Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Exploring the integration of artificial intelligence in enhancing

Sobia Nageen

sobianageen98@gmail.com

Superior University Lahore

Dr. Hisham Ul Hasan Khawaja

Superior University Lahore

Dr. Muhammad Sarwar

Superior University Lahore

Dr. Farhana Akmal

Superior University Lahore

Dr. Mehmood Ul Hassan

Shaikh Ayaz University, Shikarpur, Sindh,

Shazia Jabeen

Superior University Lahore

Article

Keywords:

Posted Date: March 20th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-8370577/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

The integration of Artificial Intelligence (AI) into education is expanding rapidly, particularly in the area of language learning. This study examined the effectiveness of Chat GPT assisted learning module in enhancing speaking skills (in terms of Range, accuracy, fluency, interaction and coherence) at secondary level. True-experimental design was employed, included fifty female students of 9th grade from a public school who were randomly assigned to experimental and control group. Speaking proficiency was evaluated with the support of ChatGPT, using the Common European Framework of Reference scale. Independent t- test was employed to compare the effectiveness of both methods. The findings show that the experimental group outperformed the control group in both monologue and dialogue tasks, with notable improvements in broad lexical range, grammatical accuracy, fluent speech, interactive engagement, and coherence. These results underscore the potential of AI-driven tools like ChatGPT to improve speaking skills and help bridge the gap between existing speaking proficiency levels and international language standards.

Introduction

Speaking is an essential skill in language learning. It is a collaborative process where individuals produce, receive, and understand information to construct meaning (Pitura, 2022). Those who are proficient in spoken English can enjoy numerus opportunities in across social ,academic and professional sectors (Akther, 2022; Manire et al., 2023).Despite its importance, Education First English Proficiency report (2024) declared that Pakistan ranked at 67 number with low proficiency out of 116 countries.

Nageen et al. (2025) also found that 88% of secondary school students performed at basic English-speaking levels (A1–A2) across range, accuracy, fluency, interaction, and coherence, while only 12% reached pre-intermediate level (B1) and none achieved advanced proficiency (B2 or above). This flaw restricts their confidence and affects their future academic growth and professional opportunities. In Pakistani public schools, Traditional teaching practices primarily emphasize on rote learning and written exercises, with little focus on spoken English activities(Haryati, 2019). This sharp gap from international standards calls for innovative, technology-driven solutions such as Artificial Intelligence integration.

The emergence of artificial Intelligence (AI) has introduced Chat GPT as a potential tool to improve speaking abilities by providing personalized learning, Interactive sessions and real time feedback. Many studies had been conducted for the last two years on Artificial intelligence in improving English language. Sayed et al. (2024)stated in his study that Chat GPT can enhance EFL learners' psychological wellbeing, speaking skills, autonomy and academic resilience.it has the potential to transform traditional methods. Yildiz (2024) examined the impact of Chat GPT on EFL learners' self-efficacy in speaking, and indicated that Chat GPT has improved their grammar, fluency, pronunciation and stress level during talk. Slamet (2024) explores Chat GPT's capacity as digital language learning tutor, underscoring its impact in boosting EFL learners' motivation, opportunity to authentic materials and self-directing learning. The

primary focus of above studies was to improve psychological wellbeing, motivation, confidence building removing stress with EFL learners. The integration of Chat GPT for enhancing qualitative aspects of spoken language (range, accuracy, fluency, interaction and coherence) as outlined by CEFR remained unexplored.

To address these challenges, innovative educational approaches are needed. Integrating Artificial Intelligence, particularly Chat GPT, offers a modern solution to enhance English speaking skills. Chat GPT provides personalized, interactive practice with immediate feedback, engaging conversations, and customized learning experiences. This study aims to evaluate the effectiveness of ChatGPT in enhancing secondary school students' English-speaking proficiency. This study employs the CEFR framework as an assessment model, focusing on range, accuracy, fluency, interaction, and coherence to evaluate students' English-speaking skills. ChatGPT serves as both an assessment and learning tool, offering real-time feedback, interactive practice, and personalized learning. The ADDIE model provides a structured framework for designing, implementing, and evaluating the ChatGPT-assisted learning module developed in this study. By incorporating these frameworks, this study not only enhances students' speaking proficiency but also contributes to bridging gaps in existing research on AI-driven language learning.

