

The Impact of Artificial Intelligence-Assisted Instruction on the Oral Proficiency Improvement of English Major Students

Xiaoli Bao

School of Foreign Language, Inner Mongolia Minzu University, Tongliao 028000, China

Abstract

This study takes 60 English major students from a university in Inner Mongolia as the research subjects and conducts experiments using two artificial intelligence platforms, the “Shell Breaking AI Speaking” app and the “AI Foreign Teacher” app, to explore the impact of AI-assisted learning on English speaking ability. A combination of questionnaire surveys and interviews is employed to assess students’ attitudes toward and experiences with AI-assisted learning. The results indicate that high-frequency AI-assisted learning can effectively enhance multiple dimensions of students’ oral expression ability within a short period of time. Students generally hold positive attitudes toward using artificial intelligence for oral training, suggesting that it can be appropriately integrated into English teaching in the future. However, the AI teaching platforms used in this study still exhibit issues such as inaccurate speech recognition and relatively limited training content. It is recommended that the AI training systems within the platforms be optimized and that personalized learning paths be incorporated.

Keywords

Artificial Intelligence; English Language Teaching; Spoken English; Expressive Ability.

1. Introduction

In the 21st century educational landscape, the application of artificial intelligence (AI) technology is becoming increasingly pervasive. In the domain of English learning, AI technology has also demonstrated revolutionary potential. With the acceleration of globalization and the rapid advancement of information technology, English serves as the primary language for international communication, rendering the instruction of oral English increasingly significant. Against this backdrop, the integration of artificial intelligence technology into English speaking instruction has emerged as a new focal point in educational technology research [1]. This study aims to conduct an in-depth investigation into the impact of AI-assisted learning on the oral proficiency of English major students. Through experimental and qualitative research methods, this study evaluates the practical effects of AI-assisted learning on enhancing students’ speaking abilities, as well as students’ attitudes toward the technology and their user experience.

2. Literature Review

2.1. Challenges Faced by Traditional English Oral Instruction

Whether one can communicate effectively in a foreign language is an important indicator for measuring students’ foreign language proficiency [2]; as one of the core skills of English, oral proficiency is one of the most important factors for effective communication. However, traditional teaching methods face numerous challenges in improving students’ oral proficiency. First, traditional oral teaching emphasizes linguistic forms and grammatical structures while neglecting the practical application and communicative functions of the language [3], making it difficult for students to effectively apply what they have learned in actual communication.

Second, due to time and resource constraints, students have fewer opportunities for practice in traditional oral English classrooms, which limits their ability to apply what they have learned in class to practical situations [3]. In addition, traditional oral teaching has limited teacher-student interaction, with teachers often adopting a “one-size-fits-all” teaching method that overlooks students’ different learning styles and needs [4]; teachers also find it difficult to provide timely and specific feedback, which not only limits students’ accurate assessment and improvement of their own oral proficiency [2] but may also cause some students to feel frustrated or neglected. However, in recent years, the development of artificial intelligence-assisted technologies has provided new possibilities for oral English learning, and how to utilize them to improve the effectiveness of oral English teaching has become an important topic of current research.

2.2. Theoretical Foundations of AI-Assisted Oral English Instruction

The application of artificial intelligence (AI) technologies in the field of education has gradually matured, and their use in language learning has also garnered widespread attention [5]. AI can provide students with personalized learning experiences through technological means such as speech recognition and natural language processing. For instance, intelligent voice assistants can simulate authentic conversational environments to help students practice oral expression, while intelligent assessment systems can provide real-time feedback on students’ pronunciation and intonation, assisting them in correcting errors. The application of these technologies not only enhances students’ learning efficiency but also strengthens their learning interest and self-confidence.

Furthermore, AI can leverage big data analytics to understand students’ learning habits and preferences, thereby recommending appropriate learning resources and methods. For example, based on students’ learning progress and proficiency levels, intelligent tutoring systems can automatically adjust teaching content and difficulty to ensure that each student receives suitable guidance and support. This personalized approach to instruction helps to unlock students’ potential and improve their learning outcomes [6].

