AbuSa'aleek, A. O., & Alenizi, A. (2024). UNVEILING POSTGRADUATES' PERSPECTIVES ON USING CHATGPT AS A TOOL FOR LEARNING IN HIGHER EDUCATION. *Teaching English with Technology*, *24*(3), 4–17.
https://doi.org/10.56297/vaca6841/BFFO7057/NXQR9614

ISSUES

UNVEILING POSTGRADUATES' PERSPECTIVES on USING CHATGPT as a TOOL for LEARNING in HIGHER EDUCATION

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Keywords: ChatGPT, gender differences, learning aid, postgraduate, postgraduates' perspectives

https://doi.org/10.56297/vaca6841/BFFO7057/NXQR9614

Teaching English with Technology

Vol. 24, Issue 3, 2024

To better understand the use of ChatGPT as a tool for learning in higher education, this investigation reports student responses to an e-questionnaire investigating their perspectives on it. In particular, it delves into whether there are any significant differences between opinions based on gender and the level of study of 51 postgraduate students in the applied linguistics program at Majmaah University, Saudi Arabia. The study's findings revealed that postgraduates' attitudes were reported as being highly positive toward using ChatGPT as a learning aid in higher education. Considering gender differences, the descriptive statistics showed that male Saudi postgraduate students have a more positive attitude toward using ChatGPT as a tool for learning in terms of their study level. The findings indicated no significant difference among first- and second-year postgraduate students toward using ChatGPT as a learning aid, which did not affect the study's findings.

1. Introduction

In education, we have seen progress in incorporating technology, dramatically transforming teaching and learning. Chatbots for learning, powered by artificial intelligence (AI), have received much interest (Alharbi, 2023; Gilson et al., 2022; Qadir, 2022; Zhai, 2022). ChatGPT, developed by OpenAI, has shown promise in enhancing students' educational experiences (Kohnke et al., 2023). Academic interest in AI and chatbots has grown rapidly, due to its potential to automate repetitive tasks, aid in data processing, and enable novel approaches to learning and assessment, thereby transforming research and education (Chen et al., 2020; Kohnke et al., 2023; Kooli, 2023).

ChatGPT, as a prominent example of AI technology, is a promising application for education (Sok & Heng, 2023). Studies on the educational usefulness of chatbots have explored various aspects of their potential. Ayedoun et al. (2019) highlighted the significance of chatbots in language practice, while Tegos et al. (2014) and Xu et al. (2022) emphasized their role in enhancing academic abilities through collaborative tasks. Lin and Chang (2020) discussed the ability of chatbots to provide timely interventions tailored to learners' needs, while Ruan et al. (2019) examined their capacity to deliver appropriate content to support learning. Strzelecki (2023) mentioned that students, as participants, are interested in incorporating ChatGPT into

their educational experience. With the introduction of this AI tool, there is a need for information on how students are utilizing it and what their level of acceptance is. These studies collectively showcase how chatbots can be used in different educational settings. Generative AI chatbots like ChatGPT are seen as catalysts for transforming education practices (Cong-Lem et al., 2024).

AI systems and chatbots have now gained recognition as resources for researchers and scholars (Kooli, 2023). Strzelecki (2023) underscored the importance of exploring the incorporation of AI tools, such as ChatGPT, in educational contexts. Nevertheless, additional research is required to delve into the impact of AI technology. Ajlouni et al. (2023), for example, emphasized the urgency of investigating students' attitudes toward using ChatGPT in an educational context. They examined the attitudes of EFL undergraduate students toward ChatGPT in various academic fields.

Despite extensive research on technology in education, there is a need for more comprehensive investigations into postgraduate perspectives on using ChatGPT as a tool for learning in higher education. This study seeks to fill this gap by offering insights into their attitudes and clarifying the perceived usefulness (PU) and perceived ease of use (PEU) of incorporating ChatGPT in higher education. Thus, there seems to be a dearth of studies addressing this topic comprehensively. Consequently, the present study explores the overall attitudes of Saudi postgraduate students toward using ChatGPT as a learning aid. Additionally, it investigates potential variations in Saudi postgraduate students' perspectives on using ChatGPT as a tool for learning in higher education. Moreover, the current study investigates gender-based differences of the students' perceptions of using ChatGPT as a tool for learning in higher education. This study addresses the following research questions:

> RQ1. What are the attitudes of Saudi postgraduate students toward using ChatGPT as a learning aid in higher education?
>
> RQ2. Are there any significant differences between Saudi postgraduate students toward using ChatGPT as a learning aid based on gender and the level of study?

