
Enhancing Students' English Engagement and Competence Through Educational Games

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Abstract

Educational game-based learning has become increasingly prevalent in global educational contexts, extending beyond traditional English classrooms and contributing to increased student motivation, engagement, and competence. This study examined the effectiveness of integrating educational games into English language learning compared with conventional teaching methods in a junior high school in Jambi Province, Indonesia. English instruction at the junior high school level often faces challenges, particularly because many students enter secondary education with limited prior exposure to English. To address this issue, the present study investigated the use of several educational game applications—Duolingo, Quizlet, ABCmouse, and Kahoot—to improve English language skills among seventh-grade students over one semester. The research employed a quantitative experimental design involving 58 students divided into two groups: an experimental group ($n = 29$) that used educational games and a control group ($n = 29$) that received conventional instruction. Data were collected through pre-tests and post-tests assessing vocabulary, grammar, and communicative competence. Statistical analysis using an independent samples t-test revealed no significant difference between groups at the pre-test stage ($t = 0.45$, $p = 0.65$). However, after the intervention, the experimental group demonstrated significantly higher post-test scores ($M = 73$, $SD = 4$) than the control group ($M = 65$, $SD = 6$), with a significant difference ($t = -6.334$,



$p < 0.001$) and a large effect size ($d = 1.63$). These findings indicate that integrating educational games can substantially enhance students' engagement and English language proficiency. Practically, this study highlights the potential of combining multiple educational game applications to support technology-integrated English instruction and improve learning outcomes in Indonesian secondary schools.

Keywords: English language teaching, experimental design, gamification, junior high school, educative games

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1. Introduction

Educational game-based learning has become a significant global phenomenon, especially in countries in Asia such as Vietnam, Pakistan, India, Japan and Indonesia. In this context, these countries face similar challenges in integrating games into learning, especially learning English to increase students' learning motivation while developing critical skills such as problem solving and collaboration (Setiawan & Wiedarti, 2020). Large populations in those countries have shown an increasing trend in the adoption of educational games as a tool to address educational disparities and increase accessibility. (Bang et al., 2024; Haidar, 2019; Laghari et al., 2017; Shen, 2023; Van Vo & Thuy Vo, 2020). Although infrastructure and technology access challenges remain, this approach has proven effective in motivating young people to learn through fun and interactive experiences. Additionally, the implementation of educational games in these diverse cultural contexts offers opportunities to enrich students' learning experiences by considering local values and contextually relevant content.

However, many problems occur during English learning process, especially in Indonesia where English is as the foreign language. The researchers revealed similar problems when teaching in one of the public schools in Jambi City, Jambi Province, Indonesia. Many students enrolled this school at VII grade having limited English competence due to inadequate exposing of English in their elementary schools. In fact, the conventional learning methods widely used in schools were often less effective in attracting students' interest and motivation to learn English. Moreover, the independent curriculum currently implemented encouraged fun and technology-integrated learning, but teachers found many obstacles during its implementation. Therefore, it is expected that educational games can be an

effective platform for learning English. Employing games as learning tools, students can improve their English skills naturally through contextual interactions. This approach not only facilitates better understanding of the language but also promotes practical use of the language in everyday situations, increasing students' confidence in communicating using English in an increasingly connected global environment (Kessler, 2018).

Recent research showed some techniques used by the teachers to improve English learning. The Listen, Repeat, and Trace (LRT) technique was one of the techniques contributing to enhance students' English vocabularies (Wulan and Nurlaili, 2025). Meanwhile, the other techniques relate closely to the gamification. Dehghanzadeh et al. (2021), Gael & Elmiana (2021), and Zhang & Hasim (2023) examined a systematic review of empirical research on gamification in EFL/ESL teaching. Their studies showed positive impact of gamification on English language learning which increased students' motivation, inclusion and competence. By integrating game elements into the learning process, students become more motivated and actively engaged, which contributes to improving their English language skills. In addition, gamification also creates a more inclusive learning environment, allowing all students to feel involved and valued in the learning process.

Furthermore, research by Q. Pham (2022) found that the use of gamification tools in English learning can improve students' vocabulary retention. This research showed that gamified applications increase student learning motivation, engagement, and create a more student-friendly classroom environment, which in turn increases vocabulary retention. In addition, research by Annamalai et al. (2022) in ESL classes in Lithuania emphasized the importance of gamification as a teaching tool that can increase students' motivation, focus, and learning independence. Yazid et al. (2024) also highlighted the positive impact of gamification on English language teaching practices, emphasizing students' engagement, motivation and overall learning experience. Case study by Lafleur (2024) demonstrated that gamified daily rewards on vocabulary digital flashcard learning can improve self-directed learning skills and learning efficiency through scheduled learning practice.