2.3. Review of Existing Research

Current research on artificial intelligence (AI)-assisted English learning primarily focuses on the following aspects. First, researchers have explored the advantages of AI technology in language teaching, suggesting that these benefits are primarily reflected in the provision of personalized learning resources and the enhancement of learning efficiency [7]. Foreign language education is currently undergoing a transition from “learning for examinations” to “learning for application,” a shift that necessitates the support of AI technology to enable personalized and flexible learning models [8]. Second, researchers have investigated typical application scenarios in which artificial intelligence can support language teaching, such as automated question-answering systems, machine translation, and intelligent tutoring systems [7]. Within these application scenarios, natural language processing technologies correspond to functions such as intelligent essay grading and speech recognition; NLP technologies within the realm of digital technology empowerment [9], as well as knowledge graph technologies, which are still in their nascent stage [10], have also provided more convenient tools for instruction and have attracted attention from researchers both domestically and internationally. Other studies have explored the application of Human-AI Negotiation Competence (HAINC) in the context of AI and foreign language education, suggesting that HAINC is a key factor influencing the effectiveness of AI applications. Accordingly, these studies recommend offering specialized courses in foreign language education to enhance students’ English learning efficiency by improving their human-AI negotiation competence [1]. Despite the aforementioned advantages of AI-assisted instruction, some studies have pointed out that

ethical risks and governance issues will pose significant challenges for the application of AI technology in language teaching [7].

Currently, educators and researchers are actively exploring the use of artificial intelligence technology to support oral English instruction [11]. Some scholars have noted that intelligent speech recognition technologies can provide real-time assessment of students' pronunciation accuracy and fluency; natural language processing technologies can help students better understand and use authentic expressions; and virtual reality and augmented reality technologies can create more immersive language learning environments for students. The application of these technologies not only enhances students' learning efficiency but also stimulates their learning interest, thereby effectively improving their oral proficiency [12]. However, empirical research on AI-assisted oral English learning remains insufficient.

3. Research Methods

3.1. Research Design

This study adopts a mixed-methods approach combining experimental and qualitative methods. Through experiments, questionnaires, and semi-structured interviews, it evaluates the impact of AI-assisted learning on the oral proficiency of English major students.

3.1.1. Experiment

1) Participants

Sixty third- and fourth-year English major students from a university were recruited for this experiment. All participants had passed the Test for English Majors Band 4 (TEM-4) and attended their regular coursework delivered in English.

2) Research Instruments

Among the various AI-powered oral English applications available, this study selected two AI platforms—the “Poke AI Speaking” app and the “AI Foreign Teacher” app—as tools for AI training and data collection. The “Poke AI Speaking” app is designed to provide users with a personalized AI speaking coach and professional oral guidance. It features graded situational dialogue modules, intelligent correction and feedback functions, and an IELTS speaking mock test function. In this study, the “IELTS Speaking Mock Test” function was used to assess students' oral proficiency and collect their speaking scores. The “AI Foreign Teacher” app is an AI-powered oral English training platform. In this experiment, the “Harvard Situational Course” function was used to conduct a 30-day AI-based oral training program for students. Additionally, the scoring system within the “Free Chat” module was employed to evaluate students' performance across four dimensions: fluency, accuracy, pronunciation, and grammar.

3) Experimental and Control Group Design

Experimental Group (n=30): Students completed a 30-day oral training program using the “Harvard Situational Course” module of the “AI Foreign Teacher” app, consisting of 10 units. Each student engaged in daily training sessions lasting approximately 30 to 60 minutes.

Control Group (n=30): Students received no additional training.

4) Pre-test and Post-test

Pre-test: Before the experiment commenced, the IELTS Speaking module of the “Poke AI Speaking” app was used to obtain pretest speaking scores for the 60 students. Simultaneously, the “Free Chat” module of the “AI Foreign Teacher” app, based on the ISS-15 scale, was used to assess students' oral performance across the four dimensions: fluency, accuracy, pronunciation, and grammar.

Post-test: Upon completion of the experiment, the same IELTS speaking test and four-dimensional assessment were administered to all 60 students again.

5) Data Collection

Data were collected from all students across two simulated IELTS speaking tests conducted using the “Poke AI Speaking” app to objectively evaluate changes in the overall oral proficiency of both groups. Additionally, assessment scores from the “AI Foreign Teacher” app’s evaluation system—covering the four dimensions of fluency, accuracy, pronunciation, and grammar—were collected to objectively analyze changes in students’ oral proficiency across different dimensions within the two groups.

