# IMPLEMENTATION OF THE TONGLIS WEB-BASED LEARNING APPLICATION TO IMPROVE ENGLISH VOCABULARY MASTERY IN ELEMENTARY SCHOOL STUDENTS

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Abstract: Mastery of English vocabulary is a fundamental component in developing language skills among elementary students, yet traditional teaching approaches in Indonesia often lack technological integration and fail to engage learners effectively. This study aims to implement and evaluate the effectiveness of a web-based learning application, Tonglis, in improving vocabulary acquisition for fifth-grade students at SD Muhammadiyah Ambarketawang 2, Yogyakarta. Utilizing a mixed-method approach, the study involved 20 students in a one-group pretest-posttest design and conducted semi-structured interviews with students and teachers. Quantitative results showed a significant increase in vocabulary scores, from a mean pretest score of 52.8 to a posttest mean of 80.4 after two weeks of using Tonglis. Qualitative data revealed enhanced student engagement, increased motivation, and more confident vocabulary usage, supported by interactive features such as native speaker audio, gamified quizzes, and child-friendly visuals. The findings demonstrate that Tonglis can effectively facilitate English vocabulary learning in primary school contexts and contribute to the advancement of educational technology tailored for young learners, particularly in low-resource settings.

**Keywords**: educational technology, English vocabulary, interactive learning media, language acquisition, web-based learning.

## INTRODUCTION

Explaining Vocabulary mastery is one of the main foundations in learning English at the elementary school level, because adequate vocabulary allows students to understand and actively use language in various contexts (Fatmawati, 2021). However, the learning process in many elementary schools in Indonesia is still dominated by traditional approaches that focus on memorization and lectures from teachers without the support of interactive technology (Ambarwati & Mandasari, 2020). As a result, students tend to be passive and have difficulty expanding and applying vocabulary in everyday language activities (Anita, Sembiring, Tijow, & Cenderawasih, 2025).

Advances in educational technology offer a great opportunity to improve the effectiveness of learning, including through the development of web-based applications that can be easily accessed by students and teachers. One approach that is starting to develop is the use of interactive educational applications designed specifically for elementary school-age children. This technology not only increases student engagement, but also allows them to learn vocabulary in a more contextual and fun way (Gilakjani, 2018). However, the application of this kind of technology in Indonesia is still limited, both in terms of the availability of appropriate learning media for children, as well as teacher training in integrating it into learning (Ahmad & Hussaini, 2021; (Rante Sampebua, Tanjung, & Sampebua, 2023)

Most of the current English learning applications are still intended for higher education levels and do not pay attention to the cognitive and visual development aspects of elementary school-age children (Kinanti & Subagio, 2020). On the other hand, many teachers also do not have enough digital competence to implement technology-based learning media effectively. Limited infrastructure, such as internet access and educational software, is also an obstacle to the implementation of digital learning media in elementary schools (S. Z. Ahmad, Budiwati, & Wijayanto, 2022).

This problem also occurred at SD Muhammadiyah Ambarketawang 2, Yogyakarta. This school faces challenges in improving students' English vocabulary mastery, where the limitations of interactive learning media cause the learning process to still focus on memorization. The lack of interesting and child-friendly learning facilities has an impact on low student motivation and involvement. One of the innovations developed to answer this challenge is the Tonglis Web App, a web-based learning application specifically designed to improve the English vocabulary mastery of elementary school students. Tonglis has interactive features such as audio pronunciation, thematic vocabulary exercises, and automatic evaluations that are presented in a child-friendly and easy-

to-use interface. With a gamification-based approach and web technology, the app aims to create a fun and effective learning experience for students. Therefore, this study aims to implement the Tonglis Web App as an innovative alternative learning media to significantly improve the English vocabulary mastery of elementary school students.

