Exploring the Impact of AI-Assisted Speaking Practice on EFL Learners' Speaking Proficiency and Motivation: A Mixed-Method Study

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Abstract
Existing studies have shown that Artificial Intelligence (AI) tools can effectively improve speaking proficiency, including aspects such as pronunciation, fluency, grammar and vocabulary. Meanwhile, some research has demonstrated their potential in fostering learner motivation and interest. However, current research lacks investigating both these tools' effectiveness in boosting speaking skills and enhancing psychological factors like motivation and anxiety reduction. Building on the gap, this study investigates the impact of AI-assisted speaking applications on enhancing English as a Foreign Language (EFL) speaking skills and students' intrinsic motivation for speaking practice. The research involved 70 sophomore English major students at a university in China, with the experimental class using the AI app EAP Talk for speaking practice over a four-week period, while the control class followed traditional speaking practice methods without AI support. A mixed-methods approach was

adopted in this study, including pre- and post-tests via a speech assessment platform, a survey, and semi-structured interviews to examine improvements in speaking proficiency alongside intrinsic motivation. The findings from the pre- and post-tests reveal significant improvements in the experimental class's speaking skills, particularly in pronunciation and fluency. Survey results revealed that most students found AI app helpful in increasing their motivation in speaking practice and boosting confidence in learning English. Many reported improved speaking skills and expressed willingness to continue using AI tool. Interview data further indicated that students perceived AI as an effective tool in reducing their speaking anxiety, while also appreciating the flexibility to practice anytime and anywhere. This study offers insights into the application of AI tools in EFL education, highlighting their potential to enhance both speaking proficiency and learner motivation.

Keywords: AI Tool, Speaking Proficiency, Motivation, Speaking Practice

Introduction

Speaking proficiency serves as a foundational component in EFL education, enabling learners to engage effectively in real-world communication. Nevertheless, conventional classroom instruction often fails to provide sufficient opportunities for substantive speaking practice due to constraints such as time limitations, overcrowded student-teacher ratios, and insufficient interactive resources (Syakur & Azis, 2020; Alsatuey, 2011). To address these classroom challenges, AI technologies like speech recognition apps and chatbots have become practical solutions. These tools offer learners personalized speaking practice with flexible scheduling and instant feedback, enabling self-directed learning while reducing reliance on teacher-centered methods (Ahn & Lee, 2016; Li & Zou, 2022).

Existing studies underscore AI's dual capacity to enhance linguistic performance or stimulate learner engagement. For instance, Fouz-González (2020) showed that AI tools significantly improve pronunciation accuracy, while Yang et al. (2022) found that task-oriented chatbots help lower speaking anxiety through structured interactions. Khasawneh and Khasawneh (2023) further found that over 70% of learners using AI tools exhibited greater motivation due to gamified features and immediate feedback. Existing studies have not sufficiently examined the dual impact of these tools on improving oral proficiency while simultaneously addressing psychological aspects such as learner motivation and anxiety levels. Building on these insights, this study examines whether AI-assisted speaking practice can effectively boost EFL learners' speaking skills and motivation. By comparing an experimental class using the EAP Talk AI app to practice speaking with a control class following traditional methods, the research evaluates how AI tools influence learners' motivation to engage in speaking practice and assesses their effectiveness in improving pronunciation, grammar, vocabulary, and fluency.

Literature Review

In the domain of EFL, speaking is considered a crucial skill that requires continual practice to achieve proficiency (Gunasekaran & Subramaniam, 2022). According to Harris (1974), speaking proficiency includes several critical components: pronunciation, grammar, vocabulary, fluency, and comprehension. Syakur and Azis (2020) highlight the interconnectedness of these components, indicating that they must be developed collectively rather than in isolation. This complexity in acquiring speaking skills is further exacerbated by

limited opportunities for real-life language use outside the classroom (Alsatuey, 2011) and the restricted time available for speaking practice due to overcrowded classrooms.

AI, which involves the creation of systems capable of performing tasks that typically require human intelligence—such as learning, reasoning, and self-correction—has the potential to address these challenges (Kok et al., 2009). The rise of mobile technology offers a viable solution, enabling learners to practice speaking whenever and wherever they choose, thus facilitating the consistent and widespread oral practice that is essential for skill development (Ahn & Lee, 2016).