6) Data Analysis

SPSS software was used for data analysis to compare differences in test scores between the experimental and control groups in the pretest and posttest, as well as to determine whether the differences between the two groups were statistically significant. Pearson correlation analysis and stepwise multiple regression analysis were employed to explore the relationships among different variables.

3.1.2. Qualitative Research

The participants remained the 60 English major students from a university who took part in the experiment. After administering a questionnaire to all 60 students, three students were randomly selected for semi-structured interviews.

1) Questionnaire Design and Content

The questionnaire primarily covered the following aspects:

- ① Basic Information: gender, age, major, etc.
- ② Attitudes Toward AI-Assisted Learning: including acceptance of AI practice partners, frequency of use, satisfaction, etc.
- ③ Self-Assessment of Oral Proficiency: requiring students to self-evaluate their oral skills, including fluency, accuracy, pronunciation, and grammar.

2) Interviews

First, attention was directed toward the interviewees’ overall perceptions of AI-assisted learning, aiming to understand their fundamental awareness and attitudes toward this novel learning approach.

Second, the study explored in depth the impact of AI-assisted learning on the interviewees’ oral proficiency, seeking to ascertain whether this learning approach contributed to the improvement of their oral expression skills and in what aspects it exerted positive or negative effects.

In addition, the interviewees were asked in detail about the various problems and challenges they encountered while using AI-assisted learning. These issues encompassed technical limitations, the suitability of learning resources, user experience, and other aspects, with the aim of comprehensively understanding their difficulties and needs in practical application.

Finally, the interviewees were invited to share their expectations and suggestions for the future application of artificial intelligence in the field of language learning. These included the new features or improvements they hoped to see, as well as their ideas and reflections on how to better integrate AI into the language learning process.

3.2. Data Analysis Methods

Descriptive Statistical Analysis: Basic descriptive statistics, such as mean and standard deviation, were conducted on the questionnaire data.

Independent Samples t-Test: An independent samples t-test was employed to compare the score differences between the experimental group and the control group in the pretest and posttest.

Paired Samples t-Test: A paired samples t-test was used to compare the score changes within the experimental group and within the control group between the pretest and posttest.

Stepwise Multiple Regression Analysis: Stepwise multiple regression analysis was conducted to examine the degree of influence of multiple independent variables on the dependent variable. Through the above research methods, this study can objectively evaluate the actual impact of AI-assisted learning on the oral proficiency of English major students and explore the underlying mechanisms and potential issues.

4. Research Results

4.1. Quantitative Research Results

In accordance with the research design, the study first conducted descriptive statistical analysis, independent samples t-tests, and paired samples t-tests on the pretest and posttest IELTS speaking scores of the 60 students obtained from the “Poke AI Speaking” app. Subsequently, calculations of means and standard deviations were performed on the pretest and posttest scores for the four dimensions of oral proficiency—fluency, accuracy, pronunciation, and grammar—derived from the “AI Foreign Teacher” app, and regression analysis was conducted on the experimental group data.

4.1.1. Descriptive Statistical Analysis

Descriptive statistical analysis was conducted on the IELTS speaking scores of the experimental group and the control group in the pretest and posttest. The specific data are presented in Table 1.

Table 1. Descriptive Statistical Data

Group	Pretest Mean (SD)	Posttest Mean (SD)	Mean Improvement (SD)
Experimental Group	5.5 (0.7)	6.58 (0.5)	1.0 (0.5)
Control Group	5.4 (0.7)	5.6 (0.6)	0.2 (0.4)

As shown in Table 1, the mean score of the experimental group in the posttest was significantly higher than that in the pretest ($p < 0.01$), indicating that students who used AI-assisted learning demonstrated a significant improvement in oral proficiency. The control group showed a slight increase in the posttest score, but the change was not statistically significant ($p > 0.05$), suggesting that students who did not receive AI assistance made limited progress.

4.1.2. Independent Samples t-Test

To compare the differences in IELTS scores between the experimental group and the control group in the pretest and posttest, an independent samples t-test was conducted. The specific data are presented in Table 2.