## METHODS

This study uses a mixed method approach that combines quantitative and qualitative methods to obtain comprehensive and in-depth data. This approach was chosen because it allows researchers to explain the phenomenon broadly while corroborating the findings with measurable empirical data (Sugiyono, 2016). From the quantitative side, this study uses a quasi experiment design with a one-group pretest-posttest model, which is measurements taken before and after treatment in one group without a comparison group. This design is suitable for use in elementary school settings that do not allow random grouping of control and experimental classes (Arikunto, 2013).

The research was carried out at SD Muhammadiyah Ambarketawang 2, Yogyakarta, with 27 students in class V who were selected purposively. The English vocabulary test is given before and after students use the Tonglis Web App application for two weeks of learning. The results of the pretest and posttest will be analyzed using descriptive and inferential statistical tests to determine a significant increase in vocabulary usage. On the qualitative aspect, the researcher conducted semi-structured interviews with English teachers and some students to reveal their perceptions of the use of the app. Qualitative data were analyzed using the Miles, Huberman, and Saldana model, which consisted of the stages of data reduction, data presentation, and conclusion drawing (Miles, Huberman, & Saldana, 2014). This approach allowed researchers to find patterns of findings and relationships between the experience of using the app and student engagement in learning English vocabulary. Through the combination of these two methods, the research is expected to provide a comprehensive understanding of the effectiveness of the implementation of the Tonglis Web App learning application for elementary school students.

## RESULTS AND DISCUSSION

This study aims to examine the effectiveness of the Tonglis Web App application in improving the use of English vocabulary in grade V elementary school students. The results of the quantitative analysis based on pretest and posttest scores showed a significant increase after the use of the application. The average student score increased from 52.8 to 80.4, which illustrates that the app has a positive impact on English vocabulary mastery skills.

Table 1. Students' pretest and posttest results

| Yes | Initials | Pretest Score | Posttest Score |
|---|---|---|---|
| 1 | S1 | 60 | 85 |
| 2 | S2 | 55 | 78 |
| 3 | S3 | 52 | 80 |
| 4 | 4S | 48 | 76 |
| 5 | S5 | 60 | 84 |
| 6 | S6 | 50 | 79 |
| 7 | S7 | 45 | 75 |
| 8 | S8 | 59 | 82 |
| 9 | S9 | 53 | 85 |
| 10 | S10 | 55 | 83 |
| 11 | S11 | 49 | 77 |
| 12 | S12 | 51 | 79 |
| 13 | S13 | 56 | 84 |
| 14 | S14 | 50 | 78 |
| 15 | S15 | 47 | 74 |
| 16 | S16 | 60 | 86 |
| 17 | S17 | 52 | 81 |
| 18 | S18 | 58 | 83 |
| 19 | S19 | 46 | 76 |
| 20 | S20 | 54 | 80 |

Table 2. Descriptive Statistics

| | N | Mean | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Pretest | 20.0 | 53.0 | 4.81 | 45.0 | 60.0 |
| Posttest | 20.0 | 80.25 | 3.64 | 74.0 | 86.0 |
| Difference | 20.0 | 27.25 | 2.38 | 23.0 | 32.0 |

Table 3. Paired Sample Test

| Paired | Values |
|---|---|
| Mean | 27.25 |
| Std. Deviation | 2.38 |
| t | 51.27 |
| Df | 19 |
| Sig. (2-tailed) | 8.03e-22 |

Based on the results of descriptive analysis of pretest and posttest data, there was a significant increase in students' English vocabulary mastery after using the Tonglis Web App. The average pretest score was 53.00 with a standard deviation of 4.81, while the average posttest increased to 80.25 with a lower standard deviation of 3.64. The average difference between pretest and posttest scores of 27.25 points indicates a substantial improvement, supported by a consistent minimum and maximum score showing a tendency to improve in all students. To test the significance of the increase, a paired sample t-test was carried out, which resulted in a t-value of 51.17 and a significance value (p-value) of $8.03 \times 10^{-22}$. Since the p value is far below 0.05, the increase that occurs can be stated to be very statistically significant. In addition, the standard value of the difference deviation of 2.38 indicates that the increase in scores occurred consistently in almost all participants. These results show that the use of the Tonglis Web App application is effective in significantly and evenly increasing students' English vocabulary mastery in one study group. These findings reinforce the importance of the application of interactive digital learning media tailored to the characteristics of elementary school students.