2. Literature review

2.1. ChatGPT as a learning aid in higher education

Technological progress has paved the way for developing AI systems, like Chat Generative Pre-trained Transformer (ChatGPT) (Dergaa et al., 2023). ChatGPT, a bot powered by AI and created by OpenAI, utilizes a language model to produce fresh written material based on user input (OpenAI, 2023; Strzelecki, 2023). Rospigliosi (2023, p. 1) stated that

> GPTs are a type of large language model that use deep learning to train and improve their output. They are trained on a large corpus of existing data, such as text and images obtained from the internet, and identify patterns that enable them to suggest appropriate words and phrases, or generate relevant images, in response to a user's question.

ChatGPT has been recognized as a beneficial resource in ESL and EFL instruction. This assertion has been confirmed by previous investigations conducted by Huang et al. (2022) and Kuhail et al. (2023). ChatGPT is an AI technology that has shown significant promise in studies in academia. ChatGPT is a sophisticated large language model (LLM) that has undergone significant training on a vast corpus of textual data, thereby equipping it with the ability to produce text responses that closely resemble those generated by humans (Dergaa et al., 2023). There was a notable increase in ChatGPT users, exceeding one million, within a few weeks following its release on November 30, 2022. The current increase in popularity underscores the wide-ranging appeal and promise of ChatGPT across diverse areas. The ChatGPT language model can provide suitable responses within a specified context, facilitating authentic-sounding conversational interactions (Deng & Lin, 2022).

2.2. Previous studies on the use of ChatGPT in higher education

Higher education institutions are examining the impacts of AI chat systems. Educators incorporate these tools into tasks to showcase their limitations and evaluate their effectiveness (Strzelecki, 2023). Universities are examining the possible implications of ChatGPT on teaching and learning in higher education, as its capabilities are extensive and have the potential to alter the educational landscape significantly (Lim et al., 2023). ChatGPT can enhance learning and improve student results when instructors promote leadership, character development, and authentic assessment (Crawford et al., 2023).

Annamalai et al. (2023) investigated the experiences of Malaysian university students in utilizing chatbots for English language learning. Specifically, the study focused on four key dimensions: performance expectancy, effort expectancy, social isolation, and COVID-19 fear. ChatGPT facilitates writing, learning, and solving tests while maintaining a conversational approach (Strzelecki, 2023).

Strzelecki (2023) created a model to predict ChatGPT adoption and use among higher education students from a Polish state university. Seven predictors were chosen to model individuals' behavioral intention and use behavior for ChatGPT. Findings indicated that the strongest predictor of behavioral intention was habit, followed by performance expectancy and hedonic motivation. Behavioral intention was the main factor influencing use behavior, followed by personal innovation.

Perkins (2023) delved into the considerations instructors have about leveraging AI tools, such as ChatGPT, in evaluation. The research explored how these tools have evolved and their role in enhancing students' digital writing skills, collaborative writing with AI for English as a Foreign Language (EFL) learners, and Automated Writing Assessments. The study showcased the capability of AI tools to produce coherent content that may go undetected by current technological measures and trained educators, underscoring a significant academic integrity issue concerning student utilization. The findings conclude that higher education institutions' academic integrity rules must be modified to account for future LLM use to decide whether a student's use of them constitutes academic misconduct.

Crawford et al. (2023) found that AI-driven chatbots have concerned practitioners attempting to authenticate student work. At the same time, some predict the demise of traditional education delivery methods. Their study recommended utilizing AI tools, such as ChatGPT, to establish beneficial educational environments for students exhibiting positive character traits. These students can utilize ChatGPT for supportive learning environments. The findings indicated that ChatGPT can potentially enhance student learning and affect their results.

