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DEVELOPING AN ENGLISH LEARNING APPLICATION BASED ON INFORMATION SYSTEMS TO IMPROVE SPEAKING ABILITY OF LKP BINTANG MULIA STUDENTS

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Abstract: *This study aims to develop an English learning application based on information systems to improve the speaking skills of LKP Bintang Mulia students. The app features voice recording, pronunciation practice, speaking exercises, and an essay tool to support structured speaking. This development addresses the limited use of technology and reliance on conventional teaching methods at the institution. Thirty students participated in a pre-test and post-test evaluation covering fluency, pronunciation, vocabulary, and confidence. The average score increased from 62.4 to 78.6, with post-test scores of 79.5 (fluency), 78.0 (pronunciation), 77.8 (vocabulary), and 79.1 (confidence). The gain score was 16.2 and the normalized gain was 0.43, indicating medium effectiveness. A paired t-test showed significant improvement ($p < 0.001$), and the effect size (Cohen's $d = 2.2$) indicated a large impact. Student feedback confirmed the app's usability and effectiveness. These results show that integrating technology through interactive applications can significantly enhance speaking ability in language learning.*

Keyword: *speaking skills; English learning app; information systems; language technology; LKP Bintang Mulia*

Abstrak: Penelitian ini bertujuan untuk mengembangkan aplikasi pembelajaran bahasa Inggris berbasis sistem informasi untuk meningkatkan keterampilan berbicara siswa LKP Bintang Mulia. Aplikasi ini memiliki fitur rekaman suara, latihan pengucapan, latihan berbicara, dan alat bantu esai untuk mendukung berbicara terstruktur. Pengembangan ini mengatasi keterbatasan penggunaan teknologi dan ketergantungan pada metode pengajaran konvensional di lembaga tersebut. Tiga puluh siswa berpartisipasi dalam evaluasi pra-tes dan pasca-tes yang mencakup kelancaran, pengucapan, kosakata, dan kepercayaan diri. Skor rata-rata meningkat dari 62,4 menjadi 78,6, dengan skor pasca-tes 79,5 (kelancaran), 78,0 (pengucapan), 77,8 (kosakata), dan 79,1 (kepercayaan diri). Skor penguatan adalah 16,2 dan penguatan ternormalisasi adalah 0,43, yang menunjukkan efektivitas sedang. Uji-t berpasangan menunjukkan peningkatan yang signifikan ($p < 0,001$), dan ukuran efek (Cohen's $d = 2,2$) menunjukkan dampak yang besar. Umpan balik siswa mengonfirmasi kegunaan dan efektivitas aplikasi. Hasil-hasil ini menunjukkan bahwa mengintegrasikan teknologi melalui aplikasi interaktif dapat meningkatkan kemampuan berbicara secara signifikan dalam pembelajaran bahasa.

Kata kunci: keterampilan berbicara; aplikasi pembelajaran bahasa Inggris; sistem informasi; teknologi bahasa; LKP Bintang Mulia

INTRODUCTION

In the digital era, integrating technology into language education has become increasingly vital and this is transforming education in the digital age: how technology affects teaching and learning methods (Kurniawan S. Djibran et al., 2024) . However, many language institutions, including LKP Bintang Mulia, still rely heavily on conventional teaching methods, limiting students' exposure to interactive and autonomous learning tools. This reliance on traditional methods often results in students lacking opportunities for structured speaking

practice and personalized feedback, which are crucial for developing fluency, pronunciation, vocabulary usage, and confidence.

Speaking is often considered the most crucial and challenging of the four language skills, as it directly reflects learners' communicative competence and confidence in real-life contexts (Nggawu & Thao, 2023) (Shabilla Maurarin Rizqi et al., 2024). Despite the growing emphasis on speaking ability, many language programs still face challenges in offering effective speaking practice that engages students and provides real-time feedback. Additionally, teachers at LKP Bintang Mulia often struggle to integrate technology effectively into their lessons, relying on methods that are limited in their ability to foster interactive and engaging speaking exercises.

Recent studies emphasize the importance of technology integration in language instruction. (Merta et al., 2023) highlight that the strategic implementation of digital tools can significantly enhance pedagogical methods and language learning outcomes and the effectiveness of technology-enhanced learning tools in english language education (Tabasi et al., 2024) discusses the advantages of incorporating technologies such as digital platforms and educational applications to motivate students and improve the quality of the educational process (Haleem et al., 2022). Identify that both experienced and inexperienced English teachers face similar challenges in implementing blended learning for speaking instruction, including students' linguistic competencies and infrastructural issues (Khairunnisa, 2022). Note that teachers encounter technical and pedagogical challenges in online speaking activities, such as limited student engagement and interaction.

