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Investigating the Effect of ChatGPT on L2 Learners' Perceptions, Writing Performance, and Speaking Competence

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A B S T R A C T

This mixed-methods within-subject study investigated how ChatGPT influences the writing and speaking skills of 30 Iranian upper-intermediate EFL learners and their perceptions of AI-assisted learning. Participants completed IELTS-style writing and speaking tasks before and after interaction with ChatGPT. Writing performance was assessed in terms of fluency, accuracy, and lexical variety, while speaking was evaluated in terms of fluency, accuracy, and confidence. Semi-structured interviews were conducted with ten learners to explore their perceptions. Quantitative analyses using paired-sample t-tests and Wilcoxon tests showed significant improvements in writing fluency, grammatical accuracy, lexical diversity, and speaking fluency and confidence ($p < .001$). Thematic analysis revealed that learners perceived ChatGPT as a motivating and supportive tool that reduced anxiety and enhanced idea generation, though concerns about overreliance and reduced critical thinking were noted. Findings suggest that ChatGPT can serve as an effective supplementary tool for developing productive skills when integrated with teacher guidance and digital literacy training. Implications for language educators and recommendations for responsible AI integration in EFL settings are discussed.

1. Introduction

The ways in which language learners access, interact with, and develop their second language skills have changed with the integration of artificial intelligence into teaching and learning contexts. Among these AI tools, ChatGPT has gained considerable attention due to its ability to provide immediate feedback, learner support, and assistance with language-related task processing. While traditional

classrooms often suffer from limited interaction, delayed feedback, and a lack of personalized instruction, AI tools offer effective solutions to address these challenges (Grassini, 2023; Kohnke et al., 2023). In particular, ChatGPT enables students to overcome the temporal and spatial limitations of traditional classrooms.

Language acquisition involves the development of both receptive and productive skills, with speaking and writing regarded as the most essential for communication (Chen, 2022). However, learners in contexts such as Iran have limited access to authentic language exposure, which may hinder their fluency, accuracy, and confidence in using the language productively (Mohammad Hosseinpur & Parsaeian, 2023). The lack of genuine communicative experiences often results in anxiety, lower motivation, and an excessive focus on grammatical accuracy rather than communicative effectiveness. In response, educators and researchers have increasingly explored technological interventions to mimic real-world language use and support learners' performance. Chatbots, including ChatGPT, provide interactive and responsive communication in the target language, promoting learner autonomy and engagement (Pack & Maloney, 2023).

Although interest in AI-powered educational tools is growing, empirical studies on ChatGPT's pedagogical applications in L2 learning contexts remain limited. The majority of current research has focused on writing, particularly how ChatGPT can assist with academic writing, provide corrective feedback, and aid in revisions (Barrot, 2023; Marzuki et al., 2023). These studies have demonstrated that learners can benefit from ChatGPT's feedback and its potential influence on speaking development. However, some aspects of speaking skills require further examination, such as fluency, confidence, and spontaneous oral expression (Lo et al., 2024). Furthermore, few studies have adopted a holistic approach to integrate both quantitative and qualitative data on learner feedback regarding ChatGPT's effectiveness in different skills.

The status of language learning in Iran provides an unparalleled opportunity to examine the effect**s** of AI on language education. Some research has shown that while Iranian students are mostly motivated, they face different structural problems, including large class size, exam pressure, and a lack of natural and authentic language exposure (Dehghani & Mashhadi, 2024). In such a context, ChatGPT can act both as a language tool and as an affective or motivational support system. Previous research has highlighted improvement in written accuracy and learner autonomy or independence, though there exist concerns regarding ethical issues persist (Jafari et al., 2025; Sedghi & Fazilatfar, 2025). To date, few studies have examined Iranian learners' perceptions of ChatGPT in relation to productive skills, which may vary across individuals.

Despite growing interest in the use of ChatGPT for language learning, limited research has examined its simultaneous impact on both writing and speaking skills, especially within the Iranian EFL context. Most previous studies have focused either on writing accuracy or general learner attitudes toward AI tools, often neglecting the connection between productive skills and learner perceptions. Furthermore, empirical evidence that combines quantitative performance measures with qualitative reflections remains scarce. Therefore, the present study aims to bridge this gap by investigating how interaction with ChatGPT influences Iranian EFL learners' writing and speaking fluency, accuracy, and confidence, as well as their perceptions of AI-assisted learning.

The current study views ChatGPT as both a tool and an interactive learning device that improves self-regulation, promotes strategic language use, and aids collaborative meaning-making.

By integrating AI into relevant tasks, such as written and spoken tasks modeled on IELTS, learners can develop critical thinking about language structure and functions, and also become more independent in their learning processes. Additionally, the study employs the Technology Acceptance Model (TAM) to assess learners' opinions and experiences, focusing on key factors such as perceived usefulness, user-friendliness, and the intention to use AI in the future (Rahimi & Mosalli, 2025; Dehghani & Mashhadi, 2024).

Finally, the current study contributes to the existing literature on the combination of AI in language teaching and learning by conducting more empirical research in less-explored contexts. By addressing both writing and speaking skills alongside learner perceptions, this study aims to inform language teachers and policymakers about the effective and ethical integration of AI into language education. In doing so, the research aligns with ongoing initiatives to create learner-focused, technology-enhanced language instruction that equips students for authentic communication in the digital era.