Moldt et al. (2023) studied medical students' perspectives on using chatbots and AI in medicine. The study employed a mixed-methods approach. The findings showed that the students usually had favorable opinions about incorporating AI in their area.

Ajlouni et al. (2023) examined how students view ChatGPT as a teaching aid. The study found that EFL undergraduate students liked utilizing ChatGPT for education. According to the study, students' attitudes regarding ChatGPT included moderate affective and high behavioral and cognitive components. Most students (73.2%) acknowledged that ChatGPT could improve their learning, however, several respondents expressed concerns about data accuracy (20.7%), usage of the platform (20.7%), and ChatGPT's inaccessibility (14.6%). Iqbal et al. (2022) recently examined 20 university faculty members at a private university in Pakistan for their perspectives on ChatGPT implementation and use. Due to cheating and plagiarism risks, they expressed negative attitudes toward it; at the same time, though, they showed a positive attitude toward aspects such as lesson planning and assessment. Thus, the study emphasized the necessity for more information and instruction for university faculty members to evaluate ChatGPT.

Cong-Lem et al. (2024) explored how Vietnamese EFL teachers perceive and address academic integrity concerns related to AI, such as chatbots like ChatGPT, in foreign language instruction. The findings revealed that teachers relate AI-driven plagiarism to a desire for more fresh ideas, inadequate educational behaviors, drive, and increased linguistic competence. Over-reliance on AI hinders critical thinking and linguistic competency

development. In reaction to academic misconduct, teachers suggested more laws, AI-based plagiarism detection, and ethical AI use awareness. This research enhances understanding of EFL educators' attitudes, providing valuable input for developing policies and strategies to promote integrity in academia in the AI era.

3. Methodology

3.1. Research design

The present study utilized a quantitative research design to collect data that substantially contributed to gaining insight into Saudi postgraduate students' perspectives on using ChatGPT as a tool for learning in higher education. We aimed to gather empirical and measurable data using a quantitative approach to fully understand the perspectives of participants from the Department of English at Majmaah University. The descriptive quantitative design is the optimal approach for investigating variables within a population. The questionnaire is appropriate for descriptive investigations, particularly when examining attitudes (Ajlouni et al., 2023; Dörnyei & Taguchi, 2010; Gillham, 2008; Siedlecki, 2020).

3.2. Population and participants

The population for this study consisted of all MA students currently enrolled in the Applied Linguistics program in the English Language Department at Majmaah University, KSA. The research sample consisted of 51 postgraduate students: 31 (60.78%) females and 20 (39.22%) males. All of them were proficient in Arabic as their mother tongue, but English was their second language. The purposive sampling method was employed for selecting the participants. This sampling aimed to identify individuals with a wealth of knowledge and provide a comprehensive description to assist researchers in addressing the study questions (Lodico et al., 2010).

Table 1. Participant profiles (N = 51)

No	Category		Number	Percentage %
1.	Gender	Female	31	60.78%
		Male	20	39.22%
2.	School year	Second year	28	54.90%
		First year	23	45.10%
3.	GPA	Excellent	27	52.94%
		Very good	24	47.06%
4.	Technological skills	Advanced	24	47.06%
		Intermediate	27	52.94%

3.3. Instrument, data collection and analysis

The current study used an electronic questionnaire to gather quantitative data concerning 51 Saudi postgraduate students' attitudes toward using ChatGPT as a learning aid in higher education. The questionnaire was

Table 2. Descriptive statistics of questionnaire subscales

Questionnaire subscales	Mean	SD	Level
Affective	3.99	1.07	High
Behavioral	4.20	0.99	High
Cognitive	4.15	0.95	High
Total	4.11	1.00	High

adopted from a previous study (Ajlouni et al., 2023). It employed three subscales of the ABC attitude model – affective, behavioral, and cognitive – to measure the students' attitudes. The survey employed a five-point Likert scale, ranging from 1 ('strongly disagree') to 5 ('strongly agree'). The instrument's validity and reliability were measured through a pilot study. The Cronbach-alpha coefficient was found to be α =.96, indicating that the questionnaire is a valid and reliable measure to collect responses from the study sample.