AI technologies, especially automatic speech recognition (ASR), have contributed to the development of several tools designed to enhance EFL speaking practice. These include ASR-based websites (Chen, 2011), intelligent personal assistants and AI-driven chatbots. The increasing popularity of mobile-assisted language learning (MALL) has led to the creation of a variety of AI-powered apps, such as Liulishuo and EAP Talk (Lehman et al., 2020; Chang et al., 2021; Li & Zhou, 2022). These applications offer several benefits, such as access to diverse learning materials, user-friendly interfaces, and support for self-directed learning (Liu et al., 2019). Through technologies like speech recognition and natural language processing, these tools allow learners to engage in interactive, real-time speaking practice, thus fostering fluency development, providing instant feedback, and tracking learner progress. Additionally, the flexibility of these tools makes them an appealing option for students who wish to supplement their in-class speaking practice.

Numerous studies have documented the positive impact of these AI-powered tools on EFL learners. For example, Ahn and Lee (2016) found that students expressed enthusiasm for the speech recognition features, which offered immediate feedback on their spoken input. In a similar vein, Li and Zou (2022) noted that learners who practiced with AI speaking apps reported improvements in pronunciation, fluency, and oral rhythm, leading to increased confidence and more frequent speaking practice. Fouz-González (2020) observed notable improvements in learners' ability to perceive and produce target language features through AI-driven training. Furthermore, Yang et al. (2022) emphasized that task-based AI chatbots helped to create a positive and comfortable environment for English speaking practice. Zou et al. (2023) further underlined that the interactive activities provided by AI apps enhanced student engagement and learning outcomes. Nevertheless, most studies focused on short-term effects, lacking long-term tracking of students' improvement in real communicative scenarios after AI-assisted speaking practice.

Behavior can be driven by intrinsic motivation, extrinsic motivation, or may lack motivation altogether. Intrinsic motivation (IM) refers to doing an activity simply because it is enjoyable and personally rewarding (Deci & Ryan, 2013). A student may attend class because they genuinely enjoy learning about the subject. IM comes from our basic psychological needs for competence and autonomy. When an activity satisfies these needs, people will naturally want to do it again because they find it inherently motivating (Vallerand et al., 1992).

Recent research has also investigated the influence of AI tools on EFL learners' IM. Aeni et al. (2021) used a mixed-methods approach to explore how the ELSA app affected students' classroom engagement and motivation. Their study found that the use of the app led to

increased student involvement and enthusiasm, which was reflected in improved speaking performance and higher motivation over the course of two sessions. Similarly, Khasawneh and Jadallah (2023) reported that more than 70% of lecturers observed substantial improvements in student performance following the integration of AI models into foreign language education. These educators noted that AI tools, such as real-time feedback, chatbots, and automated reward systems, addressed the limitations of traditional teaching methods, thereby improving students' speaking, writing, and reading skills. Wei (2023) conducted a mixed-methods study to investigate the effects of AI-assisted language instruction on EFL learners' achievement, motivation, and self-regulated learning. The results indicated that AI-mediated instruction positively influenced English learning achievement, L2 motivation, and self-regulated learning. However, existing studies paid insufficient attention to how the unique cultural psychology of Chinese students (e.g., classroom silence tendencies) influences their intrinsic motivation to use AI tools.

Previous research on AI-assisted language learning has primarily focused on either linguistic outcomes or psychological factors, with relatively few studies investigating these two aspects concurrently. The field lacks integrated analyses that consider both dimensions simultaneously. To address these research gaps, this study seeks to address two research questions:
(1) What is the effectiveness of AI tool in improving EFL learners' speaking proficiency?
(2) How does AI tool influence learners' motivation in English speaking practice?

Methodology
Participants
The study involved 70 sophomore English majors (mean age=19.4, range=19-20) from two parallel classes at a Chinese university, with 36 participants in experimental class and 34 participants in control class. All participants were native Mandarin speakers with intermediate English proficiency (CEFR B1). The gender ratio was approximately 2:8 (male: female).

