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The role of artificial intelligence technology in enhancing oral proficiency among English language learners

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Abstract: The integration of artificial intelligence into educational practice is unavoidable, yet empirical evidence on its impact on English learners' oral proficiency is limited. This research adopts Talk-GPT, an AI assistant, to conduct a seven-month controlled trial involving four English majors with similar academic backgrounds. Adopting mixed methods, this study assesses AI's effects on students' English pronunciation, vocabulary use, grammar and fluency. Results show significant gains in all four dimensions. However, limitations persist—AI feedback primarily targets superficial linguistic errors, with limited improvement in complex syntax, content coherence, and pragmatic appropriateness. To address these, the study proposes a human-machine collaborative model involving teaching, learning, and R&D: teachers prioritize higher-order linguistic skills, students avoid over-reliance and engage in authentic interaction, and developers enhance feedback mechanisms and scenarios.

Keywords: English learners; oral training; Talk-GPT

1 Introduction

Intelligent technology and generative AI are rapidly advancing and deeply integrating into education, driving innovation in English teaching models. Amid this context, reforming college oral English teaching is urgent. Current challenges include limited oral practice opportunities, insufficient classroom interaction, and a lack of timely, personalized feedback for students. Additionally, the organization is difficult, and the implementation cost is high [1]. How to leverage artificial intelligence technology to overcome these teaching dilemmas and build a new, efficient ecosystem for oral English teaching has become a core issue for educators.

As a new intelligent teaching tool, generative AI exemplified by Talk-GPT leverages deep learning based on massive corpora to realize natural human-machine dialogue with learners. By integrating automatic speech recognition, natural language processing, and personalized recommendation algorithms, it accurately identifies weaknesses in pronunciation, grammar, fluency and provides real-time feedback. It can also simulate diverse real communication scenarios, building an immersive practice environment that breaks through the temporal and spatial constraints of traditional oral learning. As Zou Bin and Wang Chenghao (2026) pointed out, AI can provide every language learner with a personalized immersive learning experience [2]. This empowers students to take ownership of their learning, effectively enhancing initiative and enthusiasm for oral expression, while providing robust technical support to address existing challenges in oral English

instruction.

As of December 2025, literature retrieved from CNKI and Web of Science show a growing trend in domestic and international studies on AI-integrated English learning. Domestic research focuses on AI-assisted oral English teaching, while international research centers on AI and computer science-integrated language learning. However, existing studies lack targeted empirical research on AI's role in improving English majors' oral proficiency and in-depth explorations on its practical effects on core dimensions (pronunciation, vocabulary, grammar) remain insufficient. To fill this gap, this study adopts an empirical experimental approach among English majors to explore AI's specific role and practical value in enhancing oral proficiency, providing empirical evidence and practical pathways for AI-supported oral English instruction.

2 Research design

2.1 Research purpose and research questions

This study explores the practical role and application of AI in enhancing English learners' oral proficiency. Using Talk-GPT, it investigates practical AI-assisted oral learning and analyzes its impact on learners' oral skills from the dimensions of pronunciation accuracy, vocabulary application, grammatical standardization, and oral fluency. It provides empirical evidence for designing personalize learning and offers practical pathways for AI to empower college oral English teaching. The research questions are as follows:

(1) Compared with traditional learning, do students using AI tools achieve higher pronunciation accuracy, richer vocabulary use, better grammatical accuracy, and higher oral fluency?

(2) What are the strengths and limitations of AI technology in supporting English learners' oral learning?

2.2 Participants

Four students majoring in English Education were selected as focus group participants. They shared the same academic background, age range, and English level. Before the experiment, a questionnaire was used to evaluate their oral English proficiency, including self-assessment, AI-assisted learning experience and willingness, ensuring no marked difference in initial oral ability and guaranteeing the comparability and accuracy of results. None of them is experienced in AI-based oral learning, which met the participant selection criteria for this research.