Table 2. Independent Samples t-Test Data

Group	*t*	df	*p*
Pretest	0.47	58	0.64
Posttest	4.87	58	< 0.001

The independent samples t-test revealed that there was no significant difference in pretest scores between the experimental group and the control group ($p = 0.64$). However, in the posttest, the experimental group's scores were significantly higher than those of the control group ($p < 0.001$). This indicates that AI-assisted learning had a significant effect on improving students' oral proficiency.

4.1.3. Experimental Results and Analysis

To more precisely evaluate the effectiveness of AI-assisted learning, the study employed the intelligent speech evaluation system of the “AI Foreign Teacher” app to assess students’ oral proficiency across four dimensions: fluency, accuracy, pronunciation, and grammar. The specific data analysis results are presented below.

As shown in Table 3, students in the experimental group demonstrated significant improvements across all oral proficiency indicators after using AI-assisted learning. This suggests that the AI evaluation system can effectively identify and provide feedback on students’ oral problems, thereby facilitating their improvement.

Table 3. Rating of Students’ Oral Proficiency by the AI Speech Evaluation System

Dimension	EG Pretest Mean (SD)	EG Posttest Mean	Improvement (SD)
Fluency	60.5 (7.2)	72.8 (6.1)	12.3 (5.1)
Accuracy	58.3 (6.9)	70.1 (5.7)	11.8 (5.3)
Pronunciation	62.4 (7.5)	73.9 (5.9)	11.5 (5.4)
Grammar	58.9 (7.0)	71.4 (5.8)	11.6 (5.2)

To further investigate the extent to which improvements in different dimensions contributed to the overall enhancement of oral proficiency, a multidimensional multiple regression analysis was conducted on the experimental group’s oral proficiency levels. The results showed that AI-assisted learning had a significant effect on improving students’ oral proficiency across fluency, accuracy, pronunciation, and grammar. Among these dimensions, improvement in fluency contributed the most to the overall enhancement of oral proficiency, followed by improvements in accuracy, pronunciation, and grammar. The specific data are presented in Table 4.

Table 4. Regression Analysis Data of the Experimental Group

Variable	Beta	*t*	*p*
Fluency	0.45	8.2	< 0.001
Accuracy	0.35	6.7	< 0.001
Pronunciation	0.28	4.9	< 0.001
Grammar	0.26	4.3	< 0.001

Based on the above data analysis, the following conclusions can be drawn: AI-assisted learning can significantly improve the oral proficiency of English major students, and this improvement is primarily manifested in helping students express themselves more fluently. Conversely, there may still be room for improvement in helping students enhance their pronunciation, accuracy, and grammar. These findings provide valuable references and guidance for the further development of foreign language education.

4.2. Qualitative Research Results

4.2.1. Questionnaire Results

To comprehensively evaluate the impact of AI-assisted learning on the oral proficiency of English major students, this study collected relevant data through a questionnaire. The specific data analysis results are presented below.

Table 5. Survey Results of Students' Acceptance of AI-Assisted Learning

Questions	Agree (%)	Neutral (%)	Disagree (%)
I believe AI-powered speaking practice is helpful to my oral proficiency.	85	10	5
I will continue using AI-powered speaking practice for oral practice.	80	15	5
I find AI-powered speaking practice more effective than traditional methods.	75	15	10

As shown in Table 5, the vast majority of students demonstrated a high level of acceptance toward AI-assisted learning, believing that it contributed to the improvement of their oral proficiency, and expressed willingness to continue using this learning approach.

Table 6. Challenges and Problems Encountered by Students

Questions	Frequency (%)
Technical failures or operational difficulties	20
Lack of personalized feedback	25
Difficulty in finding appropriate learning resources	30
Perceived lack of integration with traditional learning methods	25

As shown in Table 6, the main problems encountered by students during the use of AI-assisted learning included technical malfunctions, a lack of personalized feedback, and insufficient alignment of learning resources. These issues require further resolution in future research and application.

From the above data analysis, it can be observed that the AI-assisted learning provided by the platform has a significant effect on improving the oral proficiency of English major students, and the majority of students hold a positive attitude toward it. However, there are also some technical and resource-related issues with the app that need improvement. These findings provide useful references and guidance for the reform and development of foreign language education.

