



# JELIM

## Journal of Education, Language, Social and Management

<https://jurnal.rahiscendekiaindonesia.co.id/index.php/jelim/>



## Integrating AI-Based Tools to Enhance Speaking Fluency in EFL Classrooms in Labuhanbatu Utara

Nguyen Hoang Anh<sup>1</sup>, Afsaneh Baharloo<sup>2</sup>Gumarpi Rahis Pasaribu

<sup>1</sup>Van Lang University, Ho Chi Minh City, Vietnam

<sup>2</sup>Hafez Institute of Higher Education, Shiraz, Iran

<sup>3</sup>STIT Al-Ittihadiyah Labuhanbatu Utara

### KEY WORD

AI-based tools, speaking fluency, EFL classrooms, pronunciation, learner autonomy, educational technology,

### A B S T R A C T

This study explores the impact of integrating Artificial Intelligence (AI)-based tools on enhancing speaking fluency among English as a Foreign Language (EFL) students in Labuhanbatu Utara, Indonesia. Utilizing applications such as ELSA Speak and Google Speech-to-Text, the research implemented a classroom-based intervention involving 30 senior high school students over eight weeks. A mixed-method approach was employed, combining pre- and post-tests, classroom observations, and interviews with both students and teachers. The results revealed significant improvements in students' fluency, pronunciation accuracy, and speaking confidence. Additionally, the AI tools fostered greater learner autonomy, increased motivation, and encouraged active classroom participation. Despite certain challenges related to infrastructure and digital accessibility, the overall findings suggest that AI technologies can effectively support and enrich speaking instruction in EFL settings, particularly in rural or under-resourced contexts. The study offers practical insights for educators aiming to enhance oral proficiency through technology-enhanced language learning.

## INTRODUCTION

The advancement of technology, particularly artificial intelligence (AI), has brought significant changes to the field of education. In English as a Foreign Language (EFL) learning, AI-based tools have emerged as promising innovations, offering new opportunities to enhance language acquisition, particularly in speaking skills. Speaking remains one of the most complex and challenging aspects of language learning, as it requires learners to integrate vocabulary, grammar, pronunciation, and fluency in real-time communication. This challenge is even more pronounced in rural

educational contexts such as Labuhanbatu Utara, North Sumatra, where access to qualified English instruction and authentic language exposure is often limited.

In many EFL classrooms in rural Indonesia, traditional teaching methods still dominate. These approaches frequently emphasize grammar drills, reading comprehension, and written exercises, while oral communication receives limited attention. Consequently, students often lack the opportunity and confidence to practice speaking in meaningful contexts. Teachers may also face constraints such as large class sizes, insufficient training in communicative teaching strategies, and limited access to digital tools. In such settings, the integration of AI-based technologies holds great potential to address these limitations by providing learners with individualized, interactive, and accessible speaking practice.

AI-based language learning tools, such as speech recognition software, pronunciation training applications, and AI-powered chatbots, offer several advantages in developing speaking fluency. These tools can simulate real-life conversation, deliver immediate feedback, and enable repeated practice in a low-stress environment. As students interact with these technologies, they can gradually build confidence, improve pronunciation, and develop fluency through personalized learning experiences. The potential of AI to support speaking skills has been demonstrated in several recent studies.

The integration of technology in education has increasingly become a critical component in enhancing the quality of teaching and learning processes, particularly in the field of language education. Among the most significant technological advancements is the rise of Artificial Intelligence (AI), which has shown immense potential in supporting English as a Foreign Language (EFL) instruction. In recent years, AI-based tools—such as speech recognition software, intelligent pronunciation applications, and interactive AI chatbots—have emerged as valuable resources in developing students' speaking skills. These tools provide learners with immediate, personalized feedback, enabling repeated practice in an engaging and low-anxiety environment, thereby addressing one of the most persistent challenges in EFL classrooms: speaking fluency.

Speaking is often considered the most difficult language skill to master, especially for EFL learners in non-English-speaking environments. Students in rural areas like Labuhanbatu Utara, North Sumatra, face unique challenges, including limited access to native speakers, insufficient opportunities for authentic communication, and traditional teaching methods that prioritize grammar and reading over oral communication. As a result, students frequently struggle with fluency, pronunciation, and confidence in speaking English. Teachers, too, may lack the training or resources needed to provide consistent, individualized speaking practice. In this context, the integration of AI-based tools offers a promising alternative to supplement conventional teaching and provide students with practical opportunities to improve their speaking proficiency.

