INDONESIAN JOURNAL OF APPLIED LINGUISTICS
Vol. 15 No. 2, September 2025, pp. 387-397

Available online at:
https://ijal.upi.edu/index.php/ijal/article/view/321

https://doi.org/10.17509/ctthnz26

Enhancing grammar mastery through Climbing Castle app: A game-based learning for secondary students

Hesty Puspita Sari[1*], Azza Jauhar Ahmad Tajuddin[2], Zulfadli A Aziz[3], and Latifatul Isro'iyah[4]

[1]*English Education Department, Teacher and Training Faculty, Universitas Islam Balitar, Indonesia*
[2]*Centre of Fundamental and Continuing Education, Universiti Malaysia Terengganu, Terengganu, Malaysia*
[3]*English Education Department, Faculty of Teacher Training and Education, Universitas Syiah Kuala, Banda Aceh, Indonesia*
[4]*Management Department, Faculty of Economics, Universitas Tulungagung, Indonesia*

ABSTRACT

With the undeniable growth of digital learning as a cutting-edge educational technology, there is an increasing demand for diverse digital grammar-learning experiences for secondary-level students. This study examines the effectiveness of Android-based games in enhancing grammar learning, using a quasi-experimental design with control and experimental groups to evaluate the Climbing Castle app. Seventy secondary-level students from an Indonesian school, aged 13 to 15, participated in the study. The results of this study indicated a significant improvement in students' grammar skills, particularly in understanding and applying the simple present and past tenses. Using the Climbing Castle app, the experimental group demonstrated a substantial improvement, increasing their grammar scores from 62.71 to 68.29 from pre-test to post-test. By comparison, the control group rose from 60.86 to 61.29. A comparative analysis indicates that the Climbing Castle app had a more significant positive impact on the acquisition of grammatical skills than conventional learning methods for junior high school students. The findings provide teachers with an alternative digital tool to foster grammar learning in engaging ways. Academically, the study contributes to the growing body of research on game-based learning and offers a foundation for further investigations into its long-term impact on language proficiency.

Keywords: Climbing castle app; effectiveness; grammar; increment grammar mastery

Received:	**Revised:**
24 March 2024	28 August 2025
Accepted:	**Published:**
27 September 2025	30 September 2025

How to cite (in APA style):
Sari, H. P., Tajuddin, A. J. A., Aziz, Z. A., & Isro'iyah, L. (2025). Enhancing grammar mastery through Climbing Castle app: A game-based learning for secondary students. *Indonesian Journal of Applied Linguistics*, *15*(2), 387-397. https://doi.org/10.17509/ctthnz26

INTRODUCTION

Grammar is not only a pivotal part of learning English effectively but also the foundation of various language skills, including speaking, listening, reading, and writing (Andriani et al., 2021). It is essential to comprehend and apply spoken language in both speaking and listening. The linguistic system comprises linguistic qualities, which are generalized into grammar (Kapatsinski, 2014). However, the large number of complex, obscure, and exceptional grammatical rules makes grammar the most challenging part of learning English for EFL students (Mandasari & Wahyudin, 2021). In other words, without adequate mastery of grammar, learners struggle to construct accurate sentences, convey meaning effectively, and comprehend others, leading to communication breakdowns. Thus, grammar serves as the foundation of language proficiency and is indispensable for achieving communicative competence.

Mastering grammar requires students to first acquire proficiency in the rules of the English language before they can grasp the other four essential skills. Grammar is of paramount importance among all skills, as it serves as the foundation for skill development (Wang, 2010). Acquiring knowledge of English grammar will be a greater challenge. The study of tenses is critical since it encompasses a wide range of variations. In

*Corresponding author
Email: hestysari1403@gmail.com

addition to the lesson content, the delivery method significantly influences how students learn and understand the subject. Every grammatical element has a specific purpose inside a phrase. One grammatical component is tenses. Tenses are linguistic patterns or formations that indicate the temporal occurrence of a phrase. The tenses consist of sixteen components, each of which is influenced by the moment of occurrence. It also provides context to the statement, enabling us to discern the meaning of the sentence based on its timing of occurrence (Kusumastuti et al., 2019).