2. Literature Review

Effective foreign language acquisition requires authentic interaction in the target language; however, learners often lack opportunities to engage with native speakers, particularly in contexts where the target language is rarely used (Chen & Hwang, 2022; Guo et al., 2022). Over the past two decades, technology has become increasingly embedded in education, offering authentic learning environments and resources that help address these challenges (Loncar et al., 2023). AI tools facilitate valuable language practice, diminish physical barriers, and improve both language skills and non-linguistic factors such as motivation and attitudes (Chen, 2022).

Artificial intelligence tools, particularly chatbots, simulate human-like conversations and provide learners with continuous opportunities for language exposure regardless of time or place (Pack & Maloney, 2023; Kohnke et al., 2023). Developed by OpenAI, ChatGPT has gained rapid popularity for its conversational capabilities, accessibility, and expanding educational applications (Grassini, 2023). Unlike conventional speech tools, it facilitates ongoing interaction and comprehension across different languages, presenting new possibilities for language acquisition (Kohnke et al., 2023).

Recent research has examined ChatGPT's role across multiple instructional models, including personalized, problem-based, and project-based learning. It boosts personalized teaching, homework feedback, and acts as a tool to teach tasks and retrieve data or generate content (Rahimi et al., 2025). ChatGPT offers multiple advantages in language teaching and learning, including error detection, interactive language practice, exam simulation, and tailored feedback (Aljanabi et al., 2023). In other words, it promotes rehearsal and repetition, creativity in writing activities, and support for language learning. ChatGPT-4 simulates real dialogues, allowing learners to improve their spoken English in a low-pressure environment (Ali et al., 2023). It has been identified as enhancing learning and research processes, although there are worries about source attribution and coherence in its responses (Karakose et al., 2023).

Despite these advantages, potential issues such as plagiarism and content inconsistency highlight the need for cautious and ethical use in education. ChatGPT enhances assessment by identifying strengths and weaknesses in learner output, leading to more precise evaluation and

feedback (Grassini, 2023). It can generate dialogues and materials suited for EFL learners, as shown in studies that reveal content generated by ChatGPT is clear, engaging, and rich in vocabulary (Young & Shishido, 2023). Additionally, it assists researchers at different stages, including summarizing data, even for those with minimal AI knowledge (Pack & Maloney, 2023). However, there are concerns regarding excessive dependence and its potential adverse effects on critical thinking skills (Grassini, 2023). Speaking is crucial for language proficiency, yet numerous EFL learners find it challenging due to limited opportunities for real-life interactions (Mohammad Hosseinpur & Parsaeian, 2023). Engaging conversations and pronunciation practice in authentic contexts are essential for enhancing speaking skills, but conventional classrooms often do not provide such opportunities (Hwang et al., 2022). Chatbots have the capacity to fill this gap by providing interactive speaking assistance (Klímová & Ibna Seraj, 2023).

Recent research has shown growing interest in understanding how learners perceive ChatGPT as a language learning tool. Learners often describe ChatGPT as a supportive partner that fosters motivation, provides immediate feedback, and reduces speaking anxiety (Lo et al., 2024; Alnaeem, 2025). Studies also highlight that effective use depends on learners' digital literacy and prompt design skills (Tajik, 2024; Javaid et al., 2023). In writing contexts, students report enhanced confidence and awareness of grammatical structures when using ChatGPT for drafting and revision (Barrot, 2023; Mahapatra, 2024). However, overreliance and diminished critical thinking remain notable concerns (Shi et al., 2025; Grassini, 2023). Despite these developments, very few studies have explored how learners perceive ChatGPT across both writing and speaking tasks simultaneously. Prior research tends to isolate one skill or neglect emotional and cognitive factors influencing learners' attitudes. Therefore, this study contributes to the existing literature by integrating quantitative and qualitative evidence to examine how Iranian EFL learners perceive and experience ChatGPT during writing and speaking development.

Students should be provided with formative feedback to enhance writing skills and solve grammatical, lexical, or rhetorical problems (Zhang et al., 2024). Nevertheless, giving this feedback can be difficult in large classroom settings (Golzar et al., 2022). AI-powered tools present a scalable approach, particularly in higher education environments with strong technological access (Taskiran & Goksel, 2022). ChatGPT, being a sophisticated language model, offers tailored writing assistance, modifies content complexity, and aids in structural development and translation activities (Barrot, 2023). Tools such as Grammarly, QuillBot, and ChatGPT have streamlined the feedback process, advancing automated writing assessment (Marzuki et al., 2023).

Similar to previous AI tools, ChatGPT aids in generating ideas and streamlining the writing process (Lingard, 2023). Educators can transform it into a reliable source of feedback for grammar and vocabulary assistance (Wang & Guo, 2023). It provides corrective feedback even when students lack sufficient language proficiency (Dai et al., 2023). Chatbots boost motivation and engagement by simulating real-world conversations (Hew et al., 2023). Learners' perceptions of ChatGPT as a collaborative partner have a significant effect on writing outcomes, enhancing motivation and participation in tasks (Javaid et al., 2023).

Although there is a wealth of research on writing, the impact of ChatGPT on the development of speaking skills remains underexplored. Lo et al. (2024) underscore this lack of research, particularly in connecting writing improvements to speaking outcomes. There are a few studies have focused on how ChatGPT influences speaking fluency. One investigation conducted by Cai et al. (2024) identified

improvements in vocabulary and confidence during presentations through a ChatGPT-based oral practice tool. Therefore, the present study addresses this gap by integrating performance indicators such as fluency with learner feedback collected through interviews, thereby addressing this research gap.

