

THE IMPACT OF GAME-BASED LANGUAGE LEARNING APPS ON STUDENT ENGAGEMENT AND PROFICIENCY

Zulmy Faqihuddin Putera
Politeknik Negeri Malang
E-mail: zulmyfaqihuddin@polinema.ac.id

Abstract

Increasing student engagement and proficiency in the learning process is an important focus in education. One of the efforts made to achieve this goal is by utilizing game-based learning applications. This study aims to analyze the impact of using game-based learning media on student engagement and proficiency. The research method used is an experiment using independent sample t-test to analyze the data obtained from two groups of students, namely the experimental group that uses game-based applications and the control group that does not use these applications. The results showed that there was a significant difference in student engagement and proficiency between the two groups. Students who used the game-based application showed higher levels of engagement and proficiency compared to students who did not use the application. The implications of this study suggest that the use of game-based learning apps can be an effective strategy in improving student engagement and proficiency.

Keywords: Learning App, Games, Student Engagement, Student Proficiency

1. INTRODUCTION

Along with the development of technology, the integration of games and gamification into educational environments has become an increasingly popular approach to improving student engagement and learning outcomes (Cahyani, 2016; Ibanez et al., 2014; Randel et al., 1992). Research has shown that implementing game elements in language learning can significantly motivate students, fostering a more interactive and participatory learning environment that not only captures their interest, but also encourages deeper engagement with the subject matter. Furthermore, the incorporation of gamification strategies can address a variety of learning styles and preferences, making the language learning experience more inclusive and appealing to a wider range of students (Cahyani, 2016). Furthermore, such an approach not only promotes active learning but also enhances the innate competitive spirit among students, leading to improved retention of knowledge and skills essential for language acquisition. (Ghai & Tandon, 2023).

Language learning is an important aspect of education, both at primary and secondary levels. Research shows that the incorporation of digital games in language education can significantly increase student engagement and foster a more dynamic learning environment, ultimately aiding the acquisition of language skills. Recent research shows that game-based learning not only motivates students but also enables better retention of language concepts by creating an interactive and stimulating atmosphere that can cater to different learning styles, especially among younger learners who thrive in collaborative settings (Klimova & Kacet, 2017). In addition, the app's

ability to provide immediate feedback during game play contributes to a more responsive learning experience, which is crucial for the development of language proficiency, especially in younger students who may require more support in acquiring complex language skills (Cahyani, 2016).

The diverse formats of digital games, ranging from free-form to structured designs, allow teachers to customize their teaching strategies to meet the diverse learning objectives and psychological needs of students. Furthermore, the effectiveness of digital games as learning tools may vary depending on the specific age group and learning objectives, which suggests that a nuanced understanding of game design and pedagogical strategies is essential to maximize their benefits in language acquisition (Kirginas, 2023; Klimova & Kacet, 2017). Research Klimova & Kacet (2017) suggests that while game-based learning can increase engagement, its impact on actual language acquisition can be complex and may require careful consideration of game mechanics and learner developmental stage to ensure effective instruction.

Research in this area underscores the importance of strategically aligning game mechanics with educational goals to better support language learning outcomes, highlighting that while many games can increase engagement, the clarity of their language learning benefits is still under investigation, especially regarding specific age groups and learning contexts (Gunel & Top, 2022; Kirginas, 2023; Klimova & Kacet, 2017). In this regard, ongoing research is critical to uncovering the effects of game-based learning applications on students' engagement and language proficiency, as existing research suggests that while these tools show promise in fostering engagement, the direct correlation with tangible language improvement still requires further empirical evidence and careful evaluation of implementation strategies.

2. RESEARCH METHODS

The method in this study uses quantitative methodology. As for what is used in this experimental research is the type of Quasy Experiment research by applying pretest-posttest control group design. The population of this study were all 7th grade students of SMPN 7. The sampling technique used in this study was purposive sampling. The number of samples used was 52 students. The primary data source is grade 7 students of SMPN 7. The approach used by researchers to submit statements is to use a Likert scale. The data collection technique is student involvement and proficiency data. Data analysis used through the validity and reliability of questionnaires and questions, prerequisite tests include normality, homogeneity, and t-test. T-test testing will be carried out for hypothesis testing which will use a significance level of 0.05 and is assisted by using the SPSS 22.0 for windows program.