This increase is not only proven through numerical data, but also corroborated by the results of interviews with students and teachers. One student stated, "I love learning English because I can play while listening to the voice of the native speaker. His words are easy to remember." (S3). This shows how the audio-visual elements in the app support students' cognitive and affective processes, in line with the findings Yuan (2025) who affirms that ASR-based technology provides rapid pronunciation feedback and improves students' vocabulary retention.

From the teacher's perspective, one of the informants said, "Children who are usually passive and shy of speaking are now more daring to say new vocabulary because they are helped by voice features and gamification quizzes." This reinforces the findings of Nasyifa & Armin (2025), who explain that gamification-based educational applications such as Blooket are able to significantly increase students' verbal participation in English classes.

The interactive features of the Tonglis application are considered to help students to learn in a fun and repetitive way. The S8 student said, "I used to memorize only exam time. But now I hear it and replay it often. So keep memorizing." This is in line with the principle of repetitive spaced learning, as explained in Mahdi & Dewi (2024), which states that the repetition feature in digital media helps strengthen students' long-term linguistic memory connections. Another interesting thing is the increase in motivation to learn. The S12 student admitted, "I was excited because the application was like playing a game. It's fun and the colors are cute!" This demonstrates the importance of child-friendly interfaces in encouraging intrinsic motivation to learn English. Fernanda & Palma (2025) confirm that engaging visual displays in digital learning media directly contribute to increased learning engagement of primary school students.

Furthermore, the teacher also said that after using the application, "Many children start to actively ask the meaning of words in English, and some try to use them outside of class hours." This statement shows that apps help foster curiosity and confidence in language, an important aspect of the language acquisition process. This is in line with the study by Raudhah, Mahardika, & Widiarna (2025), which stated that the use of Wordwall and Wow Games applications has an effect in stimulating students' active involvement in the use of new vocabulary. The limitations of teachers in using digital media have also been successfully overcome. "The application is easy to use, I don't need special training to use the features," said the classroom teacher. Simplicity and ease of access are one of the strengths of the Tonglis Web App, as also explained by Lee and Lee (2022), who found that mobile-based language learning applications become more effective at the elementary school level when the interface design is made simple, intuitive, and tailored to the needs of young users of the Sinlapaninman & Pattanachai (2022). Furthermore, S9 students said, "I often teach my friends to also play the application. So we learn together." This shows that applications not only encourage individualized learning but also shape social-educational interactions among students, an important aspect of the socio-constructivist approach to learning 1263 (Hamidiyah & Dalimunte, 2025).

This research contributes to the development of contextual and child-friendly technology-based learning media, especially in elementary school

environments with minimal access to interactive digital media. The Tonglis Web App is proven to be an alternative English vocabulary teaching medium that can improve students' learning outcomes, motivation, and active participation. In addition, the study reinforces the literature that the incorporation of gamification elements, direct feedback, and visualization is an effective strategy in language learning for children, as shown in research by Parrott & Ebrahimi (2025), who developed the SPELLINGUAL app and showed that interactive visualization as well as gamification point systems successfully improve students' focus, motivation, and pronunciation accuracy during app-based learning.

## CONCLUSION

ased on the research findings, problem formulation, and goals that have been set, it can be concluded that the implementation of the Tonglis Web App significantly improves the English vocabulary mastery of elementary school students. The integration of interactive audio-visual elements, game-based features, and native speaker voice support in the app encourages student learning engagement, increases motivation, and encourages active use of vocabulary in a fun, age-appropriate learning setting. This application not only contributes to improving learning outcomes, but also builds students' confidence and independence in using English vocabulary contextually. This research makes an important contribution to the development of educational technology science by presenting empirical evidence on the effectiveness of child-friendly local digital learning media, as well as showing that a simple application designed with the right design can be a real solution to bridge the pedagogical gap in language learning, especially in resource-constrained primary schools.

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