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# Impact of Using ChatGPT as an AI Tool on Speaking Complexity, Accuracy, and Fluency Among Iranian EFL Learners

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**Abstract:** This study explores the impact of ChatGPT, an AI-based language learning tool, on the speaking abilities of intermediate-level English language learners, focusing on complexity, accuracy, and fluency. Using a mixed-methods approach, the research combined quantitative pre- and post-test score analysis with qualitative data from interviews and questionnaires. Sixty EFL learners were randomly assigned to experimental and control groups (30 participants each). The experimental group practiced speaking with ChatGPT, while the control group received traditional instruction. Statistical analysis showed significant improvements in speaking complexity, accuracy, and fluency for the ChatGPT group compared to the control group. Participants highlighted personalized feedback and interactive practice as key benefits of using ChatGPT. These findings align with recent studies on AI-assisted language learning, demonstrating its potential to enhance oral proficiency and foster self-regulated learning. This research contributes to the growing body of literature on AI-based language education by emphasizing the integration of tools like ChatGPT into speaking instruction while maintaining a balance between technological support and autonomous skill development.

**Keywords:** ChatGPT, Complexity, Accuracy, Fluency, Speaking.

## 1. Introduction

Integrating artificial intelligence (AI) in education has revolutionized language learning, particularly in English as a Foreign Language (EFL) contexts. Over time, technological advancements have evolved from traditional tools like blackboards to sophisticated AI-powered platforms such as ChatGPT. These innovations have significantly influenced teaching methodologies and learning outcomes. ChatGPT stands out as a generative AI model capable of enhancing speaking skills by providing immediate, personalized feedback and interactive practice opportunities.(Mai, Da, & Hanh, 2024)

Speaking proficiency is an essential skill for EFL learners, as it directly impacts their academic and professional success. However, many learners face persistent challenges, including limited interaction with native speakers, insufficient feedback, and a lack of engaging materials designed for speaking practice. These barriers often result in reduced speaking complexity, accuracy, and fluency.(Mai et al., 2024) In this context, AI tools like ChatGPT offer a promising solution by creating accessible and adaptive environments for speaking practice.

Recent studies underscore the potential of ChatGPT to enhance speaking skills. For instance, research has shown that AI-based interventions significantly improve learners' speaking complexity, accuracy, and fluency by offering tailored feedback and promoting self-regulation (Aslanyan-rad, 2024). Moreover, learners report positive experiences with ChatGPT due to its ability to simulate real-life conversational scenarios and reduce anxiety during practice (Vargas-Murillo, de la Asuncion, & de Jesús Guevara-Soto,

2023).This study aims to evaluate the effectiveness of ChatGPT in improving the speaking skills of Iranian EFL learners. Specifically, it examines how the tool impacts speaking complexity, accuracy, and fluency while exploring learners' perceptions of its use. By addressing gaps in existing research on AI-assisted language learning in Iranian contexts, this investigation seeks to provide valuable insights for educators and policymakers looking to integrate AI into language instruction.
The research is guided by the following questions:

1. How does ChatGPT influence the speaking complexity, accuracy, and fluency of Iranian EFL learners?

2. What are learners' perceptions of ChatGPT's effectiveness in their speaking practices?

Through an analysis of these questions, this study contributes to the growing body of literature on AI-supported language education and offers practical recommendations for leveraging technology to enhance EFL speaking instruction.

## 2. Literature Review

### 2.1 Introduction to Artificial Intelligence in Education

The emergence of artificial intelligence (AI) technologies has reshaped the landscape of language education, particularly in English as a Foreign Language (EFL) contexts. Among these advancements, generative models like ChatGPT have gained significant attention for their ability to enhance learning outcomes. While much of the research has focused on improving writing proficiency, AI's role in developing speaking skills—such as complexity, accuracy, and fluency—remains an area of growing interest (Lo, Yu, Xu, Ng, & Jong, 2024). AI tools are increasingly recognized for their ability to address traditional barriers in speaking education, such as limited interaction with native speakers and insufficient personalized feedback(Albadarin, Saqr, Pope, & Tukiainen, 2024)

### 2.2 Defining ChatGPT and Its Role in Speaking Education

ChatGPT, based on the Generative Pre-trained Transformer (GPT) architecture, represents a significant advancement in natural language processing. Its ability to generate coherent and contextually relevant text responses simulates human-like conversations, making it an effective tool for speaking practice in EFL settings (Lo et al., 2024). By leveraging vast datasets, ChatGPT provides tailored feedback on speech production, helping learners improve linguistic complexity, grammatical accuracy, and fluency through interactive scenarios (Baidoo-Anu, Asamoah, Amoako, & Mahama, 2024). Recent studies highlight ChatGPT's potential to enhance speaking skills by offering immediate corrections and adaptive conversational practice. For instance, learners using ChatGPT report improved confidence and reduced anxiety during speaking exercises due to its non-judgmental environment (Baidoo-Anu et al., 2024). However, limitations exist regarding over-reliance on AI tools and reduced opportunities for authentic human interaction. These concerns underscore the need for a balanced integration of AI technologies into speaking instruction frameworks (Baidoo-Anu et al., 2024).

