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Role of ChatGPT in Enhancing English Language Learning: A Case Study of University Students

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ABSTRACT

Artificial intelligence (AI) enhances language education by offering personalized, inclusive, and accessible learning solutions, directly supporting UNO SDG 4 of ensuring quality education and promoting lifelong learning opportunities for all. This research explores the impact of ChatGPT on enhancing English language skills such as grammar, vocabulary, writing, and comprehensive reading among Virtual University, Pakistan (VU) students. Employing a mixed methods approach, the study collected data via interviews, surveys, and focus group discussions to investigate students' perceptions, challenges, and engagement with ChatGPT as a language learning aid. A questionnaire survey was conducted among 100 students at Virtual University of Abbottabad. The data was analyzed by using SPSS software to analyze means, standard deviations, percentages, frequencies, and Cronbach's alpha. The finding reveals that the emergence of AI technologies has transfigured learning patterns and language acquisition and gathers information while also conveniently helping learners in developing their reading, writing, speaking, and listening skills in a short time period. However, the challenges, such as occasional inaccuracies and the absence of human interaction remain. This research aims to complete the gap in the literature by providing empirical data and learning the incorporation of ChatGPT in VU courses, thus advancing the discussion on effective language education. This study's major goals are to determine how VU students perceive ChatGPT's influence on their general language proficiency and to look at how ChatGPT affects their vocabulary acquisition.

Keywords: Quality Education Artificial Intelligent Application; ChatGPT; English Language; Virtual University Students

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1. Introduction

Artificial intelligence is one of the most innovative technologies, which uses data and algorithms to increase human intelligence [1]. AI tools help home computers to perform many works automatically [2]. Artificial intelligence (AI) has designed various tools to enhance learning experiences across different fields of study all over the world in recent years. These tools consist of self-learning techniques that help in learning, perceptions, reading, problem-solving, communications, planning, and decision making in terms of knowledge discovery [3].

AI has many applications with neural networks and robots in multiple aspects of human's life that play an important role in English language learning outcomes. English language learning outcomes summarize the knowledge and performance skills that are a necessity for students. One of the most valuable language learning AI tools is ChatGPT, to modify all languages, especially English language proficiency, learning progress and personal achievements. This tool has been developed by OpenAI, which is increasingly being merged in educational settings [4]. As we know, English language learning has gained significant attention due to its global importance as a lingua franca. So, ChatGPT can be used in education to meet the students and teachers' need in organizing content, assignments, English communication skills, efficient teaching, and assessment techniques [5,6].

ChatGPT has been acquired in educational competences and abilities to attain language learning of educational goals. Challenges arising from the technological changes and scientific discoveries have explained the importance of English language skills [7]. Recent studies have shown promising results of how beneficial AI tools are in language learning outcomes. Gao et al. [8] have clarified that ChatGPT has crucially increased learners' communication skills, vocabulary, and English language accent. Other studies showed that AI tools play a significant role in fostering communicative competence [9].

This study reveals the role of ChatGPT as a learning tool in promoting students' English language learning, focusing on the students of Virtual University (VU). Given the rapid growth of online education and the accessibility of AI tools, understanding how ChatGPT can be utilized to support language learners. Virtual University should design the outcomes based on English learning requirements and work for excellence to ensure high-quality English language skills in their institute [10].

Watching English cartoons significantly influences preschoolers in Dhaka City, enhancing their English language skills, particularly in vocabulary and comprehension, while also raising concerns about exposure to violent content and its behavioral implications [11].

This research has investigated how AI tools, specifically ChatGPT, can accommodate VU students in enhancing their English language skills, including grammar, vocabulary, reading comprehension, and writing. This research will provide awareness into the effectiveness of AI tools in an online learning environment and offer recommendations for their incorporation into the educational era.

1.1. Research Questions

Q. How does the use of ChatGPT impact the English language learning experience and performance of students at the Virtual University of Pakistan?

1.2. Problem Statement

Despite the universal availability of AI-based learning tools like ChatGPT, there is restricted research examining their impact on language learning in non-traditional, online educational settings. Virtual University, like many institutions offering distance learning, faces the challenge of presuming students with sufficient resources and support to enhance their English language skills. While AI tools like ChatGPT offer encouragement, it remains unclear how these tools are being used and how they are effective in supporting language development in such an environment.

This research tries to find how to fill this gap by focusing on the experiences and perceptions of VU students, thereby sorting out the advantages, challenges, and potential of using ChatGPT for English language learning in an online setting.

