

INTEGRATING GAMIFICATION AND TECHNOLOGY-ASSISTED VOCABULARY LEARNING THROUGH KAHOOT: A SERVICE LEARNING FOR UNDERSERVED STUDENTS

Reyna Chantal Runturambi, Calvin Sumbung, Michael Recard

English Language Education, Faculty of Education, Universitas Pelita Harapan

01101230015@student.uph.edu

ABSTRACT

This study addresses the problem of limited English vocabulary skills among students from one Foundation for Orphans and Quran Memorizers in Muara Angke. Although frequently exposed to English through digital media such as social media, students struggle to actively use the language due to limited educational resources and structured English instruction in school. They also come from diverse cultural backgrounds with differences in learning preferences, tribes, and religious beliefs between the tutors and students, which create challenges in delivering an inclusive teaching strategy. To address these challenges, this research examines how a service-learning program can improve students' vocabulary skills while creating an inclusive and engaging learning environment for diverse students. It also explores the effectiveness of the Kahoot app as a gamified learning tool to enhance vocabulary retention and student motivation among 7th to 9th-grade students (25 students). The service-learning project followed the IPARD (Investigation, Preparation, Action, Reflection, Demonstration) framework: investigating students' profiles, preparing lesson plans, implementing vocabulary lessons, reflection, and demonstration. A survey was conducted to understand students' ability and learning preferences. Kahoot was used for vocabulary instruction and for conducting a diagnostic test to evaluate the learning outcomes. The quantitative results demonstrated a significant improvement in vocabulary retention, with mean accuracy scores increasing from 46% in the pre-test to 83% in the post-test. The qualitative findings indicated that gamification fostered peer collaboration, sustained learning motivation, and accommodated diverse learning preferences. These findings confirm that combining service-learning initiatives with gamified digital platforms offers a viable, scalable strategy for delivering inclusive and impactful English language instruction in underserved communities.

Keywords: *Gamification, Inclusive Education, Service-learning, Teaching Vocabulary, Technology-assisted.*

ABSTRAK

Studi ini membahas permasalahan keterbatasan keterampilan kosakata bahasa Inggris di kalangan siswa pada salah satu Yayasan Yatim Piatu dan penghafal Al-Qur'an di Muara Angke. Meskipun sering terpapar bahasa Inggris melalui media digital seperti media sosial, para siswa kesulitan untuk menggunakannya secara aktif akibat keterbatasan sumber daya pendidikan dan instruksi bahasa Inggris yang terstruktur di sekolah. Selain itu, mereka berasal dari latar belakang budaya yang beragam dengan perbedaan preferensi belajar, suku, dan keyakinan agama antara tutor dan siswa, yang menciptakan tantangan dalam menyajikan strategi pengajaran yang inklusif. Untuk mengatasi tantangan tersebut, penelitian ini menguji bagaimana program *service-learning* dapat meningkatkan keterampilan kosakata siswa sekaligus menciptakan lingkungan belajar yang inklusif dan menarik bagi siswa yang beragam. Penelitian ini juga mengeksplorasi efektivitas aplikasi Kahoot sebagai media pembelajaran berbasis gamifikasi untuk meningkatkan retensi

kosakata dan motivasi belajar pada siswa kelas 7 hingga 9 (25 siswa). Proyek *service-learning* ini menerapkan kerangka kerja IPARD (*Investigation, Preparation, Action, Reflection, Demonstration*): menginvestigasi profil siswa, menyusun rencana pembelajaran, mengimplementasikan pembelajaran kosakata, melakukan refleksi, dan demonstrasi. Survei dilakukan untuk memahami kemampuan dan preferensi belajar siswa. Kahoot digunakan dalam pengajaran kosakata serta untuk melakukan tes diagnostik guna mengevaluasi hasil belajar. Hasil kuantitatif menunjukkan peningkatan yang signifikan dalam retensi kosakata, dengan skor rata-rata akurasi meningkat dari 46% pada *pre-test* menjadi 83% pada *post-test*. Temuan kualitatif mengindikasikan bahwa gamifikasi mendorong kolaborasi antar teman sebaya, menjaga motivasi belajar, dan mengakomodasi keberagaman preferensi belajar. Temuan ini mengonfirmasi bahwa mengombinasikan inisiatif *service-learning* dengan platform digital berbasis gamifikasi menawarkan strategi yang layak dan dapat diterapkan secara luas untuk menyajikan pengajaran bahasa Inggris yang inklusif dan berdampak di komunitas marginal.