A growing body of research indicates that ChatGPT effectively enhances second-language writing through feedback and revision processes. In a mixed-method study, Mahapatra (2024) found that the use of Chat GPT resulted in considerable improvements in students' organization, word choice, and error reduction. Learners valued ChatGPT for providing immediate, constructive, and insightful feedback. In a similar vein, Gokce and Yavuz Kurt (2024) observed that Turkish pre-service teachers experienced greater confidence and independence when they received feedback from ChatGPT. Lo et al. (2024) reviewed EFL studies and found that the majority concentrated on writing instead of speaking, confirming the relevance of the current study's focus on both areas. Additionally, the review by Lo et al. (2024) highlighted the scarcity of research centered on speaking in Iranian contexts, thereby reinforcing the justification for incorporating both quantitative and qualitative assessments of English proficiency in the present study's design.

A recent meta-analysis conducted by Wang and Fan (2025), which examined 51 quasi-experimental studies from 2022 to 2025, found a significant effect size for learning performance ($g = .867$) along with moderate effects on perception and higher-order thinking. However, the authors noted variability depending on the type of course and context, emphasizing the necessity for accurate measurement of writing and speaking outcomes in L2 settings. In higher education, the influence of ChatGPT on academic writing has been considerable. Nugroho et al. (2024) reported enhancements in text structure and vocabulary when ChatGPT was incorporated into the curriculum. Nonetheless, there are still gaps in understanding its impact on oral confidence and communication skills.

Fereidouni and Farahian (2024) compared three groups of Iranian intermediate EFL students: those using ChatGPT with teacher feedback, those using ChatGPT without teacher feedback, and those receiving traditional instruction. Their findings showed that the integration of ChatGPT and teacher aid produced the most substantial improvements in writing, especially in areas of coherence and accuracy. Interviews conducted with students highlighted their appreciation for immediate feedback, while also expressing issues with technical problems like VPN access and designing effective prompts. Moreover, Rahimi et al. (2025) found that perceived usefulness, ease of use, and teacher support played essential roles in Iranian learners' adoption of ChatGPT.

Sedghi and Fazilatfar (2025) examined the use of ChatGPT lessons in Iranian public schools, private institutions, and the Iran Language Institute (ILI). Teachers at private and ILI centers showed a greater willingness to adopt ChatGPT due to its flexibility and rapid response capabilities. Conversely, educators in public schools voiced concerns about digital literacy, equity, and curriculum alignment. These findings highlight the importance of teacher collaboration and the inclusion of speaking activities to address access-related challenges. Rahimi and Mosalli (2025) used a multilevel framework to investigate how more than two hundred Iranian university students interacted with ChatGPT. Results showed that pillars such as personalization and institutional support facilitated deeper learning, while concerns about privacy and inconsistent feedback hindered higher levels of engagement.

Dehghani and Mashhadi (2024) examined the perceptions of Iranian EFL educators toward ChatGPT through an expanded Technology Acceptance Model (TAM). Drawing on data from 231 teachers, the study showed that perceived usefulness and facilitating conditions were the most important factors influencing ChatGPT use. While many educators recognized ChatGPT's value for shaping learning attitudes and designing instructional activities, they also expressed concerns about student overreliance and ethical issues. Their findings highlight the need for clear policy guidance and active educator involvement. Moreover, research by Yin et al. (2021) revealed enhanced intrinsic motivation among students who interacted with chatbots. Multimodal features, such as text, voice, and gestures, enhance learning experiences and lead to improved educational outcomes.

Baidoo-Anu and Ansah (2023) examined how ChatGPT-4 helped to improve students' communicative abilities, engagement, and academic support. Rudolph et al. (2023) showed that its adaptability enhances learning when aligned with the diverse needs and backgrounds of students. According to Tlili et al. (2023), ChatGPT-4 supports assessment, task creation, and the provision of immediate instruction across different topics. Furthermore, Xiao and Zhi (2023) found that learners considered ChatGPT-4 a significant partner in their language learning tasks. Students demonstrated critical thinking by modifying prompts and evaluating the output generated by the AI.

Alnaeem (2025) investigated the perceptions of Saudi EFL learners regarding ChatGPT in the context of language learning. The findings from 22 female learners revealed that ChatGPT is viewed as a useful and user-friendly tool for facilitating text production, reinforcing writing skills, and promoting autonomous and spontaneous learning. However, concerns were raised regarding over-reliance, reduced cognitive effort, and teachers' doubts related to plagiarism associated with ChatGPT use. Although learners recognized the value of ChatGPT in enhancing their language abilities, they emphasized the necessity of using it selectively and ethically. The study highlights the importance of developing instructional perspectives that integrate ChatGPT responsibly (Alnaeem, 2025).

Gholami et al. (2025) examined the effect of chatbots on the speaking abilities of EFL learners, with a particular focus on their adaptability to learning environments. A total of seventy-two Iranian students participated in twelve sessions where they practiced speaking with chatbots. The results revealed that students who demonstrated higher levels of adaptability performed significantly better than those with lower adjustment in their posttests. Qualitative findings indicated that learners with high adaptability were typically proactive, receptive to change, and skilled in using feedback, whereas their less adaptable counterparts encountered problems with flexibility and feedback utilization. The study emphasized the crucial role of adaptability in language learning and suggested that technology can facilitate this process, recommending the customization of instructional interventions based on individual learner profiles (Gholami et al., 2025).