Despite its importance, grammar is often considered one of the most challenging aspects of English for EFL learners, as it requires not only memorizing complex rules but also applying them appropriately across various communicative contexts. The difficulties most frequently encountered include the inability to construct grammatically correct sentences, misuse of conjunctions, and incorrect verb use, which become more problematic as learners are expected to adapt to evolving grammatical standards and nuanced language use. These persistent struggles highlight grammar as the central barrier to mastering English, as inaccurate grammatical knowledge often hinders the ability to convey precise meaning, leading to misunderstandings in both spoken and written communication. Such challenges reveal that grammar is not simply about learning isolated rules, but about developing a deeper competence that integrates form, meaning, and function. This is often difficult for learners who lack adequate exposure, practice, or effective instructional support. Consequently, grammar learning remains a significant challenge for many EFL learners, underscoring the need for more innovative, contextualized, and learner-centered approaches to grammar instruction that can bridge the gap between theoretical knowledge of rules and their practical application in communication.

Moreover, some teachers have sought to innovate, developing creative methods and strategies to foster a fun, engaging learning environment for grammar. Teachers are starting to abandon traditional-based learning and move to technology-based learning. Technology-based learning can enhance the quality of grammar learning and foster a pleasant learning atmosphere (Ningtias et al., 2023; Puspitasari et al., 2022; Supriyono et al., 2022a; Yang & Chen, 2007). Although it is vital, unfortunately, learning grammar still tends to be boring for students. This may result from applying traditional methods that tend to bore students, such as traditional presentations, using printed books, and filling in blanks or ordinary multiple-choice questions without incorporating any learning innovations. Unfortunately, most English teachers still tend to rely on traditional presentation methods. Using the teacher-centered method without teacher feedback has been shown to make students passive, leading to low motivation to learn (Helawati, 2022). Bielak and Pawlak (2013) proposed that traditional teaching strategies, for example, using textbooks and generic fill-in-the-blank tasks, are still employed in many schools.

Meanwhile, learning outcomes are significantly affected by teaching that fails to engage students' interests. Garrett (1986) suggests that if a lesson does not appeal to a person for some reason, they immediately put it aside if they encounter difficulties. On the other hand, if a task is enjoyable because it yields encouraging results, one tends to give more time to it. Gayo and Widodo (2018) state that a large number of students continue using improper English grammar.

To address these challenges, innovative teaching strategies are essential that not only capture students' attention but also facilitate their understanding of grammar, one such strategy being Game-Based Learning (GBL). GBL has emerged as a popular approach to creating engaging learning environments that foster motivation, enjoyment, and active participation while simultaneously supporting the achievement of learning objectives (Rye et al., 2025). Moreover, GBL has been shown to enhance cognitive abilities such as decision-making, memory retention, attention span, and task completion (Mao et al., 2022), which are particularly relevant in an era of rapidly advancing technology across all fields, including education. In line with this, the present study proposes using the *Climbing Castle* application, an Android-based educational game, to improve English learners' mastery of grammar. Climbing Castle was initiated and developed by the researchers themselves and is an educational game application for Android. This application offers learning through games that ask questions about English grammar, with levels 1-3. The level indicates the degree of difficulty of the grammar, allowing students to learn in a fun and systematic way. Climbing Castle is an adventure-based game, with characters that are moved using the motion buttons provided. Every time a player touches the key, the panel will appear, showing questions that must be answered to earn points. The adventure will continue for a limited time. The simple present, present continuous, and simple past tenses are the challenge materials used in the game. The goal of this game is to improve students' grammar proficiency. There are three stages in each of the game's three levels, with evaluation taking place at the end. The game can be played on a computer or a laptop.

A previous study on the same application, conducted by Azizah et al. (2022), found that the Grammar Mountain game has a substantial impact on the writing proficiency of eighth-grade students. The results indicate a significant disparity in achievement between students who participated in

Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468

the ascending grammar mountain game and those who did not (Azizah et al., 2022). The researchers found that using the Climbing Grammar Mountain Game led to a statistically significant improvement in students' grammar mastery, which in turn positively affected their writing performance. The statistical analysis showed a noticeable increase in students' post-test scores, rising from a mean of 51.69 in the pre-test to 56.62 in the post-test, confirming the game's effectiveness in enhancing writing achievement.

The Android-based learning game SEEY, developed by Sari et al. (2022), facilitated English grammar instruction for eighth-grade students through engaging, interesting materials. This study concludes that the use of theoretical grammar and tenses, theoretical learning, game-based Android technology, and theoretical games was effective in teaching English grammar, particularly tenses (Sari et al., 2022). In contrast, the *Climbing Castle* game provides a distinct learning experience by incorporating grammar practice into a more interactive, challenge-based, and immersive environment. Unlike *SEEY*, which emphasizes theoretical delivery, *Climbing Castle* integrates game mechanics—levels, obstacles, and rewards—to encourage students' engagement through active participation. This design not only provides grammar practice but also enhances critical thinking, motivation, and collaboration, making the learning process more dynamic and aligned with the principles of Game-Based Learning (GBL). Therefore, while *SEEY* demonstrates the effectiveness of Android-based grammar-learning tools, Climbing Castle aims to extend this approach by fostering deeper engagement and the application of grammar knowledge in more meaningful contexts.

