

A Review On Enhancing Minority Ethnic High School Students' Speaking Performance Using Techniques And Artificial Intelligence (AI) Tools

Pham Thi Kieu Oanh, Mai Hoang Anh

Department Of Foreign Languages Education, Thai Nguyen University Of Education

Abstract

The current paper aims to review previous research on using techniques and artificial intelligence (AI) tools to improve students' speaking performance, which could contribute new directions to future research in the new Vietnamese education context. Among hundreds of published journal articles and M.A. and Ph.D theses related to this study, 25 papers were selected, summarized, and reviewed seriously, briefly, and systematically via "systematic reviews" - the only technique utilized as a data source in this inquiry. Many of these studies indicated remarkable improvements in using strategies and AI tools to boost students' speaking performance. Most of the reviewed previous studies uncovered limitations regarding research methodology, sample size, the unnatural separation between theory and practice in use, and relatively limited studies conducted in the context of Vietnamese high-school education.

Keywords: *speaking performance, techniques, AI tools, minority ethnic students.*

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I. Introduction

Although the Vietnamese government has emphasized English education, learners still face significant challenges in mastering spoken English. Pronunciation difficulties, influenced by the structure of the native language, often hinder clear communication. Limited exposure to native speakers and self-practice exacerbates this problem, leading to insufficient fluency and confidence. The fear of making mistakes in front of friends and teachers, a significant psychological barrier, causes further anxiety and hindrance. Education systems prioritize rote learning over interactive language use. As a result, students often have difficulty applying language in real-life situations, which is critical for effective communication across the classroom, academic, and professional environments. Speaking English is especially important for high school students to prepare for higher education or enter the workforce during technological transformation. The ability to speak English fluently is essential for university and college admission. English fluency also helps students achieve higher levels of achievement in higher education, where there are many academic resources and Research documents in English. In the context of Industry 4.0 and the upcoming 5.0 era, good English communication skills are indispensable to access advanced technologies and multinational cooperation, creating conditions for students to succeed in their studies and have a competitive advantage in the growing labor market.

Most significantly, ethnic minority students in Vietnam are facing unique challenges in learning to speak English because their mother tongue is a separate ethnic language. These students often speak ethnic languages that differ significantly from Vietnamese (Kinh), the language of school instruction. Therefore, their proficiency in Vietnamese is limited, making it challenging to absorb English. Additionally, restricted access to quality educational resources and native English speakers further hinders their language development. These difficulties make them feel self-conscious and increase anxiety. Addressing these challenges requires targeted education and support strategies to ensure ethnic minority students can learn and use English effectively, thereby improving their prospects. Witnessing firsthand the challenges that ethnic minority students face in learning to speak English at Phu Luong High School, a school with a majority of ethnic minority students, the researchers decided to plan this study to overcome the root cause of their difficulties in improving their English-speaking ability. This research is not only to promote academic success but also for general confidence and readiness to participate in a globalized world.

In recent years, the field of teacher education has witnessed several studies on using techniques and tools to enhance speaking skills for students. The prior studies on using techniques or tools have sufficient evidence to support the notion that using techniques or tools has a significant impact on students' speaking performance in the classroom. However, previous studies related to systematic literature reviews on the extent to which techniques or tools may achieve positive/negative changes in speaking performance for high school

students have hardly been paid more attention, especially for minority ethnic high school students. Therefore, to address this gap, a systematic review of the previous studies around the world and in Vietnam was conducted in this paper to explore the effectiveness of these techniques and tools and their shortcomings, then suggested some implications for further research directions. Mainly, the issues under question in the current research were addressed as follows: 1.) *What techniques and tools can boost high school students' speaking performance? To what extent do these techniques and tools enhance students' speaking performance?* 2.) *What are the limitations of the previous studies?*