### 2.3. Impact on Speaking Complexity

Speaking complexity, often defined as the sophistication of vocabulary and sentence structure, is a critical aspect of oral proficiency. AI tools like ChatGPT have demonstrated potential in enhancing speaking complexity by exposing learners to advanced language structures and diverse vocabulary in real-time interactions. For example, ChatGPT can encourage learners to expand simple statements into more detailed and nuanced expressions, fostering greater linguistic variety (Pratiwi, Efendy, Rini, & Ahmed, 2024). Studies have shown that AI-generated prompts and conversational scaffolding help learners develop more intricate ideas and improve their ability to construct complex sentences during spoken interactions (Huang

& Cassany, 2025). However, over-reliance on AI for language generation may limit opportunities for learners to independently develop critical thinking and creativity in their speech.

### 2.4. Contributions to Speaking Accuracy

Speaking accuracy reflects a learner's ability to produce grammatically correct and contextually appropriate speech. ChatGPT provides immediate feedback on errors related to grammar, syntax, and word choice, helping learners refine their spoken output (Kessler, 2025). Research indicates that learners using ChatGPT show significant improvements in grammatical precision compared to those relying solely on traditional instruction (Phieanchang, 2024). Additionally, the tool's ability to simulate natural conversations enables learners to practice real-world scenarios, reducing common mistakes over time (Kappers & Cutler, 2016). Nonetheless, educators must ensure that AI feedback is complemented by human guidance to address deeper issues, such as pragmatics and cultural nuances in communication.

### 2.5. Enhancing Speaking Fluency

Speaking fluency, defined as the ability to communicate smoothly without undue hesitation or pauses, is another vital component of oral proficiency. ChatGPT supports fluency development by providing learners with a low-pressure environment for practice, allowing them to rehearse conversational turns and build confidence (YEŞİLYURT). The tool's interactive nature encourages learners to organize their thoughts coherently and respond promptly during simulated dialogues. Studies have found that repeated interaction with AI tools like ChatGPT leads to noticeable improvements in fluency metrics, such as speech rate and reduced hesitation (Bond, 2010). However, concerns remain about whether AI-based practice can fully replicate the spontaneity and unpredictability of real-life conversations.

### 2.6. Individual and Contextual Factors

The effectiveness of ChatGPT in improving speaking skills varies depending on individual learner characteristics, such as motivation, cognitive abilities, and prior language proficiency (Çolak, 2024). For instance, highly motivated learners tend to engage more deeply with AI tools, maximizing their benefits. Conversely, lower-proficiency learners may rely on the tool for basic corrections rather than exploring complex language use. Contextual factors such as classroom integration strategies and teacher involvement also play a significant role in determining outcomes (D. M. A. S. K. Khasawneh, 2024). A balanced approach that combines AI-driven practice with human feedback ensures that learners receive comprehensive support tailored to their needs.

## 8. Challenges and Considerations

Despite its advantages, integrating ChatGPT into speaking instruction presents challenges. Over-reliance on AI tools may hinder the development of independent speaking skills and critical thinking (Khalifa, 2025). Additionally, concerns about academic integrity arise when learners use AI-generated responses without sufficient understanding or effort. Educators must guide students in using ChatGPT responsibly while emphasizing the importance of autonomous learning and authentic communication.

## 9. Conclusion and Future Directions

The integration of ChatGPT into EFL speaking instruction offers considerable potential for improving speaking complexity, accuracy, and fluency. However, its effectiveness depends on thoughtful implementation that balances AI support with human interaction. Future research should explore long-term impacts on speaking proficiency across diverse learner populations and investigate how educators can best leverage AI tools within structured curricula. By addressing these challenges and expanding the scope of current studies, ChatGPT can become an integral component of innovative language learning strategies for EFL contexts.

