highlighting the positive attitudes toward utilizing ChatGPT in education [19,27,43] Unlike prior qualitative studies involving teachers, this study adopted a quantitative approach involving students from various majors across five universities. Consequently, the high scores indicating participants' perceived need for more experience in using ChatGPT and their willingness for training demonstrate students' recognition of its utility as an effective tool in learning process.

Regarding the effectiveness of ChatGPT as a learning tool, the findings revealed a significant level of efficacy (see Table 2). For students, ChatGPT serves as an effective learning tool, encouraging different tasks such as simplifying the learning process, assisting in essay and content composition, analyzing and summarizing educational materials, and improving students' engagement, creativity, motivation, and critical thinking. The findings of this study match the findings of other studies such as [2,6,15,19,21–23,25,44] which similarly highlight ChatGPT's vital role in educational process. Unlike studies assessing ChatGPT's generated texts authenticity such as [47], which concluded that ChatGPT model 4 might possess greater authenticity in responses compared to mode 3.5, this study's findings suggest that ChatGPT can be an authentic source of knowledge and content when utilized properly. Regarding the adoption of ChatGPT as a learning tool, which received the lowest response score in this study, there has been extensive discussion on the prospects and concerns associated with AI technology [48]. Most importantly, ChatGPT encourages collaborative learning as it effectively facilitates knowledge sharing, peer feedback and group discussions. Thus, the planned implementation of ChatGPT in the learning process as an effective tool is anticipated to yield superior outcomes.

While ChatGPT offers advantages, its use in education requires careful consideration of potential challenges (see Table 3). Key challenges include masking students' learning deficiencies, the potential negative impact of over-reliance on students' skill development, the accuracy of generated texts and their implications on research reliability, threats to academic and educational integrity, privacy violations, the diminishing rate of emotional and human interaction and the increased rates of plagiarism. The findings of this study are consistent with previous ones that have reported ChatGPT's challenges while using it in educational settings [1,9,12–16,45]. Unlike earlier studies, this study identified masking students' learning deficiencies as a primary challenge associated with ChatGPT's use in education. To address this challenge, certain strategies are suggested. These strategies include monitoring students' ChatGPT usage during learning activities to ensure its appropriate utilization and prevent reliance on the tool to mask learning deficiencies, developing personalized learning plans that outline specific learning goals to address individual learning needs effectively and involving parents to create a supportive learning environment both inside and outside the classroom. To address potential threats to academic and educational integrity posed by ChatGPT, it is crucial to raise awareness among students about the ethical implications of its use and the importance of upholding academic integrity. This can be achieved by integrating explicit instruction on proper citation and referencing techniques into the curriculum, improving students' critical thinking skills to evaluate the reliability of information generated by ChatGPT and establishing clear policies for academic integrity violations related to its use. Furthermore, educators should employ robust plagiarism detection software capable of identifying similarities between student submissions and existing sources, including content generated by ChatGPT to reduce plagiarism properly.

5.1 Practical implications

ChatGPT can be defined as a technological revolution that touches every aspect of life, including higher education. The findings of the study are likely to raise students' awareness regarding ChatGPT's benefits and challenges in higher education. They also provide practical implications for students, educators and policymakers. For students, this study provides valuable insights on how to use ChatGPT properly as a learning aid, considering its ethical concerns and challenges. For policymakers and educators, the study's findings highlight the importance of creating

suitable guidelines and plans to address possible issues while utilizing ChatGPT. By addressing concerns such as academic and educational integrity threats and privacy violations, the findings would help conduct discussions on proper use and promote ethical considerations for educational use. Moreover, the findings offer useful perceptions for developing guidelines and policies for using ChatGPT in education. They would also assist educational institutions in determining appropriate contexts and restrictions for use, defining ethical limitations, and developing frameworks that prioritize academic and educational integrity. Therefore, it is concluded that using ChatGPT can benefit or threaten academic and educational integrity. However, introducing practical guidelines can further contribute to directing decision-making policies within educational institutions.

5.2 Limitations and future research

This study contributes to understanding the benefits of ChatGPT and challenges as a learning tool in higher education. However, there were some limitations that required careful consideration. First, the current study was conducted in the capital Sana'a and Hajjah city, Yemen, which limits the generalizability of the results to other geographical areas. Further studies could include multiple countries to provide more comprehensive insights and yield better results. Second, this study focused only on students' perspectives on ChatGPT's benefits and challenges, however, further studies can include policymakers, teachers and students for a deeper understanding. Third, this study dealt with some of ChatGPT's challenges, however, there are still different challenges that could be considered. Moreover, this study is based on surveys and has no theoretical implications. Thus, it is recommended to study ChatGPT from a theoretical perspective for better theoretical contributions. Accordingly, implications for students include developing their knowledge on ChatGPT, considering its benefits and threats. Universities must employ strong plagiarism detection tools to verify the authenticity of generated texts and reduce threats to academic and educational integrity. Furthermore, policymakers can play an important role in supporting the effective use of ChatGPT by drafting strategies that encourage its responsible adoption in higher education.

6. Conclusion

AI tools including ChatGPT present remarkable opportunities and benefits in higher education, including working effectively to make the learning process easier, providing personalized and collaborative learning, satisfying students' needs, increasing their motivation and engagement, and contributing to developing their writing skills and critical thinking. Additionally, it aids in the analysis and summarization of educational materials. However, it poses distinct challenges when utilized in educational contexts, affecting both students' learning outcomes and learning integrity. According to the findings, masking students' learning deficiencies is a major challenge, over-reliance on ChatGPT among students, the inaccuracy of generated texts, academic and educational integrity threats, in addition to a lack of training and the need for more experience. Furthermore, ChatGPT's inability to understand linguistics and context differences, particularly for ambiguous and difficult topics, may lead to generate inaccurate responses. To overcome these challenges, strategies such as mentoring students' use of ChatGPT during learning activities, developing personalized learning plans in drawing specific learning goals and involving students' parents to create an appropriate learning environment, in addition to using robust plagiarism detection software to check ChatGPT generated texts and ensure their novelty to reduce students' over-reliance on technology. This study, therefore, distinguishes itself from earlier studies on ChatGPT which used qualitative methods involving teachers' opinions. The study's findings are expected to contribute to a deep understanding of ChatGPT's benefits, effectiveness and challenges.

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