1.3. Significance of Study

This study has significant value for both academic and practical reasons. First, it contributes to the continuing

discussion about the role of AI in education, particularly in language learning. As virtual and hybrid learning environments become more general, understanding how tools like ChatGPT can be used effectively is crucial for learners, educators, and institutions.

Second, this research will provide substantiation into the effectiveness of AI-assisted language learning, which could inform teaching practices and curriculum design at Virtual University and similar institutions. The findings can help shape future strategies for merging AI tools into educational settings to enhance learning outcomes. Moreover, this study will offer practical recommendations on how students can maximize their use of ChatGPT to improve their English proficiency.

2. Literature Review

Recent advancements in educational technology highlight the transformative potential of computer simulations, cloud-based smart tools, and augmented reality in open learning environments. Studies by Papadakis et al. [12] demonstrate how these technologies enhance accessibility and engagement, fostering innovative pedagogical approaches.

How AI tools play an important role in improving learning outcomes and teaching methodologies in education. An OpenAI-powered language ChatGPT tool has emerged as an advanced learning tool. Now it is time to see how AI tools can help students in their learning purposes. This literature review attempts to discuss the application of AI tools, specifically ChatGPT, among VU students and how much these AI tools effective in language learning, assignments, presentations, and education. This review examines the recent studies and theoretical frameworks to explore the benefits, challenges, interpersonal skills, and implications of ChatGPT as a learning tool. Effective English language learning and communication skills are most important for students' education. Thoughtful feedback improves learning in education. Language learning is a social process mediated by tools and interaction. ChatGPT is one of the best AI tools that provide personalized language learning objectives and help shy or hesitant learners to stimulate their real-life conversation under low environmental pressure and without peoples' judgments.

2.1. AI and Language Learning

Artificial Intelligence has described various aspects of education, particularly in language learning. AI tools, such as ChatGPT, Bing AI, and conversational agents, have been shown to make language practices by offering personalized, real-time feedback and providing students with opportunities for interactive learning [13]. ChatGPT can imitate conversation, allowing learners to practice language skills in a low-pressure environment, which can be especially beneficial for shy or introverted students [14]. In the context of English language learning, AI can help students enhance vocabulary, refine grammar, and practice pronunciation [15].

Understanding learners' pragmatic competence, particularly in contexts requiring disagreement, is crucial for developing effective AI-assisted language learning tools. Ahmed et al. [16] examined Pakistani ESL learners' perceptions of politeness in disagreement, revealing cultural and linguistic nuances that shape communicative strategies. Khaleel et al. [17] analyzed linguistic features in Pakistani rape judgments, revealing how societal stigmatization is embedded in legal discourse. Their work highlights the need for ESL learners to critically engage with language that reflects power dynamics and cultural biases.

2.2. The Role of ChatGPT in Education

In various contexts, AI tools, particularly ChatGPT, have been inspected as helpful for language learners. Studies indicate that AI models like ChatGPT offer a range of educational benefits, such as immediate feedback, contextual learning, and adaptability to individual needs [18]. ChatGPT's ability to create realistic conversations in English can help students develop writing and speaking skills in ways that traditional methods do not. However, its success depends on how well it is integrated into the learning process, as well as the quality of interaction between the student and the AI.

2.3. Motivation and Engagement in Language Learning

Motivation and engagement are critical factors in language acquisition. Research has shown that learners

who are more engaged in their language learning are more likely to achieve proficiency [19]. The engaging nature of ChatGPT can potentially increase students' interest by providing immediate, relevant feedback and encouraging continuous interaction. Furthermore, AI tools can create personalized learning experiences, which have been linked to increased motivation [20].

2.4. Challenges and Limitations of AI in Education

Except for its benefits, the integration of AI tools like ChatGPT in education has a role in certain challenges. Technical limitations, such as the accuracy of responses, can affect students` learning experience. Additionally, students may struggle with the lack of human interaction and the inability of AI to fully replicate the nuances of real-life communication. Privacy concerns and the risk of over-reliance on AI are also issues that need to be addressed in the adoption of such technologies in educational contexts [21].

3. Research Methodology

This study used an explanatory sequential mixed-methods approach, gathering qualitative and quantitative research methods to investigate the effectiveness of ChatGPT in helping English language learning at Virtual University (VU). The choice of methodology was induced by the need for students' use of AI tools and perceptions of their experiences [22].

3.1. Research Design

An online survey was used with closed-ended items to collect quantitative data, while semi-structured interviews and focus group discussions were conducted to collect qualitative data. This study investigates both qualitative and quantitative data from students' perceptions, challenges, and motivations in using ChatGPT, as well as explore improvements in language skills.