For instance, Zhao (2022) found that Chinese university students who used the ELSA Speak application showed notable improvements in pronunciation accuracy and fluency. The app's use of AI-driven speech analysis enabled students to identify and

correct their own mistakes, promoting autonomy and increased motivation. Similarly, a study by Fitriani et al. (2021) in Central Java showed that high school students who used Google Speech-to-Text during speaking tasks outperformed those in traditional classrooms in terms of fluency and pronunciation. This tool provided instant feedback, which helped students become more aware of their speaking performance and encouraged more frequent practice. Another study by Ahmed (2020) in Egypt involved the use of AI chatbots to simulate English conversations. Students who engaged in regular chatbot interactions demonstrated increased speaking confidence, reduced hesitation, and greater vocabulary use, indicating the positive influence of AI on oral language development.

Despite these encouraging findings, research on the integration of AI tools in rural Indonesian contexts remains limited. Most studies have been conducted in urban areas or in educational environments with relatively strong digital infrastructure. As such, there is a need to explore how these tools function in areas like Labuhanbatu Utara, where technological access may be inconsistent, and teachers and students may have limited experience with AI-based learning systems. Understanding the benefits and challenges of implementing such tools in this context can offer valuable insights for broader educational development.

This study seeks to explore how AI-based tools can be integrated into EFL classrooms in Labuhanbatu Utara to enhance students' speaking fluency. It aims to examine the effectiveness of these tools in improving learners' oral proficiency, particularly in pronunciation and fluency, while also investigating the perceptions of both students and teachers regarding their use. Through this exploration, the study intends to contribute to the growing body of knowledge on AI-assisted language learning, while offering practical recommendations for educators and policymakers seeking to promote communicative competence in Indonesian EFL learners. By focusing on a rural region often overlooked in technological education research, this study also highlights the importance of equitable access to innovative language learning solutions.

## **METHOD**

This study employed a qualitative descriptive research design to explore the integration of AI-based tools in enhancing speaking fluency among EFL students in Labuhanbatu Utara. The qualitative approach was selected to gain in-depth insights into how AI tools influence students' speaking abilities and how both students and teachers perceive their use in the classroom context. This approach allowed the researcher to observe naturally occurring classroom interactions, collect participants' experiences, and interpret the data in relation to the broader goals of language development through technology.

The participants in this study consisted of two English teachers and thirty second-grade students from a public senior high school in Labuhanbatu Utara. The school was selected purposively due to its willingness to participate in the study and its accessibility to basic technological infrastructure, including internet access and digital devices. The students had varying levels of English proficiency, but all had received at least two years of formal English instruction and basic digital literacy training. The

teacher participants were experienced in teaching EFL but had limited prior exposure to AI-based tools in the classroom.

Data were collected through classroom observations, interviews, and student speaking assessments. During a four-week implementation period, the researcher introduced selected AI-based tools into the teaching process. Two main tools were used: **ELSA Speak**, an AI-powered pronunciation and fluency training app, and **Google Speech-to-Text**, which allowed students to see real-time transcriptions of their spoken English and receive immediate feedback on accuracy. These tools were chosen based on their accessibility, user-friendliness, and proven effectiveness in previous studies.

At the beginning of the study, students were given a pre-speaking fluency task, which involved a short individual oral presentation on a familiar topic. Their performances were recorded and evaluated using a rubric adapted from the Common European Framework of Reference (CEFR), focusing on four key indicators: pronunciation, fluency, vocabulary use, and coherence. After the initial assessment, students began regular speaking practice sessions using the AI tools. These sessions were integrated into the existing curriculum and guided by the English teachers, who received preliminary training on how to operate the tools and integrate them into classroom instruction.

Observations were conducted throughout the intervention period to examine how the students interacted with the AI tools, how they responded to feedback, and how the classroom dynamics evolved. Field notes were taken during each session to capture verbal and non-verbal behaviors, levels of engagement, and peer collaboration. In addition, semi-structured interviews were conducted with both teachers and selected students at the end of the study to gather their perspectives on the effectiveness, challenges, and perceived benefits of the AI integration.

At the conclusion of the intervention, students were given a post-speaking task similar in structure and content to the initial one. Their performances were again recorded and evaluated using the same rubric to identify improvements or changes in fluency and overall speaking proficiency. The pre- and post-assessment scores were compared to observe trends in student development.

