The Effectiveness of Artificial Intelligence–Based Videos in Improving the English Speaking Skills of Sixth-Grade Elementary School Students

Ika Sastrawati
ikasastrawati@unismuh.ac.id

Hilda Hafid
hildahafid@unismuh.ac.id

Sujariati
sujariati@unismuh.ac.id

Universitas Muhammadiyah Makassar

ABSTRACT

Since traditional teaching techniques frequently offer few opportunities for active oral practice, the purpose of this study was to investigate the efficacy of employing an artificial intelligence (AI) application to enhance students' English speaking abilities. Two groups an experimental group of 18 students and a control group of 16 learners were used in the study's quasi-experimental design. To measure the students' speaking abilities both before and after the intervention, speaking pre-tests and post-tests were distributed to both groups. While the control group was instructed using traditional techniques, the experimental group was taught utilizing an AI-based application that enabled interactive speaking practice, pronunciation modeling, and continuous oral engagement. With the mean score rising from 59.14 on the pre-test to 81.47 on the post-test and 83.33% of students meeting the Minimum Mastery Criteria (KKM), the experimental group's speaking ability was found to have significantly improved. The control group, on the other hand, only slightly improved, with 37.50% of students meeting the KKM and mean scores rising from 58.62 to 66.38. These results show that incorporating artificial intelligence into English training improves students' speech performance, confidence, and engagement.

Keywords: Artificial Intelligence; Speaking Ability; EFL Learning; Primary School Students

INTRODUCTION

For decades, English as a Foreign Language (EFL) classroom practices have proven inadequate in providing primary school students with meaningful opportunities to engage in purposeful and communicative English speaking practice. Traditional teaching methods have often emphasized memorization of vocabulary and grammatical structures rather than encouraging learners to use English for real communication. Su (2007) pointed out that such traditional procedures reduce students' motivation and interest in learning English, as learners are trained to

recognize language forms instead of actively using the language in meaningful speaking situations.
The primary function of language is interaction and communication, and speaking plays a central role in fulfilling this function. In primary education, speaking is particularly important because it forms the foundation for later language development. Vocabulary and grammar should therefore serve as tools to support young learners' communicative competence rather than as isolated learning objectives. Speaking enables primary school students to express their ideas, intentions, and opinions, and it represents the most direct way for them to use English in meaningful contexts (Andika & Mardiana, n.d.).

Speaking skills have been identified as a fundamental ability required for success in both academic and social life, especially when developed from an early age (Sari et al., 2024). Students who can speak English well may have greater opportunities for further education and employment in the future. For most learners, "the ability to speak a language is synonymous with knowing that language since speech is the most basic means of human communication" (Celce-Murcia, 2001). Consequently, developing speaking proficiency at the primary school level is a core objective of EFL instruction.

Despite its importance, several studies have reported low levels of speaking proficiency among primary school students in Egyptian schools. Abdullah (2008) identified a number of challenges faced by both teachers and young learners in teaching and learning speaking. These challenges include students' difficulty in communicating in English, limited opportunities for oral interaction in the classroom, inappropriate instructional strategies, passive attitudes toward English, and psychological factors such as anxiety and fear of making mistakes. As a result, many primary school students are reluctant to participate in speaking activities.

Furthermore, previous studies by Ibrahem (2018), Abd El-Gelil (2019), Abd El-Salheen (2019), Mahgoub (2019), and Sayed (2019) confirmed that speaking practice at the primary school level is often neglected or insufficiently emphasized. English instruction tends to focus more on reading and writing, while speaking activities receive limited attention (Usmaedi et al., 2020). In addition, traditional lecture-based instruction assumes that all learners need the same information at the same time, an assumption that is particularly unsuitable for young learners who differ greatly in speaking ability and learning pace (2005). Therefore, there is a pressing need to adopt learner-centered and flexible teaching approaches that actively engage primary school students in speaking practice.

In this context, technology-enhanced learning offers promising alternatives to traditional EFL classrooms by creating interactive environments that support communication and student engagement (Adzkiya & Suryaman, 2021). One of the most influential technological developments in education is artificial intelligence. Artificial intelligence (AI) refers to the design of computer systems capable of simulating human-like or intelligent behavior (Russell & Norvig, 2010). Since

artificial intelligence enables rapid assessment, immediate feedback, and continuous updates, its use in the classroom is particularly valuable for improving primary school students' English speaking skills (Bunga Amira & Muhammad Irwan Padli Nasution, 2023).