Instruments and Procedures
This study implemented a mixed-methods design: (1) pre-test assessments using speech evaluation platform, (2) a four-week intervention with AI-assisted speaking practice application, (3) post-test assessments employing parallel platform, (4) surveys measuring motivation and evaluation of the AI-assisted learning method, and (5) semi-structured interviews exploring learning experiences in depth. Figure 1 shows the detailed steps.

The study involved two classes of participants: an experimental class (n = 36) and a control class (n = 34). The experimental class completed four weeks of AI-assisted speaking practice using the EAP Talk application, engaging in five 15-minute practice sessions per week. EAP Talk is an innovative online platform that uses AI to evaluate academic English speaking skills. By combining speech recognition, language analysis, and data processing technologies, the app provides feedback of pronunciation to help learners improve independently (Wang & Zou, 2024). The control class continued with their regular traditional peer-based speaking activities without using any AI tools for practice speaking during the same period. All participants were native Mandarin speakers.
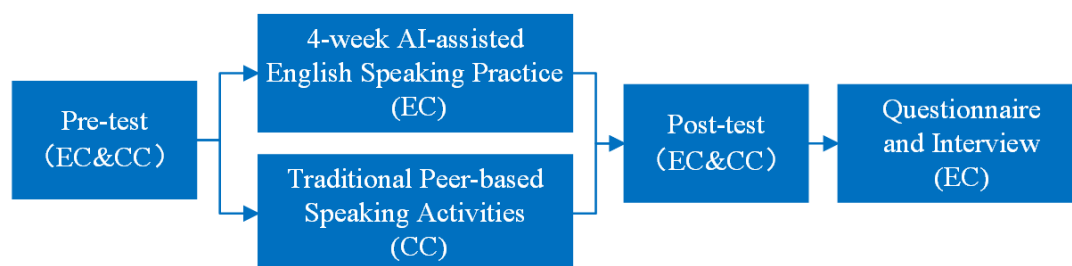
Figure 1 Quasi-experiment Plan

Pre- and Post-Tests
To assess speaking proficiency, both the experimental and control classes completed pre- and post-tests using the SpeechAce speaking test (https://www.speechace.com/speaking-test). This test evaluates pronunciation, grammar, vocabulary, fluency, and overall performance, with each test containing three questions focused on a specific topic. The test uses a scoring system with a maximum of 9 points for each component, as well as an overall score, following IELTS marking criteria. This scoring method ensured consistency and reliability when evaluating the students' speaking proficiency before and after the 4-week intervention. The sample result of the speaking test is shown in the Figure 2.

Figure 2 Sample Test Result

4-week AI-assisted English Speaking Practice
After completing the pre-test, the experimental class used the EAP Talk AI speaking app, engaging in five weekly practice sessions, each lasting at least 15 minutes. The experimental class completed a series of scenario-based speaking tasks to approximate real-life speaking contexts, with AI providing instant interaction across multiple topics. At the same period, the control class adhered to traditional classroom speaking activities without AI assistance.

Survey
To supplement quantitative assessments, a post-intervention survey was conducted with the experimental class. This instrument employed a Likert-scale matrix to assess students' motivation on AI-assisted speaking practice including whether boosting their confidence. Each item utilized a 5-point Likert scale (1=Strongly disagree; 5=Strongly agree).

Semi-structured Interviews
For qualitative data, nine students in the experimental class were purposively sampled for semi-structured interviews based on stratified criteria including academic standing, gender distribution, and personality traits. The interviews will focus on understanding students'

perception with AI-assisted speaking practice, particularly exploring whether it influences their intrinsic motivation to speak English.

Data Analysis
Pre and post-test results from the SpeechAce assessments were processed with IBM SPSS software. Initial descriptive statistics computed overall performance trends for both classes, focusing on speaking proficiency scores. Independent samples t-tests systematically assessed score differences between pre-test and post-test results across experimental and control classes.

Survey data were analyzed by IBM SPSS as well to assess students' motivation of AI tool. The Likert-scale responses generated summative profiles of students' motivation levels.
Semi-structured interview data from nine participants were transcribed and systematically examined using thematic analysis. This process sought to investigate students' perception with AI-assisted speaking practice, evaluating strengths on intrinsic motivation of this speaking practice approach compared with traditional oral English practice.