II. Literature Review

Communication through spoken language requires the capacity to effectively convey thoughts, ideas, and emotions, making speaking a crucial skill. Brown (2004) explains that speaking is a skill in which the speaker must create language at the moment, structuring their ideas clearly while interacting with their audience. Speaking goes beyond making sounds; it is also about using language intentionally to communicate, clarify meaning, and achieve communication objectives. Bygate (1987) describes speaking as a complicated process involving multiple language components simultaneously, such as word selection, sentence construction, and conversation fluency. Adjusting our speech to fit the social and situational context is an essential skill in being proficient. Pronunciation, fluency, vocabulary, and grammar are critical components of speaking and are the foundation for successful communication. Pronunciation helps the listener comprehend the speaker; fluency prevents interruptions in the conversation; vocabulary offers the right words to convey thoughts accurately; and grammar organizes those thoughts into logical sentences. Speaking is a multifaceted ability beyond being grammatically correct; it includes using language effectively to communicate with others, share information, and establish connections (Richards & Renandya, 2002). The ability to effectively speaking plays a vital role in both native and foreign language settings, as it is determined by how successfully the speaker achieves communicative goals.

Speaking plays a vital role in the instruction and acquisition of English, serving as the basis for successful communication and language skills. Speaking is often considered the most essential language skill in education, directly influencing learners' ability to participate and communicate in various situations (Bygate, 1987). Strong communication skills, especially speaking, enable students to effectively communicate their thoughts, feelings, and opinions, facilitating meaningful discussions in and out of school settings (Nunan, 1999). A significant advantage of speaking in language learning is that it promotes real-time communication. This immediate interaction allows students to engage in dynamic conversations, which is essential for practicing the language in authentic contexts (Brown & Yule, 1983). Through speaking, students receive immediate feedback from teachers and peers, allowing them to correct and refine their language use on the spot. This repetitive process of speaking, receiving feedback, and adjusting speech helps learners acquire grammar structures, vocabulary, and pronunciation more effectively, ultimately leading to greater fluency (Luoma, 2004).

III. Materials & Methods

In the current study, the researchers utilized Systematic Literature Review (SLR) as a primary tool to select and review the previous research to examine teachers' beliefs about CT and their teaching practices, thereby pointing out the drawbacks and gaps from these studies. A Systematic Literature Review (also called Systematic Review) is a study of studies. It aims to "collect all existing evidence on a specific topic to answer a specific research question. Authors create criteria for deciding which evidence is included or excluded before starting". In this paper, the following criteria for a systematic review by Liberati, A. et al. have been adjusted: (1) clearly state objectives with an explicit and reproducible methodology; (2) attempt to identify all studies that meet the eligibility criteria through a detailed search strategy; (3) assess the validity of the findings of the included studies related to using techniques or tools to enhancing speaking performance; and (4) systematically synthesize the studies' findings.

Based on these criteria, the researchers examined various search engines, including World Dissertations Library (<http://dissertation.newacademic.net/>), Google Scholar, Education Research Complete (ERC), Education Source, Academia, and Research Gate, to gather articles and dissertations in response to the purpose of the study. Based on the literature retrieval, only 20 out of hundreds of published journal articles and dissertations related to the teachers' beliefs about CT and/or their teaching practices were selected, summarized, and reviewed seriously, briefly, and systematically.

IV. Results & Discussion

The following section reports the findings reviewed prior studies and discussion.

RQ1. What techniques and tools can boost high school students' speaking performance? To what extent do these techniques and tools enhance students' speaking performance?

As it can be seen from Table 1,2,3 below, there has been a growth in the body of literature on improving students' speaking skills. Interestingly, studies on such speaking performance has focused on major issues such as (1) using techniques to enhance speaking skills; (2) using AI tools to boost speaking skills; and (3) using SpeechAce to boost speaking skills.

First, previous studies on using techniques to enhance speaking skills are briefly summarized in the following table.

Table 1. A summary of the prior studies on using techniques to enhance speaking skills (n=14)