2.3 Research procedure

The experiment spanned seven months and adhered to the progression of preparation, implementation, data collection and conclusion. Before the experiment, the research team reviewed relevant studies for theoretical basis of AI-assisted oral English learning. Meanwhile, a questionnaire survey was conducted among English majors, students from the Class of 2023 at Ningxia University, to grasp their oral proficiency, learning difficulties, and needs for AI-assisted oral learning. Focus group participants received training regarding the oral practice functions of Talk-GPT, including voice interaction, pronunciation evaluation, situational dialogue, and other related modules, enabling them to independently use the tool for oral learning tasks. At the mid-experiment stage, participants did oral practice as required: 5 times a week, 30 minutes each. The team set phased learning goals, organized monthly oral assessments, generated special reports, and recorded participants' performance regarding pronunciation, vocabulary, grammar and fluency. During practice, participants completed human-machine interactive oral training via Talk-GPT, different from traditional peer dialogue and classroom practice. At the post-experiment stage, the team extracted the raw experimental data from the Talk-GPT backend, reflecting participants' seven-month oral practice. Combined with the assessment records and learning reports, the research team sorted out and integrated the longitudinal changes in core indicators, including oral expression duration, grammatical error frequency, vocabulary diversity, pronunciation accuracy rate. The team also conducted a post-test to compare participants' overall oral proficiency before and after the experiment.

Finally, the team analyzed the experimental data, questionnaire results, and interview records, compared participants' pre- and post-experiment oral proficiency, summarized the advantages and issues of AI-assisted oral learning, and produced an experimental report together with compiled learning guidelines.

3 Results analysis

This study defined four core dimensions to evaluate participants' oral proficiency: pronunciation accuracy, vocabulary richness, grammatical accuracy, and fluency.

Pronunciation accuracy was measured by the proportion of utterances rated "perfect" via Talk-GPT's speech recognition and pronunciation evaluation, supplemented by the number of utterances categorized as "nearly perfect" "close to standard" and "needs improvement". Vocabulary use was assessed from vocabulary richness and appropriateness through both manual transcription statistics and automated tool analysis. Grammatical accuracy was indicated by the proportion of sentences with grammatical errors (focusing on tense, subject-verb agreement and sentence structure), which were manually annotated and counted from transcribed oral texts. Fluency was mainly measured by effective continuous speaking duration and frequency of meaningless pauses per minute, combined with the fluency evaluation results generated by Talk-GPT [3].

Data collection and analysis adopted a mixed-method design integrating quantitative and qualitative approaches. Multi-source data were collected, including raw backend data from Talk-GPT (pronunciation evaluation, dialogue texts, practice duration, fluency scores), pre-test and post-test assessment materials, as well as questionnaires and semi-structured interviews. Oral recordings were transcribed verbatim, with grammatical errors, vocabulary use, and pauses manually coded to form standardized datasets. Quantitative analysis used descriptive statistics to conduct longitudinal comparisons of core indicators across the 7-month experiment. Qualitative analysis thematically coded questionnaire and interview data to identify students' attitudes, difficulties and learning gains. Combining quantitative results and qualitative feedback, this study evaluated the effect of AI-assisted learning on improving English learners' oral proficiency, providing evidence for targeted learning and instructional optimization. The results show that the AI tool helps to improve students' oral proficiency significantly.

3.1 Contrast of pronunciation assessment

All four participants demonstrated varying degrees of improvement in pronunciation accuracy: Liu's score rose from 64.86% to 68.02%, Li from 72.88% to 74.29%, Mi from 71.06% to 72.37% and Wu from 71.86% to 75.81%. With AI's real-time speech recognition and precise error diagnosis, students can quickly identify and correct pronunciation deviations. Coupled with real-context practice, this effectively enhances their pronunciation accuracy, resulting in a steady rise in pronunciation performance.

3.2 Contrast of vocabulary use

According to statistics of dialogue output and lexical diversity analysis, participants showed greater precision and diversity in vocabulary selection after AI-assisted situational dialogue practice. The average number of effective vocabulary types per participant increased by 28.5%, and high-frequency scenario vocabulary use accuracy rose from 71.2% to 89.6%. Depending on its vast corpus, AI supplies rich vocabulary for daily communication, opinion sharing, and etc. This enables them to overcome the constraints of traditional vocabulary learning and move from basic to diverse and authentic expression. Moreover, personalized vocabulary recommendations and usage feedback broaden vocabulary bank and boost them to apply words flexibly in real contexts, ultimately enriching their spoken language.