This study is important because it addresses the persistent gap in English-speaking proficiency among secondary school students by leveraging AI-driven learning and assessment. Traditional teaching methods in public schools emphasize rote learning and written exercises, leaving students with limited opportunities for spoken interaction. By integrating ChatGPT as both a learning and assessment tool, this study provides a structured and interactive approach to language practice, fostering real-time feedback, autonomy, and engagement. Its findings will contribute to improving instructional strategies, aligning language education with global proficiency standards, and equipping students with essential communication skills for academic and professional success.

Objective

To examine the effectiveness of the ChatGPT-assisted learning module in enhancing English-speaking skills.

Hypothesis

Ho1: There is no significant effect of the ChatGPT-assisted learning module in enhancing students’ English-speaking skills.

Theoretical Framework

This study is based on Vygotsky’s Sociocultural Theory, which explains that students learn better through interaction and support. According to this theory, learners can improve when they receive guidance from

a more knowledgeable source. In this study, ChatGPT acts as a supportive learning partner, providing feedback and practice that help students strengthen their English-speaking skills.

The study also follows the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). This model guided the planning and creation of the 12-week ChatGPT-assisted learning module and helped evaluate its effectiveness. It ensured that the learning activities were organized, purposeful, and suited to students' needs.

Literature Review

Speaking is the act of constructing and conveying meaning through verbal and non-verbal symbols (Houn & Em, 2022). As a productive skill, it involves transforming thoughts into meaningful communication, whether in the form of monologues or dialogues (Karpovich et al., 2021). Despite English being the official language, only a small percentage of people can speak it fluently, and most secondary-level students struggle to communicate effectively even after studying it for 7 to 10 years (Abbas et al., 2018). Traditional teaching methods in Pakistan, like rote memorization and the grammar-translation method, hinder the development of English-speaking skills by prioritizing written over oral proficiency (Haryati, 2019). To bridge the gap in speaking proficiency, a shift toward more interactive and communicative teaching methods is essential.

One potential solution lies in the integration of technology, which has revolutionized many aspects of education. Integrating technology into language instruction enhances learners' motivation and engagement, providing opportunities for interactive learning with instant feedback (De Souza et al., 2021).Advanced technologies like chatbots further expand opportunities for English language learners(Kohnke et al., 2023).

Building on this technological advancement, Artificial Intelligence (AI) has emerged as a transformative tool in education. Artificial Intelligence (AI) refers to the simulation of human intelligence in machines designed to think and learn like humans. As AI has been playing a significant role in many sectors, the education sector has also received its attention in recent years.(Ahmad et al., 2021). The emergence of Artificial Intelligence (AI) in language learning represents a transformative shift in educational methodologies. Traditional language acquisition has been limited by one-size-fits-all approaches, restricted access to native speakers, and a lack of personalized learning strategies. In contrast, AI offers a fit-for-all solution by providing tailored, efficient, and engaging learning experiences. Its ability to process and analyze vast amounts of data makes it a powerful tool in reshaping language education. (Chen, 2024)The key examples of AI language learning include personalized language materials and resources, AI chat bots, and AI language learning software (Shafiee Rad, 2024).AI has transformed language learning by enhancing skills such as pronunciation, vocabulary acquisition, writing, and reading comprehension. For example, ELSA Speak improves pronunciation accuracy through real-time feedback on intonation and fluency (Anggraini, 2022; Sholekhah & Fakhrurriana, 2023).Li et al. (2020) investigated the effect of an AI-driven speech recognition system on improving pronunciation. People who received

feedback from the AI system outperformed those who did not receive such feedback during their practice. Peng et al. (2023) narrated that in vocabulary learning, Storyfier integrates target words into narratives, proving more effective for retention than traditional methods.Phan et al. (2024) sated that digital storytelling also boosts students' interest and language proficiency. Duolingo's adaptive learning supports reading and listening practice, showing positive outcomes for beginner and intermediate learners (Jiang et al., 2024; Loewen et al., 2020). These studies highlight AI's role in fostering engaging, effective language learning experiences across various proficiency areas.

Among the many AI tools available, Chat GPT, developed by Open AI, is an advanced AI language model that can engage in natural language conversations. It can understand and generate human-like responses, making it a valuable tool for language learning. (Khalil & Er, 2023). Chat GPT's capabilities include answering questions, providing explanations, and participating in interactive dialogues. Chat GPT, an advanced language model, offers numerous advantages for language learning that go beyond traditional teaching methods (Baskara, 2023; Kohnke et al., 2023). Several studies have explored the impact of ChatGPT on language learning.