| No | Authors | Focus | Participants | Instrument(s) | Major Findings | Limitations |
|----|------------------------------|--|--------------|---|---|---|
| 1 | Muhammad Yasir Yahya (2019) | Improving Speaking Performance and L2 Motivation through Task-Based Language | 59 | Pre-test & post-test, Questionnaire, semi-structured interviews | <ul style="list-style-type: none"> - The TSLT approach had a positive impact on students' overall vocabulary outcomes and L2 retention and the TBLT approach was more effective in promoting complex and fluent language. - The study highlights the importance of the teacher's role and the TSLT approach in encouraging students' overall L2 motivation. | <ul style="list-style-type: none"> - Students were not randomly assigned to groups based on criteria such as English proficiency, gender, or major. - The study included only two experimental groups, lacking a control group for comparison of instructional methods. - A post-test was not conducted due to time constraints. |
| 2 | Ika Diani Oktarina (2010) | Improving students' speaking skill through critical thinking | 20 | Pre-test & post-test | This method is effective and could give significant improvement toward the students' speaking skill in English. | The validity of the only data collection instrument is uncertain. |
| 3 | Rahmiaty (2021) | Enhancing students' speaking skill through picture word inductive model media | 22 | Pre-test & post-test | <ul style="list-style-type: none"> - It showed that the students were interested in learning English speaking by using Picture word inductive model media. - Students were very enthusiastic and excited to learn English and was able to enhance their speaking | The validity of the only data collection instrument is uncertain. |
| 4 | Yenni Sofianita (2023) | Improving students' speaking skill using english basic speaking module | 10 | Pre – test ; observations | - The Messiah English speaking module can help students improve their speaking skill at the Ngawi International Language Course (ILC) in 2023. | <ul style="list-style-type: none"> - Small number of participants. - The validity of the only data collection instrument is uncertain. |
| 5 | Nanda Nur Rohmah (2023) | Improving student's speaking skill by using Project Based learning | 27 | Pre-test & post-test | By implementing Project Based-Learning in teaching speaking could find out the increasing aspect of speaking. | <ul style="list-style-type: none"> - As this study was carried out close to midterm exams, this research could not significantly address the aspect of grammar in speaking. - The validity of the only data collection instrument is uncertain. |
| 6 | Nurmin Maulana (2014) | Developing students' speaking skill by reporting news | 20 | Pre-test & post-test, Questionnaire | The reporting news is effective in upgrading students' speaking skill. | <ul style="list-style-type: none"> - The study indicated only three aspects of speaking skills are fluently, comprehensibility and accuracy. - The researcher was confusing speaking skills with writing skills. |
| 7 | Ratindi Azhrima (2020) | The effect of using guessing and speculating game with pictures on students' achievement in speaking | 50 | Pre-test & post-test | <ul style="list-style-type: none"> - Using the Guessing and Speculating Game with Pictures made students more enthusiastic and active in class compared to those who were not taught with this method. | The validity of the only data collection instrument is uncertain. |
| 8 | Sri Wahyuni, Fitri Yulianti, | The use of guessing game to improve student's speaking skill | 27 | Pre-test & post-test | - There is a significant difference between the students who are taught speaking by using a guessing game and those who | The validity of the only data collection instrument is uncertain. |

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| | (2015) | | | | are taught speaking by using a traditional approach. | |
| 9 | Vu Dinh Bac, et al (2019) | Enhancing English speaking performance of the first-year Non English major from ethnic groups at TN university of education by using cooperative activities | 20 | Test, Questionnaire | - Cooperative activities are extremely useful in teaching other subjects as well as when the teacher applies to teach English in general and speaking skill in particular. | The study was conducted on a small scale, focusing only on first-year non-English major students from ethnic groups at TNUE. Therefore, the study's findings are limited and cannot comprehensively cover all aspects of the topic. |
| 10 | Resha P. W. et al (2015) | Developing speaking skill of grade 8 students through short conversation | 20 | Pre-test & post-test | The application of short conversation can significantly develop the grade 8 students' speaking skills. | - Data collection instrument is limited. - This study provides an incomplete picture of speaking skills by solely focusing on fluency & accuracy. |
| 11 | Bounsong Sorkeomany (2024) | Promoting students' speaking proficiency through Communicative Activities | 54 | Pre-test & post-test | -The use of communicative activities was effective in improving the speaking proficiency of the experimental group. -Many students had a positive attitude and perception towards the effectiveness of the communicative activities. | Their research still does not provide solutions or organize activities thoroughly. |
| 12 | Rahmawati (2017) | Improving English speaking ability Using the team-games-tournament technique | 24 | Pre-test & post-test, Post - questionnaire | Teaching speaking using the TGT technique increased the students' ability in speaking better than any technique that the researcher had used with the students before | - Team-Games-Tournament also has some disadvantages in teaching-learning, such as it is time consuming since the tournaments can take up a lot of time. |
| 13 | William Urrutia León, Esperanza Vega Cely (2010) | Encouraging Teenagers to Improve Speaking Skills through Games in a Colombian Public School | 40 | Questionnaire | Games were found to be an effective way to encourage teenagers to improve their speaking skills, particularly when the games included group work, motivation, and competition, and helped students overcome their fear of making mistakes and perceive speaking as a natural process | The researchers only implemented 3 out of 10 types of games, and haven't expanded deeply on the games they researched as they said " develop each one of the games, at least four times, in order to get better results." |
| 14 | Adrina Vianney Vázquez Mendoza (2020) | The use of a Project to promote speaking skills in a Foreign Language (ELF) class | 32 | Test | Using projects was an effective way to promote speaking skills in the EFL classroom, with communicative activities that encouraged collaborative work and use of the target language. | The project-based approach took a long time to execute and required the teacher to guide students through resource limitations and misalignment between student ideas and project goals. |