4.2.2. Interview Results

To gain an in-depth understanding of the impact of AI-assisted learning on the oral proficiency of English major students, this study collected qualitative data through semi-structured interviews. The specific interview results and analysis are presented below.

1) Overall Perceptions of AI-Assisted Learning

The interviewees generally held positive impressions of AI practice partners. Interviewee A stated that the AI practice partner was a highly innovative learning tool that provided immediate feedback, helping to quickly correct pronunciation and grammatical errors—a level of immediacy that traditional teaching methods could not match. Interviewee B felt that the AI practice partner was very engaging, as it eliminated the pressure associated with human teachers and allowed for free expression without fear of judgment. However, Interviewee C noted that although the AI practice partner was convenient, it sometimes lacked a human touch and could not fully replace the guidance of a human teacher.

2) Impact of AI-Assisted Learning on Oral Proficiency

The interviewees generally agreed that using an AI practice partner had a significant impact on their oral proficiency. Interviewee A reported a noticeable improvement in oral fluency, as the ability to practice at any time and receive corrective feedback from the AI practice partner

facilitated continuous progress. Interviewee B felt that their self-confidence had increased because the AI practice partner provided ample positive feedback, reinforcing their belief in their improving oral skills. Interviewee C mentioned that the AI practice partner helped them use authentic expressions more naturally, which was highly beneficial for improving oral proficiency.

3) Problems and Challenges Encountered

During the use of the AI practice partner, the interviewees encountered certain problems and challenges. Interviewee A noted that the speech recognition of the AI practice partner was sometimes inaccurate, resulting in unfair scoring, and expressed hope for future improvements in this area. Interviewee B experienced technical malfunctions, such as application crashes or network connectivity issues, which affected the learning experience. Interviewee C felt that the content offered by the AI practice partner was sometimes monotonous and expressed a desire for more diverse topics and situational simulations.

4) Expectations and Suggestions for the Future

The interviewees offered several expectations and suggestions for the future application of artificial intelligence in language learning. Interviewee A expressed a desire for more personalized learning pathway recommendations, with teaching content adjusted according to their progress and interests. Interviewee B hoped that the AI practice partner would incorporate more interactive features, such as role-playing or conversational exercises, to make learning more engaging. Interviewee C suggested strengthening the integration of AI practice partners with human teachers, with regular assessments and guidance provided by human teachers, in order to leverage the advantages of AI while preserving the personal touch of teaching.

From the above interview results, it can be seen that the majority of interviewees held a positive attitude toward AI-assisted learning, believing that it played a significant role in enhancing oral proficiency and self-confidence. However, certain technical and content-related issues still need to be further addressed. These reflections provide valuable references for future research and practice.

5. Discussion

5.1. Interpretation of Results

The experimental results and data analysis of this study indicate that the use of AI practice partners can significantly improve students' oral proficiency within a relatively short period, with the most pronounced improvement observed in oral fluency. The questionnaire results revealed that the majority of students expressed willingness to use AI tools for oral training, while technical malfunctions, a lack of personalized feedback, and insufficient learning resources were identified as the main challenges. The interview results further showed that the interviewees had strong confidence in AI tools. Although existing tools still have certain limitations, the interviewees expressed expectations for more personalized learning pathways and interactive features, and suggested integrating human teacher guidance.

5.2. Research Limitations

Although this study provides valuable insights into AI-assisted oral English learning, several limitations should be acknowledged.

First, the sample size was relatively small and confined to students from a specific background. The participants in this study were 60 English major students from a single university, which may limit the generalizability of the findings. Future research should expand the sample size and include students from different regions and diverse backgrounds to enhance the representativeness and generalizability of the results.

Second, the study duration was relatively short, limited to a one-month training period. Although significant short-term effects were observed, the long-term impact of sustained AI-assisted learning on students' oral proficiency remains unclear. Therefore, future research should extend the observation period to evaluate long-term effects and sustainability.

Third, the AI-assisted instruction system employed in this study was relatively singular, which limits the representativeness of its instructional outcomes. Although the evaluation of students' oral proficiency adopted the widely recognized IELTS speaking test format, the tests were conducted in an online simulated examination environment built by the AI system due to site constraints. Consequently, the scores obtained may differ to some extent from those derived from authentic IELTS testing conditions.