Prasetya and Syarif (2023) found that Chat GPT significantly enhances language accuracy, grammar understanding, and vocabulary proficiency in Indonesian higher education. Their study highlighted the tool's ability to provide tailored feedback, improving self-awareness and goal-setting in students.

Songsiengchai et al. (2023) reported that Chat GPT boosted Thai students' language skills, with a paired t-test confirming statistically significant improvements ($p < 0.05$). Students found the AI-based learning engaging and personalized, which increased motivation and self-confidence.

Afkarin and Asmara (2024) observed that Chat GPT positively influenced student motivation and GPA, though they emphasized the need for further research on its long-term impact and integration in education. Explored the role of Chat GPT in English acquisition among ESL learners. The study concluded that while Chat GPT offers significant benefits like customized feedback and mock assignments, it also has drawbacks and risks if misused. Proper application of AI in language instruction can enhance learning efficiency and effectiveness, but it should be used responsibly to avoid undermining personal interactions and educational integrity.

Hayashi and Sato (2024) studied the effectiveness of Chat GPT in enhancing English proficiency and reducing second language anxiety. The research found that using Chat GPT as an L2 interlocutor improved listening and speaking abilities, reduced L2 speaking anxiety, and fostered proactive learning attitudes, though it noted the need for more challenging assessments and a more robust research design. Yildiz (2024) found that integrating ChatGPT into EFL education significantly enhances students' speaking self-efficacy

The existing literature highlights a gap in examining ChatGPT's impact on speaking skills, particularly in terms of range, accuracy, fluency, interaction, and coherence at the secondary school level in Pakistan. This study is unique in applying the Common European Framework of Reference (CEFR), which includes

six proficiency levels and five key indicators. Additionally, it integrates ChatGPT as both a learning tool and an assessor of speaking performance. By addressing this gap, the study aims to contribute to existing knowledge and bridge the gap between students' current proficiency and international language standards.

Methodology

Research Design

A true experimental pre-test, post-test control group design was adopted to measure the effectiveness of ChatGPT in enhancing English-speaking skills. This design was chosen because it ensures reliability and validity through random assignment, minimizing bias and allowing causal inferences.

Participants, sampling and sample size

The same sample was intentionally retained from Study I (Nageen et al., 2025) to ensure continuity between the needs-assessment and experimental-validation phases.

The selected sample comprised ninth-grade female students enrolled in the Science, Arts, and Computer Science streams at a public school in Sahiwal. These diverse streams were purposefully selected, as proficiency in English is critical across all disciplines for higher education, warranting the inclusion of learners from varied academic backgrounds. This school was selected due to its well-equipped IT lab, which provided a crucial resource for conducting AI-driven assessment and learning activities. The secondary level was **selected** as it represents a foundational stage in the education system, establishing the basis for higher education. Neglecting English proficiency gaps at this stage may impede students' success in higher education and restrict future career prospects.

To address the heterogeneity of the population, a stratified systematic sampling technique was employed. The total population comprised 310 students, categorized into three academic strata: Science (150 students), Arts (70 students), and Computer Science (90 students). Students were systematically selected from an ordered list of roll numbers, with every sixth student chosen from the Science and Computer Science groups and every seventh from the Arts group. This k-th interval selection ensured randomness and equal selection probability across all academic strata. Although English proficiency typically varies across academic streams in Pakistan, the systematic sampling ensured a fair comparison to examine these differences. The sample distribution was 48% Science, 22% Arts, and 30% Computer Science.

The study included fifty participants, representing 16% of the population, in accordance with established educational research guidelines. Gay, Lorraine, and Mills (2012), indicate that selecting 10–20% of the population is typically adequate to maintain reliability and generalizability in educational research.

Demographic analysis indicated that nearly all students had 8–9 years of English language learning within the public education system. The majority came from lower-middle to middle-class families,

reflecting a relatively homogeneous socio-economic background. All participants were urban residents, with Punjabi and Urdu as their mother tongues. The majority (96%) were 14 years old, while 4% were 15. None of the students received additional support at home to enhance their English-speaking skills.

Although drawn from different academic streams, the participants possessed a consistent educational background: all were in Grade 9, enrolled in the same school, taught by the same English faculty, followed the same curriculum, and were assessed through an identical examination system. This uniformity ensured consistent teaching and learning conditions, facilitating a fair comparison of speaking proficiency across the groups.