Kata Kunci: Gamifikasi, Pendidikan Inklusif, Pembelajaran Berbantuan Teknologi, Pengajaran Kosakata, *Service-learning*.

INTRODUCTION

Muara Angke is a densely populated coastal area in North Jakarta characterized by fishing ports, seafood markets, and economically challenged communities. In the Muara Angke area, there are many slums, dense and uninhabitable settlements that are in swampy areas and do not have drainage, so the area is often flooded (Indrianingrum & Rozak, 2019). Within this community, non-profit institutions such as At-Taufiqul Mubarak Orphanage provide essential care and educational support for underprivileged children. Despite their environmental condition, the orphanage home provides a safe and nurturing environment for children who have grown up in underprivileged circumstances. However, the Mubarak Orphanage Home faces a significant challenge in addressing the low educational levels of the children, particularly in improving their English language proficiency. Limited structured instruction and minimal access to quality educational resources further contribute to students' low English vocabulary skills, as seen in cases where teachers struggle with delayed textbooks and the lack of audio-visual aids, which hinders students' English skill development (Singh, 2024).

English education is important in today's globalized world, yet children at the orphanage lack access to quality English instruction because they came from disadvantaged backgrounds. Lack of education is possessed by the surrounding population, so many families do not have a good life (Edbert & Ratnaningrum, 2020). This lack of knowledge affects their vocabulary development, making it difficult for them

to understand and use new words confidently in everyday situations. Vocabulary is essential because it gives learners the building blocks to communicate and understand a language other than the one originally learned as a child (Hermagustiana & Rusmawaty, 2018). As a result, they have a limited vocabulary, which affects their overall English language skills. Moreover, the students come from diverse cultural backgrounds, representing various tribes and religious beliefs, which occasionally results in differences in learning preferences and classroom dynamics. This diversity presents additional challenges in implementing an inclusive teaching strategy that accommodates different cultural values and learning styles. In this context, educational inclusion is essential to ensure that all students—regardless of social, cultural, ethnic, linguistic, or functional differences—have equal access to quality education and opportunities to participate fully in school life (Fernandez et al., 2023).

Although students frequently use digital devices in their daily lives—offering valuable opportunities for learning and cognitive growth (Madarcos et al., 2024)—these gadgets are primarily utilized for entertainment rather than educational purposes. This tendency negatively affects their overall education and hinders their ability to develop essential English skills, including English vocabulary acquisition. However, when used correctly, technology can be an excellent tool for learning, offering platforms like websites that provide rich language resources, making them especially useful for language students (Hermagustiana & Rusmawaty, 2018). Gamification is the use of game elements and principles in learning to make the activities more engaging and enjoyable (Ružic & Dumancic, 2015). Gamification transforms traditional learning into an exciting experience that makes students more likely to retain what they learn. Gamification can be particularly useful for language acquisition since it helps students to practice and remember vocabulary in a fun and meaningful way. By knowing the essential words of a language, it will allow students to communicate even at a basic level and give opportunities for them to practice the language in various contexts.

To address this gap, this study examines the implementation of a service-learning project specifically designed to enhance English vocabulary mastery among 7th to 9th-grade students at the At-Taufiqul Mubarak Orphanage. Specifically, this research aims to: (1) evaluate the impact of an IPARD-guided service-learning intervention on

vocabulary acquisition, and (2) assess the effectiveness of Kahoot! as a gamified digital tool in creating an engaging, interactive, and inclusive learning environment for disadvantaged students.

METHOD

2.1. Research Design

This study used a mixed-methods research design. Quantitative data were gathered through the administration of a Kahoot-based pre-test and post-test to measure students' vocabulary improvement. Qualitative data were obtained through a learning profile survey, class observation, and semi-structured interviews with the students. This method allowed the researchers to collect both test results and information about the students' learning preferences, participation, and improvement during the inclusive, technology-based lessons in the service-learning program.

2.2. Participants and Contexts

The study was conducted at the At-Taufiqul Mubarak Orphanage in Muara Angke, North Jakarta. The participants consisted of 25 middle-school students enrolled in Grades 7 through 9. The participants came from diverse backgrounds and educational levels, sharing a common need for structured English language instruction.

2.3. Service-Learning Framework (IPARD)

This research employed a service-learning program guided by the five-stage IPARD framework (Investigation, Preparation, Action, Reflection, Demonstration) to ensure a structured implementation.

- Investigation: Tutors conducted baseline surveys using Google forms alongside semi-structured interviews to assess students' prior English exposure, device usage habits, vocabulary challenges, learning styles, and topic interests. This helped the tutors to see their starting level and adjust the teaching methods to fit their needs.
- Preparation: Based on the findings in the investigation stage, tutors developed culturally responsive lesson plans focusing on high-frequency vocabulary and contextual themes (e.g. sports, daily activities) using visual aids and presentation slides.