As clearly seen from Table 1, although these studies were undertaken in different teaching contexts such as Iran, Cambodia, Taiwan and Vietnam, their results generally uncover that most of the participants witnessed a remarkable improvements in speaking after applying techniques such as Task-Based Language, critical thinking, picture word inductive model media, Project-based learning and etc.

The following section focuses on a review of prior inquiries on using AI tools to enhance speaking skills are briefly summarized in the following table.

Table 2. A summary of the prior studies on using AI tools to enhance speaking skills (n=8)

| No | Authors | Focus | Participants | Instrument(s) | Major Findings | Limitations |
|----|----------------|---|---|--|--|---|
| 1 | Bin Zou (2023) | Supporting speaking practice by Social network-based Interaction in Artificial Intelligence (AI)-Assisted Language Learning | 70 students from different Chinese universities | questionnaires and semi-structured interviews as well as pre- and post-tests | Social network based interaction can effectively improve learners' speaking skills in the AI context | limited by the implementation period (five weeks) |

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| 2 | Sayit Abdul Karim (2023) | Promoting EFL students' speaking performance through Elsa Speak: An AI in English language teaching | 21 EFL students (5 Males and 16 Females) | test, questionnaire, and semi-structured interview | students' speaking ability has significantly improved after using the ELSA application | Small number of participants. |
| 3 | Xin An et.al (2022) | Modeling English teachers' behavioral intention to use artificial intelligence in middle schools | 470 | Questionnaire Interview | - The EFL teachers were positive with regard to the measured factors | Limited by the method, this research could not explain causality |
| 4 | Kushmar Lesia Viktorivna (2022) | Artificial Intelligence in Language Learning: What Are We Afraid of | 418 | Questionnaire | AI significantly improves the quality of language learning by adapting to the individual features (talent and background) and expectations (aims and objectives) of each student. | lack of teachers' attitude |
| 5 | Irfan Suryana (2020) | Artificial intelligence to master English listening skills for non-English major students | 3 females and 2 males | Questionnaire | The development of technology gives good impacts on education as well. | limited by the number of student |
| 6 | Randi Williams (2019) | PopBots: Designing an Artificial Intelligence Curriculum for Early Childhood Education | 80 Pre-K and Kindergarten children | Questionnaire | uses a programmable, social robot to guide young children's exploration of AI concepts | lack of instructors' feedback |
| 7 | E. Madhavi (2023) | Developing Learners' English Speaking Skills using ICT and AI Tools | 100 | test | the factors are low motivation | Lack of teachers' attitude |
| 8 | Bin Zou (2024) | An exploratory study of using an artificial intelligence speech evaluation system for speaking practice in EFL learning | 30 | questionnaires and interviews | participants view EAP Talk as an effective AI tool for assisting EFL learners in practicing their speaking skills, owing to its diverse feedback types akin to a personal tutor. | no empirical evidence no comparison between the experimental and control groups |

As clearly displayed in Table 2, the findings overall reveal that most of the participants got high marks in speaking tests in numerous studies. Clearly, this review of literature has exhibited that AI tools, to some extent, influence or guide their speaking practices.