Another study, conducted by Amaliah (2020), examines students' perspectives on using the mobile application "Hello English" to enhance their English grammatical skills. The research findings indicate that the majority of participants hold favorable views of the application due to its ease of comprehension, increased enthusiasm and motivation in learning English grammar, and its ability to alleviate learning monotony and facilitate material retention (Amaliah, 2020). In contrast, the *Climbing Castle* game emphasizes interactive mechanics—levels, challenges, and rewards —that transform grammar learning into an active, immersive experience. While *Hello English* relies more on theoretical delivery and practice exercises, *Climbing Castle* encourages learners to apply grammar knowledge within dynamic tasks that require decision-making and problem-solving. This distinction highlights the unique contribution of *Climbing Castle* not only to making grammar learning engaging but also to fostering deeper application and contextualized understanding through Game-Based Learning (GBL).

The use of technology in the GBL method will help improve students' grammar learning outcomes. Yunanto et al. (2020) believe that developing this game-based application can increase users' interest in learning English grammar. His research focuses on grammar skills, with the study population consisting of students who take the TOEFL certification exam. It provides results in the form of improved test scores and increased engagement, demonstrating the app's effectiveness in enhancing grammar proficiency. However, it has not yet been widely published in the marketplace. The application can attract students who are the subject of research. Using games can help students engage in enjoyable, effective grammar learning. Gamification in EFL classrooms can support teaching and learning in the 21st century (Redjeki & Muhajir, 2021). Games can also enhance research participants' grammatical abilities (Castillo-Cuesta, 2020). Students have also shown positive responses to teaching methods that incorporate game applications (Yunanto et al., 2020). Unlike previous research, this study designed and produced a game-based learning tool called Climbing Castle. The Climbing Castle education game is an innovative learning medium based on application technology that enables students to learn grammar offline on their respective Android devices. The game is an idea designed to solve problems in the field by leveraging the rapidly advancing technology.

Climbing Castle can be used offline, so there is no additional cost to use this app. By not requiring data usage, students can turn off their internet connection, allowing them to play and learn using the climbing castle with greater focus. Students find it easier to use the Android device that Climbing Castle uses because they are familiar with it. The style of play in Climbing Castle has also been designed to provide excitement for students, ensuring they remain engaged and not bored while learning through this game. The questions provided are also designed with a difficulty level adjusted to the level, allowing students to learn with ease and continue to improve towards more challenging questions on a fun journey.

Although the development of educational games like Climbing Castle is an innovative step in grammar learning, it is not sufficient to ensure an improvement in students' grammar skills. It is crucial to conduct further research to determine the effectiveness of utilizing such games in the learning process, particularly in enhancing grammar proficiency among junior high school students. Therefore, this study aims to empirically examine the impact of the Climbing Castle application on students' mastery of English grammar, particularly the simple present and past tenses, through an interactive, game-based approach. Accordingly, the

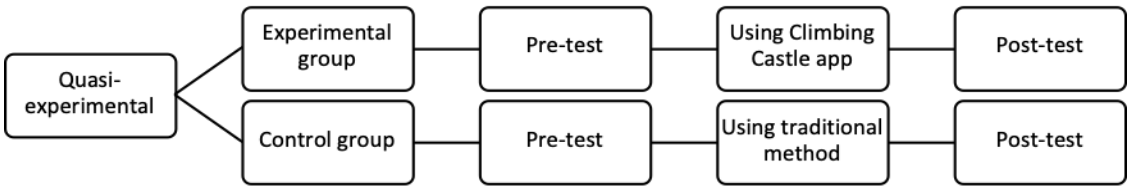
Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468

present study is guided by the following research question: Does the use of the Climbing Castle Android-based game significantly improve junior high school students' grammar mastery in Blitar compared to traditional instruction?