Aksakallı and Daşer (2025) examined the effect of gender and frequency of use on Turkish EFL students' perceptions of ChatGPT in L2 writing outside the classroom. Applying the Technology Acceptance Model, the study, which included 483 undergraduates, revealed that, although ChatGPT was perceived as useful and user-friendly, more frequent users reported more favorable attitudes. Male participants reported using the tool primarily for the enjoyment, yet both male and female learners expressed similarly positive attitudes toward ChatGPT. Qualitative findings supported these results and identified benefits such as assistance with brainstorming, alongside concerns regarding a potential decline in creativity. The study underscores the importance of considering learner characteristics when examining attitudes toward AI-assisted writing tools.

Wang (2025) examined the effectiveness of ChatGPT-4 in enhancing the academic English writing skills of Chinese college students. The research applied a pre-experimental design with forty-eight learners, evaluating their writing abilities before and after a six-week intervention using ChatGPT-4. The results revealed significant improvements in lexical usage, sentence construction, coherence of ideas, and overall writing quality. Learners reported that ChatGPT-4 was particularly useful for revising and editing their drafts, generating subject-relevant content, and understanding grammatical concepts. Additionally, concerns were raised regarding potential overreliance on the tool and a reduction in critical thinking skills. The study recommends a blended instructional approach that integrates AI support with teacher feedback to enhance learning outcomes (Wang, 2025).

Shi et al. (2025) examined the effect of ChatGPT and automated writing evaluation (AWE) systems on the writing skills of Chinese EFL learners and their conceptualization of an "ideal L2 writing self." Using a mixed-methods approach with 118 learners, the ChatGPT group demonstrated significantly higher writing performance than the AWE and control groups. However, these learners received lower scores on measures of their ideal L2 writing self, raising concerns about overreliance on the tool and reduced creativity. Although learners valued the detailed feedback provided by ChatGPT, many expressed concerns about becoming too dependent on it. This research emphasizes the significance of structured use of AI tools to maintain students' autonomy and promote thoughtful engagement in writing activities.

Tajik et al. (2024), in a qualitative study conducted at Islamic Azad University, investigated how Iranian EFL students used ChatGPT for individualized learning. Interview findings indicated that learners developed skills in prompt engineering and critically evaluated AI-generated content, with a focus on maintaining academic integrity.

The literature review was revised to narrow its scope to ChatGPT-specific research in EFL learning. General discussions of artificial intelligence, chatbots, and technology in education were condensed into a brief contextual paragraph. The revised section now highlights three main strands of research: (1) ChatGPT's impact on writing performance, including accuracy, coherence, and lexical variety (e.g., Barrot, 2023; Mahapatra, 2024; Fereidouni & Farahian, 2024); (2) ChatGPT's role in speaking skill development, focusing on fluency, confidence, and error reduction (e.g., Lo et al., 2024; Gholami et al., 2025); (3) Learners' perceptions and attitudes toward ChatGPT-assisted learning, especially motivation, autonomy, and ethical concerns (e.g., Alnaeem, 2025; Dehghani & Mashhadi, 2024). The section now directly supports the study's research questions and theoretical framework related to ChatGPT use in productive skills. Based on this revised literature review, the researcher intends to formulate the following research questions:

RQ1. What impact does the use of ChatGPT have on L2 learners' writing performance in terms of fluency, accuracy, and lexical variety?

RQ2. How does interaction with ChatGPT influence L2 learners' speaking fluency and confidence in oral tasks?

RQ3. What are learners' perceptions of ChatGPT as a supportive tool in their language learning process?

3. Methodology

In this research, a mixed-methods within-subjects design was used to explore the influence of ChatGPT on the writing and speaking abilities of B2-level Iranian EFL learners, in addition to their perceptions of AI-assisted language learning. The research design was guided by Creswell and Plano Clark's (2017) model for convergent mixed-methods, where both quantitative and qualitative data were collected at the same time and integrated during the interpretation phase. The quantitative component assessed changes in students' writing and speaking performance before and after using ChatGPT, while the qualitative section examined students' perceptions and attitudes through semi-structured interviews. This research design was selected to provide a comprehensive understanding of how generative AI influences language skill development in a real classroom environment.

3.1 Participants and Setting

Thirty Iranian EFL learners (15 females and 15 males) participated in this study. They were selected through purposive sampling from a private language institute in Tehran, where approximately 90 students were enrolled in upper-intermediate courses. Selection was based on learners' willingness to participate and their proficiency level verified by the Oxford Placement Test (OPT). Participants' OPT band scores ranged between 47 and 54, corresponding to the B2 level of the Common European Framework of Reference (CEFR). All participants were aged 18–30 and had at least two years of English learning experience. Written informed consent was obtained from all students before their participation.

3.2 Instrumentation

3.2.1 Writing Task

To assess writing ability, two prompts similar to IELTS Task 2 were given. The initial task was completed independently without any AI assistance (pre-test), while the subsequent task was done with the help of ChatGPT as a writing aid (post-test). The essays were evaluated using an analytic framework modified from IELTS scoring criteria, focusing on fluency (determined by the average length of sentences), accuracy (the number of grammatical errors per 100 words), and lexical variety (type-token ratio).