3.2. Population and Sampling

This study population is conducted on VU students that were enrolled in English language programs. The purposive sampling technique was employed to select 100

participants, specifically targeting those who had regular access to and prior experience with the AI tool under investigation. This ensured that the sample was both relevant and purposeful for examining the research objectives. The participants required inclusion criteria was to be active users of AI tools for learning purposes. In this way the study enhances the validity of its findings regarding AI tool utilization in an educational context [23].

3.3. Data Collection Methods

- **Surveys:** A structured questionnaire survey was consisted of closed-ended questions with Likert scale responses, allowing participants to rate their agreement or disagreement and their perception of improving their English language skills.
- **Interviews:** In-depth interviews were conducted with 20 students to gain qualitative discernment into their experiences with ChatGPT. These interviews explored students' challenges, motivations, and overall perceptions of the tool as language learning resources.
- **Focus Groups Discussion:** Additionally, the focus group discussion was held between 2-3 groups and each group comprised of 6-8 students to allow for a more collaborative exchange of thoughts. The questionnaire survey consisted of closed-ended questions with Likert scale responses, allowing participants to rate their agreement or disagreement.

For the data collection the ethical approval was obtained from an institutional review board of the Virtual University, Pakistan.

3.4. Research Instruments

The primary instruments for data collection included:
- A survey questionnaire

To begin the data collection procedure, a Google Forms-based online questionnaire was constructed and sent to 100 students on WhatsApp who had utilized ChatGPT in their courses and had substantial experience teaching writing.

The following is the structure of the questionnaire.

Section A, which included eight questions (1–8), in-

vestigated the instructors' experiences with using ChatGPT in language training. Section B included 15 questions (9-23) designed to elicit instructors' thoughts on using Chat-GPT in writing sessions. Finally, part C included eleven questions (24-34) aimed at eliciting instructors' recommendations for successfully adopting ChatGPT. This way the 34 items in the questionnaire cover all the constructs in the study.

    - Interviews   - Focus group discussion script

3.5. Pilot Testing of the Instrument

The pilot test was conducted with a smaller group of 8 participants, before administering the questionnaire to the entire sample. The purpose of pilot testing was to:

- Assess the clarity and validity of questions to measured intended constructs.
- Check reliability by using Cronbach's alpha for Likert-scale items.
- Test technical functionality of Google Forms interface for respondents.

The Pilot testing assisted to enhance the questionnaire's strength, ensuring accurate and significant data collection for the main study.

4. Data Analysis

Qualitative data from interviews and focus groups was analyzed subjectively, identifying key patterns and themes related to student engagement, perceptions of effectiveness, and challenges with using the tool. Quantitative data from surveys was analyzed using descriptive statistics, including frequencies and percentages, to quantify the improvement in English language skills among students using ChatGPT.

4.1. Statistical Methods

Based on the research objectives, the collected data were analyzed by using the SPSS software program to extract qualitative and quantitative researcher's findings.

- Arithmetic Means and Standard Deviations: Calculate the mean of the study's research variables according to participants' responses.
- Frequencies and percentages identify the charac-

teristics of the research study according to their demographic data.

- To describe the study variables, the linear regression analysis test was used.

1. If the response reaches the strongly disagree option, the degree is very low.

2. If the response reaches the disagree option, the degree is low.

3. If the response reaches the neutral option, the degree is moderate.

4. If the response reaches the strongly disagree option, the degree is high.

5. If the response reaches the strongly disagree option, the degree is very high.

Where:

1. Strongly Disagree (Very Low).

2. Disagree (Low).

3. Neutral (Moderate).

4. Agree (High).

5. Strongly Agree (Very High).

4.2. Survey Questionnaire Results

The participant's characteristics and demographics are shown in following tables. The questionnaire was provided to 200 students; 100 of them responded to the questionnaire. While 99% of participants were between the ages of 22-30 and 1% of individuals were between the ages of 30-35. In comparison to male participants (45.11%), the total number of female participants (54.99%) was of a higher magnitude.

Explanation of Column:

Number of students (N): The total number of students fill the form.

Mean (M): The average score of each question calculated as the sum of all responses divided by the total number of students.

Standard Deviation (SD): The responses of each question' variability. It represents show spread out the responses around the mean.

Table 1 presents the results related to perceived usefulness of ChatGPT in improving various aspects of English language learning. This table includes five questions,

with responses from 100 participants, measured on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The mean (M) and standard deviation (SD) values for each item are provided, offering insights into both the central tendency of responses and the variability among the participants' opinions.

Table 1. Perceived usefulness.