Third, previous studies on using SpeechAce to boost speaking skills are briefly summarized in the following table.

Table 2.3. A summary of the prior studies on using SpeechAce to boost speaking skills (n=3)

| No | Authors | Focus | Participant s | Instrumen t | Major Findings | Limitations |
|----|--|---|---|---------------------------|--|---|
| 1 | A Mutiara, SC Wakhda, IM Alfidariyani (2024) | The Effectiveness of SpeechAce Website on Students' Pronunciation | 30 students | test, interview | Most of the students improved their pronunciation skills from the "Intermediate" category to "Upper Intermediate" and some of them even reached the "Advanced" category | Having a minimum sample, the results of this research are specific to the particular group and cannot be widely generalized |
| 2 | NM Zainuddin, M Mohamad (2024) | Utilising SpeechAce to Enhance Speaking Skills among English as a Second Language Pre-University Students | 121 pre-university students, two teachers | semi-structured interview | The study found that Speechace, an AI-powered pronunciation tool, is a valuable resource for improving speaking abilities of ESL learners at a Malaysian university. Both teachers and students reported positive experiences using Speechace. | The study involved a small sample size of participants from a single university. This limits the generalizability of the findings to a wider population of ESL learners and teachers. |

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|---|----------------------------|---|------------|-------------------|---|--|
| 3 | Lidia Avellón Mayor (2021) | Overcoming segmental difficulties in English pronunciation in Spanish 3-ESO bilingual students through the use of SpeechAce | 8 students | Test on Speechace | 'SpeechAce' has proved to be a useful tool for secondary school students to enhance their pronunciation of English phonemes, with a view to overcome those difficulties related with the most challenging phonemes for them | Limited Sample Size, Shortened Observation Period, Focus on Segmental Features |
|---|----------------------------|---|------------|-------------------|---|--|

A review on 25 previous studies worldwide and in Vietnam regarding the impact of techniques or AI tools on speaking performance was conducted as a fundamental basis in order to examine their strengths and weaknesses.

RQ2. What are the Limitations of the Previous Studies?

It is evident from Table 1,2, 3 that most of the studies reviewed reveal certain limitations.

With reference to methodology, many of the research projects are methodologically limited. Some employed only one technique or method of data collection, such as questionnaire /survey or interviews whereas few studies combined questionnaire and interview instruments. These instruments, either individually or in combination, are not sufficient to examine the effectiveness of techniques or AI tools in boosting speaking performance. Therefore, a more appropriate qualitative approach should be required for methodological triangulation using diverse techniques of data collection and analysis.

Regardless of participants, some researchers conducted a case study that focused on only one student or several students to gather information about the effectiveness of techniques or AI tools, it would be unlikely for them to generalize their findings to other cases.

Finally, to my knowledge, there were only a few research projects carried out to explore as well as analyze minority ethnic high school students' speaking performance in Vietnam, especially in mountainous areas. From the above-mentioned reasons, this study may contribute significant reviews to the field of English language teaching.

V. Conclusion

To sum up, certain contributions to the existing literature regarding using techniques and AI tools have been explored from the systematic review on the prior studies. Specially, the reviewed studies have highlighted certain implications for further research directions in the global as well as in the new education context in Vietnam.

In terms of data collection instruments, questionnaires or/and interviews were highly favored in many prior studies for a data source suggests that a mixed-methods approach embracing quantitative and qualitative data such as journals and observations, etc. should be adopted to attain triangulation of the data.

With regard to sampling, some reviewed studies merely with a small number of participants implied that future research projects should require a greater sample size that is more likely to enhance the finding generalizations to other contexts.

Regarding research issues, although research projects pertaining to CT has aroused substantial attention worldwide and in Vietnam over many years, there have, to the best of our knowledge, been few studies concerning the use of techniques or AI tools for minority ethnic high school students to boost their speaking performance. Therefore, this research field should be a "fertile ground" - the most remarkably concerned topic for novice researchers in Vietnam.

Overall, it can be concluded that, to a greater extent, using techniques or AI tools, and are, therefore, needed for teachers and students Additionally, it is suggested that further empirical investigations should be delved into this field, which may devote to education innovation in Vietnam.

Declaration by Authors

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