3. RESULTS AND DISCUSSION

3.1. Research Results

The research results shown in Figure 1 show the results of the comparison between pretest and post-test scores in the experimental and control classes. From the graph, it can be seen that in the experimental class, there is a significant increase from pretest to post-test scores, which is characterized by an increase in the highest score, lowest score, and

average score after the intervention (post-test). On the other hand, the control class also showed an increase in post-test scores, but not as significant as the experimental class. The number of students in both classes did not differ significantly.

However, the larger increase in mean scores in the experimental class indicates that the intervention had a stronger positive impact compared to the control class which was not given the intervention. This is also reflected in the increase in the highest score and decrease in the lowest score in the experimental class after the implementation of the intervention. Overall, these results indicate that the method or intervention applied to the experimental class was effective in improving student learning outcomes compared to the control class. This indicates that the special treatment given to the experimental class had a positive impact on student achievement.

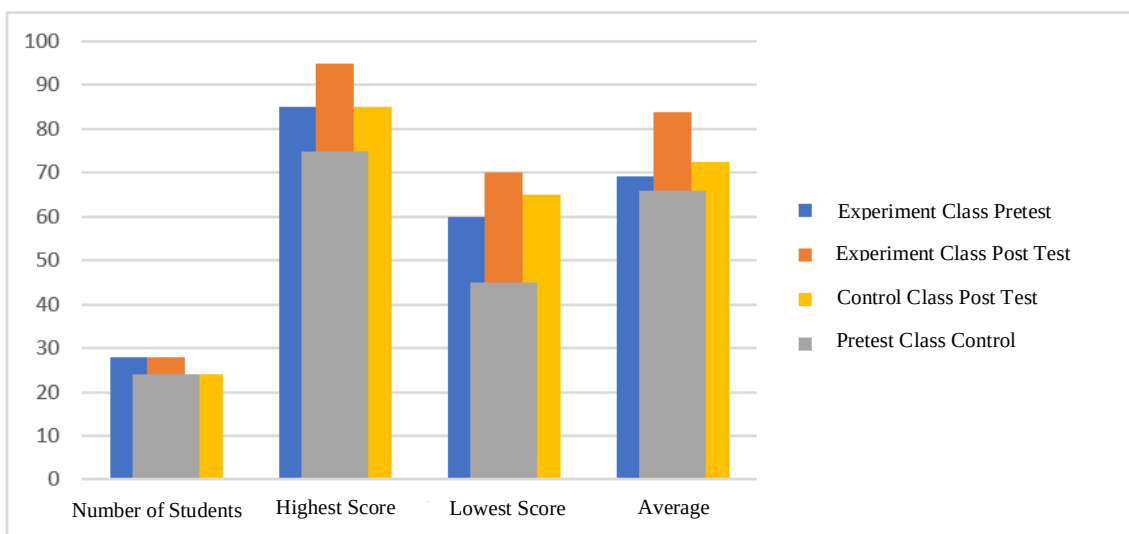


Figure 1. Pretest and Posttest Results of Experimental and Control Classes

In the context of an independent sample t-test, the significance level is the criterion used to determine whether the results of a statistical test are strong enough to reject the null hypothesis (H_0), which usually states that there is no difference or effect. If the significance value (p-value) ≤ 0.05 , this indicates that there is strong enough evidence to reject H_0 , so we can conclude that there is a significant influence between the variables tested.

Table 1. T-test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
Student Engagement and Proficiency	Equal variances not assumed	0,01	777.976	292.462
	Equal variances assumed	0,009	777.976	287.060
Posttest	Equal variances assumed	0	1.142.857	1.554.793
	Equal variances not assumed	0	1.142.857	1.547.596

The t-test results show that the $p\text{-value} \leq 0.05$. This means that the observed differences in student engagement and proficiency between the groups that used the learning app and those that did not are not mere coincidence, but rather reflect a real and significant effect of using the app. In other words, the use of the learning app significantly improved student engagement and proficiency compared to the non-app using group. This indicates that learning apps, as tested in this study, play an important role in improving student learning outcomes.

3.2. Discussion

The integration of learning apps into the educational landscape has gained significant attention in recent years. Research has shown that the utilization of such apps can improve student attendance and engagement, as evidenced by interactive features that motivate students and allow for effective assessment of their progress (Ariati & Iswahyuni, 2023). In addition, the incorporation of technology in education enables personalized learning experiences, allowing students to engage with content tailored to their individual needs, ultimately promoting a deeper understanding of the material being studied (Bhat, 2023).

