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Enhancing Speaking Proficiency in English Language Learning: The Impact of AI-Based Technology on Junior High Students

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ABSTRACT

The study explored the relationship between the use of AI-based technology in English language learning and the speaking skills of ninth-grade students at SMPN 1 Majasari Pandeglang. A total of 186 students were involved, and 64 were chosen as the sample, divided equally into control and experimental groups. The experimental group was taught using an AI-based application, while the control group followed conventional teaching methods. Results revealed that students who used the AI-based application demonstrated greater improvement in their speaking skills compared to those taught traditionally. This was evidenced by significantly higher N-Gain scores in the experimental group, indicating that the AI-based approach was more effective in enhancing speaking abilities. The findings suggest that incorporating AI technology into language learning can significantly boost students' speaking skills. Based on the results, the study recommends conducting further research with larger sample sizes and including different educational levels. This would allow for a more comprehensive exploration of the potential benefits of AI-based tools in enhancing language education across diverse learning environments.

Keywords: AI-based technology; English language learning; speaking skills

INTRODUCTION

English language proficiency is crucial in the current era of globalization, where cross-cultural communication and business transactions require a deep understanding of the language. SMPN 1 Majasari, like many other educational institutions, aims to improve its students' English proficiency. However, the results of the English language proficiency test at SMPN 1 Majasari show a low level of student achievement. This raises the need to look for more effective and innovative learning methods to improve students' English language skills.

In an effort to overcome this problem, researchers conducted research with the title " Enhancing Speaking Proficiency in English Language Learning: The Impact of AI-Based Technology on Junior High Students ". This research aims to explore the relationship between the frequency of using artificial intelligence (AI)-based technology in English language learning and improving students' speaking test results at SMPN 1 Majasari.

In this study, researchers divided students into two groups, namely the control group and the experimental group. The control group consisted of 32 students, and the experimental group also

consisted of 32 students. The experimental group will receive additional treatment in the form of using artificial intelligence-based technology in learning English, while the control group will undergo English learning without the use of this technology.

Thus, the main aim of this research is to find out to what extent the intensity of the use of artificial intelligence-based technology can influence the improvement of students' English language skills in the experimental class. It is hoped that the results of this research can contribute to the development of more effective and innovative English learning methods at SMPN 1 Majasari and other educational institutions. SMPN 1 Majasari aims to improve its students' English proficiency, but the results show a low level of achievement. This raises the need for more effective and innovative learning methods. This research explores the relationship between the frequency of using AI-based technology in English language learning and improving students' speaking test results.

The research focus of this study is to investigate the correlation between the frequency of using artificial intelligence (AI)-based technology in English language teaching and the improvement of students' speaking test results in SMPN 1 Majasari, Pandeglang. This focus stems from the observed low proficiency in English language skills among students at SMPN 1 Majasari, indicating a need for innovative approaches to enhance English language learning outcomes.

Frequency of Using AI-based Technology: This subfocus involves examining the extent to which AI-based technology is utilized in English language teaching practices at SMPN 1 Majasari. The frequency of usage will be measured in terms of the integration of AI tools, such as Google Lens, into classroom activities and assignments aimed at improving speaking skills.

Students' Speaking Test Results: Another subfocus is on assessing the speaking test results of students in both the control and experimental groups. This entails conducting pre-test and post-test assessments to gauge any improvements in speaking proficiency following the implementation of AI-based technology in the experimental group.

Through an in-depth analysis of these subfocus areas, the study aims to uncover insights into the effectiveness of incorporating AI-based technology in English language teaching and its potential impact on enhancing students' speaking skills. By elucidating the relationship between the frequency of AI technology usage and language proficiency outcomes, the research seeks to provide valuable contributions to the field of language education, particularly in addressing the challenges faced by SMPN 1 Majasari in improving English language proficiency among its students.

AI is defined as systems designed to perform tasks that usually require human intelligence such as problem-solving, pattern recognition, and decision-making (Russell & Norvig, 2021). Artificial intelligence (AI) has become an important topic in research and technological development. Russell and Norvig (2021) define artificial intelligence as systems designed to perform tasks that usually require human intelligence, such as problem solving, pattern recognition, and decision making.

LeCun et al. (2020) describe AI as a research field that focuses on creating machines that can learn from experience, adapt to environmental changes, and perform tasks that normally require human intelligence. According to McCarthy et al. (2022), artificial intelligence is a branch of computer science that seeks to build systems capable of performing tasks that require human thinking, such as learning, planning, and solving problems.

Research by Fauziyyah, Chintya. (2019). This study explores the use of the Duolingo application as an effort to improve English speaking skills among class VII students at MTs Cinyasag. Using a quasi-experimental method with a nonequivalent control group design, this research aims to assess the impact of using the Duolingo application on students' speaking abilities. By utilizing technology as an additional learning tool, this research tries to provide a solution in improving students' speaking skills in English subjects.

