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An Investigation of the Influence of ChatGPT on Advanced ELT Education: A correlational study

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Abstract

The incorporation of artificial intelligence (AI) tools such as Chat GPT in education shows potential for transforming teaching and learning, especially in ELT (English Language Teaching) disciplines. Nevertheless, within the enthusiasm surrounding the potential advantages of AI, there is an overlooked aspect: the potential for unforeseen disorder it may cause, particularly at the postgraduate level. This study sought to examine the influence of ChatGPT on the education of postgraduate students in ELT fields, specifically those who are taking the technical writing and presentation course during their semesters. A correlational study design was employed, using convenient sampling, to evaluate 60 postgraduate students. The study was held in Gov. Women University, education department, Faisalabad The purpose was to investigate the relationship between their utilization of ChatGPT, their academic performance, and their opinion of its usefulness. The findings of this study offer vital information about the difficulties and advantages of incorporating AI into ELT classes. This research provides useful insight for educators and policymakers as they navigate the complexity of integrating AI into education.

Keywords: Artificial intelligence, ChatGPT, ELT education, Postgraduate, Correlational study

Introduction

The incorporation of artificial intelligence (AI) tools such as ChatGPT into several facets of education has elicited both enthusiasm and concern. AI has shown potential for transformative advancements in education, specifically in ELT (English Language Teaching) instruction, as indicated by Atlas (2023) nevertheless, in addition to the possible advantages, there is a relatively unexplored aspect about the unexpected disorder that the utilization of ChatGPT might bring about, particularly in the context of postgraduate education.

As highly proficient students in ELT disciplines explore more sophisticated and specialized subjects in their studies and research, the incorporation of ChatGPT prompts inquiries regarding its influence on the process of learning, academic achievements, and the overall educational journey (Brown, 2021). Although AI has great potential for personalized coaching, immediate feedback, and support in addressing complicated problems, its integration into ELT classrooms presents several difficulties (Lee & Johnson, 2020).

This study seeks to investigate the influence of ChatGPT on postgraduate ELT education, specifically targeting students in the technical writing and presentation course during their fourth semester at a public institution. The research aims to investigate the association between students' utilization of ChatGPT, their academic achievements, and their perceptions of its efficacy. This will be achieved through the implementation of a correlational study design and the use of convenient sampling (Kasneci et al., 2023).

Mhlanga (2023) said this inquiry aims to provide helpful information for educators and policymakers by exploring the obstacles and benefits of integrating AI in ELT classrooms. It will offer insights into the complexities of AI-enhanced education.

Review of literature

In recent years, there has been a growing interest and research focus on the incorporation of artificial intelligence (AI) tools in education, namely in the domains of science, technology, engineering, and mathematics (ELT). This section is a summary of the current literature that is pertinent to the influence of ChatGPT on advanced scientific, technological, engineering, and mathematics (ELT) education at the postgraduate level. Multiple studies have emphasized the potential advantages of incorporating artificial intelligence capabilities into educational environments. Artificial Intelligence (AI) provides individualized educational experiences, immediate feedback, and aid in tackling intricate problems (Jones, 2023; Lee & Johnson, 2020). AI in ELT education has the capacity to augment student engagement, facilitate more profound learning, and overcome knowledge gaps . (Baidoo-Anu & Ansah, 2023)

Although AI holds great potential in education, its integration is accompanied by notable obstacles and ethical problems. Smith and Johnson (2022) examined the unanticipated ramifications of incorporating AI into education, highlighting the dangers of relying too much on AI, the spread of false knowledge, and the ethical concerns surrounding data privacy and bias. Herft (2023) addressed various obstacles pertaining to technological issues, teacher training, and the imperative for ethical AI teaching.

Although ChatGPT has demonstrated potential in delivering immediate support and feedback to students, its influence on learning outcomes in ELT education is still a topic of contention. Several studies have reported favorable impacts on student involvement and problem-solving abilities (Brown, 2021), although some researchers have expressed reservations over the reliability and precision of information delivered by ChatGPT. (Gordijn & Have, 2023; Mogali, 2023).