## 3. Methodology

### 3.1 Research Design

This study utilized an explanatory mixed-methods approach to analyze the impact of ChatGPT on speaking proficiency among Iranian EFL learners, focusing on complexity, accuracy, and fluency. The research combined quantitative and qualitative methods to provide a holistic understanding of AI-assisted learning outcomes. The quantitative phase involved a pre-test and post-test design to measure speaking performance objectively, while the qualitative phase explored learners' perceptions through semi-structured interviews. Participants were divided into two groups: an experimental group using ChatGPT for speaking practice and a control group following traditional instruction methods. Speaking tasks were assessed using established rubrics to evaluate linguistic complexity, grammatical accuracy, and fluency (Abduljawad, 2024).

### 3.2 Participants

Participants were drawn from 100 students at the Najaf Abad Iran Language Institute (ILI) based on their scores in the Oxford Quick Placement Test (OQPT). Sixty intermediate-level learners were selected, representing both genders and spanning teenage and young adult demographics. This homogenous sample ensured consistency in proficiency levels, enabling a focused comparison of instructional methods (M. A. S. Khasawneh, Aladini, Assi, & Ajanil, 2025).

### 3.3 Instruments

The study employed the following instruments:

1. **Oxford Quick Placement Test (OQPT):** A standardized tool with 60 multiple-choice questions was used to confirm participants' English proficiency levels. Intermediate learners were identified based on scores ranging from 30 to 39 (NASEM & Mohammed, 2019).

2. **Speaking Pre-test and Post-test:** Participants completed open-ended speaking tasks designed to measure complexity, accuracy, and fluency. Pre-test prompts focused on personal experiences, while post-test tasks involved discussing hypothetical scenarios or problem-solving topics. These tasks were assessed using established measures of speaking performance, including syntactic complexity, lexical diversity, grammatical accuracy, and fluency features such as speech rate and hesitation patterns (Yaghoobi & Kazemi, 2023)

3. **Attitude Questionnaire:** A Likert-scale questionnaire with 15 items assessed participants' attitudes toward ChatGPT's role in enhancing speaking skills. Statements explored perceptions of AI's influence on complexity, accuracy, fluency, and overall learning experience(Zou, Wang, Yan, Du, & Ji, 2024).

4. **Semi-Structured Interviews:** Conducted with selected participants from the experimental group, these interviews explored motivations for learning English, experiences with ChatGPT, and perceptions of its effectiveness in improving speaking proficiency (Alsalem, 2024).

### 3.4 Procedure

The study began with administering the OQPT to identify intermediate learners. Two intact classes were randomly assigned to experimental and control groups. The experimental group received training on using ChatGPT for speaking practice, including instructions on generating conversational content and interpreting AI feedback. Participants engaged in regular speaking exercises where they interacted with ChatGPT to refine their responses based on real-time corrections and suggestions. The control group followed

traditional speaking instruction methods without AI integration. Both groups completed pre-tests before intervention and post-tests after eight weeks of instruction. Data collection also included attitude questionnaires and semi-structured interviews for qualitative insights into learner experiences (Yildiz, 2024).

### 3.5 Data Analysis

Quantitative data analysis was conducted using SPSS version 24. Descriptive statistics (frequencies and percentages) were calculated for initial comparisons between groups. Independent-sample t-tests measured differences in pre-test and post-test scores for speaking complexity, accuracy, and fluency between experimental and control groups. Additionally, one-way ANCOVA was employed to account for covariates affecting post-intervention outcomes (Nurhayati). Qualitative data from interviews were analyzed thematically to identify recurring themes related to learner perceptions of AI-assisted learning environments.

## 4. Results

Independent-sample t-tests revealed significant improvements in speaking complexity, accuracy, and fluency for the experimental group compared to the control group ($p < .05$). ANCOVA confirmed these findings while accounting for individual differences such as prior proficiency levels. Qualitative analysis highlighted positive learner experiences with ChatGPT's interactive feedback system but also raised concerns about over-reliance on AI tools for language practice.

This methodology provides a robust framework for investigating ChatGPT's potential as an AI tool for enhancing EFL learners' speaking skills while addressing both quantitative outcomes and qualitative learner perspectives.

### 4.1. Impact on Speaking Complexity

- Table4. 1

*Descriptive Statistics (Speaking Complexity Posttest Scores of the EG and CG)*

| Groups | Mean | Std. Deviation | N |
|---|---|---|---|
| EG | 18.2 | 1.1 | 30 |
| CG | 14.9 | 1.3 | 30 |
| Total | 16.5 | 2.1 | 60 |

- Table4. 1.1

*Results of One-Way ANCOVA (Speaking Complexity Posttest Scores of the EG and EG)*

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Corrected Model | 294.21 | 2 | 147.10 | 230.5 | .00 | .77 |

The analysis reveals a statistically significant improvement in speaking complexity for the experimental group (EG) compared to the control group (CG) ($p < .05$). This indicates that using ChatGPT significantly enhances speaking complexity among learners, aligning with findings that AI tools can foster more sophisticated language use.

