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The Impact of the AI-Based Application ELSA Speak on Students' English Speaking Skills: A Pre-Experimental Study at the Madrasah Tsanawiyah Level

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ABSTRACT
Speaking skills remain one of the most challenging aspects of English language learning, especially for students in madrasah tsanawiyah (Islamic junior high schools) with limited access to interactive speaking practice. This study aims to examine the impact of using the ELSA Speak application in improving the English speaking skills of eighth-grade students at MTs Zainul Anwar Kraksaan, with a particular focus on pronunciation, intonation, and fluency. Employing a quantitative approach with a one-group pretest-posttest pre-experimental design, the study involved 18 students who used the ELSA Speak application regularly for one week. Data were collected through oral tests administered before and after the intervention and analyzed using paired sample t-tests. The results revealed a significant improvement in students' speaking scores, with the average increasing from 50.61 to 59.50 and a significance value of 0.013. These findings indicate that ELSA Speak effectively enhances students' speaking performance. In conclusion, the integration of AI-based learning tools such as ELSA Speak offers an adaptive and practical solution for developing speaking proficiency in English, particularly in educational settings with limited resources, while also supporting broader digital transformation efforts in language education at the secondary level.

Keywords: : speaking skills, ELSA Speak, artificial intelligence, English language education.

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INTRODUCTION
English has long been recognized as an international language that plays a central role in global communication. In the field of education, mastery of English is a crucial factor in students' success in meeting the demands of globalization. Among the four fundamental language skills—listening, speaking, reading, and writing—speaking is often considered the most complex and challenging to master. This is because speaking requires not only a command of vocabulary and grammar but also accuracy in pronunciation, fluency, and appropriate intonation according to context. As emphasized by Torky, speaking skill is the result of an integration of phonology, morphology, and syntax, which must be applied spontaneously in real-life situations.

In Indonesia, particularly at the junior secondary level such as Madrasah Tsanawiyah (MTs), many students struggle with English speaking skills. Most classroom instruction still emphasizes receptive skills such as reading and writing, while opportunities for authentic speaking practice remain limited. Ranti highlights that one of the main challenges Indonesian students face in English pronunciation stems from the phonemic differences between Indonesian and English, often resulting in articulation errors and unnatural intonation.

With the advancement of technology, artificial intelligence (AI)-based learning approaches are increasingly being integrated into education. One innovation that has gained significant attention is the ELSA Speak (English Language Speech Assistant) application. This application provides personalized and adaptive pronunciation training using speech recognition technology and real-time

feedback to correct user errors. Various studies have demonstrated its effectiveness. According to data from ELSA Corp, more than 90% of users show improved pronunciation within the first three months, while other studies report an average pronunciation score increase from 70 to 80 after three usage cycles. An experimental study at SMK Negeri 2 Purwokerto also found significant score differences between the experimental group (average score: 79.23) and the control group (average score: 74.34).

Although many previous studies have confirmed the effectiveness of ELSA Speak, most have focused on university students and adults. Research targeting MTs-level students remains scarce, despite the fact that adolescence is a critical stage for second language acquisition. Additionally, most studies have only evaluated pronunciation, without holistically assessing intonation and fluency—two essential components for effective communication. This study was conducted at MTs Zainul Anwar Kraksaan, an Islamic educational institution that reflects the common characteristics of Indonesian students from lower-middle socioeconomic backgrounds in non-urban areas.

Therefore, this research aims to evaluate the use of ELSA Speak as an AI-based learning tool to improve three core aspects of speaking skills among MTs students: pronunciation, intonation, and fluency. By addressing the gap in literature on the effectiveness of ELSA Speak among adolescent learners and providing empirical evidence from the madrasah setting, this study seeks to contribute theoretically to Second Language Acquisition studies and practically as a reference for educators and policymakers in integrating digital technology into English language education curricula.