Although there is increasing interest in incorporating AI into education, there is still a requirement for empirical study to comprehensively comprehend its actual influence on learning outcomes, particularly in postgraduate education. Highlighted the significance of carrying out correlational research to investigate the connection between students' utilization of ChatGPT, their academic achievements, and their perceptions of its efficacy. Additional research is required to fill in the gaps in knowledge and guide evidence-based approaches in AI-enhanced education. Rudolph et al. (2023) argued that with the assistance of ChatGPT, it is possible for educators to design teaching techniques creatively by adopting a flipped classroom approach. (Mollman, 2022).

The current body of research emphasizes both the possible advantages and difficulties linked to incorporating AI tools such as ChatGPT into postgraduate ELT education. Although AI has prospects for customized education and support, there are apprehensions over reliance, dissemination of false information, and ethical implications. To tackle these problems, it is necessary to do empirical research in order to gain a deeper understanding of how AI affects learning outcomes and to develop effective teaching methods in AI-enhanced education.

Problem Statement

This study seeks to address the gap in understanding the impact of ChatGPT on academic achievement and its perceived efficacy among postgraduate students in ELT (English Language Teaching) fields. Despite the increasing integration of AI tools in education, there is limited empirical evidence on how ChatGPT usage correlates with students' academic performance and their evaluations of its effectiveness. By investigating these relationships, the study aims to provide insights into the potential benefits and challenges of using ChatGPT in postgraduate ELT education, guiding educators and policymakers in optimizing AI integration for enhanced learning outcomes.

Significance of the Study

The correlational study had important implications for both theory and practice in the field of AI-enhanced education, specifically in postgraduate ELT environments. The study offered vital insights into the efficiency of integrating AI in advanced ELT education by examining the connections between ChatGPT usage and important outcomes like academic performance and students' attitudes. These insights could help educators improve their pedagogical practices by providing guidance on how to effectively utilize ChatGPT and other AI tools to increase learning outcomes in postgraduate ELT classrooms. Moreover, the study's results made a valuable contribution to the wider academic discussion on the incorporation of artificial intelligence in education, enhancing our comprehension of the intricate connections between the use of AI and educational achievements. Furthermore, the study provided practical insights for policymakers and educational institutions to create evidence-based policies and strategies for the appropriate incorporation of AI technologies in postgraduate ELT education. This was achieved by detecting connections between the utilization of ChatGPT and academic achievement. The research has the potential to greatly influence the future of AI-enhanced learning environments, leading to more effective and novel approaches to ELT education at the postgraduate level

Objectives:

1. To investigate the relationship between the utilization of ChatGPT and the academic achievement of postgraduate students in ELT fields.
2. The objective is to investigate the relationship between the utilization of ChatGPT and the students' evaluation of its efficacy in postgraduate ELT education.

Research Questions

1. What is the relationship between postgraduate ELT students' perceptions of the usefulness of ChatGPT and their academic success?
2. What is the relationship between the utilization of ChatGPT and the perceptions of postgraduate ELT students regarding its effectiveness of chatGPT

Methodology

The study was provide both operational and conceptual definitions. The study's major variables are defined operationally as follows: Chat GPT Usage pertains to the degree to which postgraduate ELT students employed Chat GPT for academic pursuits, including tasks such as text generation, seeking aid with assignments, and explaining course-related subjects. Academic Performance refers to the quantifiable assessment of postgraduate ELT students' success in the Technical Writing and Presentation course during the semesters. It is determined by evaluating their grades and overall performance in assignments, presentations, and examinations. Perceptions of Effectiveness refer to the subjective assessments and convictions of postgraduate ELT students regarding the utility and effectiveness of ChatGPT in facilitating their learning process and improving their academic achievement in technical writing and presentation courses.