Instruments

Three primary instruments were utilized in this study. Details of these instruments are provided below:

CEFR Scale

The researcher employed the Common European Framework of Reference for Languages (CEFR) to evaluate students' English-speaking proficiency. The CEFR is an internationally recognized framework that delineates six levels of language proficiency, from A1 (beginner) to C2 (proficient), organized into three broad user categories: Basic users (A1–A2), Independent users (B1–B2), and Proficient users (C1–C2). Each level is defined by specific descriptors that evaluate core aspects of language use, including range, accuracy, fluency, interaction, and coherence.

This study employed a structured marking scheme based on the CEFR classification of proficiency levels: A1, A2, B1, B2, C1, and C2. As the qualitative descriptors of CEFR alone were insufficient for detailed analysis, a numeric scoring system was adopted. Each speaking component—range, accuracy, fluency, interaction, and coherence—was assessed using CEFR descriptors and assigned corresponding numeric values: A1 = 1, A2 = 2, B1 = 3, B2 = 4, C1 = 5, and C2 = 6. Each construct was assigned a maximum of six marks, resulting in a total of thirty marks for both the monologue and dialogue tasks. The overall spoken proficiency test had a maximum score of sixty. Students were classified according to CEFR levels: A1 (beginner), A2 (elementary), B1 (pre-intermediate), B2 (upper-intermediate), C1 (advanced), and C2 (proficient). Based on their percentage scores, they were further grouped into three broad categories: A1–A2 as basic users, B1–B2 as independent users, and C1–C2 as proficient users. This structured marking scheme ensured an objective and consistent evaluation of English-speaking proficiency.

Spoken English proficiency Test (SEPT)

The Spoken English Proficiency Test (SEPT) was developed by the researcher following Churchill's paradigm for instrument development, ensuring a systematic and rigorous process.

A one-week pilot study involving five students was conducted to ensure feasibility and establish validity. Based on expert feedback, the test format was revised to align with the IELTS structure and CEFR standards. The revision extended the duration from 4–5 minutes to 10–13 minutes and added a monologue section as effective speaking requires both independent speech and interactive communication. The revised test was then reviewed by two Associate Professors from the English department who confirmed its validity, linguistic appropriateness, and CEFR alignment. The test structure and scoring were refined accordingly. The Spoken English Proficiency Test (SEPT) demonstrated excellent internal consistency (Cronbach's α = .964). The final version of the Spoken English Proficiency Test (SEPT) consisted of three parts and had a total duration of approximately 10–13 minutes. Part one was a two- to three-minute warm-up session designed to help students feel comfortable during the conversation. Part two involved a four- to five-minute monologue task, in which students spoke on the topic "Your Favorite Hobby" in the pre-test and "Your Dream Job or Career Ambition" in the post-test. Part three consisted of a five- to six-minute dialogue task; the pre-test topic was "A Recently Watched Film or Drama," while the post-test topic focused on "Plans for the Weekend."

Chat GPT-Assisted Learning Module:

A structured 12-week learning module was developed to integrate ChatGPT into students' speaking practice, focusing on range, accuracy, fluency, interaction, and coherence. Aligned with the 9th-grade English syllabus, the module addressed proficiency gaps identified in the needs assessment while ensuring academic relevance. Each weekly session followed a consistent structure to maximize student engagement and learning. The structure of each session included:

- Presentation on topics from the 9th-grade Punjab textbook board (10 minutes)
- Interactive practice with ChatGPT (35 minutes)
- Role plays, group discussions, and pair-work activities (35 minutes)

The module was reviewed by language experts, who confirmed its alignment with the CEFR descriptors and validated its pedagogical effectiveness.

Procedure of the study

Pre-Test Administration

Prior to pre-test, Ethical approval for the study was obtained from the Office of Research, Innovation, and Commercialization (ORIC), Superior University, Lahore, and the research was conducted in accordance with internationally recognized ethical standards, including the Declaration of Helsinki. Participation was voluntary, and written informed consent was secured from both the school administration and the parents or legal guardians of all participating students. All responses were treated with strict confidentiality, and data were securely stored and used solely for research purposes.

The pre-test was administered in a controlled environment with stable internet access. Students’ spoken proficiency was assessed through monologue and dialogue tasks, which were evaluated using ChatGPT to establish baseline performance. Employing CEFR rubrics and a structured scoring scheme, ChatGPT evaluated students’ range, accuracy, fluency, and coherence, producing real-time transcripts and delivering immediate feedback and scores. However, interaction was evaluated manually by the researcher, as ChatGPT cannot perceive non-verbal cues. All transcripts, scores, and feedback were securely recorded for subsequent analysis.