METHOD

This study employed a quasi-experimental design with a control and an experimental group. The quasi-experimental design assumes that the two groups should be as comparable as possible (Stuart & Rubin, 2008). This approach was selected because random assignment in authentic classroom contexts is often unfeasible, yet the design still allows for rigorous comparisons between existing groups. It enables the evaluation of the Climbing Castle app's impact on grammar mastery by contrasting students who used the app with those who received traditional grammar instruction. Quasi-experimental research provides flexibility in adapting to classroom constraints, maintains ethical standards by not withholding potential benefits, and produces valuable insights into the effectiveness of educational technology (Campbell & Riecken, 1968). The participants were selected using a purposive sampling procedure, considering the accessibility of classes and the suitability of the students' level in relation to the research objectives. The sample consisted of two intact classes from a school in East Java, Indonesia, each comprising 35 students, with one class designated as the experimental group and the other as the control group. This procedure ensured that the groups were relatively comparable while maintaining the natural classroom setting. Following that, the researchers adopted and adapted the design, showing the potential to generate valuable data regarding the app's efficacy, contextualizing its impact, and enabling the exploration of broader implications for educational technology as follows:

Figure 1
Research Design



The research design in Figure 1 shows that a quasi-experimental design consists of two groups: the experimental and the control groups. Both groups first take a pre-test to measure their initial proficiency in grammar. The experimental group then receives treatment using the Climbing Castle application, while the control group is taught through traditional methods, with teachers translating the learning material using the Grammar-Translation method. After the intervention, both groups take a post-test to assess their progress. By comparing the pre-test and post-test results of the two groups, the study aims to determine the effectiveness of the Climbing Castle application in improving students' grammar mastery compared to conventional instruction.

Respondents

The participants were 70 secondary-level students at a public junior high school in East Java, Indonesia, aged 13 to 15 years. They were divided into two groups: 35 students in the control group and 35 students in the experimental group. The control group received traditional grammar instruction, while the experimental group used the Climbing Castle app during English lessons, as shown in Table 1.

Table 1
Participants of the study

Age	Total	Sex
13 years old	10	Male
13 years old	11	Female
14 years old	10	Male
14 years old	13	Female
15 years old	14	Male
15 years old	12	Female

The treatment for the experimental group includes four sessions of the app's gameplay, focusing on the use of simple present and past tenses. Table 2 displays that both groups take pre-tests and post-tests to assess their grammar proficiency before and after the treatment.

Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468

Table 2
Sessions for the Experimental and Control Groups

Session	Treatment		Duration
	Experimental Group (Using Climbing Grammar Mountain Game)	Control Group (Conventional Method)	
Pre-session	Pre-test	Pre-test	45 minutes
Week 1	Game introduction and familiarization	Explanation of grammar rules	45 minutes
Week 2	Playing the game on levels 1 and 2	Paper-based worksheet practice of the Present tense	
Week 3	Playing the game on level 3	Paper-based worksheet practice of the past tense	45 minutes
Week 4	Game evaluation on Android	Present tense and past tense practice	45 minutes
Post-session	Post-test	Post-test	

The students who did not receive special treatment were also included in the same session, held at the same time and for the same duration.

Instruments

The primary research instrument used in this study was a grammar test administered as both a pre-test and a post-test to measure students' mastery of grammatical structures. Grammar tests are widely employed in language research because they provide a direct and systematic means of assessing learners' linguistic knowledge (Zientek et al., 2016). Testing grammar explicitly allows researchers to identify learners' strengths and weaknesses in applying grammatical rules, making it suitable for evaluating the effectiveness of instructional interventions (Hughes, 2003). The 20 test items in this study covered essential aspects of grammar, including sentence construction, conjunctions, and verb usage, which are considered fundamental components of grammatical competence (Murcia & Freeman, 1999). The pre-test was administered to assess students' baseline proficiency, while the post-test was conducted to evaluate progress after the treatment.

To ensure validity, both tests were content-validated by two English teachers, who verified alignment with curriculum objectives and the targeted grammar constructs. Furthermore, the tests were piloted with 20 students outside the sample group to ensure reliability, clarity of instructions, and appropriate difficulty level. This procedure aligns with the recommendation that instruments in experimental studies should be tested for both validity and reliability before being administered to the main participants (Creswell & Creswell, 2017).

Data Collection

Data for this study were collected through grammar tests administered as pre- and post-tests. The pre-test was designed to measure students' baseline mastery of grammar, while the post-test assessed their progress after the intervention. The test items covered key aspects of grammar, including sentence structure, conjunctions, and verb usage, as these elements are central to English grammatical competence (Murcia & Freeman, 1999).

To ensure the instrument's quality, both tests underwent content validation by two experienced English teachers, who confirmed that the items aligned with the curriculum objectives and accurately represented the targeted grammar constructs. This process was essential because content validity guarantees that an instrument measures what it is intended to measure (Tuhumury, 2013). In terms of reliability, a pilot test was conducted with 20 students from another school in the same area. The students' responses were analyzed using Cronbach's Alpha in SPSS, which produced a coefficient exceeding 0.70. According to Karasakaloglu (2018), the results indicate an acceptable level of internal consistency for educational research instruments, confirming that the grammar test was reliable in consistently measuring students' mastery of grammar.