3.2.2 Speaking Task

For the speaking portion, participants engaged in two tasks resembling the IELTS format, focusing on monologues. During the pre-test, students spoke spontaneously without any technological support. In the post-test, learners were allowed to use ChatGPT for a five-minute planning phase to help them brainstorm ideas, find vocabulary, and structure their responses. Their speaking performances were recorded and assessed across three criteria: fluency (measured in words per minute), accuracy (calculated as the number of grammatical errors per minute), and confidence, which was evaluated through both a self-assessment on a five-point scale and instructor observation.

3.2.3 Semi-structured Interviews

Learners' perceptions of ChatGPT were examined through semi-structured interviews with a group of 10 participants, chosen to ensure both gender equity and diversity in language proficiency and AI usage approaches. The interview questions were crafted based on the study's design and objectives. These questions focused on learners' opinions regarding the usefulness of ChatGPT, challenges they faced, its influence on motivation, and their strategies for interaction. The interviews were carried out in either English or Persian, based on the preference of the participants, and were recorded with their consent. To gain deeper qualitative insights, semi-structured interviews were conducted with ten participants selected from the main sample. This number was determined based on data saturation principles, where no new themes emerged after approximately the eighth interview, indicating adequate coverage of perspectives (Guest et al., 2020). The selection ensured gender balance (five males and five females) and diversity in learners' performance and attitudes toward ChatGPT. This sample size aligns with previous mixed-method EFL studies employing qualitative triangulation (e.g., Barrot, 2023; Tajik, 2024), where 8–12 participants were sufficient for thematic depth.

Prior to the main study, a pilot test was conducted with eight upper-intermediate EFL learners from the same institute who were not part of the main sample. The pilot aimed to verify the clarity of task instructions, timing, and scoring procedures for both writing and speaking tests. Based on participant feedback, minor adjustments were made to task wording and scoring rubrics to ensure clarity. To assess reliability, two experienced IELTS examiners independently scored the pilot tasks using the same analytic rubrics. The inter-rater reliability for writing scores reached $r = .91$, and for speaking scores $r = .88$, indicating high consistency. Regarding validity, the tasks were adapted from official IELTS Academic samples, ensuring content validity aligned with CEFR B2 descriptors for writing and speaking. The scoring rubrics were validated through expert review by two applied linguistics specialists, confirming alignment with the study's constructs of fluency, accuracy, and lexical variety.

3.3 Research Procedure

Data collection was carried out over five consecutive weeks during the spring semester of 2025, comprising four instructional sessions and one interview week dedicated to interviews. Each session lasted approximately 90 minutes.

Week 1: Writing pre-test (IELTS Task 2 format, 40 minutes writing + 10 minutes instruction).

Week 2: Speaking pre-test (IELTS Part 2 monologue, 3–4 minutes per participant, followed by feedback).

Week 3: Writing post-test using ChatGPT (students had 15 minutes for AI interaction, 40 minutes writing).

Week 4: Speaking post-test with ChatGPT preparation (5 minutes AI-assisted planning + 4-minute oral response).

Week 5: Semi-structured interviews (20–25 minutes per participant).

All sessions were supervised by the researcher and conducted in regular classroom conditions with consistent timing and environment.

4. Data Analysis

Quantitative data obtained from the writing and speaking tasks were examined using descriptive statistics (mean, standard deviation) and paired-sample t-tests to determine whether the differences between pre- and post-test scores were statistically significant. Fluency was measured in terms of words per sentence (writing) and words per minute (speaking). Accuracy was assessed by counting the number of grammatical errors per 100 words, while lexical variety was evaluated using the type-token ratio. Confidence ratings were analyzed using Wilcoxon signed-rank tests for non-parametric paired data. Qualitative data from interviews were transcribed and examined through thematic analysis (Braun & Clarke, 2006). The transcripts were inductively coded using NVivo, and the themes that emerged were categorized into groups such as "perceived usefulness," "motivation," "limitations," and "AI literacy." Data triangulation was employed to link performance-based results with learners' reflective narratives.

To assess variations in learners' performance before and after the intervention, paired-sample t-tests were applied to variables measured on a continuous scale, specifically speaking fluency (words per minute) and speaking accuracy (grammatical errors per 100 words). These tests presume interval-level data and an approximately normal distribution of difference scores. Conversely, learners' speaking confidence was evaluated using a 5-point Likert scale, which represents ordinal-level data. Consequently, the Wilcoxon signed-rank test, a non-parametric substitute for the t-test, was utilized to compare pre- and post-test confidence scores. This mix of statistical methods ensures that the analysis methods used align with the characteristics of each variable and the underlying assumptions. In other words, during the study, writing and speaking skills were taught using task-based communicative instruction consistent with the institute's curriculum. Each writing session included explicit guidance on idea organization, grammatical accuracy, and lexical range, while speaking sessions emphasized fluency, self-expression, and confidence building through IELTS-style monologues. Prior to the ChatGPT-assisted post-tests, learners were introduced to ChatGPT prompt construction (e.g., asking for ideas, vocabulary suggestions, and grammar checks) through a 20-minute orientation. However, no direct teaching intervention was provided by the researcher during the experimental tasks to maintain the natural interaction between learner and AI tool. The collected data were analyzed using descriptive statistics (mean, SD) and inferential tests (paired-sample t-tests for continuous variables and Wilcoxon signed-rank tests for ordinal data). Qualitative interview transcripts underwent thematic analysis (Braun & Clarke, 2006), focusing on categories such as perceived usefulness, motivation, and limitations.