The questionnaire included items to which the participants provided their responses. The electronic questionnaire was distributed to postgraduate students via college WhatsApp groups. The students were informed about the study's objective and that their replies would be utilized solely for research purposes. Students were also told that their participation was voluntary and would not impact their grades.

Descriptive statistics, such as means and standard deviations, were utilized in the three questionnaire subscales – affective, behavioral, and cognitive – to assess the participants' perspectives toward using ChatGPT as a tool for learning in higher education. The analysis employed the SPSS version 23 software to provide precise and reliable statistics. The t-test was used to measure whether there are any significant differences between Saudi postgraduate students' attitudes toward using ChatGPT in higher education based on gender and the level of study. The means were categorized as high (3.67–5), moderate (2.34–3.66), and low (1–2.33).

3.4. Findings

This section presents quantitative data findings about the overall postgraduates' perspectives of ChatGPT as a learning aid in higher education through analysis of three questionnaire subscales, namely, affective, behavioral, and cognitive subscales. It also presents whether there are significant differences between female and male Saudi postgraduate students and their level of study and their using ChatGPT as a learning aid.

Table 2 shows that the mean score for postgraduates' attitudes toward using ChatGPT as a learning aid is 4.11. The findings indicate that the postgraduate students had favorable attitudes toward using ChatGPT in their education. Additionally, the average ratings for the three attitude aspects towards ChatGPT showed a variance.

Table 3. Mean and SD of postgraduates' responses on the affective subscale

Items	Mean	SD
I like learning about ChatGPT.	4.33	0.48
I enjoy using ChatGPT in the learning process.	4.45	0.70
I feel comfortable using ChatGPT in the learning process.	4.47	0.70
I feel at ease employing ChatGPT in the learning tasks.	3.80	1.10
I feel annoyed to use ChatGPT because there is no human interaction.	2.82	1.26
I feel concerned about using ChatGPT in doing schoolwork because it may generate inaccurate results.	4.43	0.78
I feel nervous if I cannot access ChatGPT services.	3.59	1.10
Total	3.99	1.07

Table 3 shows the average score, mean, and standard deviation of the affective subscale of attitudes of postgraduates toward using ChatGPT in higher education. Overall, postgraduates' attitudes gained a high score (M 3.99, SD 1.07), which indicates they have a high positive attitude about using ChatGPT as a learning aid.

Further, the average score of replies to the seven items regarding the affective subscale attitudes ranged from 2.82 to 4.47. This finding indicates that postgraduates enjoy gaining familiarity, feeling comfortable, and being at ease in using ChatGPT during the learning process. Similarly, they also show reservations about utilizing ChatGPT for academic tasks due to the potential for generating fake outcomes and feeling anxiety when they are unable to utilize the ChatGPT services.

Table 4 shows the average score, mean, and standard deviation of the behavioral subscale of postgraduates' attitudes toward using ChatGPT. Overall, postgraduates' attitudes gained a high score (M 4.2, SD 0.99) with them having a high positive perspective toward using ChatGPT as a learning aid in higher education.

Further, the average score of their replies to the seven items in the behavioral subscale ranged from 3.82 to 4.59. This finding indicates that postgraduates believe in using ChatGPT for exercises to hone their skills and prepare for examinations. In addition, they would disseminate information to classmates and colleagues regarding the advantages of incorporating ChatGPT into the educational process. Finally, they intend to employ ChatGPT as a tutor and educational resource and to summarize materials to accomplish educational goals.

Table 4. Mean and SD of postgraduates' responses on the behavioral subscale

Items	Mean	SD
I would follow the improvements in ChatGPT.	4.27	0.57
I would inform friends and colleagues about the benefits of employing ChatGPT in the learning process.	4.59	0.50
I would use ChatGPT as a tutor.	4.10	1.08
I would use ChatGPT as an educational resource.	3.94	1.22

Items	Mean	SD
I would use ChatGPT for exercising, practicing and exam preparation.	3.82	1.31
I would use ChatGPT for summarizing and analyzing the educational material.	4.41	0.61
I would keep using ChatGPT to achieve my learning goals.	4.29	1.08
Total	4.20	0.99

Table 5 describes the average score, mean, and standard deviation of the third subscale of the questionnaire, i.e., cognitive subscale, of postgraduates' perspectives toward using ChatGPT as a learning aid in higher education. The overall mean and standard deviation of this subscale gained a high score (M 4.15, SD .95), where postgraduates reported having a high positive cognitive level toward using ChatGPT.