Group Assignment

After the pre-test, participants were randomly divided into two groups. The experimental group consisted of students who received ChatGPT-assisted instruction, while the control group followed traditional speaking exercises without AI-based assistance.

Intervention

The intervention spanned 12 weeks, during which the experimental group participated in ChatGPT-assisted training. This training focused on AI-generated feedback, structured speaking tasks, and interactive discussions. The control group, in contrast, followed a conventional approach to speaking practice without AI integration.

Post-Test Administration

After the intervention, the post-test was conducted to measure students' progress in speaking proficiency. The post-test was administered in a controlled environment with stable internet access to ensure consistency with the pre-test conditions. Speaking test activities (monologue and dialogue) were evaluated via ChatGPT, which analyzed range, accuracy, fluency, and coherence using CEFR rubrics and a structured marking scheme. ChatGPT generated real-time transcripts, provided immediate feedback, and assigned scores. However, interaction was manually assessed by the researcher, as ChatGPT can’t interpret non-verbal cues. The recorded transcripts, scores, and feedback were systematically stored for comparative analysis with pre-test results, ensuring the reliability and validity of the assessment.

Data Analysis

The collected data were systematically analyzed to evaluate students' English-speaking proficiency using a structured approach aligned with the CEFR framework. First, all monologue and dialogue transcripts were arranged sequentially from Student 1 to 50. Next, a manual result list was prepared, documenting monologue, dialogue, and overall speaking test scores along with key subcomponents to facilitate smooth data entry into SPSS. The third step involved coding and entering the data into SPSS for statistical analysis. Inferential statistical tests, such as independent sample t-tests were employed to compare the performance of the experimental and control groups. Pre-test and post-test results were analyzed to determine the effectiveness of ChatGPT-assisted learning in enhancing students' speaking skills. The findings were interpreted in relation to the CEFR criteria, ensuring an objective assessment of progress in range, accuracy, fluency, interaction, and coherence.

Results and Discussion

The present study aimed to examine the effectiveness of the ChatGPT-Assisted Learning Module in enhancing English-speaking skills among secondary school students in Punjab, Pakistan. Following the pre-test and post-test design, students' proficiency was assessed using the CEFR framework, providing a structured measure of language development. The study explored both overall speaking performance and specific components, including range, accuracy, fluency, interaction, and coherence, to determine the impact of AI-assisted learning compared to traditional classroom methods. Descriptive statistics highlight students' progression across CEFR levels, while inferential analyses demonstrate the statistical significance of observed improvements, offering a comprehensive view of the module's effectiveness.

Table 1

Comparison of Overall English-Speaking Proficiency Levels in Pre-Test and Post-Test for Experimental and Control Groups

variable	Group	Proficiency Levels		Pre-test	Post-test		
			f	f %	M	f	f %	M
Overall	Experimental	A1: beginning	6	24%	16.12	0	0%	36.56
Speaking	Group	A2: elementary	17	68%		0	0%	
		B1: Pre-intermediate	2	8%		3	12%	
		B2: upper-intermediate	0	0%		21	84%	
		C1: advanced	0	0%		1	4%	
		C2: proficient	0	0%		0	0	
	Control	A1: beginning	6	24%	16.56	4	16%	17.60
	Group	A2: elementary	15	60%		15	60%	
		B1: Pre-intermediate	4	16%		6	24%	
		B2: upper-intermediate	0	0%		0	0%	
		C1: advanced	0	0%		0	0%	
		C2: proficient	0	0%		0	0%	

Table 2

Comparison of Overall Speaking Skills Scores Between Experimental and Control Groups in the Post-test

Variable	**Groups**	***N***	***M***	***SD***	***Df***	***t***	***P***
Overall English-Speaking	Experimental	25	36.56	4.61	48	13.0	.000
	control	25	17.60	5.64			
$p < 0.001$ (highly significant)							

Table 3

Comparison of Monologue and its Key Components Scores between Experimental and Control Groups in the Post-Test

Variable	**Groups**	***N***	***M***	***SD***	***df***	***T***	***P***
Overall Monologue	Experimental group	25	18.00	2.43	48	11.61	.000
	control group	25	8.56	3.25			
Range	Experimental group	25	3.60	.500	48	9.79	.000
	control group	25	1.84	.746			
Accuracy	Experimental group	25	3.60	.500	48	11.26	.000
	control group	25	1.68	.690			
Fluency	Experimental group	25	3.60	.500	48	11.26	.000
	control group	25	1.68	.690			
Interaction	Experimental group	25	3.60	.500	48	11.39	.000
	control group	25	1.64	.700			
Coherence	Experimental group	25	3.60	.500	48	12.09	.000
	Control group	25	1.64	.637			
$p < 0.001$ (highly significant)							