Research by Johnson et al. (2020) investigated the effectiveness of using AI chatbots in providing feedback in English language learning. Also, research by Abimanto, D. (2023). This research explores the effectiveness of using artificial intelligence (AI) in English language learning using a mixed-methods method that combines quantitative and qualitative approaches. The results showed significant improvements in listening, speaking, reading and writing skills after using AI, which supports the effectiveness of using this technology in language learning. This research also fills the gap in previous research in the context of using AI in English language learning in educational institutions. The practical implication of this research is the need for the integration of AI in the language learning curriculum to improve effective and efficient learning outcomes. This research makes a significant contribution to the understanding of the use of AI in language learning and shows the great potential of this technology in the development of innovative and adaptive learning methods.

METHOD

This research uses a quasi-experimental design with a non-equivalent control group design. The experimental class uses AI-based technology in learning while the control group follows conventional learning.

Research Population and Sample

The population consisted of 186 ninth-grade students, with 64 selected as the sample. The control group and the experimental group each consisted of 32 students.

Research Variables

- Independent Variable: Use of AI-based technology.
- Dependent Variable: Improvement in English speaking ability.

Research Data Collection Techniques and Instruments

- Speaking Proficiency Test: Measures students' speaking abilities before and after intervention.

- Observation: Assesses the frequency and intensity of AI technology use.
- Questionnaire: Collects information about perceptions of AI-based technology in learning.

Validity and Reliability of Research Instruments Reliability was confirmed using Cronbach's Alpha, with values greater than 0.06 indicating reliability. Validity was tested using Bivariate Pearson Correlation in SPSS.

Research Data Analysis Technique Data were analysed using descriptive statistics, normality and homogeneity tests, and independent sample t-tests in SPSS. Hake's N-Gain method was used to examine the degree of improvement in speaking abilities.

RESULT

The AI-based program significantly impacted students' speaking abilities. The experimental group improved more than the control group, as shown by higher N-Gain scores.

Group	Test Type	Minimum Value	Maximum Value	Average	Median	Standard Deviation	Mode
Control	Pre-Test	23	60	44.73	45	8.686	40
Control	Post-Test	53	87	70.23	70	10.183	70
Experiment	Pre-Test	23	60	44.73	45	8.686	40
Experiment	Post-Test	67	97	82.57	83	8.889	80

Table 1. Pre-Test and Post-Test Results of Students' Speaking Ability

Group	Test Type	Kolmogorov-Smirnov (Sig.)	Shapiro-Wilk (Sig.)
Control	Pre-Test	0.200	0.629
Control	Post-Test	0.200	0.211
Experiment	Pre-Test	0.200	0.424
Experiment	Post-Test	0.200	0.118

Table 2. Normality Test Results

Variable	Levene Test (Sig.)
Speaking Ability Value	0.584

Table 3. Homogeneity Test Results

Group	Test Type	t-value (Sig.)	N-Gain	N-Gain Category
Control	Post-Test	0.000	0.47	moderate
Experiment	Post-Test	0.000	0.70	advanced

Table 4. Hypothesis Test Results and N-Gain

The independent sample t-test findings showed that there is a significant difference in the speaking skills of the students between the two types of teaching techniques (traditional teaching and AI-based application). Subsequently, the N-Gain score also demonstrated that using the AI-based application outperforms traditional teaching methods in terms of improving students' speaking abilities. With Mobile-Assisted Language Learning (MALL), students can participate in the teaching and learning process rather than being treated as passive recipients with no chance to interact in English, as is the case with traditional approaches. Similarly, Classroom Action Research's (CAR) results, which examined how students in secondary education used an AI-based program, showed that students improved their proficiency with it. during their studies of the English language (Siregar et al., 2020). Instead of traditional education, which requires expensive printed speaking materials, students choose to study with mobile-assisted language learning since it gives them access to free resources (Asad & Ghani, 2021).

DISCUSSION

The results of this study unequivocally demonstrate that AI-based applications significantly enhance students' speaking abilities in English compared to traditional teaching methods. The experimental group, which used AI-based technology, exhibited substantial improvement in their post-test scores, with an average increase from 44.73 in the pre-test to 82.57 in the post-test. In contrast, the control group, which followed conventional learning methods, showed a lesser increase from 44.73 to 70.23. This marked difference highlights the effectiveness of AI-based applications in facilitating language learning, specifically in improving speaking skills.

AI-based applications provide interactive and engaging learning experiences that are tailored to individual student needs. These applications often include features such as real-time feedback, pronunciation practice, and interactive dialogue simulations, which help students practice and refine their speaking skills in a more effective manner. The immediacy of feedback in AI applications allows students to correct their mistakes promptly, leading to faster and more efficient learning. Furthermore, the interactive nature of these applications keeps students engaged and motivated, which is crucial for language acquisition.