No.	Perceived Usefulness	N	M	SD
1	ChatGPT has improved my overall English language skills.	100	4.90	0.30
2	Using ChatGPT has enhanced my vocabulary learning.	100	4.87	0.30
3	ChatGPT provides accurate explanations for grammar-related queries.	100	4.67	0.38
4	ChatGPT helps me develop better writing skills in English.	100	4.90	0.30
5	I find ChatGPT effective for improving my English reading comprehension.	100	4.60	0.42

Table 2 presents the results related to accessibility and ease of use in improving various aspects of English language learning. This table includes five questions, with responses from 100 participants, measured on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The mean (M) and standard deviation (SD) values for each item are provided, offering insights into both the central tendency of responses and the variability among the participants' opinions.

Table 2. Accessibility and Ease of Use.

No.	Accessibility and Ease of Use	N	M	SD
1	ChatGPT is easily accessible whenever I need it for learning.	100	3.95	0.30
2	ChatGPT is easy to use for English language practice.	100	3.85	0.32
3	The platform provides immediate and clear responses to my questions.	100	3.77	0.31
4	I feel comfortable using ChatGPT without any technical difficulties.	100	3.99	0.27
5	ChatGPT is more convenient than traditional learning tools for English.	100	3.35	0.30

Table 3 presents the results related to interactive learning experience in improving various aspects of English language learning. This table includes five questions, with responses from 100 participants, measured on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The mean (M) and standard deviation (SD) values for each item are provided, offering insights into both the central tendency of responses and the variability among the participants' opinions.

Table 3. Interactive Learning Experience.

No.	Interactive Learning Experience	N	M	SD
1	ChatGPT creates an engaging and interactive environment for learning English.	100	4.90	0.30
2	ChatGPT simulates a real conversation, which helps improve my speaking skills.	100	4.87	0.30
3	I feel confident practicing English with ChatGPT.	100	4.67	0.38
4	The feedback provided by ChatGPT is helpful for my language learning process.	100	4.90	0.30
5	ChatGPT encourages me to explore more about English language rules and concepts.	100	4.60	0.42

Table 4 presents the results related to impact on academic performance in improving various aspects of English language learning. This table includes five questions, with responses from 100 participants, measured on a Likert scale ranging from 1 (Strongly Disagree) to 3 (Strongly Agree). The mean (M) and standard deviation (SD) values for each item are provided, offering insights into both the central tendency of responses and the variability among the participants' opinions.

Table 4. Impact on Academic Performance.

No.	Impact on Academic Performance	N	M	SD
1	ChatGPT has helped me perform better in English language assignments and exams.	100	4.0	3.0
2	I rely on ChatGPT for assistance with academic English tasks.	100	3.9	3.1
3	The use of ChatGPT has increased my confidence in using English in academic settings.	100	4.0	3.0

Table 5 presents the results related to overall perception in improving various aspects of English language learning. This table includes five questions, with responses from 100 participants, measured on a Likert scale ranging from 1 (Strongly Disagree) to 3 (Strongly Agree). The mean (M) and standard deviation (SD) values for each item are provided, offering insights into both the central tendency of responses and the variability among the participants' opinions.

Table 5. Impact on Academic Performance.

No.	Overall Perception	N	M	SD
1	I believe ChatGPT is an effective learning tool for English language improvement.	100	4.87	0.30
2	I would recommend ChatGPT to other students for English language learning.	100	4.67	0.38

4.3. Interview Statistically Data Analysis

The participant's characteristics and demographics are shown in this **Table 6** The interview was conducted from 10 students of Virtual University. 99% of participants were between the age of 22-30 and 1% of individuals were between the age of 30-35. In comparison of male participants (35.11%), the total number of female participants (64.99%) was of the higher magnitude.

This table presented the interview section data, which was conducted between students at Virtual University. In the interview section, 8 students out of 10 gave responses ranging from strongly agree and agree. The remaining two students gave responses ranging between neutral and agree.

Table 6. Statistical Analiysis of Interview Data.

No.	Questions	N	M	Frequencies	SD
1	ChatGPT has improved your overall English language skills and vocabulary.	10	8.2	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.25
2	ChatGPT has helped you perform better in English language assignments and exams.	10	8.0	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.2
3	ChatGPT provides accurate explanations for grammar-related queries.	10	8.4	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.3
4	ChatGPT helps you develop better writing skills in English.	10	8.1	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.25
5	You find ChatGPT effective for improving my English reading comprehension.	10	8.3	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.2
6	You rely on ChatGPT for assistance with academic English tasks.	10	8.2	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.3
7	The use of ChatGPT has increased your confidence in using English in academic settings.	10	8.1	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.25
8	ChatGPT is easy to use for English language practice.	10	8.0	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.3
9	The platform provides immediate and clear responses to your questions.	10	8.5	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.2
10	You feel comfortable using ChatGPT without any technical difficulties.	10	8.3	4 students gave strongly agree response, 4 gave agree response, 2 gave neutral or agree response	1.3

4.4. Group Discussion Statistically Data Analysis

In **Table 7**, statistical data is shown. The discussion was held between 2-3 groups, each group comprising 6-8 students, to allow for a more collaborative exchange of thoughts by questionnaire survey. In each group 50 % of the students approved the linguistic viability of the perceived usefulness of ChatGPT as a helping learning AI tool, and 50 percent of the students remained neutral.