Table 4

Comparison of Dialogue and its Key Components Mean Scores in the Post-Test between Experimental and Control Groups

Variable	Groups	*N*	*M*	*SD*	*df*	*t*	*P*
Overall Dialogue	Experimental group	25	18.60	2.466	48	12.325	.000
	control group	25	9.04	2.992			
Range	Experimental group	25	3.68	.556	48	11.027	.000
	control group	25	1.80	.645			
Accuracy	Experimental group	25	3.68	.556	48	11.720	.000
	control group	25	1.80	.577			
Fluency	Experimental group	25	3.68	.556	48	11.720	.000
	control group	25	1.80	.577			
Interaction	Experimental group	25	3.88	.525	48	12.492	.000
	control group	25	1.84	.624			
Coherence	Experimental group	25	3.68	.556	48	11.027	.000
	Control group	25	1.80	.645			
$p < 0.001$ (highly significant)							

As shown in Table 1, the descriptive analysis of English-speaking proficiency levels revealed clear differences between the experimental and control groups. Students in the experimental group progressed from mainly basic user levels (A1–A2) in the pre-test to predominantly independent user levels (B1–B2) in the post-test, with a few reaching the advanced level (C1). In contrast, most students in the control group remained at basic user levels, showing only minimal improvement. These results indicate that the ChatGPT-assisted learning module provided learners with enhanced opportunities for meaningful language practice, supporting faster development of oral proficiency compared to traditional teaching methods. This aligns with previous research highlighting the effectiveness of AI tools in improving EFL learners' speaking skills (Rahman, 2020; Xiao & Zhi, 2023).

The inferential analysis further confirms the effectiveness of ChatGPT-assisted learning. As shown in Table 2, the experimental group outperformed the control group in overall English-speaking scores, demonstrating a statistically significant improvement in post-test performance. This indicates that AI-mediated instruction can substantially enhance overall speaking ability compared to conventional methods (Bekou et al., 2024) .

Looking at specific components of speaking, monologue (Table 3) and dialogue (Table 4) tasks reveal consistent improvements across all areas: range, accuracy, fluency, interaction, and coherence. The

experimental group demonstrated richer vocabulary and grammatical variety, higher accuracy in language use, smoother fluency with fewer pauses, more effective interaction, and better coherence in organizing ideas compared to the control group. These findings suggest that ChatGPT not only supports linguistic knowledge but also promotes communicative competence in authentic speaking contexts. Previous studies have similarly highlighted that AI tools, such as ChatGPT, enhance lexical range, grammatical accuracy, and overall oral proficiency by providing real-time feedback, interactive practice, and personalized guidance (Karataş et al., 2024; Nazeer et al., 2024; Ngo, 2024; Song & Song, 2023).

Conclusion

This study examined the effectiveness of the ChatGPT-Assisted Learning Module in enhancing secondary school students' English-speaking skills. Findings revealed that students in the experimental group moved from basic to independent proficiency levels and showed clear improvements in range, accuracy, fluency, interaction, and coherence in both monologue and dialogue tasks. These results suggest that ChatGPT provides interactive and personalized practice, supporting more effective development of English-speaking skills than traditional instructional methods.

Implications

The findings have important implications for educators, curriculum developers, and policymakers, suggesting the need for AI-driven interventions in language teaching and a shift towards more interactive and technology-supported educational practices.

Limitations

The limitations of this study should be considered when interpreting the findings. It was conducted with a limited sample of 50 female secondary school students from a single public school in an urban area, which may restrict the generalizability of the results. The study focused specifically on English-speaking skills, and the intervention lasted three months, which limits the ability to assess long-term effects. Future research could involve a larger and more diverse sample, extend the duration of the intervention, explore broader English language skills, and adopt a mixed-methods approach to capture both quantitative and qualitative insights.

Abbreviations

AI	Artificial Intelligence
SEPT	Spoken English Proficiency Test
CEFR	Common European Framework of Reference

Declarations

Ethical Considerations

Informed consent was obtained from all participants and the school administration. The study was conducted in accordance with the Declaration of Helsinki and approved by the Office of Research, Innovation, and Commercialization (ORIC), Superior University, Lahore.

Availability of Data and Materials

The datasets generated and analyzed during the current study are not publicly available due to institutional restrictions but are available from the corresponding author upon reasonable request.