This section outlines the empirical results of the study, organized according to the three research questions that guided the investigation. First, quantitative results concerning learners' performance in writing and speaking are presented, followed by qualitative insights into learner perceptions. A mix of descriptive statistics, inferential tests (including paired-sample t-tests and Wilcoxon signed-rank tests), and thematic analysis is employed to assess the effects of ChatGPT on second language (L2) acquisition. Tables are included to present essential findings, and each section concludes with a narrative interpretation of the data. The combination of quantitative and qualitative evidence provides a detailed understanding of how generative AI affects writing fluency, grammatical precision, lexical variety, speaking skills, and learner attitudes.

RQ1. What impact does the use of ChatGPT have on L2 learners' writing performance in terms of fluency, accuracy, and lexical variety?

Table 1

Descriptive Statistics of Writing Performance (Pre-Test)

Measure (Pre-Test)	N	Mean	Std. Deviation
Writing Fluency Pre	30	13.62	1.80
Writing Accuracy Pre	30	10.03	1.98
Writing Lexical Variety Pre	30	0.55	0.05

The results from the pre-test (Table 1) reveal that learners produced an average of 13.62 words in each sentence (SD = 1.80) and committed approximately 10.03 grammatical mistakes for every 100 words (SD = 1.98). The lexical variety, assessed through the type-token ratio, was found to be 0.55 on average (SD = 0.05), suggesting a moderate level of vocabulary diversity before the ChatGPT intervention.

Table 2

Descriptive Statistics of Writing Performance (Post-Test)

Measure (Post-Test)	N	Mean	Std. Deviation
Writing Fluency Post	30	15.00	2.11
Writing Accuracy Post	30	8.05	2.30
Writing Lexical Variety Post	30	0.60	0.05

As a result of the writing task supported by ChatGPT (Table 2), participants showed improved fluency, averaging 15.00 words per sentence (SD = 2.11). Their rate of grammatical errors also dropped to approximately 8.05 errors per 100 words (SD = 2.30). Furthermore, lexical diversity improved, indicated by a mean type-token ratio of 0.60 (SD = 0.05), reflecting greater lexical variety.

Table 3

Paired Sample T-Test Results for Writing Performance

Measure	N	Mean Difference	Std. Deviation	t	Sig. (2-tailed)
Writing Fluency	30	1.38	0.93	-8.11	.00
Writing Accuracy	30	-1.98	0.91	11.93	.00
Writing Lexical Variety	30	0.06	0.02	-16.06	.00

To evaluate the impact of ChatGPT on writing skills, paired-sample t-tests (see Table 3) were performed to analyze writing performance before and after its use. The results indicated a significant enhancement in writing fluency, with $t(29) = -8.11$, $p < .001$, demonstrating that learners produced longer and more complex sentences. There was also a notable improvement in writing accuracy, $t(29) = 11.93$, $p < .001$, evidenced by a decrease in grammatical errors. Additionally, lexical variety showed a significant increase, $t(29) = -16.06$, $p < .001$, indicating that learners utilized a wider range of vocabulary following the intervention.

RQ2. How does interaction with ChatGPT influence L2 learners' speaking fluency and confidence in oral tasks?

Table 4

Descriptive Statistics of Speaking Performance (Pre-Test)

Measure (Pre-Test)	N	Mean	Std. Deviation
Speaking Fluency Pre	30	85.65	10.52
Speaking Accuracy Pre	30	11.71	2.31
Speaking Confidence Pre	30	2.43	0.50

The pre-test results (Table 4) indicate that participants had an average fluency rate of 85.66 words per minute (SD = 10.52) and committed an average of 11.71 grammatical errors per 100 words (SD = 2.31). Moreover, their self-assessed speaking confidence was recorded at an average of 2.43 on a 5-point scale (SD = 0.50), reflecting a moderate level of confidence at the outset.

Table 5

Descriptive Statistics of Speaking Performance (Post-Test)

Measure (Post-Test)	N	Mean	Std. Deviation
Speaking Fluency Post	30	95.89	11.07
Speaking Accuracy Post	30	9.60	2.39
Speaking Confidence Post	30	2.86	0.73

Following the ChatGPT intervention (Table 5), the average fluency of learners rose to 95.90 words per minute (SD = 11.07), while the number of grammatical errors dropped to 9.60 per 100 words (SD = 2.39). Additionally, confidence levels increased to 2.87 (SD = 0.73), indicating a moderate improvement in learners' self-assessed speaking confidence.

Table 6

T-Test and Wilcoxon Results for Speaking Performance

Measure	N	Mean Difference	Std. Deviation	t / Wilcoxon W	Sig. (2-tailed)
Speaking Fluency	30	10.24	5.19	-10.81	.00
Speaking Accuracy	30	-2.11	0.92	12.55	.00
Speaking Confidence	30	0.43	0.73	0.0	.00

Results from paired-sample t-tests (Table 6) indicated a significant improvement in speaking fluency, $t(29) = -10.81$, $p < .001$, signifying that learners exhibited greater fluency after the ChatGPT-assisted preparation. Additionally, there was a notable improvement in speaking accuracy, $t(29) = 12.55$, $p < .001$, reflected in a decrease in grammatical errors. The Wilcoxon signed-rank test results for confidence scores showed a significant rise, $W = 0.00$, $p < .001$, indicating that learners experienced increased confidence during oral tasks following the intervention.