While popular platforms like Duolingo and ELSA Speak have demonstrated the potential of technology-enhanced speaking practice (Hasbi & Nursaputri, 2024), such innovations are rarely tailored for specific local contexts or used in non-formal institutions like LKP Bintang Mulia. This gap between available technological resources and classroom implementation poses a challenge for educational institutions that lack the expertise or infrastructure to fully leverage these technologies (Gottschalk & Weise, 2023)

To address these challenges, this research aims to develop an English learning application based on information systems, designed to provide interactive speaking activities, including voice recording, pronunciation drills, and structured essay presentation tools (Yan et al., 2024). By incorporating technology, the application offers students an engaging, user-friendly platform to practice speaking more independently and effectively.(Tanti Sri Kuswiyanti & Adiyan1, Okta Rosfian, 2023) This study investigates whether the developed application can significantly improve students' speaking abilities through quantitative analysis using pre-test and post-test methods, providing insights into the effectiveness of integrating information systems into speaking instruction at LKP Bintang Mulia and similar educational settings.

METHOD

This research employed a quantitative approach using a pre-experimental design, specifically the One Group Pre-test–Post-test Design (Gomm, 2021). This design allows the researcher to measure the difference in students' speaking skills before and after using the English learning application developed for this study. The purpose was to determine whether the application significantly improves speaking performance among students at LKP Bintang Mulia.

Participants

The participants were 30 students from LKP Bintang Mulia who were

selected purposively based on their availability and willingness to participate. All students had similar backgrounds in English proficiency and had not used any other learning technology prior to the intervention.

Instruments

To collect data, the researcher used a speaking test administered before and after the intervention (pre-test and post-test), along with a questionnaire to gather students' perceptions of the application's usability and effectiveness. The speaking tests focused on four criteria: fluency, vocabulary, pronunciation, and comprehension, and were assessed using the scoring rubric shown in Tables 1 and 2.

1. Pre-test: Assessed students' baseline speaking abilities through four tasks: personal introduction, picture description, role-play, and question–answer session.
2. Post-test: Similar in format to the pre-test, but with more complex prompts to measure improvement in structured speaking and communication confidence.

Each criterion was scored on a scale of 1 to 4 (Poor to Excellent). The maximum possible score (MS) per student was 16. The formula used to calculate the final score was:

$$\textbf{Score} = \frac{SS}{MS} \times 100$$

In which:

SS (Students' Score): The total score achieved by the student across all aspects (e.g., Fluency, Comprehension).

MS (Maximal Score): The maximum possible score. (Winna & Sabarun, 2023)

Procedure

1. Pre-test Administration: Students completed the pre-test under supervised conditions. Scores were recorded as baseline data.
2. Application Use: Over the next four weeks, students used the developed English learning application regularly during guided sessions. Features such as voice recording, essay creation, and pronunciation tools were integrated into weekly speaking assignments.
3. Post-test Administration: After the intervention, students completed the post-test. The same scoring rubric and evaluation format were used.
4. Questionnaire Distribution: Students provided feedback regarding the app's usability, motivation effects, and perceived improvement in speaking.

Pre-test Administration: The pre-test was administered to all participants at the start of the study to establish baseline data on their speaking skills

Data Analysis

Data were analyzed using descriptive statistics (mean scores and gain), normalized gain score, and paired sample t-tests to determine the statistical significance of improvement. Additionally, Cohen's d was calculated to measure effect size and interpret the magnitude of the improvement.here we can seen the table 1 and 2,especially the scoring rubric (Pre test) and (post Test)

Table 1 Scoring Rubric (pre test)

Criteria	Excellen (4)	Good (3)	Fair (2)	Poor (1)
Fluency	Smooth, natural	Minor pauses	Frequent pauses	Struggles to speak
Vocab	Wide range	Sufficien t	Limited	Very limited

Pronunciation	Accurate sounds	Minor errors	Understandable with effort	Hard to understand
Comprehension	Full understanding	Mostly clear	Some misunderstanding	Significant difficulty