The data obtained from the pre-test and post-test were then subjected to statistical analysis. Descriptive statistics, such as means and standard deviations, were first calculated to summarize the data, followed by an inferential analysis using an independent-samples t-test to determine whether there were significant differences between the control and experimental groups. This test was chosen because it is appropriate for comparing the means of two unrelated groups when the dependent variable is continuous, normally distributed, and measured at the interval or ratio level (Gravetter & Wallnau, 2017). Sedgwick (2010) further notes that the independent-samples t-test is particularly suitable when the groups being compared are approximately equal in size, as is often the case in intervention studies in which one group receives a distinct treatment.

Data Analysis

The data obtained from the pre-test and post-test were then analyzed using SPSS version 27. The analysis was conducted in two stages. First, descriptive statistics were calculated to summarize students' grammar performance, including the mean and standard deviation of scores in both the control and experimental groups. These descriptive measures provided an initial overview of students' progress before and after the intervention. Second, inferential statistics were employed to examine the

Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468

effectiveness of the Climbing Castle application. An independent sample t-test was conducted to determine whether there was a statistically significant difference in grammar achievement between the two groups. The independent t-test was selected because it is appropriate for comparing the means of two unrelated groups when the dependent variable is continuous, normally distributed, and measured at the interval or ratio level (Gravetter & Wallnau, 2017). Sedgwick (2010) also notes that this test is suitable when sample sizes are relatively equal, as was the case in this study.

In this test, the null hypothesis (H_0) stated that there was no significant difference in grammar achievement between the control and experimental groups. Conversely, the alternative hypothesis (H_a) posited a significant difference in grammar achievement between the two groups, indicating a positive effect of the Climbing Castle application. Before running the t-test, assumptions of normality and homogeneity of variance were tested to ensure the validity of the results. Through this procedure, SPSS conducted a rigorous, systematic analysis of the data, enabling the researcher to accurately evaluate the impact of game-based learning on students' grammar mastery.

FINDINGS AND DISCUSSION

Before examining the impact of the Climbing Castle app, the pre-test and post-test scores of both groups were analyzed to determine students' initial grammar mastery and their improvement after the intervention. Table 3 presents the descriptive statistics of students' grammar scores before and after the treatment. This illustrates the impact of the Climbing Castle app on students' language competence. The statistics showed that the experimental group, who utilized the Climbing Castle app, got a significant increase in their grammatical abilities, with their average pre-test score increasing from 62.71 to 68.29 in the post-test. In comparison, the control group, which did not use the app and instead employed a traditional grammar method, showed a slight improvement in average score, from 60.86 to 61.29. This significant improvement in the experimental group suggests that the Climbing Castle app was more effective in enhancing students' grammatical competency than traditional approaches. The result of students' average score of pre-test and post-test is shown in the following table 3:

Table 3
Result of students' pre-test and post-test

Group	Pre-test average score	Post-test average score
Experimental	62.71	68.29
Control	60.86	61.29

Before proceeding to the inferential analysis, assumptions of normality and homogeneity of variance were tested to ensure the appropriateness of the parametric test. The results showed that the data were normally distributed and that variances were homogeneous ($p > 0.05$), allowing the use of an independent-samples t-test. The findings of this study reveal the impact of the *Climbing Castle* app on students' grammar mastery, as measured through pre-test and post-test results from both the control and experimental groups. The comparisons indicate that students in both groups demonstrated relatively similar levels of grammar proficiency before the intervention, confirming baseline equivalence. The test data were analyzed using SPSS version 27 to determine the impact of the app on students' grammar achievement. Table 4 presents the results of calculating means and standard deviations to examine the effect of playing the Android game Climbing Castle on grammar mastery.

Table 4
Impact of the app on students' grammar achievements

Group	N	Mean	Std. Deviation	Std. Eror Mean
Control	35	61.29	7.10663	1.20124
Experimental	35	68.29	7.85370	1.32752

Based on Table 4 above, the respondents for each group were 35 students. The average learning result, or mean, for the control group was 61.29, while the experimental group's mean was 68.29. Therefore, based on the statistical description, there were significant differences in the average learning results between the control and experimental classes. The researchers employed an independent-samples t-test to determine whether there were any such differences among the groups. The experiment showed significant differences in higher grammar mastery. The results supported the research study and suggested that using the Climbing Castle android-based game as a learning medium in grammar class could significantly improve students' learning outcomes, as shown in Table 5.

Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468

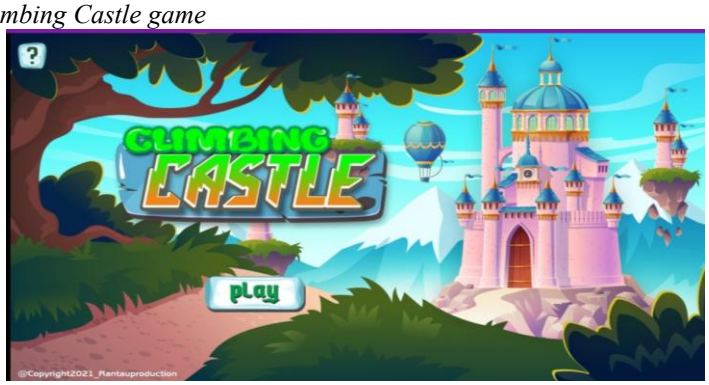
Table 5
Students' learning outcome based on the t-test

	F	sig	t	Df	Sig (2tailed)	Mean Difference	Std. Error Difference	Lower	Upper
EVA	2.432	124	-3.910	68	.000	-7.00000	1.79023	-10.57255	-3.42745
EvnA			-3.910	67.332	.000	-7.00000	1.79023	-10.57319	-3.42681

Based on independent sample test results, the p-value of 0.124 is greater than 0.05, indicating that equal variances are assumed. The output of the table with sig (2-tailed) is 0.000 < 0.05, which suggests the rejection of H_0 and the acceptance of H_a. Thus, there is a significant difference in learning grammar through the Android-based game Climbing Castle. Then, the mean difference is -7.000, indicating the difference in average learning results between the control and experimental classes. The difference is -3.42745 to 10.57255, with a 95% confidence interval of the difference.

Given that the test results were valid and demonstrated significant improvement in students' grammar mastery, it is essential to highlight how the Climbing Castle game functions as an effective learning medium. The game not only provides students with opportunities to practice and enhance their grammar skills through interactive gameplay, but also fosters greater motivation by making the learning process more engaging, enjoyable, and less intimidating. By analyzing its features and gameplay, learners can gain a deeper understanding of why the app was successful in motivating them and why it proved more effective compared to traditional grammar instruction. Climbing Castle can be obtained by scanning the barcode on the following YouTube link: https://youtu.be/9FGhvUAgAHo. Downloading the file on Google Docs will be forwarded from the barcode. The Climbing Castle application file can be installed on each student's cell phone. Figure 2 displays the main screen of the Climbing Castle app when students open it.

Figure 2
Home screen of the Climbing Castle game



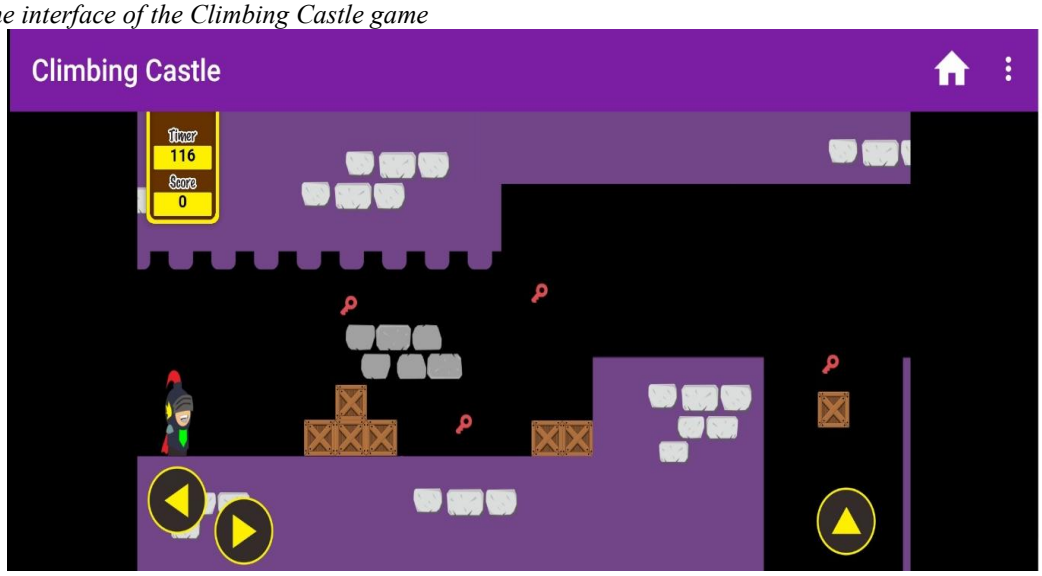
After pressing the play button, students will be directed to a panel. Figure 3 shows the panel of levels students can choose from, based on their ability. For beginners, press the shield button with a castle image displaying level one instructions, which will then direct you to the starting point of the Climbing Castle game.