Finally, although multiple data collection methods were employed in this study, the self-reported data from interviewees in the qualitative research may be subject to personal perceptions and memory bias. Future research may consider adopting more objective data collection methods, such as behavioral observations and actual performance recordings, to reduce subjective bias.

In summary, while this study reveals, to a certain extent, the impact of AI-assisted learning on the oral proficiency of English major students, several limitations remain. Future research should further expand the sample size, extend the observation period, and adopt more objective data collection methods to provide more comprehensive and in-depth research conclusions.

6. Conclusion and Recommendations

In the experimental and qualitative analyses of this study, students in the experimental group demonstrated a significant improvement in oral proficiency after using AI practice partners. The majority of students accepted the AI-assisted learning provided by the platform and perceived it as effective, while also identifying certain technical details of the platform that require improvement. These findings reflect the positive impact of AI-assisted learning on the oral proficiency of English major students, suggesting that it can be appropriately integrated into curriculum instruction in the future.

Based on the above conclusions, the following recommendations are proposed. With respect to research, future studies should expand the scope of investigation, increase sample sizes, extend observation periods, and adopt more objective and reliable data collection methods. With respect to the design of AI-assisted platforms, improvements should be made in speech recognition accuracy, system stability, and the richness of learning resources. Additionally, personalized learning pathways should be designed, teaching content should be dynamically adjusted, appropriate learning resources should be recommended, human teacher guidance should be integrated, and interactive features should be enhanced. Through the implementation of these recommendations, it is hoped that AI-assisted learning systems can be further optimized, their application effectiveness in language learning can be enhanced, and they can provide useful references and guidance for the reform and development of foreign language education.

Acknowledgements

I am grateful to my esteemed teacher for the guidance, to my parents for their nurturing, and to my dear friends for their companionship. Though words are few, my feelings are deep; this bond shall remain in my heart forever.

References

- [1] Wen, Q. F. & Liang, M. C., Human-machine interactive negotiation competence: ChatGPT and foreign language education. *Foreign Language Teaching and Research*, Vol. 56 (2024) No.2, p286-296.
- [2] Ouyang, F. S., A preliminary study on oral English teaching. *Foreign Language Teaching and Research*, (1982) No.3, p52-59.
- [3] Shi, P. W., On enhancing authenticity in oral language teaching. *Language Teaching and Linguistic Studies*, (1983) No.1, p60-68.
- [4] Kang, Z. F. & Lu, X. Y., Current state, problems, and countermeasures in oral English teaching in China. *Foreign Languages and Their Teaching*, (1998) No.4, p32-35+57.
- [5] Wang, Y., A study on factors influencing college students' behavioral intention to use AI technology in mobile-assisted English vocabulary learning. *Modern Distance Education*, Vol.35 (2023) No.5, p72-80.
- [6] Lu, H. Z., On the application of artificial intelligence technology in outcome-based English teaching. *Information System Engineering*, Vol. 40 (2024) No.6, p153-156.
- [7] Wang, C. Y. & Sun, J., AIGC-enabled language services: Use value, ethical risks, and governance solutions. *Foreign Language Education*, Vol. 45 (2024) No.2, p30-35.
- [8] Yang, D., National language strategy: Challenges and transformations in foreign language education in the new era. *Foreign Language Teaching and Research*, Vol. 56 (2024) No.1, p3-9.
- [9] Zhang, H., Towards a high-quality foundational English education system: Connotations, imperatives, and pathways. *Foreign Language Teaching and Research*, Vol. 53 (2023) No.3, p410-419.
- [10] Zheng, Y. Y., Generative AI in foreign language education: Key debates and theoretical construction. *Foreign Language Education*, Vol. 45 (2024) No.6, p48-53.
- [11] Li, X. Y., Cultivating international communication competence in college foreign language education. *Journal of Xiangyang Polytechnic*, Vol. 22 (2023) No.6, p121-124.
- [12] Wang, W. W., Wang, K. & Zhang, Y. Q., Exploring automated scoring pathways for interpreting based on the CSE interpreting assessment scales. *Foreign Language World*, Vol.39 (2022) No.2, p 80-87.