In addition, research Ariati & Iswahyuni (2023) and Leligou et al (2017) shows that the effectiveness of learning apps is strengthened through gamification elements, which not only increase user engagement but also enhance the overall learning experience by making educational content more accessible and engaging for students. This is particularly relevant in the context of mobile learning, where innovative technologies provide students with the flexibility to access educational materials anytime and anywhere, further contributing to increased productivity and achievement of learning objectives (Leligou et al., 2017). This flexibility, combined with the interactive nature of learning applications, allows educators to develop more dynamic and competitive learning environments that match the demands of contemporary students, thus reinforcing the idea that technology can significantly improve educational outcomes in a variety of contexts.

The positive impact of learning apps on student learning is further reinforced by empirical evidence. A comparative study conducted Bhat (2023) to assess the effect of technology integration on student performance revealed that institutions that have used technology-based approaches, experienced significantly higher test scores and retention rates among students compared to those who relied on traditional teaching methods, thus reinforcing the notion that thoughtful integration of educational technology can greatly improve learning outcomes. Furthermore, the integration of augmented reality and other advanced information technologies has been shown to create diverse learning experiences that can significantly impact student engagement and performance, suggesting that the innovative use of these tools in educational settings is critical to maximizing the effectiveness of the learning process (Quintero et al., 2019).

The positive effects of game-based learning applications are seen in their ability to create a more fun and engaging atmosphere, which not only increases student motivation but also allows for more effective assimilation of language concepts, in line with the findings of various studies highlighting the importance of this approach (Cahyani, 2016; Demirbilek et al., 2022; DuBravac, 2012; Xavier, 2020). Moreover, by utilizing both intrinsic and extrinsic motivation factors, gamification elements can create a dynamic

learning environment that encourages students to take charge of their educational experience, ultimately encouraging continued engagement and enthusiasm for language acquisition in a diverse classroom environment (Cahyani, 2016; Xavier, 2020). Moreover, the successful implementation of gamification in language learning not only facilitates skill development, but also fosters a sense of achievement among students, thereby strengthening their commitment to the learning process and increasing their overall engagement with the material (DuBravac, 2012). The strategic use of game mechanics, such as rewards and social engagement circles, has proven to be effective in increasing student participation and fostering a sense of community among students, which is crucial for language development and maintenance of motivation during the learning process.

Game-based learning has emerged as a promising approach to language education, providing an engaging and interactive platform for students to develop their linguistic abilities (Young & Wang, 2014). Research Gunel & Top (2022) shows that such applications not only improve vocabulary retention, but also enhance overall language proficiency by creating an immersive environment where students can practice in context and receive immediate feedback on their performance. Furthermore, the integration of game mechanics in language learning promotes increased student motivation and engagement, leading to improved communication skills as students actively participate in collaborative tasks and problem-solving scenarios (Berns et al., 2016). In addition, studies have shown that game-based learning apps significantly facilitate vocabulary acquisition and pronunciation, where students show a better attitude towards learning, which suggests that these apps can serve as an effective tool for educators aiming to motivate their students and improve learning outcomes (Shao, 2012; Sung et al., 2015).

While the benefits of game-based language learning are well demonstrated, it is important to consider the potential limitations and challenges associated with its implementation. These challenges include the possibility that high interactivity can sometimes hinder vocabulary acquisition, as well as the fact that not all games are always effective for language learning purposes, requiring careful selection of appropriate educational games by instructors (Hung et al., 2018). In addition, the need for teachers to have adequate knowledge of the function and educational value of computer games is critical, as a lack of understanding of these resources can hinder their effective integration into the curriculum (Johnson et al., 2016). In addition, students' diverse cognitive and language proficiency levels require a tailored approach to game-based learning, which underscores the importance of aligning game content with educational objectives to maximize its impact on language acquisition and to meet the various needs of students in the classroom.

4. CONCLUSION

Based on the results of the research conducted, it can be concluded that the use of game-based language learning applications has a significant positive impact on student engagement and proficiency. The increase in student engagement is seen from higher active participation and increased interest in the learning materials delivered through the app. In addition, the study also showed a significant improvement in students' proficiency after using the game-based learning app, where students showed better understanding and

higher ability in doing the questions. The results of the independent sample t-test reinforced these findings by showing that the differences in students' engagement and proficiency before and after using the app were significant at the significance level ≤ 0.05 . This conclusion confirms the importance of technology integration in education, particularly through game-based learning media, as an effective strategy to increase student engagement and proficiency in the teaching and learning process in the digital era.