- **Action:** During the Action stage, vocabulary lessons were implemented through onsite meetings at the orphanage. The Kahoot platform was used for administering pre-tests, interactive vocabulary quizzes, and a post-test to evaluate the students' progress.
- **Reflection:** In this stage, tutors and students discussed the learning experience, vocabulary challenges, and technological tools used.
- **Demonstration:** Finally, in the Demonstration phase, the results of the service-learning were synthesized into a final report and presented to the key stakeholders.

2.4. Data Collection and Analysis

Quantitative data were collected using a 13-item diagnostic vocabulary test administered via Kahoot! before (pre-test) and after (post-test) the instructional intervention. Test results were automatically recorded by the Kahoot! platform, generating overall accuracy percentages and item-by-item breakdown metrics. Descriptive statistics (mean accuracy rates and percentage growth) were calculated to assess quantitative progress. Qualitative data from open-ended survey responses, observation notes, and interview transcripts were analyzed thematically to evaluate student engagement, peer collaboration, and learning motivation.

RESULTS AND DISCUSSION

3.1 Student Baseline Profile and Learning Preferences

The baseline survey and semi-structured interviews revealed that while students frequently interact with English through social media and digital entertainment, they rarely engage in active, structured language learning. Vocabulary acquisition was identified as their primary academic obstacle. Regarding instructional preferences, students expressed a strong preference for interactive, game-based learning, visual aids, and topic themes focused on sports and daily social activities.

3.2 Quantitative Vocabulary Achievement

Student vocabulary acquisition was evaluated using a 13-item diagnostic test administered via Kahoot! prior to and following the instructional intervention.

Table 1. Pre-Test and Post-Test Diagnostic Vocabulary Outcomes

Assessment Stage	Total Items	Overall Accuracy (%)	Percentage Gain (%)	Primary Performance Indicator
Pre-Test	13	46.0%	—	Limited recognition of core target vocabulary
Post-Test	13	83.0%	+37.0%	High mastery and contextual retention

Overall, the clear difference between the pre-test and post-test results highlights how effective engaging teaching methods can be in helping students learn. The success of this method shows that using Kahoot as a tool for vocabulary improvement works well and emphasizes the teaching strategies that focus on the specific student needs. Our findings suggest that continuing to use such innovative methods could lead to even better improvements in students' language skills, providing a strong foundation for their future learning

3.3 Observational and Classroom Dynamics

Classroom observations during the Kahoot! quizzes highlighted increased student participation and active engagement. The immediate feedback after each question helped students identify errors in real time and discuss correct answers with peers. Subsequent speaking activities confirmed that students successfully applied newly acquired vocabulary (e.g., sports and Independence Day event terms) in structured sentences.

4.1. Execution of the IPARD Framework

The IPARD framework effectively guided the planning and implementation of the service-learning project. By combining structured service-learning implementation with technology-assisted learning through Kahoot, students' vocabulary knowledge can be improved.

- **Investigation and Preparation:** Baseline data gathered during the investigation phase enabled tutors to design culturally responsive and contextually relevant lesson plans. Aligning content with student interest areas (such as sports) ensured high initial engagement (Ituma, 2025).
- **Action:** Integrating Kahoot! into the action phase bridged learning gaps among

students with varying levels of prior English exposure.

- **Reflection & Demonstration:** Post-session discussions allowed students to reflect on vocabulary errors, while tutors utilized automated platform analytics to identify topics requiring further reinforcement.

4.2. Impact of Gamification on Vocabulary Retention and Motivation

Our findings confirmed the effective use of a gamification tool like Kahoot! The 37% increase in test accuracy (from 46% to 83%) demonstrates the efficacy of technology-assisted gamification in resource-constrained environments. These results align with Mustagis et al. (2024), who observed similar performance gains and enhanced motivation among Indonesian EFL learners using Kahoot!

The gamified structure offered three important pedagogical benefits:

1. **Immediate formative feedback:** Real-time scoring enabled real-time error correction, allowing students to reinforce correct word associations immediately (Figuccio & Jonston, 2022)
2. **Low-anxiety competition:** Friendly competition motivates students to actively participate and collaborate with peers across different age groups during the quiz rounds (Burguillo, 2010).
3. **Contextual application:** Gamified practice enabled students to transfer vocabulary into active speaking exercises.