Figure 3
Level and evaluation section screen of the Climbing Castle game

Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468

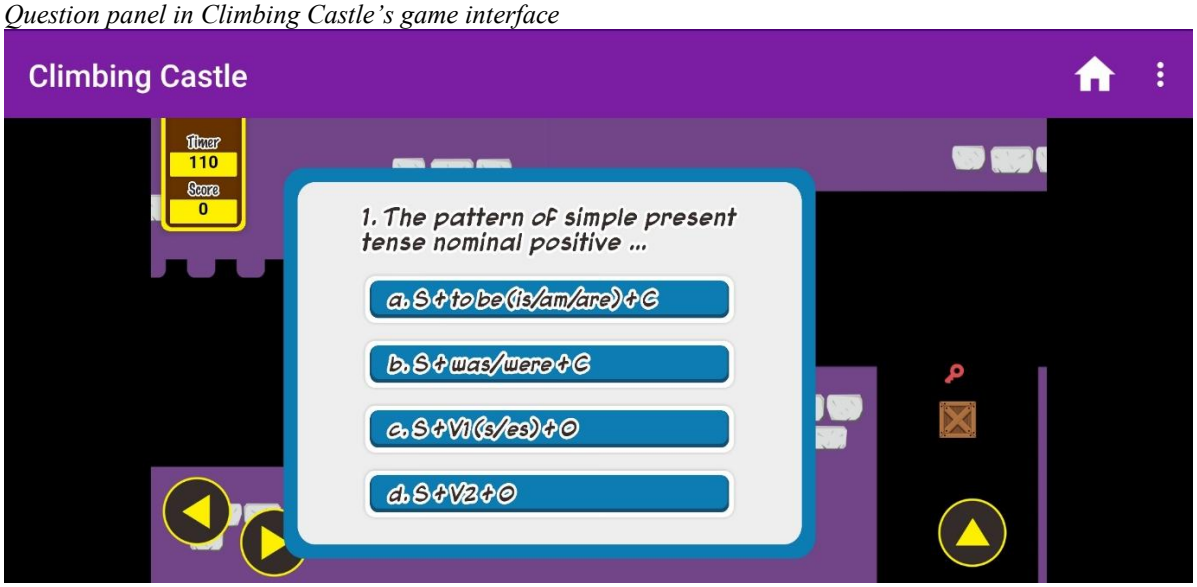
The Climbing Castle game begins when players reach the starting point. Players have 120 seconds to complete the level by pressing the button below the character, which directs the character to pass through the obstacles in the game.

Figure 4
Game interface of the Climbing Castle game



To earn points, the character must collect keys along the journey of the game. When the key is obtained, a multiple-choice question panel will appear. When the student answers correctly, the points under the timer will increase. These points are the markers of learning outcomes when using Climbing Castle as a learning medium.

Figure 5
Question panel in Climbing Castle's game interface



This research on the Climbing Castle app has demonstrated its effectiveness in enhancing students' grammar proficiency, particularly in understanding and using the simple present and past tenses. This finding aligns with existing literature on the benefits of game-based learning and gamification in educational settings. The findings reveal that students who participated in the game sessions showed significant improvement in their grammar skills compared to those who received traditional instruction. This outcome is consistent with Castillo-Cuesta (2020), who found that digital games can enhance grammar and vocabulary learning by providing interactive, engaging content. The gamified nature of Climbing Castle likely contributed to increased student motivation and

Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468

engagement, creating innovative learning strategies that improve academic performance.

The present study provides valuable insights into the convergence of gamification and language acquisition, specifically in enhancing students' grammar proficiency. ESL instructors can gain significant advantages from this study by integrating cutting-edge tools, such as the Climbing Castle app, into their instructional methodologies. The application embodies a contemporary approach to language teaching, combining the appeal of gaming with educational techniques that enhance student engagement and academic outcomes (Leaning, 2015). This approach has great potential to revolutionize the teaching and learning of grammar, which is often seen as difficult or monotonous. From an educator's perspective, incorporating educational games, such as Climbing Castle, into the classroom creates a dynamic, competitive learning environment that promotes active participation and cooperation. This study demonstrates that incorporating games offers a twofold advantage: it stimulates learners by providing a pleasurable, stress-free experience, while also imparting material that can be challenging when taught using conventional approaches. Designed to address the challenges ESL learners face in understanding grammar, the app serves as a valuable resource that engages their attention, promoting continuous involvement and practice without the persistent stress of grades or the apprehension of committing errors. The concept of "learning through play" aligns with the conclusions of Buchem et al. (2022) underscoring the importance of multimodal game-based learning in meeting students' diverse requirements and learning preferences. By leveraging its interactive lessons and real-time feedback, the Climbing Castle app effectively employs this method, providing a customized learning experience that fosters a deeper understanding of language.