In Indonesia, learning process using educational games has been widely implemented with applications such as *Duolingo*, *Quizlet*, *ABCmouse*, and *Kahoot*. Studies show that these apps have significant benefits. Duolingo is effective in improving linguistic aspects, such as vocabulary and grammar, as well as building a positive attitude towards language learning with an attractive interface and structured learning system (Anton Adi Purwanto & Syafryadin, 2023; Astarilla, 2018; Hidayati & Diana, 2019; Inayah et al., 2020; Jaelani & Sutari, 2020; Mulya & Refnaldi, 2016). Quizlet improves vocabulary retention and facilitates independent learning through digital flashcards, games, and tests (Aprilani & Suryaman, 2021; Info, 2021; Nguyen et al., 2021; A. T. Pham, 2022; Sanosi, 2018; Thi et al., 2020; Waluyo & Bucol, 2021). ABCmouse, aimed at children, introduces basic English concepts

through interactive educational games, increasing interest in learning from an early age (Thai & Ponciano, 2016; Whelan, 2019; Zamora & Pittman, 2018). Kahoot, with its interactive quizzes, increases student engagement and motivation, making learning more competitive and fun (Mahbub, 2020; Singh et al., 2021; Susanti, 2017; Wang & Tahir, 2020). The combination of these various applications creates a dynamic learning environment and supports the development of students' English language skills in Indonesia.

Many previous studies only used one application and were conducted in several meetings, so they did not provide a comprehensive picture of the effectiveness of various educational game applications in the long term. Based on many benefits presented in the previous studies, the current researchers used several educational game applications for one semester. This approach aimed at creating a more holistic and sustainable technology-based English learning environment. By utilizing various applications such as Duolingo, Quizlet, ABCmouse, and Kahoot in an integrated manner, this research evaluated how a combination of these tools could work together to more effectively increase students' motivation, engagement, and English learning outcomes. The current research was expected to provide new insights into educational game-based learning strategies leading to more optimal and applicable implementation in the educational context in Indonesia.

Gamification in the learning process is a strategy that utilizes game elements to enhance student engagement, motivation, and learning outcomes. Integrating components such as points, challenges, badges, and leaderboards, gamification aims to create a more interactive and enjoyable learning environment (Zadeja & Bushati, 2022). Gamification approach has been acknowledged for its potential to increase students' concentration, motivation, engagement, and overall positive experiences (Oliveira et al., 2023). In educational settings, gamification has been effectively used to boost students' motivation, engagement, and learning performance. Through incorporating game elements into the learning process, gamification helps to establish an effective educational environment that enhances children's motivation and engagement (Permana et al., 2022).

Research suggests that gamified learning interventions have the capacity to enhance student engagement and improve learning outcomes (Buckley & Doyle, 2016). Various game elements such as scores, challenges, and rewards in gamification promotes competitiveness, cooperation, and exploration of complex concepts in a fun and interactive manner. Additionally, it has a positive impact on student motivation and engagement in various academic tasks (Kassymova et al., 2024). In conclusion, gamification in the learning process is a valuable tool that not only enhances student engagement and motivation but also improves learning outcomes and overall educational experiences. In addition, integrating

game elements into educational settings creates a dynamic and interactive learning environment that encourages student participation and achievement.

Gamification refers to the use of game elements in non-game contexts to enhance students' motivation, engagement, and learning outcomes. This concept has gained considerable attention in education, particularly in English language learning, due to its ability to make learning more engaging, effective, and competitive. Gamification incorporates game elements such as points, levels, badges, challenges, and leaderboards into the learning environment. These elements are designed to stimulate intrinsic motivation, which comes from within the students themselves, driven by the desire to achieve goals and overcome challenges presented. In the context of English language learning, gamification can be implemented through various means, such as mobile applications, online platforms, or specially designed classroom games.

The application of gamification in English language learning can encompass a range of activities, from vocabulary and grammar exercises to simulations of real-life communicative situations. For example, students may have tasks or challenges that they must accomplish using English, earning points or recognition for each accomplishment they achieve. By integrating elements such as points, levels, badges, challenges, and leaderboards, gamification would be able to successfully create a more interactive and enjoyable learning environment. This approach has been acknowledged for its potential to increase students' concentration, motivation, engagement, and overall positive experiences (Oliveira et al., 2023).