4.3. Promoting Educational Equity and Inclusion

In underprivileged settings such as Muara Angke, technological interventions often face barriers due to limited educational infrastructure (Singh, 2024). However, when applied within a structured service-learning model, mobile gamification acts as an equalizer. By shifting device usage from passive entertainment to active, collaborative learning (Madarcos et al., 2024), the program established an inclusive environment where students of diverse educational backgrounds could participate equally.

CONCLUSION

This study demonstrates that integrating service-learning combined with technology-assisted gamification effectively improves English vocabulary acquisition

among underserved learners at At-Taufiqul Mubarak Orphanage. The IPARD framework helped structured the service-learning, making the planning and implementation process more organized. The improvement in vocabulary scores, from 46% to 83% shows how important technology-assisted methods are for enhancing language learning. This research also emphasized the significance of creating an inclusive learning environment, as students came from diverse cultural, ethnic, and religious backgrounds with different learning preferences. The success of Kahoot in this context confirms that gamified, technology-assisted learning can be a valuable tool for improving vocabulary acquisition while promoting inclusivity in diverse classrooms.

REFERENCES

- Burguillo, J. C. (2010). Using game theory and Competition-based Learning to stimulate student motivation and performance. *Computers and Education*, 566–575.
- Edbert, N., & Ratnaningrum, D. (2020). Ruang Edukasi Dan Interaksi Muara Angke. *Jurnal Sains, Teknologi, Urban, Perancangan, Arsitektur (Stupa)*, 2(2), 1873. <https://doi.org/10.24912/stupa.v2i2.8595>
- Fernandez, I. L., Dosil-Santamaria, M., Idoiaga Mondragon, N., & Ozamiz Etxebarria, N. (2023). Teachers' Involvement in Inclusive Education: Attitudes of Future Teachers. *Education Sciences*, 13(9). <https://doi.org/10.3390/educsci13090851>
- Figuccio, M. J., & Johnston, M. (2022). Kahoot! Predicts exam scores and promotes student engagement. *Journal of Research in Innovative Teaching and Learning*, 15(2), 170–177. <https://doi.org/10.1108/JRIT-07-2021-0051>
- Gadgets on Students' Learning Interests and Academic Performance. *International Journal of Education and Teaching Zone*, 3(1), 1–11. <https://doi.org/10.57092/ijetz.v3i1.222>
- Hermagustiana, I., & Rusmawaty, D. (2018). *The Use of Technology for Vocabulary Instruction in EFL Classrooms: Support and Challenges*. 144, 137–143. <https://doi.org/10.2991/icedutech-17.2018.27>
- Indrianingrum, L., & Rozak, A. (2019). *Konsep Pengembangan Kampung Muara Angke Jakarta menjadi Kampung Vertikal*. September, D059–D066. <https://doi.org/10.32315/ti.8.d059>
- Ituma, M. G. (2025). The Use of Differentiated Instruction to Achieve Culturally Responsive Teaching. *Open Journal of Educational Research*, 5(1), 13–30. <https://doi.org/10.31586/ojer.2025.1234>

- Madarcos, C. A., De Vera, M. G., & Manlavi, M. (2024). The Effectiveness of Using gadgets on students' learning interests and academic performance. *International Journal of Education and Teaching Zone*, 3(1), 1–11. <https://doi.org/10.57092/ijetz.v3i1.222>
- Munawarah, S., Hayati, S., Fitriyani, W., Rahman, E., Mieyrandha, M., Maharani, L. M., Tegar, J., & Fauzi, I. (2024). Games in Enhancing Productive Skills for EFL Students. *EBONY: Journal of English Language Teaching, Linguistics, and Literature*, 4(2), 42–51. <https://doi.org/10.37304/ebony.v4i2.14032>
- Mustagis, R. M. S. G., Hijayadi, R., Rufiani, R., Al Mubarak, M. T., Jamilah, J., & Pratiwi, D. (2024). Benefits of Kahoot in Improving 7th Grade Junior Highschool English Vocabulary: Classroom Action Research in SMP Hamong Putera Ngaglik. *English Education and Literature Journal (E-Jou)*, 4(02), 69–78. <https://doi.org/10.53863/ejou.v4i02.1014>
- Ružic, I. M., & Dumancic, M. (2015). Gamification in education. *Informatologia*, 48(3–4), 198–204. <https://doi.org/10.3390/encyclopedia3040089>
- Singh, R. B. (2024). Navigating English Language Education Challenges in Resource-limited Contexts. *KMC Journal*, 6(1), 135–152. <https://doi.org/10.3126/kmcj.v6i1.62336>