Further, the average score of their replies to the nine statements of the cognitive subscale ranged from 3.67 to 4.49, which shows high positive attitudes toward ChatGPT among postgraduate students. This finding indicates that ChatGPT enhances the learning experience for learners, especially in refining their writing abilities. The postgraduates reported that ChatGPT advances one's cognitive abilities and academic self-assurance, and they intend to continue utilizing ChatGPT to accomplish their educational objectives. Similarly, they also show ChatGPT facilitates continuous learning.

Table 5. Mean and SD of postgraduates' responses on the cognitive subscale

Items	Mean	SD
The skills of employing ChatGPT in learning are necessary for students.	4.29	0.76
ChatGPT makes the learning process easier.	4.25	0.44
ChatGPT makes the learning experience better.	4.49	0.50
ChatGPT enhances academic self-confidence.	4.02	0.93
ChatGPT develops writing skills.	3.67	1.21
ChatGPT satisfies my individual learning needs.	3.96	1.23
ChatGPT supports lifelong learning.	4.06	0.95
ChatGPT improves higher-order skills, i.e., evaluation and creativity	4.27	0.90
I would keep using ChatGPT to achieve my learning goals.	4.29	1.08
Total	4.15	0.95

To address the second research question, an independent-samples t test was conducted to find out whether there are significant differences between Saudi postgraduate students toward using ChatGPT as a learning aid according to their gender and their level of study.

The results of the test are presented in Table 6 and show that there is a significant difference among male and female Saudi postgraduate students toward using ChatGPT as a learning aid. The p-value for the test of differences concerning students' gender is 0.030, which is less than significance level 0.05. This indicates that the gender had a significant impact on the findings. Furthermore, the descriptive statistics in Table 7 also show

Table 6. Independent t-test of postgraduates' gender

Independent Samples Test											
		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
TOTAL	Equal variances assumed	2.319	0.134	2.233	49	0.015	0.030	0.314	0.141	0.0314	0.5963
	Equal variances not assumed			2.343	46.591	0.012	0.023	0.314	0.1339	0.0443	0.5834

that there is significant difference among male (M 4.30, SD 0.423) and female (M 3.98, SD 0.528) Saudi postgraduate students toward using ChatGPT as a learning aid.

Table 7. Descriptive statistics postgraduates' gender (N = 51)

Gender	N	Mean	SD	Standard Error Mean
Male	20	4.30	0.423	0.095
Female	31	3.98	0.528	0.095

Table 8. Independent t-test of the postgraduates' level of study

Independent Samples Test of the students' school year											
		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
TOTAL	Equal variances assumed	9.228	0.004	1.849	49	0.035	0.070	0.25875	0.13994	-0.02246	0.53997
	Equal variances not assumed			1.916	47.693	0.031	0.061	0.25875	0.13505	-0.01283	0.53033

Table 8 shows the finding of the independent samples t-test that there is no significant difference among first- and second-year postgraduate students' attitudes toward using ChatGPT as a learning aid. The p-value for the test of differences regarding their level of study is 0.061, which is higher than the significance level 0.05. Furthermore, the descriptive statistics in Table 9 shows that there is a slight difference among first-year students (M 4.25, SD 0.392) and female Saudi postgraduate students (M 3.99, SD 0.569) toward using ChatGPT as a learning aid, but it is not significant according to the t-test.

Table 9. The descriptive statistics postgraduates' level of study

School year	N	Mean	SD	Standard Error Mean
First year	23	4.25	0.392	0.082
Second year	28	3.99	0.569	0.107

4. Discussion

The aim of this study was to identify Saudi postgraduate students' perspectives toward using ChatGPT as a tool for learning in higher education and whether there are any significant differences between their perspectives based on their gender and level of study.