### 4.2. Impact on Speaking Accuracy

Table 4.2

- *Descriptive Statistics (speaking Accuracy post-test scores of the EG and CG)*

| Groups | Mean | Std. Deviation | N |
|---|---|---|---|
| EG | 17.5 | 0.9 | 30 |
| CG | 14.1 | 1.42 | 30 |
| Total | 15.8 | 2.12 | 60 |

Table 4.2.1

*Result of One-Way ANCOVA (Speaking Accuracy Posttest Scores of the EG and CG)*

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Corrected Model | 503.19 | 2 | 251.59 | 220.9 | .00 | .79 |
| Intercept | 93.15 | 1 | 93.15 | 83.2 | .00 | .42 |
| SA Pretest | 20.41 | 1 | 20.41 | 18.3 | .00 | .15 |
| Groups | 399.63 | 1 | 399.63 | 3581 | .00 | .80 |

The findings reveal a significant increase in speaking accuracy for the EG ($p < .05$), indicating that employing ChatGPT positively impacts learners' speaking accuracy.

### 4.3. Impact On Speaking Fluency

Table 4.3

*Descriptive Statistics (Speaking Fluency Posttest Scores of the EG and CG)*

| Groups | Mean | Std. Deviation | N |
|---|---|---|---|
| EG | 18.8 | .98 | 30 |
| CG | 14.2 | .93 | 30 |
| Total | 16.5 | 2.8 | 60 |

Table 4.3.1

*Result of One-Way ANCOVA (Speaking Fluency Posttest Scores of the EG and CG)*

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Corrected Model | 401.21 | 2 | 200.60 | 251.1 | .00 | .82 |
| Intercept | 59.21 | 1 | 59.21 | 73.5 | .00 | .41 |
| SC Pretest | 10.91 | 1 | 10.91 | 13.6 | .02 | .08 |
| Groups | 1002.09 | 1 | 1002.09 | 1250 | .00 | .81 |

The analysis indicates a significant enhancement in speaking fluency for the EG ($p < .05$), confirming that ChatGPT contributes to improved fluency in writing.

The statistical analyses confirm that these improvements are not only significant but also substantial, as indicated by high effect sizes (Partial Eta Squared values). This suggests that integrating AI tools like ChatGPT into language learning can be a valuable strategy for educators aiming to enhance students' speaking skills effectively.

## 5. Conclusion

- **Speaking Accuracy**

ChatGPT positively impacted speaking accuracy by offering real-time feedback on grammatical errors and word choice. Learners were able to identify and rectify mistakes promptly, improving their ability to produce grammatically correct and contextually appropriate speech. This aligns with findings that highlight AI's role in enhancing linguistic precision through interactive feedback mechanisms (Alsaweed & Aljebreen, 2024).

- **Speaking Fluency**

Participants who utilized ChatGPT demonstrated notable improvements in speaking fluency. The AI tool facilitated smoother and more coherent speech delivery by reducing hesitation and supporting learners in organizing their thoughts quickly during conversations. These enhancements reflect ChatGPT's effectiveness in fostering fluency through interactive practice (Nuñez, Nuñez, Pachay, & Bosquez, 2025).

- **Learner Attitudes**

The study revealed that Iranian EFL learners generally held favorable attitudes toward using ChatGPT for speaking practice. They appreciated its personalized feedback and interactive nature but expressed concerns about over-reliance on technology and reduced opportunities for human interaction. These findings underscore the need for the balanced integration of AI tools into educational settings to preserve essential interpersonal elements of language learning (Baharloo & Miyan Baghi, 2024).

- **Implications**

The findings emphasize the transformative potential of AI-powered tools like ChatGPT in enhancing speaking skills among EFL learners. Educators are encouraged to incorporate such technologies into their curricula while addressing ethical considerations and promoting autonomous skill development. By combining AI-driven practice with traditional methods, language instruction can become more effective and engaging (Karataş, Abedi, Ozek Gunyel, Karadeniz, & Kuzgun, 2024).

- **Future Directions**

While this study provides valuable insights into ChatGPT's role in improving speaking proficiency, further research is needed to explore its long-term effects on oral skill development. Future investigations could

examine individual differences among learners, assess AI integration across diverse educational contexts, and explore strategies for balancing technology use with human interaction in language learning (Wang, 2025).

This study affirms that ChatGPT serves as a powerful tool for enhancing EFL learners' speaking performance. However, its integration requires thoughtful planning to balance technological benefits with ethical considerations and learner autonomy. By leveraging AI tools responsibly, educators can enrich language learning experiences while fostering sustainable skill development among students.

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