Findings
Here are the results for the two research questions: The findings for the first research question were derived from pre and post-test, survey, and semi-structured interviews. The results for the second research question were obtained from the survey and semi-structured interviews.

Effectiveness in Improving Speaking Proficiency
Pre- and Post-test
Table 1
Group Statistics

	Class	Mean	SD	t	Sig. (2-tailed)	Cohen's d
Overall	CC	0.059	0.3669	2.633	0.01	0.63
	EC	0.033	0.4922			
Vocabulary	CC	0.435	0.5736	1.969	0.053	0.471
	EC	0.756	0.767			
Grammar	CC	0.088	0.4947	1.684	0.097	0.403
	EC	0.303	0.5664			
Pronunciation	CC	-0.188	0.4125	2.775	0.007	0.664
	EC	0.131	0.5366			
Fluency	CC	-0.153	0.3553	3.228	0.002	0.772
	EC	0.144	0.4116			

The analysis of pre- and post-test differences revealed distinct improvements between the experimental class (EC, $n = 36$) and control class (CC, $n = 34$) in speaking proficiency components. Independent samples t-tests demonstrated statistically significant gains for the EC in pronunciation ($t = 2.775$, $p = 0.07$, $d = 0.664$) and fluency ($t = 3.228$, $p = 0.002$, $d = 0.772$), with mean improvements of 0.13 ($SD = 0.54$) and 0.14 ($SD = 0.41$), respectively. In contrast, the CC showed negligible changes or slight declines in these components. For vocabulary, the EC exhibited a higher mean improvement compared to the CC, though the difference was not statistically significant ($p = 0.053$). Similarly, grammar improvements

in the EC surpassed the CC, reaching marginal significance ($p = 0.097$, $d = 0.403$). Critically, the overall speaking proficiency of the EC ($M = 0.33$, $SD = 0.49$) significantly outperformed the CC. These results underscore the AI tool's impact on enhancing students' pronunciation and fluency, alongside moderate contributions to their grammar and vocabulary, yielding significant speaking proficiency enhancement.

Enhancing Motivation in English Speaking Practice
Survey
Table 3
Result of the Survey

	No. of items	Sample survey items 5-point Likert-scale questions	Cronbach's alpha	Mean (Max= 5; Min=1)	SD
Motivation	3	e.g. The AI tool has increased my interest in practicing English speaking.	0.96	4.05	0.79

The survey focusing on students' intrinsic motivation includes three dimensions related to engagement with AI speaking tool: interest in practice, confidence development, and willingness to participate. Analysis of survey responses demonstrated an aggregate mean score of 4.05 (SD = 0.79) on the 5-point Likert scale. Most students in the experimental class noted that the AI tool enhanced their engagement with speaking practice and boosted their confidence in learning English. Many agreed that the interactivity of the AI tool made them more willing to actively practice spoken English. The high reliability coefficient (Cronbach's α = 0.96) confirms the internal consistency of these findings.

Semi-structured Interviews
Semi-structured interviews with nine students revealed their experiences with the AI speaking app. First, students highlighted enhanced intrinsic motivation, noting that the AI tool significantly increased their enthusiasm for learning English and encouraged more consistent English speaking practice. The convenience and flexibility of being able to practice at any time and from any location was seen as another main benefit to make it possible to start a self-initiated English conversation. In addition, many students mentioned that the AI helped reduce their speaking anxiety, offering a relaxing and non-judgmental environment to boost their confidence to speak English aloud and alleviate their hesitation to communicate through English. Students observed improvements in their confidence on speaking English, noting that the AI-assisted practice helped them pronounce the words and sentences accurately and clearly and express ideas more fluently by using improved pronunciation, articulation and grammatical structure.

Summary
The pre- and post-test results showed significant improvements in the experimental class's speaking proficiency after four-weeks AI-assisted practice, particularly in pronunciation and fluency compared to the control class. The survey findings corroborate these results, with students reporting higher motivation, increased confidence, and greater willingness to engage in AI-assisted speaking practice. Interview data highlighted that students perceive AI tools as effective in alleviating speaking anxiety and stimulating their intrinsic motivation in English speaking.