The study's findings revealed that postgraduates had high positive attitudes toward using ChatGPT as a learning aid in higher education. Considering gender differences, the findings indicated a significant difference among male and female postgraduate students, with male students having a more positive attitude toward using ChatGPT as a learning aid. Furthermore, in terms of the level of study, the findings indicated no significant difference among first- and second-year postgraduate students' interest in using ChatGPT as a learning aid, which did not affect the study's findings.

It should be noted that there is a dearth of studies addressing postgraduate attitudes toward using ChatGPT as a comprehensive learning aid in higher education. These findings align with previous studies (Ajlouni et al., 2023; Crawford et al., 2023; Studente et al., 2020). For example, Crawford et al. (2023) reported that utilizing ChatGPT for supportive learning environments benefits students and can potentially improve their learning and results. Ajlouni et al. (2023) reported that most students acknowledged that ChatGPT could improve education. Studente et al. (2020) found a positive correlation between chatbot use, study engagement, and peer engagement. Students stated that chatbots provided support and connected them with their program leader.

Affective attitude components refer to emotional reactions to an attitude object, such as liking or disliking it. Cognitive components estimate the entity based on an individual's belief or doubt about it (Jain, 2014). Cognitive and affective attitude components influence behavioral intention, which motivates actual behavior (Svenningsson et al., 2022). Previous studies (Alharbi, 2023; Gilson et al., 2022; Kohnke et al., 2023; Qadir, 2022; Zhai, 2022) highlighted that technology has significantly changed teaching and learning in education, and AI-driven chatbots, especially ChatGPT, have gained attention as educational aids to improve educational experiences. Furthermore, Ajlouni et al. (2023) emphasized the importance of maintaining and promoting positive attitudes toward ChatGPT technology to encourage its use as a practical learning tool.

The findings contradict previous studies (Iqbal et al., 2022) that found that university faculty members have negative attitudes toward ChatGPT due to cheating and plagiarism risks. They even showed a positive attitude toward its positive aspects, such as lesson planning and assessment.

Perkins (2023) emphasized that students using AI technologies like ChatGPT in formal assessments may affect academic integrity, and higher education institutions' academic integrity rules must be modified to account for future use to decide whether a student's use of ChatGPT constitutes academic misconduct. OpenAI's ChatGPT chatbot has been shown to help ESL and EFL students (Huang et al., 2022; Kuhail et al., 2023).

5. Limitations of the study and implications for further research

Despite this study's contribution to earlier studies on the use of ChatGPT as a tool for learning in higher education, several limitations need to be tackled in future studies. The findings on postgraduates' perspectives on utilizing ChatGPT as a learning aid in higher education are based on a sample consisting of 51 postgraduate students: 31 females and 20 males. A more comprehensive sample of undergraduate and postgraduate students may be needed in further studies to verify and confirm the findings of this study. Second, the present investigation is based on the quantitative research design, and the data were gathered via an e-survey to measure postgraduates' attitudes toward using ChatGPT as a tool for learning.

Future studies should concentrate on qualitative or mixed-method approaches to understand students' perspectives in-depth. It is necessary to investigate the actual use of ChatGPT in postgraduate tasks and research projects and how it affects their learning outcomes. Finally, this study is limited to postgraduate perspectives; therefore, future studies should concentrate on the perspective of EFL instructors and supervisors toward using ChatGPT as a learning aid in higher education.

Author contributions

The article's authors have contributed equally to every section of this article.

Acknowledgment

The authors extend the appreciation to the Deanship of Postgraduate Studies and Scientific Research at Majmaah University for funding this research work through Project Number R-2024-1158.