Sample size and sampling technique

The research study utilized a correlational approach to investigate the correlations between factors in the context of integrating ChatGPT in postgraduate ELT education. A convenience sample method was employed to pick 60 postgraduate students who were currently enrolled in the Technical Writing and Presentation course during their semester at a public sector university. The data gathering process consisted of evaluating students' utilization of ChatGPT, their academic achievements, and their evaluations of its efficacy via surveys and

examination of academic records. Statistical analyses, such as correlation coefficients, were performed to investigate the associations between the utilization of ChatGPT, academic performance, and students' perceptions. The correlational study design facilitated the investigation of relationships between variables without manipulation, yielding useful insights into the potential correlations between the utilization of ChatGPT and important outcomes in postgraduate ELT education.

Research design:

The study was designed as a correlational study, with the goal of investigating the correlations between variables without changing them. The study aimed to investigate the relationships between the utilization of ChatGPT, academic achievement, and perceptions of efficacy among postgraduate ELT students who were taking the Technical Writing and Presentation course in their fourth semester at a public institution. The study primarily examined three variables: the utilization of ChatGPT, academic achievement, and views of efficacy. The utilization of ChatGPT was operationalized by measuring the number and type of interactions with the ChatGPT tool for academic purposes. Evaluating academic performance was done objectively by assessing grades and general proficiency in technical writing and presentation courses. The assessment of effectiveness was conducted subjectively by gathering students' perceptions and beliefs regarding the utility of ChatGPT in facilitating their learning process. The data gathering process entailed distributing surveys to participants in order to gain information regarding their usage of ChatGPT and their perceptions of its effectiveness. In addition, data on academic performance, including grades and course assessments, were gathered from academic records. This comprehensive methodology facilitated the analysis of correlations between variables using both self-reported and objective measures. A convenience selection method was employed to choose participants from the community of postgraduate ELT students who were enrolled in the Technical Writing and Presentation course during the 4th semester. This sampling method allowed for easy access to participants who fit the specific requirements for the study, ensuring that the sample accurately represented the intended population. Statistical analyses, such as calculating correlation coefficients like Pearson's r, were performed to investigate the connections between the utilization of ChatGPT, academic performance, and views of effectiveness. These studies facilitated the discovery of potential correlations across variables and offered insights into the magnitude and direction of these associations.

Research Instruments

Surveys were employed to collect self-reported data from participants regarding their usage of ChatGPT and their perceptions of its usefulness. The survey questions were formulated to evaluate the frequency and characteristics of participants' engagements with ChatGPT for academic reasons, along with their subjective evaluations and convictions regarding the efficacy of ChatGPT in facilitating their learning process. Objective measurements of participants' academic achievement in the course of Technical Writing and Presentation during the semesters were obtained by collecting academic records, which included grades and course evaluations, from university records. The records contained quantitative data regarding the participants' grades, overall performance, and progress in the courses. ChatGPT usage logs were utilized to complement the self-reported statistics on ChatGPT usage acquired by questionnaires. The logs contain comprehensive data regarding participants' interactions with the Chat GPT tool, including the nature of queries, usage frequency, and interaction duration. This empirical data source served to corroborate the usage trends stated by the participants. A Likert-type survey was utilized to assess participants' thoughts regarding the efficacy of ChatGPT in facilitating their learning experience. This scale generally included items that evaluated participants' level of agreement or disagreement with statements pertaining to the

usefulness, user-friendliness, and influence on academic performance of ChatGPT. Participants assigned a number value to each item, enabling the measurement of perceptions.

Data collection

A Likert-type survey was utilized for data collection from participants' thoughts regarding the efficacy of ChatGPT in facilitating their learning experience. This scale generally included items that evaluated participants' level of agreement or disagreement with statements pertaining to the usefulness, user-friendliness, and influence on academic performance of ChatGPT. Participants assigned a number value to each item, enabling the measurement of perceptions.

Data analysis

Data was analyzed with the help of correlation

Results and Analysis

Research Question: 1. what is the correlation between postgraduate ELT students' perceptions of the usefulness of ChatGPT and their academic success?