Competing Interests

The author declares no competing interests.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' Contributions

SN conceptualized and designed the study, collected and analyzed the data, interpreted the results, and wrote the manuscript.
MS supervised the research and provided guidance throughout the study.
HHK reviewed each section of the manuscript and provided critical insights, particularly in designing the test activities.
F assisted in developing the ChatGPT-assisted learning module.
MH supported the data analysis process.
S assisted with the literature review.
All authors read and approved the final manuscript.

Authors' Information

SN is a PhD scholar in Education at Superior University, Lahore. Her current research focuses on exploring the integration of Artificial Intelligence, specifically ChatGPT, to enhance English speaking skills among secondary school students in Punjab, Pakistan.

Availability of Data and Materials

The dataset supporting the conclusions of this article is included within the article itself. All student proficiency scores, CEFR-based ratings, and related tables are presented in the results section. Further data can be made available upon reasonable request from the corresponding author.

References

1. Abbas, N., Ashiq, U., & Abrar ul haq, M. (2018). Gap between acquired and required English learning objectives for the primary school students: Empirical evidence from Sargodha (Pakistan). *Cogent Social Sciences*, *4*(1), 1457421.
2. Afkarin, M. Y., & Asmara, C. H. (2024). Investigating the Implementation of ChatGPT in English Language Education. *Journey: Journal of English Language and Pedagogy*, *7*(1), 57-66.
3. Ahmad, S. F., Rahmat, M. K., Mubarik, M. S., Alam, M. M., & Hyder, S. I. (2021). Artificial intelligence and its role in education. *Sustainability*, *13*(22), 12902.
4. Akther, F. (2022). English for personal and career development and its importance for better employment opportunities. *Journal of Languages, Linguistics and Literary Studies*, *2*(3), 95-100.
5. Anggraini, A. (2022). Improving students' pronunciation skill using ELSA Speak application. *Journey*, *5*(1), 135-141.
6. Baskara, R. (2023). Exploring the implications of ChatGPT for language learning in higher education. *Indonesian Journal of English Language Teaching and Applied Linguistics*, *7*(2), 343-358.
7. Bekou, A., Mhamed, M. B., & Assissou, K. (2024). Exploring opportunities and challenges of using ChatGPT in English language teaching (ELT) in Morocco. *Focus on ELT Journal*, *6*(1), 87-106.
8. Chen, Y. (2024). Enhancing Language Acquisition: The Role of AI in Facilitating Effective Language Learning. In (pp. 593-600). https://doi.org/10.2991/978-2-38476-253-8_71
9. De Souza, R., Parveen, R., Chupradit, S., Velasco, L. G., Arcinas, M., Tabuena, A. C., Pentang, J., & Ventayen, R. J. M. (2021). Language teachers' pedagogical orientations in integrating technology in the online classroom: Its effect on students motivation and engagement. *Turkish Journal of Computer and Mathematics Education*, *12*.
10. First, E. (2024). EF English Proficiency Index
11. A Ranking of 116 Countries and Regions by English Skills United States. Retrieved from www.ef.edu/epi
12. Gay, L. R., Mills, G. E., & Airasian, P. W. (2012). *Educational research: Competencies for analysis and applications*. Pearson.
13. Haryati, S. (2019). *An analysis of student's problem in learning English at smkn 1 simpang empat* University of Muhammadiyah Malang].
14. Hayashi, K., & Sato, T. (2024). The Effectiveness of ChatGPT in Enhancing English Language Proficiency and Reducing Second Language Anxiety (L2).
15. Houn, T., & Em, S. (2022). COMMON FACTORS AFFECTING GRADE-12 STUDENTS'SPEAKING FLUENCY: A SURVEY OF CAMBODIAN HIGH SCHOOL STUDENTS. *Jurnal As-Salam*, *6*(1), 11-24.
16. Jiang, X., Peters, R., Plonsky, L., & Pajak, B. (2024). The Effectiveness of Duolingo English Courses in Developing Reading and Listening Proficiency.
17. Karataş, F., Abedi, F. Y., Ozek Gunyel, F., Karadeniz, D., & Kuzgun, Y. (2024). Incorporating AI in foreign language education: An investigation into ChatGPT's effect on foreign language learners. *Education*

and Information Technologies, 1-24.