Submitted: December 09, 2024 EET

REFERENCES

Ajlouni, A. O., Wahba, F. A. A., & Almahaireh, A. S. (2023). Students' attitudes towards using ChatGPT as a learning tool: The case of the University of Jordan. *International Journal of Interactive Mobile Technologies*, *17*(18), 99–117. https://doi.org/10.3991/ijim.v17i18.41753

Alharbi, W. (2023). AI in the foreign language classroom: A pedagogical overview of Automated Writing Assistance tools. *Education Research International*. https://doi.org/10.1155/2023/4253331

Annamalai, N., Ab Rashid, R., Hashmi, U. M., Mohamed, M., Alqaryouti, M. H., & Sadeq, A. E. (2023). Using chatbots for English language learning in higher education. *Computers and Education: Artificial Intelligence*, *5*, 100153. https://doi.org/10.1016/j.caeai.2023.100153

Ayedoun, E., Hayashi, Y., & Seta, K. (2019). Adding communicative and affective strategies to an embodied conversational agent to enhance second language learners' willingness to communicate. *International Journal of Artificial Intelligence in Education*, *29*(1), 29–57. https://doi.org/10.1007/s40593-018-0171-6

Chen, X., Xie, H., Zou, D., & Hwang, G. J. (2020). Application and theory gaps during the rise of artificial intelligence in education. *Computers and Education: Artificial Intelligence*, *1*, 100002. https://doi.org/10.1016/j.caeai.2020.100002

Cong-Lem, N., Tran, T. N., & Nguyen, T. T. (2024). Academic integrity in the age of generative AI: Perceptions and responses of Vietnamese EFL teachers. *Teaching English with Technology*, *24*(1), 28–47. https://doi.org/10.56297/FSYB3031/MXNB7567

Crawford, J., Cowling, M., & Allen, K. (2023). Leadership is needed for ethical ChatGPT: Character, assessment, and learning using artificial intelligence (AI). *Journal of University Teaching and Learning Practice*. https://doi.org/10.53761/1.20.3.02

Deng, J., & Lin, Y. (2022). The benefits and challenges of ChatGPT: An overview. *Frontiers in Computing and Intelligent Systems*, *2*(2), 81–83. https://doi.org/10.54097/fcis.v2i2.4465

Dergaa, I., Chamari, K., Zmijewski, P., & Saad, H. B. (2023). From human writing to artificial intelligence generated text: Examining the prospects and potential threats of ChatGPT in academic writing. *Biology of Sport*, *40*(2), 615–622. https://doi.org/10.5114/biolsport.2023.125623

Dörnyei, Z., & Taguchi, T. (2010). *Questionnaires in Second Language Research: Construction, Administration and Processing* (2nd ed.). Routledge.

Gillham, B. (2008). *Developing a Questionnaire*. A&C Black.

Gilson, A., Safranek, C., Huang, T., Socrates, V., Chi, L., Taylor, R. A., & Chartash, D. (2022). How does ChatGPT perform on the Medical Licensing Exams? The implications of Large Language Models for medical education and knowledge assessment. *medRxiv*. https://doi.org/10.1101/2022.12.23.22283901

Huang, W., Hew, K. F., & Fryer, L. K. (2022). Chatbots for language learning – are they really useful? A systematic review of chatbot-supported language learning. *Journal of Computer Assisted Learning*, *38*(1), 237–257. https://doi.org/10.1111/jcal.12610

Iqbal, N., Ahmed, H., & Azhar, K. A. (2022). Exploring teachers' attitudes towards using ChatGPT. *Global Journal for Management and Administrative Sciences*, *3*(4), 97–111. https://doi.org/10.46568/gjmas.v3i4.163

Jain, V. (2014). 3D model of attitude. *International Journal of Advanced Research in Management and Social Sciences*, *3*(3), 1–12.