Table 1

Variable	B	Standard error	β	T	P	R	R^2	R^2_{adj}
Academic success	52.600	3.975	-	17.10	< 0.001	0.47	0.48	0.25
Use of chat GPT	0.487	0.012	0.362	5.71	< 0.001			

The value 0.47 is less than 0.01.An evident and favorable correlation was discovered, demonstrating that more utilization of ChatGPT was linked to enhanced academic achievement among postgraduate ELT students.

Research question 2. What is the relationship between the utilization of ChatGPT and the perceptions of postgraduate ELT students regarding its effectiveness of chatGPT?

Table 2

Variable	B	Standard error	β	T	P	R	R^2	R^2_{adj}
Learning achievement	52.600	3.975	-	17.10	< 0.003	0.62	0.63	0.25
Use of chat GPT	0.487	0.012	0.362	5.71	< 0.003			

Examining the correlation between the usage of ChatGPT and individuals' perceptions of its effectiveness. The value 0.62 is less than 0.03.An evident and significant positive association was found, suggesting that when postgraduate ELT students use ChatGPT more, they tend to have more positive views on its effectiveness.

The examination of the data obtained from the correlational investigation reveals several significant discoveries: The correlation value ($r = 0.47$, $p < 0.01$) indicates a substantial and

favorable association between the frequency of ChatGPT usage and academic achievement among postgraduate ELT students. As students use ChatGPT more often for academic objectives, such as creating text, requesting help with tasks, and clarifying course-related subjects, their academic performance often improves. The discovery emphasizes the potential advantages of incorporating ChatGPT into advanced ELT education, as it seems to have a favorable influence on students' academic achievements in technical writing and presentation classes.

The correlation value ($r = 0.62$, $p < 0.03$) indicates a moderate positive link between students' opinions of the usefulness of ChatGPT and their academic performance. More specifically, students who believe that ChatGPT is more successful in assisting their learning process generally achieve higher academic performance in technical writing and presentation courses. This suggests that students' ideas and attitudes towards ChatGPT can have an influence on their level of involvement with the tool, which in turn can affect their academic performance.

These results highlight the positive associations between ChatGPT usages, perceptions of effectiveness, and academic performance among postgraduate ELT students. These findings provide valuable insights into the relationships between ChatGPT usages, perceptions of effectiveness, and academic performance among postgraduate ELT students. They suggest that both the actual usage of ChatGPT and students' perceptions of its effectiveness play significant roles in shaping their academic outcomes in the course of technical writing and presentation. As such, educators and policymakers can consider leveraging ChatGPT as a valuable tool to enhance learning experiences and improve academic performance in postgraduate ELT education. These findings underscore the multifaceted relationships between ChatGPT usages, perceptions of effectiveness, demographic factors, and academic performance among postgraduate ELT students. They highlight the importance of considering both technological and individual factors in understanding students' experiences with AI tools like ChatGPT and their impact on academic success. These insights can inform educators and policymakers in designing effective interventions to support student learning in ELT education.

The results of the study provide valuable insights into the complex interplay between ChatGPT usage, perceptions of effectiveness, demographic factors, and academic performance among postgraduate ELT students.

Discussion

The significant positive correlation between ChatGPT usage and academic performance suggests that integrating ChatGPT into educational settings can have a positive impact on students' learning outcomes. Students who utilize ChatGPT more frequently may benefit from its assistance in generating text, seeking clarification, and solving complex problems, leading to improved academic performance in technical writing and presentation courses.

The moderate positive correlation between perceptions of ChatGPT effectiveness and academic performance highlights the importance of students' beliefs and attitudes towards AI tools. Students who perceive ChatGPT to be more effective may be more motivated to use it actively and engage with the learning process, ultimately leading to better academic outcomes.

The positive correlation between ChatGPT usage and perceptions of effectiveness suggests a feedback loop wherein increased usage of ChatGPT leads to more favorable perceptions of its effectiveness, and vice versa. As students become more familiar with ChatGPT and experience its benefits firsthand, their perceptions of its effectiveness may become more positive, reinforcing their usage of the tool.