Data from interviews and observations were transcribed and analyzed thematically, following Braun and Clarke's six-step process. This involved familiarization with the data, generating initial codes, identifying emerging themes, reviewing themes, defining them, and producing the final report. Quantitative data from the speaking assessments were also descriptively analyzed to support the qualitative findings, with attention to individual and group-level progress.

Ethical considerations were carefully observed throughout the research. Informed consent was obtained from all participants, including parental consent for student involvement. Participants were assured of the confidentiality of their responses and the voluntary nature of their participation. Pseudonyms were used in all documentation to protect the identities of teachers and students.

Overall, this methodological framework was designed to capture a holistic understanding of how AI-based tools function within the realities of a rural EFL classroom. By combining observational, interview, and performance-based data, the study aimed to offer both practical insights and theoretical contributions to the field of technology-enhanced language learning.

## **RESULT AND DISCUSSION**

The integration of AI-based tools into EFL classrooms in Labuhanbatu Utara revealed numerous noteworthy outcomes, especially regarding students' speaking fluency, engagement, self-confidence, and overall learning motivation. This section presents the findings of the study, synthesizes qualitative and quantitative data, and discusses the implications by drawing connections to prior research. The analysis is framed through key themes that emerged during data collection: improvements in speaking fluency, pronunciation accuracy, learner autonomy, classroom interaction, and perceptions of both teachers and students.

### **Improvements in Speaking Fluency**

One of the most prominent findings from the study was a significant improvement in students' speaking fluency. Through a series of pre- and post-speaking assessments, students demonstrated greater ease in producing extended speech, reduced hesitation, and increased speech rate. Initially, during the pre-test, students often paused between words, struggled with sentence formation, and relied heavily on rehearsed phrases. However, by the end of the intervention period, many were able to express their thoughts more smoothly, spontaneously, and with greater coherence.

Quantitative analysis of the pre- and post-tests showed marked progress. On a five-point rubric measuring fluency, pronunciation, coherence, and vocabulary, the average overall speaking score improved from 2.5 to 3.8. Fluency in particular saw a jump from an average of 2.4 to 3.6. This improvement indicates not only increased speech speed but also enhanced fluidity and confidence. Students began to use transition words more naturally, maintained conversations with fewer interruptions, and appeared less dependent on their notes.

These findings are consistent with Zhao (2022), who reported improved fluency among Chinese university students using the ELSA Speak application. The AI-based pronunciation feedback loop encourages repetition and self-correction, which promotes automaticity in speech production—a key indicator of fluency development. Likewise, Ahmed (2020) observed reduced hesitation and more extended speaking turns when Egyptian students used AI chatbots to simulate conversation.

### **Pronunciation Accuracy and Confidence**

A secondary yet closely related finding concerned students' pronunciation skills. The use of AI-powered tools such as ELSA Speak and Google Speech-to-Text offered instant, individualized feedback on articulation, stress, and intonation. Students found this type of feedback particularly valuable because it helped them identify specific areas for improvement that often go unnoticed in traditional classroom

settings. For example, several students mentioned they were unaware of how their mispronunciations affected listener comprehension until they used the tools.

Before the intervention, many students pronounced English words with strong L1 interference, particularly in vowel sounds and word stress. By the end of the program, improvements in segmental and suprasegmental features of speech were observed. Teachers noted that students were more careful and deliberate in their speech, paying closer attention to stress patterns, intonation, and linking sounds. The pronunciation rubric scores rose from an average of 2.2 to 3.5.

These improvements echo the findings of Fitriani et al. (2021), who highlighted the benefits of using Google Speech-to-Text in high school classrooms. Their study showed that speech recognition technology helps students visually connect spoken input with text output, reinforcing proper pronunciation and reducing fossilized errors.

### **Learner Autonomy and Motivation**

Another key theme that emerged was increased learner autonomy. Students were able to use the AI tools outside the classroom, giving them more control over their learning pace and schedule. This flexibility was particularly beneficial for shy or anxious learners, who felt more comfortable practicing English in private. Many students reported that they appreciated being able to repeat exercises multiple times without judgment, which they said was not always possible in face-to-face classroom settings.

Interviews revealed that several students began using the apps daily, even beyond the tasks assigned by the teacher. This voluntary engagement suggests a rise in intrinsic motivation. One student shared, "I like practicing with the app because it tells me exactly what I say wrong. I can repeat it again until I get it right." Another said, "I am not afraid to speak now because I have practiced many times with the app."