RQ3.What are learners' perceptions of ChatGPT as a supportive tool in their language learning process?

Table 7

Thematic Summary of Learner Perceptions

Theme	Key Insights
Perceived Usefulness	Learners found ChatGPT helpful for generating ideas, correcting grammar, and planning responses.
Motivation	Increased motivation and reduced anxiety were reported when using ChatGPT for preparation.
Limitations	Concerns included over-reliance, 'lazy brain' effect, and difficulty crafting prompts.
AI Literacy	Learners adapted prompts strategically and evaluated ChatGPT output critically over time.

Thematic analysis of semi-structured interviews conducted with a subset of 10 learners (Table 7) identified four key themes. First, students emphasized the use of ChatGPT, showing it helped them in generating ideas, correcting grammar, and planning content. Second, many students reported increased motivation and lower anxiety when getting ready for speaking and writing activities with the aid of this tool. Third concerns were raised regarding the potential overreliance on ChatGPT, the so-called 'lazy brain' phenomenon, and difficulties in constructing effective prompts. Finally, AI literacy was identified as a vital component, with more advanced users displaying better prompt engineering skills and a critical approach to assessing AI-generated content. These findings revealed that whereas ChatGPT is seen as a useful tool, its efficient use requires digital savvy, strategic engagement, and guidance from instructors.

To conclude, the quantitative findings of the current study showed that integrating ChatGPT into language learning significantly enhanced learners' writing and speaking abilities. With respect to writing skills, learners demonstrated noticeable improvements in fluency, producing longer and more coherent sentence structures as well as enhancing grammatical accuracy and lexical diversity. These improvements indicate that ChatGPT can serve as an active tool for planning, revising, and producing written samples. Learners also revealed increased fluency and fewer errors in spoken tasks as they asserted that they felt more confident during the performance of speaking skills. Quantitative and qualitative measures, such as paired-sample t-tests and Wilcoxon signed-rank tests, and interview data, confirmed the positive effect of ChatGPT on language development.

Using ChatGPT as a tool for idea generation, error correction, or anxiety reduction in speaking and writing skills was effective and user-friendly from the learners' viewpoints. It also showed that learners had a greater desire and motivation to use ChatGPT. Furthermore, some concerns were voiced about the overreliance on AI and reduced critical thinking among the participants. As a result, it is substantiated that ChatGPT can be a very effective and valuable supplementary tool for improving language skills when combined with an educational milieu, in spite of its limitations.

5. Discussion and Conclusion

The findings of the present study revealed significant improvements in students' writing and speaking performance, as well as in their lexical and grammatical accuracy, resulting from the integration of ChatGPT into language learning. These findings are consistent with previous research that emphasized the effective use of ChatGPT in improving written tasks (Barrot, 2023; Mahapatra, 2024; Nugroho et al., 2024). Improvements in sentence length and lexical diversity are also aligned with

Mahapatra's (2024) results about the support ChatGPT provides for sentence structure and lexical enrichment in second language writing. Similarly, Gokce and Yavuz Kurt (2024) asserted that learners who received feedback from ChatGPT gained more confidence and independence, which corresponds with the results of the current study. Moreover, syntactical error reduction corresponds with Wang and Guo's (2023) research, which identified ChatGPT's efficiency as a reliable source of corrective feedback. The present results support the idea that ChatGPT acts as a worthwhile device that simplifies idea generation, guides language revision, and suggests personalized instruction, especially in academic writing tasks based on IELTS prompts.

The study also found that frequent users of ChatGPT demonstrated higher levels of AI literacy, consistent with findings by Javaid et al. (2023). The results also showed that students used ChatGPT both for grammatical checks or sentence rephrasing and response assessing critically or prompt development. This finding aligns with Tajik et al. (2024), who pointed out the innovative and analytical application of ChatGPT among Iranian students when provided with appropriate guidance. However, the study also highlighted the risks of overreliance and diminished critical thinking (Shi et al., 2025; Liu & Almutairi, 2025), stressing the need for teacher monitoring and digital literacy education when combining AI with written tasks instruction.

The results also demonstrated substantial improvement in learners' speaking fluency and accuracy, accompanied by an upward trend in their confidence. These results emphasized a specific schism in the literature, that is, the insufficient exploration of ChatGPT's effect on speaking competence (Lo et al., 2024; Cha et al., 2024). Even though previous studies by Hew et al. (2023) and Lin and Chang (2023) confirmed the advantages of engaging in speaking practice through chatbots, few studies focused specifically on ChatGPT's contribution to organized speaking tasks like IELTS-style monologues. The rise in words spoken per minute and the decrease in grammatical mistakes in spoken answers are in line with Klímová and Ibna Seraj's (2023) findings that chatbots create low-pressure rehearsal settings, thereby improving learners' fluency and accuracy over time.

Furthermore, the increase in learners' confidence aligns with the emotional benefits reported by Tanaka et al. (2023), who observed that regular use of ChatGPT resulted in decreased speaking anxiety. The interview data from the current study also indicated that learners felt more equipped and less nervous after engaging with ChatGPT during the preparation phase of speaking activities. This implies that even indirect engagement with AI, before the speaking task rather than during it, can have a beneficial impact on learners' oral performance and emotional readiness. These results corroborate the findings of Gholami et al. (2025), who reported that learners with greater adaptability demonstrated the most notable gains in speaking through chatbot interaction. Similarly, in this study, learners who were receptive to feedback and strategic in their prompt usage noted enhanced speaking skills, emphasizing the importance of learner adaptability in the development of oral skills through technology.