18. Karpovich, I., Sheredekina, O., Krepkaia, T., & Voronova, L. (2021). The use of monologue speaking tasks to improve first-year students' English-speaking skills. *Education Sciences*, *11*(6), 298.
19. Khalil, M., & Er, E. (2023). Will ChatGPT G et You Caught? Rethinking of Plagiarism Detection. International Conference on Human-Computer Interaction,
20. Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. *RELC journal*, *54*(2), 537-550.
21. Li, J., Xie, H., Li, D., & Lu, X. (2020). Effects of an AI-based speech recognition system on improving EFL learners' pronunciation. *Computers & Education*, *156*, 103952.
22. Loewen, S., Isbell, D. R., & Sporn, Z. (2020). The effectiveness of app-based language instruction for developing receptive linguistic knowledge and oral communicative ability. *Foreign Language Annals*, *53*(2), 209-233.
23. Manire, E., Kilag, O. K., Cordova Jr, N., Tan, S. J., Poligrates, J., & Omaña, E. (2023). Artificial Intelligence and English Language Learning: A Systematic Review. *Excellencia: International Multi-disciplinary Journal of Education (2994-9521)*, *1*(5), 485-497.
24. Nageen, S., Sarwar, M., Alam, M., Jabeen, M., & Tayyab, J. (2025). Assessing English-speaking proficiency among secondary school students in Pakistan: a quantitative cross-sectional study. *Language Testing in Asia*, *15*(1), 49. https://doi.org/10.1186/s40468-025-00384-7
25. Nazeer, I., Yasmin, S., & Khan, N. M. (2024). English language acquisition through chatgpt: a study on personalized conversational practice and feedback. *Journal of Applied Linguistics and TESOL (JALT)*, *7*(4), 1076-1091.
26. Ngo, T. (2024). The use of ChatGPT for vocabulary acquisition: A literature review. *Available at SSRN 5059052*.
27. Peng, Z., Wang, X., Han, Q., Zhu, J., Ma, X., & Qu, H. (2023). Storyfier: Exploring vocabulary learning support with text generation models. Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology,
28. Phan, T. A. N., Le, H. H., & Phan, G. A. V. (2024). From Words to Wonders: EFL Students' Perceptions of Digital Storytelling for Language Learning. *International Journal of Language Instruction*, *3*(4), 59-92.
29. Pitura, J. (2022). Developing L2 speaking skills in English-medium EFL higher education. *Innovation in Language Learning and Teaching*, *16*(2), 118-143.
30. Prasetya, R. E., & Syarif, A. (2023). ChatGPT as a Tool for Language Development: Investigating Its Impact on Proficiency and Self-Evaluation Accuracy in Indonesian Higher Education. *Voices of English Language Education Society*, *7*(3), 402-415.
31. Rahman, T. (2020). Pakistani english. *The handbook of Asian englishes*, 279-296.
32. Sayed, B. T., Bani Younes, Z. B., Alkhayyat, A., Adhamova, I., & Teferi, H. (2024). To be with artificial intelligence in oral test or not to be: a probe into the traces of success in speaking skill,

psychological well-being, autonomy, and academic buoyancy. *Language Testing in Asia*, *14*(1), 49.

33. Shafiee Rad, H. (2024). Revolutionizing L2 speaking proficiency, willingness to communicate, and perceptions through artificial intelligence: a case of Speeko application. *Innovation in Language Learning and Teaching*, 1-16.
34. Sholekhah, M. F., & Fakhrurriana, R. (2023). The Use of ELSA Speak as a Mobile-Assisted Language Learning (MALL) towards EFL Students Pronunciation. *JELITA: Journal of Education, Language Innovation, and Applied Linguistics*, *2*(2), 93-100.
35. Slamet, J. (2024). Potential of ChatGPT as a digital language learning assistant: EFL teachers' and students' perceptions. *Discover Artificial Intelligence*, *4*(1), 46.
36. Song, C., & Song, Y. (2023). Enhancing academic writing skills and motivation: assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students. *Frontiers in Psychology*, *14*, 1260843.
37. Songsiengchai, S., Sereerat, B.-o., & Watananimitgul, W. (2023). Leveraging Artificial Intelligence (AI): Chat GPT for Effective English Language Learning among Thai Students. *English Language Teaching*, *16*(11), 1-68.
38. Xiao, Y., & Zhi, Y. (2023). An exploratory study of EFL learners' use of ChatGPT for language learning tasks: Experience and perceptions. Languages, 8 (3), 212. In.
39. Yildiz, C. (2024). ChatGPT Integration in EFL Education: A Path to Enhanced Speaking Self-Efficacy. *Novitas-ROYAL (Research on Youth and Language)*, *18*(2), 167-182.