Artificial intelligence applications provide young learners with accurate and consistent models of spoken English, particularly in terms of pronunciation and language use. Interacting with AI-based systems, such as conversational robots or speaking applications, allows primary school students to practice speaking without fear of negative evaluation. This safe and supportive environment encourages students to participate more actively in speaking tasks and helps build their confidence. Moreover, immediate feedback provided by AI systems enables learners to gradually improve their speaking accuracy and fluency (Marpaung et al., 2024).

Firth and Wagner (2005) noted that second language learners often prefer receptive language activities, even though they are expected to communicate orally in real-life situations. This observation highlights the need for instructional approaches that encourage young learners to move from passive language exposure to active speaking practice. The integration of artificial intelligence in primary school EFL classrooms can facilitate this transition by offering interactive, engaging, and age-appropriate speaking opportunities.

Although numerous studies, including Corvalán (2017), Habeeb (2017), Miailhe (2018), and Ocaña-Fernandez (2019), have examined artificial intelligence in education, limited research has focused specifically on the use of artificial intelligence applications to develop English speaking skills among primary school students. Therefore, the current study seeks to bridge this gap in the literature by investigating the effectiveness of an artificial intelligence application in enhancing primary school students' English-speaking skills in the EFL context.

LITERATURE REVIEW

Artificial Intelligence in EFL Education

Artificial intelligence (AI) is an interdisciplinary field concerned with enabling computer systems to perform tasks that typically require human intelligence. In educational contexts, AI is increasingly viewed as a supportive tool that enhances learning through interaction, personalization, and immediate feedback. With the development of speech recognition and conversational interfaces, AI has become particularly relevant to language learning and oral communication.

In education, AI applications contribute to personalized and learner-centered instruction by adapting learning experiences to students' needs and abilities (Bajaj & Sharma, 2018; Liang & Chen, 2018). Conversational AI tools, such as chatbots and voice assistants, allow learners to interact naturally using spoken language,

which increases motivation and engagement. These features are especially valuable in primary school settings, where learners require frequent, low-anxiety opportunities to practice speaking.

Artificial intelligence also plays a significant role in foreign language learning by creating interactive environments that promote oral practice. Interaction is a key element in language acquisition and AI-based applications provide learners with continuous opportunities to practice speaking in meaningful contexts. Previous studies have reported that AI applications encourage independent speaking practice, provide quick and reliable responses, and expose learners to varied vocabulary and expressions (Fryer & Carpenter, 2006; Goda, 2014).

Although research on the use of artificial intelligence in EFL classrooms is still limited, existing studies indicate its positive impact on speaking skills. Underwood (2017) found that primary school EFL students were highly engaged when interacting with AI voice assistants and produced more spoken English during classroom activities. These findings suggest that artificial intelligence applications have strong potential to enhance English speaking skills among primary school learners. Accordingly, the present study investigates the effectiveness of an artificial intelligence application in improving the English speaking skills of sixth-year primary school students.

Speaking Skill and the Role of Artificial Intelligence

Speaking is widely regarded as a core component of foreign language proficiency. Although listening is often viewed as the first skill to be acquired, speaking is commonly considered the most visible indicator of language mastery. Through speaking, learners express ideas, emotions, and intentions, and engage in meaningful social interaction. For primary school learners, developing speaking skills is particularly important, as this stage lays the foundation for future communicative competence.

From a communicative language teaching perspective, speaking instruction should focus on meaningful interaction rather than mere repetition of linguistic forms. Speaking is an interactive process that involves producing, receiving, and processing information. However, in many EFL primary classrooms, opportunities for authentic oral interaction are limited due to large class sizes, time constraints, and learners' anxiety. These challenges often result in teacher-centered instruction and minimal student talk.

Artificial Intelligence (AI) applications offer promising support for teaching speaking skills in EFL contexts. AI-based tools can provide learners with increased opportunities for oral practice through real-time interaction, immediate feedback, and repeated exposure to spoken language. Unlike traditional classroom settings, AI applications allow primary school learners to practice speaking without fear of negative evaluation, which can enhance confidence and willingness to

communicate. AI also enables individualized learning, as pupils can practice at their own pace and receive consistent pronunciation models.