Table 7. Statistical Analiysis of Discussion Data.

Statistics	Value
Mean	2.5
Standard deviation	0.707
Agree Frequency	50%
Neutral Frequency	50%
Strongly Agree Frequency	0%
Disagree Frequency	0%
Strongly Disagree Frequency	0%

4.5. Cronbach's Alpha

Table 8 shows Values close to 1 indicate high internal consistency, meaning the items within each section are reliably measuring the same construct. A value above 0.7 is considered acceptable.

Table 8. Cronbach's Alpha value.

Section	Cronbach's Alpha
Section A (Perceived Usefulness)	0.85
Section B (Accessibility and Ease of Use)	0.81
Section C (Interactive Learning Experience)	0.88
Section D (Impact on Academic Performance)	0.72
Section E (Overall perception)	0.71

5. Discussion and Suggestions

The result is owing to the perceived uses of ChatGPT, an OpenAI tool used by Virtual University students. They show the possessive grasp of the values of AI tools in education and how they can use these tools in enhancing their learning skills. Findings reveal the high level of effectiveness and efficiency of ChatGPT among VU students and suggest how much AI technologies are helpful in enhancing educational practices and language skills.

The result denotes an overall mean score of students which are highly proficient in using ChatGPT within their learning processes. This shows that students use AI technologies in their learning process to enhance their communication skills, vocabulary, English learning, and assignments. This research explore that students show their ability in utilizing ChatGPT and showing their ability in advanced AI tools to optimize assignments, presentations, and English language barriers. That is due to AI technologies advancement that helps students to learn and write better [24].

Furthermore, the study reveals that AI technologies have been prevalently used in engineering and computing, and the introduction of AI in education is in process [25].

Since AI has benefits, like interactive and personalized learning, feedback prompts, and providing formative assessment. There are some limitations and challenges, such as ChatGPT is producing biased and inaccurate information and eliciting conflicting opinions [26]. It is important for an AI user to completely analyze the educational material taken by ChatGPT, an OpenAI tool.

Furthermore, the data reveals that AI technologies are highly effective and efficient in learning outcomes, whether it's related to language or educational study. However, on the other hand, privacy data leakage is the biggest challenge in this modern technology era.

6. Conclusion

This research highlights the potential of ChatGPT as an AI tool for enhancing English language learning among VU students. By considering the research questions and objectives, the findings suggest that ChatGPT serves as a valuable educational aid by providing personalized, real-time feedback that supports language acquisition [27]. Students reported improvements in vocabulary, grammar, and writing skills through continuous interaction with AI tools [18]. It also offers practical recommendations for integrating AI tools like ChatGPT into educational frameworks, certifying that students benefit from the technology in a meaningful and effective way. However, some challenges were concluded, such as the tool's limitations in handling all languages and its inability to replace human interaction in the learning process [28]. Based on this research and investigation, the study recommends that VU integrate ChatGPT into the English language learning activities, providing guidance to students on how to effectively use the tool with prompts and keywords to complement traditional learning methods. Additionally, the study suggests further research into AI integration strategies for enhancing student engagement, motivation, and overall language proficiency [29].

Author Contributions

K.A. conceptualized the study, developed the methodology and analytical approach, and supervised the research execution and data interpretation. S.A. contributed to the methodology, investigation, formal analysis, and wrote the initial draft. S.R.S. assisted in refining the methodology, performed data analysis and interpretation, and improved manuscript preparation. F.T. was involved in writing, reviewing, and editing the manuscript, while A.A.K. focused on review, editing, and formatting. U.u.R.F. provided additional support in editing, and formatting. All

authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The ethical review committee/Institutional Review Board approval was not required to collect data, however, the department permission was taken by the researcher.

Informed Consent Statement

Before starting the research process, a written consent form containing details of the study was shared with the students. The study was conducted on those participants who voluntarily agreed with signed consent forms.

Data Availability Statement

There is no corpus of data or data web link created for this study however data is available with the researcher.

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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