METHOD

RESEARCH DESIGN

This study employed a quantitative approach using a pre-experimental one-group pre-test and post-test design. This design allows the researcher to measure changes in speaking skills—particularly pronunciation—resulting from the intervention of using the ELSA Speak application by comparing students' performance before and after the treatment within the same group. This design was chosen due to constraints in forming a control group or conducting participant randomization, which is often impractical within the fixed classroom settings typically found in Madrasah Tsanawiyah (MTs).

RESEARCH PARTICIPANT

The population of this study consisted of all eighth-grade students at MTs Zainul Anwar Kraksaan during the 2024/2025 academic year. This population was selected because eighth-grade students are generally considered to have basic English proficiency and are more prepared to receive technology-based learning interventions. The sampling method used was purposive sampling, in which one class consisting of 18 students was selected based on the uniformity of class characteristics, technological readiness, and recommendations from the school administration. A total of 18 students was deemed sufficient for the pre-experimental design and for conducting basic statistical analysis, such as the paired sample t-test.

RESEARCH INSTRUMENT

The primary instrument used in this study was a speaking test consisting of a pre-test and post-test to assess students' abilities in three main aspects: pronunciation, fluency, and intonation. The speaking test comprised 15 items, with each item evaluated on the three aspects using a 5-point rating scale. The maximum raw score attainable was 225 points (15 items × 15 points), which was then converted to a 100-point scale for standardization. The instrument's validity was assessed through content validity by two experts (expert judgment), yielding a result of 64.29% (considered moderately valid), and construct validity using Pearson Product-Moment correlation, which showed that all 15 items were valid (r-calculated > r-table 0.468). The reliability of the instrument, tested using Cronbach's Alpha, yielded a coefficient of 0.985, indicating an "excellent" level of reliability.

RESEARCH PROCEDURE

The study was conducted in three main stages: preparation, implementation, and analysis.

1. **Preparation Stage:**

   This stage included obtaining research permission from MTs Zainul Anwar Kraksaan,

conducting initial classroom observations, selecting 18 students as participants, developing the speaking test instruments, and providing a brief training session for students on how to use the ELSA Speak application.

2. **Implementation Stage:**
   The implementation began with administering a pre-test to assess students' initial speaking abilities. Following this, students underwent the treatment phase by using the ELSA Speak application regularly for one week, with a daily duration of 30 to 45 minutes, focusing specifically on the "Improve Pronunciation" feature. All activities were directly supervised by the researcher and the teacher. After the treatment period ended, students completed a post-test that was equivalent in format to the pre-test.
3. **Analysis Stage:**
   The pre-test and post-test scores were analyzed quantitatively to measure the effect of the intervention.

DATA ANALYSIS

Data analysis was conducted using both descriptive and inferential statistical approaches with the assistance of SPSS software.

1. **Descriptive Statistics:**
   Descriptive statistics were used to calculate the mean, standard deviation, and score distribution to provide an overview of students' speaking abilities before and after the intervention.
2. **Inferential Statistics:**
   Inferential analysis employed the Paired Sample t-Test to determine whether the difference in scores between the pre-test and post-test was statistically significant. The decision was based on the significance value (p-value). If $p < 0.05$, the null hypothesis (H_0) is rejected, indicating a significant effect of using the ELSA Speak application.

FINDING

1. Descriptive Statistical Analysis
   The pre-test results conducted before the intervention indicated that students' initial speaking abilities were relatively low. Out of 18 students, 11.1% fell into the "Very Poor" category, 44.4% in the "Poor" category, 33.3% in the "Fair" category, and 11.1% in the "Good" category. None of the students achieved the "Very Good" level. The average pre-test score was 50.61, with a standard deviation of 16.33.
   Following a one-week intervention using the ELSA Speak application, the post-test results showed a clear improvement. The students' average score increased to 59.50, with a standard deviation of 22.25. This 8.89-point increase in the mean score indicates measurable progress in students' speaking skills. The distribution of categories also shifted positively: while some students remained in the "Poor" category (38.9%), five students (27.8%) reached the "Very Good" category, which had been entirely absent in the pre-test.
2. Inferential Statistical Analysis and Hypothesis Testing
   To examine whether the difference between pre-test and post-test scores was statistically significant, a Paired Sample t-Test was conducted. Prior to this, a paired sample correlation test showed a strong and statistically significant positive correlation between pre-test and post-test scores ($r = 0.796$, $p < 0.001$), indicating consistency in the scoring process.
   The results of the paired sample t-test are presented below:

Table 1. Paired Sample t-Test Results

Paired Differences	Mean Difference	Standard Deviation	t	df	Sig. (2-tailed)
Pre-test – Post-test	-8.89	13.53	-2.787	17	0.013

Based on the table above, the calculated *t*-value is -2.787 with 17 degrees of freedom (df). The obtained significance value (2-tailed) is 0.013. Since this p-value is less than the critical threshold of

0.05 (0.013 < 0.05), it can be concluded that the difference between the pre-test and post-test scores is statistically significant.

Therefore, the **null hypothesis (H_0)**—which states that *"there is no significant difference between students' pre-test and post-test scores after using the ELSA Speak application"*—is **rejected**. Conversely, the **alternative hypothesis (H_1)**—which states that *"there is a significant difference between students' pre-test and post-test scores"*—is **accepted**.

DISCISSION

The findings of this study indicate that the use of the ELSA Speak application significantly improved students' speaking skills, as evidenced by the increase in the average score from 50.61 to 59.50 and the statistical significance of the results ($p = 0.013$). This suggests that the integration of mobile-based pronunciation tools like ELSA Speak can positively impact learners' oral proficiency, particularly in English as a Foreign Language (EFL) contexts, where students have limited exposure to authentic spoken English. The improvement was not only numerical but also categorical, with the emergence of students in the "Very Good" category on the post-test, highlighting the application's effectiveness in fostering higher levels of speaking competence.

These findings are consistent with recent empirical research in the field of Mobile-Assisted Language Learning (MALL). For instance, Al-Qudah & Suleiman found that EFL students in Jordan who used ELSA Speak demonstrated significant improvement in pronunciation and fluency. Similarly, Putri and Husna reported that ELSA Speak facilitates independent and repetitive pronunciation practice, leading to increased learner autonomy and tangible gains in speaking performance.

Theoretically, this study supports both the Technology Acceptance Model (TAM) and Vygotsky's Sociocultural Theory. The AI-powered instant feedback system and accuracy scores provided by ELSA Speak offer real-time scaffolding, enabling students to identify and correct their errors independently. This process aligns with the concept of the Zone of Proximal Development (ZPD), wherein learners can progress beyond their current abilities with the right support. The application creates a safe and low-pressure practice environment, which is crucial for overcoming the speaking anxiety commonly experienced by language learners.

The strong positive correlation ($r = 0.796$) between pre-test and post-test scores not only reflects the improvement in students' performance but also indicates consistency in learning outcomes, reinforcing the reliability of both the teaching method and the assessment instruments used. Therefore, this discussion confirms that ELSA Speak is not merely an engaging and interactive tool but also an empirically effective application for enhancing students' English speaking proficiency. These findings contribute to the growing body of research advocating for the integration of mobile learning technologies into both formal and informal English language instruction.

CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that the use of the ELSA Speak application significantly improved the English speaking skills of eighth-grade students at MTs Zainul Anwar Kraksaan, particularly in the areas of pronunciation, fluency, and intonation. Quantitative analysis using a pre-experimental design showed an increase in the average score from 50.61 to 59.50, with a paired sample t-test significance value of 0.013 ($p < 0.05$), confirming that the improvement was statistically significant.

The effectiveness of ELSA Speak, which leverages artificial intelligence and real-time speech recognition, was proven to enhance students' prosodic and phonological dimensions of spoken English. The application successfully provided individualized, adaptive, and non-intimidating speaking practice, which in turn boosted students' confidence and reduced language learning anxiety.

This study offers new empirical evidence on the effectiveness of Mobile-Assisted Language Learning (MALL) in the context of Madrasah Tsanawiyah in semi-urban areas of Indonesia. It also

highlights that AI-powered applications can be effectively integrated even in environments with limited infrastructure, thus supporting equitable access to quality English language education.

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