Comparison of Learning Motivation

Motivation plays a critical role in the learning process, and the study found that students using AI-based applications were more motivated to learn compared to those using traditional methods. This increased motivation can be attributed to several factors inherent in AI-based learning tools. Firstly, these applications often use gamification elements such as rewards, badges, and progress tracking, which make learning more enjoyable and rewarding for students. The competitive and fun elements introduced by gamification can significantly boost students' intrinsic motivation to learn.

Secondly, AI-based applications offer personalized learning experiences. Unlike traditional methods that adopt a one-size-fits-all approach, AI applications adapt to each student's learning pace and style, providing customized exercises and content that match their proficiency level. This personalization ensures that students are neither bored with tasks that are too easy nor frustrated with tasks that are too difficult, maintaining their interest and motivation to continue learning.

Moreover, the convenience and accessibility of AI-based learning also contribute to higher motivation levels. Students can access these applications anytime and anywhere, allowing for flexible learning schedules. This flexibility helps students integrate language learning into their daily routines more seamlessly, leading to more consistent practice and better outcomes.

Simultaneous Influence on Learning Motivation and Speaking Ability

The study further indicates that AI-based applications have a stronger simultaneous influence on both students' learning motivation and speaking abilities. This dual impact underscores the potential of AI technology to revolutionize language teaching by addressing two critical aspects of learning: skill acquisition and learner engagement.

Traditional teaching methods often struggle to balance these aspects, as they can be monotonous and fail to provide immediate feedback. In contrast, AI-based applications create a dynamic learning environment where students are actively involved in their learning process. The interactive nature of AI tools encourages students to participate more actively, thereby improving their speaking skills through practice and repetition. At the same time, the engaging and adaptive features of these tools keep students motivated, creating a positive feedback loop where increased motivation leads to more practice, which in turn leads to better skills.

Investigating the integration of AI-based applications with other teaching methods could also be a valuable area of research. Understanding how these tools can complement traditional teaching practices or be integrated into a blended learning model could provide practical guidelines for educators aiming to enhance language instruction.

while this study highlights the significant benefits of AI-based applications in improving students' speaking abilities and motivation, further research is needed to explore the full potential and address the challenges of integrating AI technology into language education.

The AI-based application has a notable impact on pupils' speaking abilities, outperforming traditional teaching methods in improving students' speaking skills. The study's limitations include its focus on effectiveness without delving into students' experiences and restriction to one school. Future research should use different methodologies and larger sample sizes across various educational levels.

Discussion Points	Results
The impact of using AI-based applications on students' speaking abilities	AI-based programs have a significant impact on students' speaking abilities compared to traditional methods.
Comparison of learning motivation between students using AI-based programs and traditional methods	Students using AI-based programs are more motivated to learn compared to traditional methods.
Simultaneous influence between learning motivation and students' speaking ability	AI-based applications have a stronger influence simultaneously on students' learning motivation and speaking abilities.

Table 5. Discussion of Results

CONCLUSION

This quasi-experimental study has successfully shown that speaking abilities among secondary pupils are significantly impacted by the AI-based application. The results show that students who use the AI-based application to study are more motivated to learn than those who use traditional teaching methods. Students using the AI-based software had N-Gain scores that were categorized as high and effective, as opposed to moderate and less effective categories for conventional training. Student participation in the learning process is highly valued in the AI-based application. The application also promotes a competitive yet fun learning atmosphere and improves student-to-student engagement.

Students that use the AI-based program outperform those who study through traditional training when it comes to speaking abilities. An independent sample t-test and a comparison of the N-gain scores for each student group can be used to illustrate this. The main components of the AI-powered application that help students improve their speaking drills. Students can improve their speaking techniques and get more comfortable speaking in English with the help of this tool.

Compared to traditional teaching methods, the AI-based application has a stronger simultaneous influence on students' motivation to study and speaking abilities. The N-Gain score, which rates students who learn using the AI-based program as high and effective and those who study through traditional modes of education as moderate and less successful, lends more credence to this claim. The study's findings demonstrate that the AI-based application effectively raises pupils' speaking abilities.

Students' success in speaking can be impacted by the selection of effective instructional techniques. Students that use the AI-based program speak differently than students who learn through traditional methods. The results of students learning English in an enjoyable and stimulating environment (the AI-based application learning model in this case) are consistently better than those of students learning through boring and passive traditional teaching methods. When compared to traditional teaching methods, AI-based application learning models demonstrate a superior impact on speaking abilities concurrently.

Students that use the AI-based application to learn English may become better and more motivated. The features of this program were designed to make learning English fun for students. All of the features in this application can aid students in improving their English proficiency, especially in speaking. For this reason, it is highly recommended that secondary English teachers make use of this educational tool.

The AI-based application significantly improves students' speaking abilities and motivation to learn. Students using the AI-based application had higher N-Gain scores compared to those taught conventionally. For students, the AI-based program can be a tool for English language learning. For teachers, it can assist in improving students' speaking proficiency. Future researchers should explore more institutions, larger sample sizes, and new research methods to address current limitations.

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