Gamification not only enhances the learning process but also fosters student involvement and achievement (Vardarlier, 2021). Incorporating game elements into the learning process helps establish an effective educational environment that enhances children's motivation and engagement (Semartiana et al., 2022). Furthermore, gamification has been shown to reduce boredom, increase student engagement in class activities, and enhance learning motivation without compromising the understanding of the material (Putra & Priyatmojo, 2021). Moreover, it does not only increase students' motivation through game elements such as rewards, points, and rankings, but also encourages them to actively participate in learning. According to (Zhang & Hasim, 2023), Students tend to be more motivated to complete assignments and achieve learning goals when there are elements of competition and recognition involved. This creates a competitive yet supportive learning environment, where students feel encouraged to strive to do better.

Gamification also makes learning more interesting and interactive, thereby increasing overall student engagement. Students are more actively engaged in learning activities because they can see their progress visually through the use of points, badges or levels they

have earned. These elements not only provide instant feedback to students, but also help them develop independent learning skills and take responsibility for their personal achievements. Q. Pham (2022) asserted that digital flashcards significantly contributed to improving student's knowledge in terms of various words, vocabularies, and phrases in English. At this point, the students have more opportunities to consolidate their understanding of new vocabulary, thereby strengthening their overall understanding of the language.

Additionally, gamification facilitates self-directed and inclusive learning. (Annamalai et al., 2022; Lafleur, 2024) highlighting that game elements such as self-setting study time and self-tracking of progress provide opportunities for students to learn based on their learning style and characteristics. Thus, it does not only increase students' intrinsic motivation but also allows all students to feel involved and valued in the learning process, regardless of their learning style or background. Moreover, gamification is not just a tool to improve English learning outcomes, but also to create an inclusive and competitive learning environment for all students. Teachers, tutors, and all the educators could integrate the gamification approach into their teaching process to create a more enjoyable, effective, and relevant learning experience for students.

2. Method

2.1. Research design and approach

This research employed a quantitative experimental research design to investigate the impact of using four educational games (Duolingo, Quizlet, ABCmouse, and Kahoot) on English language learning in 7th grade of one junior high school in Jambi City, Jambi Province, Indonesia for one semester. The students in each class comprised of 29 students regardless their gender, and family background. The classes were divided into two groups: an experimental group receiving treatment using educational games, and a control group undergoing conventional teaching methods without educational games. The researchers focused only on the outcomes of these groups after receiving the treatment through their post-test results.

In the experimental group, Duolingo was utilized to enhance students' English language skills through intensive practice in various language aspects, while Quizlet focused on expanding vocabulary and understanding grammar structures. In addition, ABCmouse was employed to measure the fundamental English language concepts interactively and engagingly, particularly for students needing better initial comprehension. Kahoot, with its competitive and interactive quiz approach, was implemented to enhance student engagement and motivation in learning English. Meanwhile, the control group received standard English language lessons without educational games, focusing on four major curriculum topics as per standard requirements. Both groups follow the independent curriculum. Each of these

platforms was implemented in four separate meetings, resulting in a total of sixteen meetings for the experimental treatment.

The researchers collected the data from both groups before and after the treatment to measure progress in vocabulary understanding, grammar, and overall English communication skills. Statistical analysis such as the t-test was employed to compare learning outcomes between the two groups, aiming to identify whether the use of educational games yields significant differences in English language learning outcomes compared to conventional methods. The significant differences were measured by using an analysis statistic with a significant value of $P < 0.05$ (normality of data via Shapiro-Wilk).

2.2. Participants

Participants were selected using a random sampling method to ensure unbiased representation and minimize potential bias in the study. The population consisted of eight seventh-grade classes, from which two classes were randomly selected using a lottery technique. Each class had an equal probability of being chosen, ensuring fairness in the sampling process. After the selection, one class was randomly assigned as the experimental group and the other as the control group, each consisting of 29 students ($n = 58$ in total). This procedure ensured that randomization occurred at the class level rather than the individual level, which is appropriate in a classroom-based experimental design.

In terms of demographic characteristics, the participants had a mean age of approximately 12–13 years old, which is typical for seventh-grade students. Based on preliminary data from school records, the students' prior English achievement was relatively homogeneous, with an average English score of around 70 (on a scale of 0–100). This homogeneity was further confirmed through a statistical homogeneity test, which indicated that there was no significant difference in variance between the experimental and control groups. This result suggests that both groups had comparable baseline abilities before the intervention.

The researchers ensured that every class had an equal chance of being selected, enhancing the study's reliability and generalizability across similar educational contexts. Additionally, the randomized selection process minimized selection bias and maintained ethical standards, as no specific group of students was intentionally targeted. This approach allowed the study to objectively evaluate the impact of educational game-based learning on students' English learning outcomes without undue influence on participant behavior or responses.