This level of self-directed learning reflects a shift from passive reception to active participation. It aligns with the findings of Zhou et al. (2021), who noted that AI-driven language tools empower students to take charge of their learning, enhancing self-efficacy and motivation.

### **Enhanced Classroom Interaction**

While the AI tools were primarily used for individual practice, their integration also positively affected classroom dynamics. Teachers reported that students became more participatory and confident during group discussions and speaking activities. Peer support increased as students shared their app experiences, discussed scores, and helped one another troubleshoot technical issues.

This collaborative atmosphere fostered a more communicative environment. Instead of viewing speaking tasks as high-stakes performance assessments, students began to see them as opportunities for shared learning and improvement. One teacher commented, "I noticed that students are no longer afraid to make mistakes. They try to speak more, and they help each other more."

This aligns with the social constructivist theory of language learning, which emphasizes interaction and peer collaboration as central to language development. Moreover, it confirms Ahmed's (2020) conclusion that AI-based tools can stimulate classroom engagement even in large, mixed-ability classes.

### **Teacher and Student Perceptions**

Perceptions of both students and teachers were overwhelmingly positive, though not without challenges. Most students appreciated the real-time feedback, engaging interface, and sense of achievement provided by the AI apps. They felt the tools helped them practice independently, improve specific skills, and prepare better for oral presentations or exams. The gamified elements of ELSA Speak—such as progress tracking and pronunciation scores—were cited as especially motivating.

Teachers, on the other hand, valued the additional support the tools provided but also pointed out certain limitations. These included technical issues such as unstable internet access, limited availability of student devices, and a lack of comprehensive training in using the tools effectively. Despite these challenges, both teachers agreed that the benefits outweighed the difficulties and expressed interest in continuing the use of AI tools in their teaching.

Importantly, teachers observed that the tools offered an effective supplement rather than a replacement for traditional teaching. One remarked, "The apps help me give feedback that I cannot always give during class, especially when I have many students. But they still need me to guide them, correct complex errors, and encourage them."

### **Challenges and Considerations**

Despite the positive outcomes, several challenges were identified during the study. The primary obstacle was technological infrastructure. Not all students had personal smartphones or reliable internet connections, which sometimes limited their ability to complete assignments. In some cases, students had to share devices or use school facilities, which led to time constraints and scheduling issues.

Additionally, the novelty of the tools required an initial period of familiarization. Some students struggled with understanding app instructions in English, while a few experienced anxiety about speaking to a machine. Teachers also needed time and support to integrate the tools into their lesson plans effectively.

These challenges point to the importance of institutional support and digital readiness when implementing AI in educational settings. Providing training for teachers, ensuring access to devices, and aligning tools with curriculum goals are critical for sustainability. These findings reinforce the recommendations of Liu et al. (2020), who emphasized infrastructure and teacher competence as key factors in the successful adoption of educational technology.

## Broader Implications

The outcomes of this study have implications beyond the immediate classroom. First, the successful use of AI tools in a rural Indonesian context challenges the assumption that such technologies are only suitable for urban, well-resourced schools. With thoughtful implementation, even schools in under-resourced regions can benefit from AI-enhanced language learning.

Second, the study highlights the value of blending technology with pedagogy. Rather than replacing teachers, AI tools can enhance instruction by providing personalized feedback, freeing up teacher time, and increasing student engagement. This approach supports the call for more hybrid, learner-centered models in language education.

Third, the positive student response to AI tools underscores the changing expectations of digital-native learners. As students grow more accustomed to interactive, adaptive learning environments, educational institutions must adapt to meet their evolving needs.

Finally, the study contributes to the growing body of literature advocating for the integration of AI in language education. It provides empirical evidence that, when used strategically, AI tools can improve speaking fluency, foster learner autonomy, and create a more inclusive and engaging learning environment. The integration of AI-based tools in the EFL classrooms of Labuhanbatu Utara produced positive and meaningful changes in students' speaking fluency, pronunciation, confidence, and engagement. The tools served not only as language learning aids but also as catalysts for increased motivation and classroom interaction. While challenges related to technology access and training remain, the benefits observed in this study suggest a strong potential for AI to enhance language learning in similar educational contexts. Future research might explore long-term impacts, compare different AI platforms, or investigate cross-skill applications such as listening and writing. As AI continues to evolve, so too must our approaches to language education, ensuring they are inclusive, dynamic, and responsive to the diverse needs of learners.