Discussion

This study sought to examine both the effectiveness of AI-assisted speaking practice on speaking proficiency and its influence on students' motivation. The findings align with existing literature while offering new insights into AI's role in EFL contexts.

The experimental class's significant improvement in speaking proficiency, particularly in pronunciation and fluency, corroborates findings by Fouz-González (2020) and Li and Zou (2022), who emphasized AI's capacity to simulate real-world interactions. Additionally, the structured practice offered by EAP Talk aligns with Ahn and Lee's (2016) observation that immediate feedback fosters students' engagement in speaking practice.

The results also revealed that students perceived the AI tool as flexible, non-judgmental, and conducive to reducing speaking anxiety and boosting the confidence—a finding consistent with Yang et al. (2022). The diverse speaking topics and instant feedback in EAP Talk likely triggered intrinsic motivation, encouraging consistent practice. Notably, the AI app's role in improving logical thinking and grammatical accuracy suggested that AI may support higher cognitive skills alongside language improvement.

Conclusion

EAP Talk is an AI-powered online app that evaluates English speaking skills using speech recognition and language analysis (Wang & Zhou, 2024). During practice, it provides real-time feedback scores on fluency, pronunciation, and integrity (e.g., completeness of sentences), helping students track their progress in pronunciation. This four-week study revealed measurable improvements in speaking proficiency especially pronunciation accuracy and oral fluency among participants using the tool. Beyond the linguistic gains, students reported important psychological advantages, including sustained intrinsic motivation for independent practice, boosted confidence and reduced anxiety in speaking, and increased engagement in learning English. The tool's strengths, particularly its flexibility, immediate interactions, and cross-cultural communication scenarios, proved its value in language acquisition.

These results strongly indicated that AI-assisted learning methods can effectively supplement traditional English teaching approaches. Educational institutions should implement three strategies to maximize the benefits of AI-assisted language learning: first, provide teachers with systematic training on AI tool implementation; second, upgrade technological infrastructure to ensure all students have equal access; and third, develop comprehensive evaluation mechanisms to assess long-term learning outcomes, which is also one of the current research gaps that remains to be addressed. This mix-methods approach, which merged AI's efficiency with teachers' instructional expertise, proved particularly effective for enhancing both language proficiency and student motivation. The findings showed that well-implemented AI tools can transform language education by delivering personalized, responsive learning experiences tailored to individual students' needs. However, this study is subject to certain limitations that should be considered. While the four-week trial showed short-term effectiveness, the study was unable to assess long-term improvement of acquired skills. Most interventions focus on short-term outcomes, leaving the long-term sustainability of AI-assisted practice effects unaddressed. Additionally, since all participants were Chinese English majors, the findings may not apply to students with different educational or cultural

backgrounds. Future research should track learners over longer periods and include more diverse groups to better understand how well AI tools assist in different contexts.

Acknowledgements

References

Ahn, T. Y., & Lee, S. M. (2016). User experience of a mobile speaking application with automatic speech recognition for EFL learning. *British Journal of Educational Technology, 47*(4), 778–786. https://doi.org/10.1111/bjet.12212

Alsatuey, M. C. (2011). Perceived benefits and drawbacks of synchronous voice-based computer-mediated communication in the foreign language classroom. *Computer-Assisted Language Learning, 24*(5), 419–432. https://doi.org/10.1080/09588221.2011.565964

Azamatova, A., Bekeyeva, N., Zhaxylikova, K., Sarbassova, A., & Ilyassova, N. (2023). The effect of using artificial intelligence and digital learning tools based on a project-based learning approach in foreign language teaching on students' success and motivation. *International Journal of Education in Mathematics, Science and Technology, 11*(6), 1458–1475. https://doi.org/10.46328/ijemst.1880

Chang, Y., Lee, S., Wong, S. F., & Jeong, S. (2021). AI-powered learning application use and gratification: An integrative model. *Information Technology & People, 35*(7), 2115–2139. https://doi.org/10.1108/ITP-07-2020-0527

Chen, H. H. J. (2011). Developing and evaluating an oral skills training website supported by automatic speech recognition technology. *ReCALL, 23*(1), 59–78. https://doi.org/10.1017/S0958344010000280

Deci, E. L., & Ryan, R. M. (2013). *Intrinsic motivation and self-determination in human behavior*. Springer Science & Business Media.