Table 1. Participants

No	Class	Number of Students	Group	Mean English Score	Description
1	VII-A	29	Population	-	Not selected
2	VII-B	29	Experimental	70	Gamified learning (Duolingo, Quizlet, ABCmouse, Kahoot)
3	VII-C	29	Population	-	Not selected
4	VII-D	29	Population	-	Not selected
5	VII-E	29	Population	-	Not selected
6	VII-F	29	Control	70	Conventional learning
7	VII-G	29	Population	-	Not selected
8	VII-H	29	Population	-	Not selected
Total	8 Classes	232 Students	-	-	-

2.3. Instrument test

The research employed standardized assessment instruments during both the initial and final tests at the end of the semester to evaluate English language learning outcomes. These instruments were carefully selected to effectively measure the key aspects of language proficiency targeted in the study, including vocabulary comprehension, grammar knowledge, and overall communicative ability. The initial test served as a baseline measure to establish the starting point of each participant's language skills before any intervention took place, while the final test at the end of the semester provided a comprehensive evaluation of their progress over the study period.

Similarly, the final semester test used the same assessment tools to measure the impact of using educational games on language learning progress. By maintaining consistency in the assessment instruments between the pre-test and the final semester test, the study aimed to accurately quantify the extent of improvement attributable to the implementation of educational games. The instruments utilized in both tests were designed to provide objective data on participants' linguistic development, ensuring that the findings could be rigorously analyzed to draw meaningful conclusions about the efficacy of gamified learning approaches in enhancing English language education.

3. Findings and Discussion

This research aimed to evaluate the effect of using educational games in English language learning among the 7th-grade students at a junior high school for one semester. Two sample groups were utilized: an experimental class employing educational games (Duolingo, Quizlet, ABCmouse, and Kahoot) and a control class using conventional teaching methods.

At the beginning of the semester, the average pre-test score for the experimental class was 60 with a standard deviation (SD) of 10, while the average pre-test score for the control class was 59 with SD 9. Thus, an independent t-test was conducted to assess the differences between the two groups at the outset of the research, revealing no significant difference between the pre-test scores of the experimental and control classes ($t = 0.45$, $p = 0.65$). This number indicated that the initial English language proficiency of students in both groups was equivalent.

After one semester of implementing different teaching methods using various educational games or employing gamification approach (i.g Duolingo, Quizlet, ABCmouse, and Kahoot), the average post-test score for the experimental class increased to 73 with SD 4, whereas the average post-test score for the control class increased to 65 with SD 6. The statistical analysis using an independent t-test showed a significant difference between the post-test scores of the two groups ($t = -6,334$ $p < 0.001$). These results indicated that students in the experimental class, using educational games, experienced greater improvement in English language proficiency compared to students in the control class using conventional teaching methods. The following figures show us the results of the SD, Independent Sample Test, and Independent Sample Effect Size of both control and experimental classes after receiving the treatment.

Table 2. The Post-tests of control class and experimental class after gamification treatment

Group Statistics					
	Kelas	N	Mean	Std. Deviation	Std. Error Mean
Hasil Post Test	Control Class	29	65,0690	6,34109	1,17751
	Experimental Class	29	73,9310	4,07020	,75582

Table 3. The independent sample test control class and experimental class after gamification treatment

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Hasil Post Test	Equal variances assumed	10,909	,002	-6,334	56	<,001	-8,86207	1,39921	-11,66502	-6,05911
	Equal variances not assumed			-6,334	47,724	<,001	-8,86207	1,39921	-11,67579	-6,04835

Table 4. The independent samples effect size of both classes

Independent Samples Effect Sizes					
		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
Hasil Post Test	Cohen's d	5,32803	-1,663	-2,257	-1,058
	Hedges' correction	5,40074	-1,641	-2,227	-1,044
	Glass's delta	4,07020	-2,177	-2,934	-1,402

a. The denominator used in estimating the effect sizes.
 Cohen's d uses the pooled standard deviation.
 Hedges' correction uses the pooled standard deviation, plus a correction factor.
 Glass's delta uses the sample standard deviation of the control group.

Table 4 showed that the effect size significantly exceeds the “large” category at 1.63. The number indicates the difference between the two groups has a very strong impact; a clear and substantial in the context of this study. In addition, the value at 1.63 has a very large influence on the observed outcome.