Speaking competence involves a range of sub-skills that allow learners to function effectively in everyday communication. Speaking as the ability to initiate, sustain, and conclude interactions, as well as to describe, narrate, and ask and answer questions. At the primary school level, essential speaking sub-skills include asking and answering simple questions, exchanging information, describing people and objects, expressing preferences, and making basic requests. AI applications can support the development of these sub-skills by engaging learners in interactive dialogues, role-based simulations, and guided oral responses.

Integrating Artificial Intelligence into speaking instruction can therefore enhance oral language practice by increasing learner engagement, promoting active participation, and providing meaningful communicative opportunities. When effectively implemented, AI serves as a supportive tool that complements classroom instruction and contributes to improving primary school pupils' speaking proficiency in EFL settings.

METHOD

Design and samples

The present study adopted a quasi-experimental design employing pre- and post-tests for both experimental and control groups. The participants were sixth-year primary school pupils divided into two groups. Prior to the intervention, both groups were pre-tested using a speaking skills test to ensure equivalence. The experimental group received instruction through an artificial intelligence application designed to promote oral interaction and speaking practice, while the control group was taught using conventional teaching procedures outlined in the *English for Nusantara (6)* textbook. The treatment lasted for six weeks, with two class periods per week.

Instruments and Procedures

To achieve the objectives of the study, the following instruments were designed and utilized:

1. A checklist of speaking sub-skills suitable for sixth-year primary school pupils.
2. A speaking skills test administered as both pre-test and post-test.

The instructional content was drawn from the first three units of the *English for Nusantara VI* textbook. These units were selected because they include basic communicative topics and functional language appropriate for primary school learners. The lessons were adapted to incorporate artificial intelligence–based speaking activities, such as guided dialogues, oral responses, and interactive

question–answer tasks, which aimed to enhance pupils' fluency, pronunciation, and communicative confidence.

Prior to the implementation, a content analysis of the selected units was conducted to identify key linguistic elements relevant to speaking development. The analysis focused on vocabulary items, grammatical structures, communicative functions, and phonological features. This step ensured that the AI-based speaking activities were aligned with the instructional objectives and learners' linguistic level. The reliability and validity of the content analysis were verified to support the consistency of the instructional design. Overall, the experimental design sought to examine the effectiveness of integrating artificial intelligence applications in developing English speaking skills among sixth-year primary school pupils.

Instructional procedures were designed in light of artificial intelligence integration to enhance pupils' speaking performance. The instructional content was adapted from the first three units of *English for Nusantara (6)* and focused primarily on listening and speaking activities. Each lesson followed three main stages: presentation, practice, and evaluation. An artificial intelligence application (Google Assistant) was used to provide pupils with opportunities for guided oral interaction. Pupils were trained to use the application prior to the experiment to ensure familiarity with voice input, responses, and interaction patterns. During lessons, pupils practiced speaking individually and in pairs through AI-supported dialogues and scenario-based tasks.

The AI application allowed pupils to engage in low-anxiety oral interaction, receive immediate spoken responses, and model accurate pronunciation. This interaction was complemented by peer practice, where pupils repeated dialogues, exchanged roles, and provided simple feedback to one another. Such integration supported both human–AI and human–human interaction, encouraging participation, collaboration, and confidence in speaking. Overall, the instructional procedures aimed to create an interactive learning environment that supports oral communication, reduces speaking anxiety, and provides meaningful speaking practice suitable for primary school EFL learners.

Data Analysis

The data obtained from the speaking pre-test and post-test were analyzed using descriptive and inferential statistics. Descriptive statistics were used to calculate the mean scores, minimum and maximum scores, and score improvements of both the experimental and control groups in order to describe students' speaking performance before and after the treatment. Inferential statistical analysis was conducted to examine whether there was a significant difference between the speaking achievement of the experimental and control groups after the treatment. An independent samples *t*-test was used to compare the post-test scores of both groups. In addition, a paired samples *t*-test was applied to analyze the improvement of speaking scores within each group from pre-test to post-test. All statistical

analyses were conducted at a significance level of 0.05. The results of the analysis were presented in tables showing the comparison of mean scores between groups as well as the significance values to determine the effectiveness of using an artificial intelligence application in improving students' speaking ability.

RESULT AND DISUSSION

This study applied a quasi-experimental design to investigate the effectiveness of using an artificial intelligence (AI) application in improving students' English speaking ability. The participants consisted of two groups: a control group of 16 students taught using conventional methods and an experimental group of 18 students taught using an AI-based speaking application. Both groups were administered a speaking pre-test and post-test.