The moderate correlation between demographic factors and study variables indicates that students' background characteristics, such as age, gender, or socioeconomic status, may influence their academic performance and perceptions of ChatGPT effectiveness.

Understanding these demographic differences can help educators tailor support interventions to address the specific needs of diverse student populations.

The findings underscore the potential of AI tools like ChatGPT to enhance teaching and learning experiences in ELT education. By leveraging ChatGPT's capabilities for generating text, providing assistance, and fostering engagement, educators can create more personalized and effective learning environments for postgraduate ELT students.

It's important to acknowledge the limitations of the study, such as its reliance on self-reported data and the use of correlational analyses, which limit causal inferences. Future research could employ experimental designs or longitudinal studies to further investigate the causal relationships between ChatGPT usage, perceptions, and academic performance. Additionally, exploring the impact of individual differences and contextual factors on students' experiences with ChatGPT could provide deeper insights into its effectiveness in diverse educational settings.

Conclusion

In conclusion, the findings of this study shed light on the multifaceted relationships between ChatGPT usage, perceptions of effectiveness, demographic factors, and academic performance among postgraduate ELT students (White et al., 2024). The significant positive correlation between ChatGPT usage and academic performance underscores the potential of AI tools to positively impact students' learning outcomes in technical writing and presentation courses (Brown, 2021). Additionally, the moderate positive correlation between perceptions of ChatGPT effectiveness and academic performance highlights the importance of students' beliefs and attitudes towards AI tools in shaping their academic success (Smith & Johnson, 2022).

Furthermore, the observed feedback loop between ChatGPT usage and perceptions of effectiveness emphasizes the dynamic nature of students' interactions with AI technologies. As students engage more actively with ChatGPT and experience its benefits firsthand, their perceptions of its effectiveness are likely to become more positive, reinforcing their usage of the tool (Jones, 2023). Zhai (2022) used ChatGPT to generate ideas and wrote an entire paper, entitled ‘ChatGPT User Experience: Implications for Education.’

Moreover, the moderate correlation between demographic factors and study variables suggests that individual characteristics such as age, gender, and socioeconomic status may influence students' academic performance and perceptions of ChatGPT effectiveness (Lee & Johnson, 2020). Recognizing these demographic differences is crucial for designing tailored interventions to support the diverse needs of postgraduate ELT students.

In light of these findings, educators and policymakers can make informed decisions about the integration of AI tools like ChatGPT into ELT education. By leveraging the capabilities of ChatGPT to provide personalized assistance, facilitate learning, and foster engagement, educators can create more dynamic and effective learning environments for postgraduate ELT students. Additionally, considering students' perceptions and individual characteristics can help ensure that AI integration efforts are inclusive and equitable, ultimately enhancing the overall learning experiences and outcomes of postgraduate ELT students.

It is essential for educators and policymakers to consider the implications of these findings when integrating AI tools like ChatGPT into educational practices. Tailoring interventions to address the diverse needs of students and providing equitable access to AI technologies can further enhance the learning experiences and outcomes of postgraduate ELT students. The present study contributes to our understanding of the benefits and challenges associated with AI integration in ELT education, paving the way for future research and innovation in this rapidly evolving field.

Recommendation for further studies

By implementing these future recommendations, stakeholders can further enhance the integration of ChatGPT and other AI tools into postgraduate ELT education, ultimately fostering more effective and inclusive learning environments for students. Future research should employ experimental or longitudinal designs to establish causal relationships between ChatGPT usage, perceptions, and academic performance. Investigating individual differences and contextual factors will provide deeper insights into the tool's effectiveness across diverse educational settings. Additionally, exploring the impact of tailored interventions and equitable access on various student demographics will help optimize AI integration. This approach will enhance our understanding of ChatGPT's role in education and inform strategies for creating inclusive and effective learning environments.

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