REFERENCES

- Ariati, S. D., & Iswahyuni, I. (2023). Students' Perceptions Towards the Application of Gamification in English Class. *ELLITE: Journal of English Language, Literature, and Teaching*, 8(1), 20–28.
- Berns, A., Isla-Montes, J.-L., Palomo-Duarte, M., & Doderio, J.-M. (2016). Motivation, students' needs and learning outcomes: A hybrid game-based app for enhanced language learning. *SpringerPlus*, 5, 1–23.
- Bhat, R. A. (2023). The Impact of Technology Integration on Student Learning Outcomes: A Comparative Study. *International Journal of Social Science, Educational, Economics, Agriculture Research, and Technology (IJSET)*, 2(9), 592–596.
- Cahyani, A. D. (2016). Gamification approach to enhance students engagement in studying language course. *MATEC Web of Conferences*, 58, 3006.
- Demirbilek, M., Talan, T., & Alzouebi, K. (2022). An Examination of the Factors and Challenges to Adopting Gamification in English Foreign Language Teaching. *International Journal of Technology in Education*, 5(4), 654–668.
- DuBravac, S. (2012). Game mechanics for classroom engagement. In *Increasing student engagement and retention using immersive interfaces: Virtual worlds, gaming, and simulation* (pp. 67–94). Emerald Group Publishing Limited.
- Ghai, A., & Tandon, U. (2023). Integrating gamification and instructional design to enhance usability of online learning. *Education and Information Technologies*, 28(2), 2187–2206.
- Gunel, E., & Top, E. (2022). Effects of Educational Video Games on English Vocabulary Learning and Retention. *International Journal of Technology in Education*, 5(2), 333–350.
- Hung, H.-T., Yang, J. C., Hwang, G.-J., Chu, H.-C., & Wang, C.-C. (2018). A scoping review of research on digital game-based language learning. *Computers & Education*, 126, 89–104.
- Ibanez, M.-B., Di-Serio, A., & Delgado-Kloos, C. (2014). Gamification for engaging computer science students in learning activities: A case study. *IEEE Transactions on Learning Technologies*, 7(3), 291–301.
- Johnson, C., McGill, M., Bouchard, D., Bradshaw, M. K., Bucheli, V. A., Merkle, L. D., Scott, M. J., Sweedyk, Z., Velázquez-Iturbide, J. À., & Xiao, Z. (2016). Game development for computer science education. In *Proceedings of the 2016 iticse working group reports* (pp. 23–44).
- Kirginas, S. (2023). Digital Game-Based L1 Language Learning Outcomes for Preschool

- Through High-School Students: A Literature Review. *International Journal of Gaming and Computer-Mediated Simulations (IJGCMS)*, 15(1), 1–16.
- Klimova, B., & Kacet, J. (2017). Efficacy of computer games on language learning. *Turkish Online Journal of Educational Technology-TOJET*, 16(4), 19–26.
- Leligou, H. C., Zacharioudakis, E., Bouta, L., & Niokos, E. (2017). 5G technologies boosting efficient mobile learning. *MATEC Web of Conferences*, 125, 3004.
- Quintero, J., Baldiris, S., Rubira, R., Cerón, J., & Velez, G. (2019). Augmented reality in educational inclusion. A systematic review on the last decade. *Frontiers in Psychology*, 10, 1835.
- Randel, J. M., Morris, B. A., Wetzel, C. D., & Whitehill, B. V. (1992). The effectiveness of games for educational purposes: A review of recent research. *Simulation & Gaming*, 23(3), 261–276.
- Shao, J. (2012). A Study of Multimedia Application-Based Vocabulary Acquisition. *English Language Teaching*, 5(10), 202–207.
- Sung, Y.-T., Chang, K.-E., & Yang, J.-M. (2015). How effective are mobile devices for language learning? A meta-analysis. *Educational Research Review*, 16, 68–84.
- Xavier, C. C. M. (2020). Gamifying Portuguese Language Learning: A Case Study Examining a Quest-Based Website to Prompt Oral Production and Interaction in Learners of Portuguese L2. *Revista Brasileira de Linguística Aplicada*, 20, 733–760.
- Young, S. S.-C., & Wang, Y.-H. (2014). The game embedded CALL system to facilitate English vocabulary acquisition and pronunciation. *Journal of Educational Technology & Society*, 17(3), 239–251.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).