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. *RELC Journal*, *54*(2), 537–550. https://doi.org/10.1177/00336882231162868

Kooli, C. (2023). Chatbots in education and research: A critical examination of ethical implications and solutions. *Sustainability*, *15*(7), 5614. https://doi.org/10.3390/su15075614

Kuhail, M. A., Alturki, N., Alramlawi, S., & Alhejori, K. (2023). Interacting with educational chatbots: A systematic review. *Education and Information Technologies*, *28*, 973–1018. https://doi.org/10.1007/s10639-022-11177-3

Lim, W. M., Gunasekara, A., Pallant, J. L., Pallant, J. I., & Pechenkina, E. (2023). Generative AI and the future of education: Ragnarök or reformation? A paradoxical perspective from management educators. *The International Journal of Management Education*, *21*(2), 100790. https://doi.org/10.1016/j.ijme.2023.100790

Lin, M. P.-C., & Chang, D. (2020). Enhancing post-secondary writers' writing skills with a chatbot. *Journal of Educational Technology & Society*, *23*(1), 78–92. https://www.jstor.org/stable/26915408

Lodico, M. G., Spaulding, D. T., & Voegtle, K. H. (2010). *Methods in Educational Research: From Theory to Practice*. John Wiley & Sons.

Moldt, J. A., Festl-Wietek, T., Madany Mamlouk, A., Nieselt, K., Fuhl, W., & Herrmann-Werner, A. (2023). Chatbots for future docs: Exploring medical students' attitudes and knowledge towards artificial intelligence and medical chatbots. *Medical Education Online*, *28*(1), 2182659. https://doi.org/10.1080/10872981.2023.2182659

OpenAI. (2023). *ChatGPT: Optimizing language models for dialogue*. https://openai.com/blog/chatgpt/

Perkins, M. (2023). Academic integrity considerations of AI Large Language Models in the post-pandemic era: ChatGPT and beyond. *Journal of University Teaching and Learning Practice*. https://doi.org/10.53761/1.20.02.07

Qadir, J. (2022). Engineering education in the era of ChatGPT: Promise and pitfalls of Generative AI for education. *TechRxiv*. https://doi.org/10.36227/techrxiv.21789434.v1

Rospigliosi, P. A. (2023). Artificial intelligence in teaching and learning: What questions should we ask of ChatGPT? *Interactive Learning Environments*, *31*(1), 1–3. https://doi.org/10.1080/10494820.2023.2180191

Ruan, S., Willis, A., Xu, Q., Davis, G. M., Jiang, L., Brunskill, E., & Landay, J. A. (2019). Bookbuddy: Turning digital materials into interactive foreign language lessons through a voice chatbot. In *Proceedings of the Sixth (2019) ACM Conference on Learning Scale* (pp. 1–4). ACM.

Siedlecki, S. L. (2020). Understanding descriptive research designs and methods. *Clinical Nurse Specialist*, *34*(1), 8–12. https://doi.org/10.1097/NUR.0000000000000493

Sok, S., & Heng, K. (2023). ChatGPT for education and research: A review of benefits and risks. *Cambodian Journal of Educational Research*, *3*(1), 110–121. https://doi.org/10.2139/ssrn.4378735

Strzelecki, A. (2023). To use or not to use ChatGPT in higher education? A study of students' acceptance and use of technology. *Interactive Learning Environments*, 1–14. https://doi.org/10.1080/10494820.2023.2209881

Studente, S., Ellis, S., & Garivaldis, S. F. (2020). Exploring the potential of chatbots in higher education: A preliminary study. *International Journal of Educational and Pedagogical Sciences*, *14*(9), 768–771.

Svenningsson, J., Höst, G., Hultén, M., & Hallström, J. (2022). Students' attitudes toward technology: Exploring the relationship among affective, cognitive and behavioral components of the attitude construct. *International Journal of Technology and Design Education*, *32*(3), 1531–1551. https://doi.org/10.1007/s10798-021-09657-7

Tegos, S., Demetriadis, S., & Tsiatsos, T. (2014). A configurable conversational agent to trigger students' productive dialogue: A pilot study in the CALL domain. *International Journal of Artificial Intelligence in Education*, *24*, 62–91. https://doi.org/10.1007/s40593-013-0007-3

Xu, W. W., Su, C. Y., Hu, Y., & Chen, C. H. (2022). Exploring the effectiveness and moderators of augmented reality on science learning: A meta-analysis. *Journal of Science Education and Technology*, *31*(5), 621–637. https://doi.org/10.1007/s10956-022-09982

Zhai, X. (2022). ChatGPT user experience: Implications for education. *SSRN Scholarly Paper*. https://doi.org/10.2139/ssrn.4312418