Du, Y., & Mo, Q. (2022). An adaptive tutor or explicit facilitator? Influence and role of artificial intelligence in promoting L2 motivation among college students. *Influence and Role of Artificial Intelligence in Promoting L2 Motivation Among College Students*. https://doi.org/10.3389/fpsyg.2022.906499

Fouz-González, J. (2020). Using apps for pronunciation training: An empirical evaluation of the English File Pronunciation app. *Language Learning & Technology, 24*(1), 62–85. https://doi.org/10125/44557

Gunasekaran, D., & Subramaniam, G. K. J. (2022). The influence of reading on students' speaking abilities: Pronunciation, grammar, and vocabulary. *Change & Adaptation, 161*. https://doi.org/10.21814/jaals

Harris, D. (1974). *Testing English as a second language*. McGraw-Hill.

Kasneci, E., Seßler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., et al. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences, 103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Khasawneh, M. A. S., & Khasawneh, Y. J. A. (2023). The potentials of artificial intelligence in stimulating motivation and improving performance of undergraduates in foreign

languages. *Journal of Namibian Studies: History Politics Culture, 34*, 7059–7077. https://doi.org/10.5281/zenodo.7485866

Kok, J. N., Boers, E. J., Kosters, W. A., Van der Putten, P., & Poel, M. (2009). Artificial intelligence: Definition, trends, techniques, and cases. *Artificial Intelligence, 1*, 270–299. https://doi.org/10.1016/j.artint.2009.02.003

Lehman, B., Gu, L., Zhao, J., Tsuprun, E., Kurzum, C., Schiano, M., ... & Tanner Jackson, G. (2020). Use of adaptive feedback in an app for English language spontaneous speech. In *Artificial Intelligence in Education: 21st International Conference, AIED 2020, Ifrane, Morocco, July 6–10, 2020, Proceedings, Part I 21* (pp. 309–320). Springer International Publishing. https://doi.org/10.1007/978-3-030-51093-7_26

Li, M., & Zou, B. (2022). Using artificial intelligence technology as a tutor for EFL speaking practice. In J. Colpaert & G. Stockwell (Eds.), *Smart CALL: Personalization, contextualization, socialization* (pp. 82–100). Springer. https://doi.org/10.1007/978-3-030-53968-1_6

Liu, Y., Yang, T., & Xu, S. Y. (2019). The efficacy of using Liulishuo for spoken English ability: Taking the practice of Liulishuo in North China Electric Power University (Baoding) as an example. *International Education Studies, 12*(4), 244–252. https://doi.org/10.5539/ies.v12n4p244

Shafiee Rad, H., & Roohani, A. (2024). Fostering L2 learners' pronunciation and motivation via affordances of artificial intelligence. *Computers in the Schools, 1–22*. https://doi.org/10.1080/07380569.2024.2046197

Syakur, A., & Azis, R. (2020). Developing a reading learning model to increase reading skills for animal husbandry students in higher education. *Britain International of Linguistics Arts and Education (BIoLAE) Journal, 2*(1), 484–493. https://doi.org/10.30560/biolaj.v2n1p484

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and psychological measurement*, *52*(4), 1003-1017.

Wang, C., & Zou, B. (2024). Review of EAP talk. *Journal of China Computer-Assisted Language Learning*, *4*(2), 376-385.

Wei, L. (2023). Artificial intelligence in language instruction: Impact on English learning achievement, L2 motivation, and self-regulated learning. *Frontiers in Psychology, 14*, 1261955. https://doi.org/10.3389/fpsyg.2023.1261955

Yang, H., Kim, H., Lee, J., & Shin, D. (2022). Implementation of an AI chatbot as an English conversation partner in EFL speaking classes. *ReCALL, 34*(3), 327–343. https://doi.org/10.1017/S095834402100038X

Zou, B., Guan, X., Shao, Y., & Chen, P. (2023). Supporting speaking practice by social network-based interaction in artificial intelligence (AI)-assisted language learning. *Sustainability, 15*(4), Article 2872. https://doi.org/10.3390/su15042872