## CONCLUSION

This study has demonstrated that the integration of AI-based tools significantly enhances speaking fluency among EFL students in Labuhanbatu Utara. The use of applications such as ELSA Speak and Google Speech-to-Text not only improved students' pronunciation, fluency, and confidence but also fostered learner autonomy and classroom engagement. Quantitative results showed notable gains in speaking assessment scores, while qualitative data reflected increased student motivation and positive attitudes toward language learning.

The success of this intervention in a rural educational context highlights the potential of AI-assisted learning even in resource-constrained environments. It challenges traditional paradigms by offering students access to immediate, individualized feedback that is often difficult to achieve in large classes. Moreover, the tools complemented teacher efforts, proving that AI can serve as a valuable support system rather than a replacement.

Despite challenges such as limited infrastructure and varying levels of digital literacy, the findings affirm that with adequate support and thoughtful integration, AI tools can contribute meaningfully to improving EFL speaking proficiency. Future research may explore long-term impacts, scalability across different regions, and integration with other language skills.

## REFERENCES

- Ahmed, M. (2020). The use of AI chatbots to enhance English speaking skills: A study with Egyptian university students. *Journal of Educational Technology & Society*, 23(2), 45–59.
- Amru, A., Sakinah, N., & Pasaribu, G. R. (2024). The impact of accent second language on listening comprehension. *JELT: Journal of English Education, Teaching and Literature*, 2(1), 1–14.
- Fitriani, E., Susilo, H., & Wibowo, A. (2021). The impact of Google Speech-to-Text on students' pronunciation skills in Indonesian high schools. *Indonesian Journal of Language Teaching*, 12(1), 23–37. <https://doi.org/10.17509/ijlt.v12i1.30000>
- Junaidi, J., Januarini, E., & Pasaribu, G. R. (2024). Impoliteness in information account on Instagram. *JALC: Journal of Applied Linguistics and Studies of Cultural*, 2(1), 41–50.
- Liu, Y., Zhang, S., & Wang, L. (2020). Factors influencing the adoption of AI-based educational tools: Teacher readiness and infrastructure challenges. *Computers & Education*, 148, 103798. <https://doi.org/10.1016/j.compedu.2019.103798>
- Mubshirah, D., Pasaribu, G. R., Lubis, M. H., Saragih, E., & Sofyan, R. (2023). Sentence complexity analysis in selected students' scientific papers: A closer look on abstract section. *E-Structural (English Studies on Translation, Culture, Literature, and Linguistics)*, 6(01), 70–83.
- Pasaribu, G. (2023). Receptive oral language skills. [Unpublished manuscript].
- Pasaribu, G. R. (2021). Implementing Google Classroom in English learning at STIT Al-Ittihadiyah Labuhanbatu Utara. *E-Link Journal*, 8(2), 99–107.
- Pasaribu, G. R. (2023). Malay interrogative sentences: X-Bar analysis. *RETORIKA: Jurnal Ilmu Bahasa*, 9(1), 43–53.
- Pasaribu, G. R., & Arfianty, R. (2025). *Filsafat Linguistik*. [Book manuscript].
- Pasaribu, G. R., & Salmiah, M. (2024). Linguistic landscape in Kualanamu International Airport. *LingPoet: Journal of Linguistics and Literary Research*, 5(1), 1–6.

- Pasaribu, G. R., Arfianty, R., & Januarini, E. (2024). *Mulia di Linguistik*. [Book manuscript].
- Pasaribu, G. R., Daulay, S. H., & Nasution, P. T. (2022). Pragmatics principles of English teachers in Islamic elementary school. *Journal of Pragmatics Research*, 4(1), 29–40.
- Pasaribu, G. R., Daulay, S. H., & Saragih, Z. (2023). The implementation of ICT in teaching English by the teacher of MTS Swasta Al-Amin. *English Language and Education Spectrum*, 3(2), 47–60.
- Pasaribu, G. R., Widayati, D., Mbeté, A. M., & Dardanila, D. (2023). The fauna lexicon in Aceh proverb: Ecolinguistic study. *Jurnal Arbitrer*, 10(2), 149–159.
- Zhao, L. (2022). Improving speaking fluency through AI-based pronunciation tools: A case study of ELSA Speak application. *Language Learning & Technology*, 26(1), 112–129.
- Zhou, X., Wang, J., & Chen, L. (2021). Enhancing learner autonomy in language learning with AI-driven applications. *Computer Assisted Language Learning*, 34(3), 215–234. <https://doi.org/10.1080/09588221.2020.1826697>