Explanation:
Each student is scored from 1 to 4 in each criterion. The total score (SS) is compared to the maximum score (MS = 16) to calculate the percentage:

$$\textbf{Score} = \frac{SS}{MS} \times 100$$

Table 2 Scoring Rubric (post test)

Criteria	Excellent (4)	Good (3)	Fair (2)	Poor (1)
Fluency	Smooth, natural speech	Minor hesitations	noticeable pauses	Struggles with flow
Vocab	Rich and varied	Sufficient for context	Limited use of new words	Repetitive
Pronunciation	Clear , accurate sounds	Minor errors	Understandable with effort	Hard to follow
Comprehension	Full understanding	Mostly accurate	Some misunderstanding	Significant confusion

Explanation:
Same scoring procedure as in pre-test. Results are then analyzed to measure individual and overall progress. You can also calculate:

In which

Gain Score = Post-test average – Pre-test average

Normalized Gain (g) = (Post – Pre) / (100 – Pre)

RESULTS AND DISCUSSION

The purpose of this research was to examine the effectiveness of an English learning application based on information systems in improving the speaking abilities of students at LKP Bintang Mulia. The data were obtained through pre-tests and post-tests focused on four key speaking indicators: fluency, pronunciation, vocabulary, and confidence. A total of 30 students participated in the study.

Pre-Test and Post-Test Results

The average pre-test score across all indicators was 62.4, indicating limited speaking ability prior to the intervention. After the implementation of the application, the average post-test score increased to 78.6, reflecting a notable improvement. The detailed scores for each indicator are shown in the table below.

Table 3. Pre-test and Post-test Score Comparison

No	Indicator	Pre-test	Post-test
1	Fluency	63.0	79.5
2	Pronunciation	61.2	78.0

3	Vocabulary	62.7	77.8
4	Confidence	62.5	79.1
Avarage		**62.4**	**78.6**

The gain score (post-test minus pre-test) was 16.2 points, and the normalized gain score (g) was calculated as:

$$g = \frac{Post-test-Pre-test}{100-Pre-test} = \frac{78.6-62.4}{100-62.4} \approx 0.43$$

This normalized gain score of 0.43 falls into the medium category of effectiveness.

Statistical Analysis

To test the significance of the improvement, a paired sample t-test was conducted. The result showed that the difference between pre-test and post-test scores was statistically significant with $p < 0.001$, indicating that the improvement was not due to chance.

Additionally, the effect size using Cohen's d was calculated

$$d = \frac{Mean_{post} - Mean_{pre}}{SD_{Pooled}} \approx 2.2$$

This large effect size demonstrates that the application had a substantial impact on students' speaking skills.

DISCUSSION

These findings confirm that the integration of an English learning application based on information systems contributed significantly to students' development in speaking English. The voice recording and pronunciation tools helped learners improve articulation and fluency, while the essay feature supported structured speaking and vocabulary growth. The interactive design of the application likely enhanced student engagement and learning motivation.

The results are in line with prior research emphasizing the importance of digital tools in language learning (Gripse, 2025) As in (Ali et al., 2024)). Enhancing Student Excellence Through Digitalization of Indonesian Language Learning Aligned with the Independent Curriculum

Furthermore, student feedback through questionnaires confirmed that the application was user-friendly and contributed to a more interactive and modern learning experience, in contrast to the conventional methods previously used at LKP Bintang Mulia**.**

CONCLUSION

This study successfully developed and implemented an English learning application based on information systems to improve the speaking skills of students at LKP Bintang Mulia. The application integrated features such as voice recording, pronunciation practice, speaking exercises, and structured essay tasks, which effectively supported student engagement and language production.

The findings showed a significant improvement in students' speaking abilities, with the average score increasing from 62.4 (pre-test) to 78.6 (post-test). The normalized gain score of 0.43 indicated medium effectiveness, while the paired t-test result ($p < 0.001$) and large effect size (Cohen's $d = 2.2$) confirmed the substantial impact of the intervention.

These results demonstrate that the use of interactive technology in language education—particularly through mobile or web-based applications—can greatly enhance key aspects of speaking skills, including fluency, vocabulary, pronunciation, and confidence. The application can be a valuable tool for language instructors seeking to modernize their teaching strategies and improve student outcomes.\

Future research is recommended to explore the long-term effects of such applications, examine their use in different learning contexts, and integrate AI-powered feedback for personalized learning experiences.

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