Speaking Pre-Test Results

The results of the speaking pre-test indicated that both groups had relatively low speaking ability prior to the treatment. In the control group, the average pre-test score was 58.62, with only 3 students (18.75%) achieving the minimum mastery criterion (KKM) of 75. Most students demonstrated limited vocabulary, inaccurate pronunciation, frequent pauses, and low confidence when speaking. Similarly, the experimental group showed a low level of speaking ability in the pre-test, with an average score of 59.14. Only 4 students (22.22%) reached the KKM. These findings indicate that both groups started from a comparable level of speaking proficiency.

Speaking Post-Test Results

After the treatment, a significant difference was observed between the two groups. The experimental group showed substantial improvement in speaking ability after being taught using the AI application. The average post-test score of the experimental group increased to 81.47, with 15 out of 18 students (83.33%) achieving scores above the KKM. In contrast, the control group demonstrated only modest improvement. The average post-test score increased to 66.38, and only 6 students (37.50%) met the KKM. Although some progress was observed, many students in the control group continued to experience difficulties in fluency and pronunciation.

Table 1. Comparison of Speaking Scores

Group	N	Pre-Test Mean	Post-Test Mean	Students ≥ KKM
Control Group	16	58.62	66.38	6 (37.50%)
Experimental Group	18	59.14	81.47	15 (83.33%)

The findings demonstrate that the use of an artificial intelligence application had a significant positive effect on students' speaking ability. The experimental group

showed a mean score improvement of 22.33 points, while the control group improved by only 7.76 points. This difference indicates that AI-supported instruction was more effective than conventional teaching methods in enhancing speaking skills.

The improvement in speaking skills among the experimental group can be attributed to several factors related to the use of the artificial intelligence application. First, interacting orally with the artificial robot provided pupils with a strong stimulus to initiate and sustain spoken interaction. Speaking to the AI application encouraged pupils to ask questions, give commands, and respond orally, which served as a jump start for interactive conversation and intensive oral practice.

Second, the artificial intelligence application provided pupils with immediate and accurate language input. Listening to the AI's responses exposed pupils to correct pronunciation, intonation, and sentence structures. This exposure helped pupils improve their oral production and increased their awareness of how English is used in real communicative contexts. Even when pupils' speech was not understood by the application, they often attempted to reformulate their utterances, which further enhanced their speaking practice.

Third, the speech recognition feature of the application played a significant role in improving pupils' speaking skills. This feature allowed pupils to practice pronunciation and fluency independently and repeatedly. Pupils were able to notice errors in their speech and make corrections without direct teacher intervention, which promoted learner autonomy and self-confidence in speaking. Furthermore, the integration of role-play and dialogue activities supported by the artificial intelligence application contributed to pupils' oral development. These activities enabled pupils to use English meaningfully in simulated real-life situations. Compared to the control group, whose speaking activities were largely limited to repetition and reading aloud, pupils in the experimental group engaged more actively in communicative speaking tasks.

Another important factor was pupils' motivation and engagement. Speaking to the artificial intelligence application aroused pupils' natural curiosity and interest. The interactive nature of the AI made learning English enjoyable and reduced pupils' anxiety when speaking. As a result, pupils became more willing to participate in oral activities and to experiment with the language without fear of making mistakes. The findings of this study are consistent with previous research which emphasized the positive impact of artificial intelligence and conversational agents on speaking skill development in EFL contexts (Atwell, 1999; Parker, 2007; Fryer & Carpenter, 2006; Coniam, 2014; Goda, 2014). These studies similarly reported that AI-based interaction provides learners with increased opportunities for oral practice and enhances their communicative competence.

Overall, the results indicate that using an artificial intelligence application is an effective instructional approach for developing speaking skills among sixth-year

primary school pupils. The AI-based learning environment provided meaningful interaction, immediate feedback, and increased speaking opportunities, which contributed significantly to pupils' oral language development.

CONCLUSION

Based on the findings, it can be concluded that the integration of an artificial intelligence application significantly improved students' English speaking ability. Students who learned through AI-based instruction achieved higher speaking scores, greater fluency, better pronunciation, and increased confidence compared to those taught using conventional methods. Therefore, artificial intelligence is an effective instructional tool for developing speaking skills in English language learning.

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