The significant increase in post-test scores for the experimental class suggests that the use of educational games can enhance student engagement and motivation in learning English, thereby improving their learning outcomes. These findings support the implementation of educational games such as *Duolingo*, *Quizlet*, *ABCmouse*, and *Kahoot* as effective learning aids in English education at the junior high school level. This research provides empirical evidence that gamification approaches in English language learning can bring significant benefits to the development of students' language skills, particularly in terms of motivation, engagement, and mastery of content. Thus, the integration of technology and innovative teaching methods is highly recommended for adoption in English education curricula in schools.

At the beginning of the research, English language proficiency in both groups was similar, as indicated by similar pre-test results between the experimental and control groups. However, after one semester of using different teaching methods such as employing various educational games (*Duolingo*, *Quizlet*, *ABCmouse*, and *Kahoot*), there was a significant difference in post-test results. The average post-test score for students in the experimental class increased to 73 with a standard deviation of 4, whereas in the control class only increased to 65 with a standard deviation of 6. Statistical analysis using an independent t-test showed a significant difference with a t-value of $t = -6,334$ $p < 0.001$. Thus, the improvement in English language proficiency in the experimental class was significantly greater compared to the control class.

These findings demonstrate that integrating educational games such as *Duolingo*, *Quizlet*, *ABCmouse*, and *Kahoot* in English language learning effectively enhance the students' engagement and motivation in terms of their English communication skills, vocabularies and

grammar or structures, and their learning active participation in the classroom. The Duolingo and ABCmouse significantly enhanced students' communication skills as the researchers greatly exposed them to practice using the Duolingo to speak and ABCmouse to read short phrases or sentences. In addition, the Quizlet significantly increased students' knowledge in terms of lexicons, vocabularies, and structures. Meanwhile, Kahoot app attracted active engagement and participation of the students during the learning process. All in all, integrating each of this game had led to improving students' score and outcomes of English mastery and competence.

One of the key factors supporting the effectiveness of educational games is their ability to enhance students' intrinsic motivation. Various game elements such as points, badges, and rankings provide instant feedback and recognition for students' achievements. Thus, the use of educational games also allows students to learn in a more independent and responsible manner towards their personal achievements.

Furthermore, the integrated use of various educational game applications over one semester provided new insights into how this holistic approach can be applied in the educational context in Indonesia. In fact, using this holistic approach was more effective compared to using a single application in the short term. For instance, Duolingo is effective in improving language aspects and skills, while Quizlet aids in vocabulary retention and self-learning through digital flashcards and games. ABCmouse introduces basic English language concepts interactively, especially for students needing better initial understanding, and Kahoot enhances student engagement and motivation through interactive quizzes.

The results of this research indicate a significant positive impact of using educational games on English language learning among 7th-grade students at one junior high school in Jambi City, Jambi Province, Indonesia. Based on data analysis from pre-tests and post-tests, students receiving and exposing the educational games showed greater improvement compared to those using conventional teaching methods. This research provided empirical evidence that gamification approaches in English language learning could bring significant benefits to the development of students' language skills. These findings support the integration of technology and innovative teaching methods in English education curricula in schools in Indonesia. Therefore, it is expected the English learning environment and process through various educative gamification approach could lead to more inclusive and competitive learning environment, allowing all students to feel engaged and valued in the learning process.

Despite the positive findings, several limitations should be acknowledged. First, this study was conducted in a single school with a relatively small sample size, which may limit the generalizability of the results to other contexts. Second, differences in students' access to

digital devices and internet connectivity may have influenced their level of participation and engagement during the intervention. Third, the study did not implement a blinding procedure, meaning that both students and the teacher were aware of the treatment, which may introduce potential bias in behavior and performance.

Future research is recommended to involve larger and more diverse samples across multiple schools, as well as to consider mixed-method approaches to explore students' perceptions and experiences in greater depth. Additionally, further studies could examine the long-term effects of gamification and investigate how individual game elements contribute to specific language learning outcomes.

4. Conclusion

This study found that the use of educational game-based learning in English instruction for seventh-grade junior high school students had a significant positive effect on students' language abilities. The integration of applications such as Duolingo, Quizlet, ABCmouse, and Kahoot! contributed to increased student engagement, participation, and motivation during the learning process. Students became more active and responsive, while game elements such as points and rankings provided immediate feedback that supported their learning progress. These findings indicate that gamified learning can effectively support English language development, particularly in vocabulary and grammar.

However, this study was limited to a relatively small sample size and a single educational context. Therefore, future research is recommended to involve larger and more diverse samples to improve generalizability. In addition, employing mixed-methods designs could provide deeper insights into students' experiences, perceptions, and learning processes when using gamification. Further studies may also explore the long-term impact of educational game integration and compare the effectiveness of individual applications to better understand their specific contributions to language learning outcomes.

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