3.3 Contrast of grammatical accuracy

During the experiment, AI provided real-time identification and corrective feedback on oral grammatical errors,

improving students' grammar usage and accuracy. The average grammatical error decreased from 18.3% to 7.4%, with third-person singular and tense consistency errors dropping by 62.7% and 58.2% respectively. High-frequency grammatical errors were notably reduced, enabling more accurate use of grammatical rules in oral production. Through repeated correction and intensive practice, AI helped students reduce grammatical errors and learn to use them properly [4].

3.4 Contrast of oral fluency

The immersive real-time dialogue scenarios of AI significantly improved the oral fluency of all four participants. Average pause times per 100 utterances decreased from 21.6 to 8.3; average thinking time shortened from 4.7 seconds to 1.8 seconds; speech fluency increased from 65.4 to 87.1 points. Pauses and thinking time declined markedly, greatly enhancing speech coherence. AI's continuous interactive practice alleviated the lack of communication opportunities in traditional oral learning and improved students' language response speed through high-frequency output. Moreover, AI tailored the dialogue rhythm to each learner's proficiency, helping them to adapt to natural speech rhythms, overcome expression barriers and enhance fluency and authenticity of oral output.

4 Conclusion

The experiment confirms that AI technology effectively supports English learners' oral learning in multiple dimensions: (1) real-time speech recognition and precise error correction help students correct pronunciation deviations; (2) corpus-driven situational vocabulary input enriches students' vocabulary repertoire and enhances their flexible vocabulary use in real contexts; (3) ongoing feedback on grammatical errors in oral practice helps them correct recurrent mistakes and develop sound grammatical habits; (4) immersive real-time interactive scenarios break traditional oral practice limitations, improving language response speed, reducing pauses and significantly enhancing oral fluency.

However, this study also identifies obvious limitations of existing AI-assisted oral learning. First, students' grammatical accuracy only improved in basic error-prone points, with persistent deficiencies in applying complex sentence patterns and special grammatical rules, leading to limited overall improvement. Then, technology only identifies surface-level errors in pronunciation, vocabulary and grammar, failing to provide comprehensive and effective evaluation and feedback on deep dimensions such as content coherence, argument clarity and pragmatic appropriateness. Lastly, personalized adaptation is still inadequate—there is a scarcity of customized resource recommendation and targeted practice design accounting for students' individual learning characteristics and unique linguistic deficiencies [5]. Besides, some learning resources are poorly matched with the corresponding practice scenarios.

The reasons are as follows. First, in high-frequency human-machine dialogue, students focus more on fluency and lexical flexibility, with limited attention to complex grammatical norms, leading to insignificant improvement in complex syntactic structures. Second, existing AI only achieve superficial speech recognition and basic natural language processing, lacking the capacity to analyze deep language logic and pragmatic contexts; its feedback relies on preset error databases, failing to evaluate language connotation and context adaptability. Third, the specialized corpus for English learners remain underdeveloped, with insufficient targeted model training to satisfy specific learning demands. In addition, human-machine interaction lacks emotional and cognitive exchange compared with real communication, limiting students' deep expression and adaptability. Based on research results and problem analysis, the integration of AI into oral English teaching requires a human-machine collaborative model involving teaching, learning and technological R&D. At the teaching level, instructors should use AI for pre-class personalized diagnosis and post-class practice guidance, focusing on deep abilities (e.g. logical construction and pragmatic appropriateness) beyond AI's reach. At the learning level, students ought to leverage AI's real-time feedback to strengthen foundational oral abilities (pronunciation, vocabulary, grammar) while avoiding over-dependence, and improve deep expression through practice, peer evaluation and diversified learning inputs. At the R&D

level, a learner-specific corpus should be built to enhance targeted model training and personalized recommendations; the feedback mechanism should be optimized to analyze language logic and pragmatics, and interactive scenarios should be enriched to make AI support deep language use. These improvements will help AI move from basic error correction to genuine capacity building for learners. Additionally, AI integration in oral teaching must adhere to the core of language learning—interpersonal communication and cultural understanding.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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