Despite the increase in learners' confidence being statistically significant, it was less substantial than the improvements observed in writing skills. This may stem from the inherent constraints of using AI for pre-task planning in spontaneous speech, along with the limited time available for interacting with ChatGPT. Additionally, this corresponds with the challenges noted by Petrović and Jovanović (2021), who cautioned that feedback related to speech can lack depth during real-time processing. Therefore, while ChatGPT can aid in preparing for tasks and boosting confidence, its effectiveness in improving spontaneous speaking performance might hinge on how learners assimilate and apply the AI-generated input in actual speech situations.

The third significant discovery, students' predominantly favorable views of ChatGPT, aligns with a trend identified in various studies across different cultural settings. The majority of participants in the current study described the tool as beneficial, inspiring, and easy to use, echoing findings by Alnaeem (2025), Xiao and Zhi (2023), and Baidoo-Anu and Ansah (2023). Similar to Liu and Almutairi's (2025) research, learners in this study valued ChatGPT's help in brainstorming, enhancing vocabulary, and correcting grammar, which they felt contributed to their better performance in both writing and speaking. Furthermore, the current study supports Ibrahim and Kirkpatrick's (2024) findings about motivation and anxiety reduction, and also improved engagement of the learners.

In spite of the advantages of utilizing the tool, the current study voiced some concerns about over-dependency and reduced cognitive growth, which is in sync with admonitory points made by Grassini (2023), Shi et al. (2025), and Dehghani and Mashhadi (2024). More importantly, learners in this study asserted some concerns regarding getting too reliant on the tool that may lead to brain laziness, a term used by Alnaeem (2025). Moreover, technical challenges such as issues in formulating prompts or difficulties in accessing the platform due to VPN restrictions, particularly related to the Iranian context, were reported, resonating with the problems mentioned by Sedghi and Fazilatfar (2025). These results showed that while students usually admitted to the use of ChatGPT, there is also an obvious demand for more structured training and support to use the tool both effectively and ethically.

To summarize, regarding the first research question, the study found significant improvements in writing fluency, accuracy, and lexical diversity after ChatGPT use. These results support previous findings (Barrot, 2023; Mahapatra, 2024) showing that ChatGPT provides effective feedback for sentence structure and vocabulary development. The increase in lexical diversity and reduction in grammatical errors confirm that AI-assisted writing enhances both form and meaning when used as a planning and revising tool. Regarding the second research question, Learners demonstrated noticeable improvement in speaking fluency and grammatical accuracy, along with higher self-assessed confidence. These findings are consistent with Lo et al. (2024) and Gholami et al. (2025), who reported that ChatGPT creates low-pressure rehearsal opportunities that reduce anxiety and promote spontaneous language production. However, the smaller increase in confidence compared to fluency indicates that ChatGPT's effect on emotional readiness may require longer exposure or integrated speaking tasks. And about the third research question, Thematic analysis revealed that most learners viewed ChatGPT as a supportive and motivating tool that facilitated idea generation and reduced speaking anxiety. Nonetheless, some concerns emerged regarding overreliance and limited critical engagement, echoing Grassini (2023) and Shi et al. (2025). These results suggest that while ChatGPT can effectively scaffold learning, it must be accompanied by teacher guidance to maintain cognitive engagement and language independence. Overall, the discussion aligns with all three research questions, highlighting that ChatGPT contributes positively to productive skill development when combined with pedagogical supervision and digital literacy training.

This study explored how ChatGPT affects Iranian EFL learners' writing and speaking skills as well as their perceptions of AI-assisted learning. Quantitative findings revealed significant improvements in fluency, grammatical accuracy, and lexical diversity in writing, alongside higher fluency and confidence in speaking. Qualitative data confirmed that learners viewed ChatGPT as a motivating and supportive tool that reduced anxiety but raised concerns about overreliance and reduced critical thinking. The findings suggest that ChatGPT can serve as an effective supplementary tool in EFL classrooms, particularly for enhancing productive language skills. Teachers should

integrate ChatGPT alongside traditional instruction to provide feedback, encourage self-regulation, and foster motivation. Incorporating digital literacy training is essential to ensure responsible and critical use of AI. The study involved a relatively small sample of 30 participants from a single institution, which may limit generalizability. Moreover, the short duration (five weeks) may not fully capture long-term effects of ChatGPT on learner autonomy and language development. Future studies could employ longitudinal designs with larger and more diverse populations to examine sustained impacts of ChatGPT on language performance and learner attitudes. Further research could also compare AI-assisted and teacher-led feedback to evaluate the balance between automation and human interaction in language education. In the end, this study aids to the largely unexplored zone of AI's part in speaking growth and development, especially within the Iranian foreign language environment. Future studies should broaden this research by utilizing more longitudinal frameworks, probing peer-AI interaction dynamics, and evaluating the impacts of AI gadgets on cooperative learning, pronunciation, and discourse-level oral production. To summarize, although ChatGPT cannot take the place of human teachers and human education, it acts as a valuable resource that, when applied with purpose and critical thinking, can significantly increase second language learners' writing and speaking skills. The inclusion of AI tools can be promising as they can increase personalized access to language learning, as long as they are directed by ethical issues and resourceful pedagogy and digital literacy.

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