The primary factor contributing to the app's efficacy in enhancing grammar proficiency is its real-time feedback system. An essential aspect of the Climbing Castle app is its ability to provide instant correction of mistakes, enabling students to quickly review and reinforce their understanding of grammar principles. These findings support the assertion by Redjeki and Muhajir (2021) that prompt feedback is crucial for language learning, as it enables learners to internalize accurate grammar structures more effectively. The application's reinforcement after each activity or quiz enhances students' ability to retain the material and builds greater confidence in applying grammar rules in their language use. Additionally, its high level of accessibility is a notable benefit of Climbing Castle's application. Supriyono et al. (2022) argue that Android-based applications exhibit significant promise in democratizing education by offering learning materials to a broader range of users. The app's compatibility with mobile devices enables it to reach students in diverse environments, including those with limited access to conventional educational resources. In locations with inadequate educational infrastructure, such as rural or underserved communities, digital solutions like Climbing Castle offer a pragmatic approach to addressing deficiencies in grammar education.

Furthermore, the study highlights the broader significance of gamification in mitigating the anxiety often associated with language acquisition. The Climbing Castle app enhances accessibility and reduces the intimidation students face in grammar courses by integrating a gamified environment that incentivizes effort and progress. This method is supported by research by Tobias et al. (2014), which found that multimedia and game-based learning environments can effectively reduce learner anxiety, thereby enhancing overall academic achievement. The application's gaming, characterized by its competitive element, whereby students strive to amass points and ascend the leaderboard, serves to augment motivation and foster active engagement. Within this gamified environment, ESL learners, who often hesitate to engage in speaking or writing due to their apprehension about committing errors, are more inclined to enthusiastically adopt the learning process, thereby enhancing their mastery of grammar.

Ultimately, the Climbing Castle app serves as a prime example of the increasing significance of gamification and technology in contemporary schooling. Its efficacy in improving students' grammar command highlights the possibility of incorporating comparable applications into the ESL curriculum to enhance language acquisition through captivating, interactive platforms. This research contributes to the growing body of evidence supporting the use of digital technologies in education, specifically in fostering a welcoming, inspiring, and easily accessible learning environment. The integration of gamified learning applications, such as Climbing Castle, into ESL instructors' teaching methods has the potential to revolutionize grammar instruction, thereby enhancing the learning experience by making it both enjoyable and efficient. Further investigation might examine the enduring effects of these tools and analyze how they can be systematically integrated into conventional educational frameworks to further improve language acquisition outcomes.

CONCLUSION

The results of this study indicate that using the Climbing Castle app significantly improved students' mastery of grammar. The experimental group, which learned grammar through the app, showed a notable improvement in their average

Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468

score, from 62.71 in the pre-test to 68.29 in the post-test. In contrast, the control group, which relied on traditional grammar instruction, showed a slight increase from 60.86 to 61.29. These findings confirm that the *Climbing Castle* app was more effective at enhancing students' grammatical competence than conventional methods. This directly addresses the research question, demonstrating that digital game-based learning can effectively support grammar acquisition and improve learner engagement. The Climbing Castle app has effectively enhanced grammar proficiency among junior high school students, particularly in mastering simple present and past tenses. The study shows that students using the app significantly outperformed those receiving traditional instruction, thanks to its interactive and gamified design. This confirms that digital game-based learning can be a valuable supplement to conventional teaching methods, making grammar learning more engaging and accessible.

In light of these results, teachers are encouraged to integrate game-based applications, such as Climbing Castle, into grammar instruction to foster greater motivation and better learning outcomes. Schools can also adopt this approach to complement traditional methods and create more interactive classroom experiences. For future researchers, it is recommended to examine the long-term effects of game-based grammar learning, test its applicability to other language skills, and explore its effectiveness across different age groups and educational settings. Additionally, continued innovation and refinement of educational apps are essential to ensure they remain practical, user-friendly, and widely accessible.

REFERENCES

Amaliah, D. (2020). Students' perceptions on mobile application 'Hello English' as media to enhance English grammar. *Proceedings of the 2nd Bogor English Student and Teacher (BEST)*. Bogor English Student and Teacher (BEST).

Andriani, A., Yuniar, V. D., & Abdullah, F. (2021). Teaching English grammar in an Indonesian junior high school. *AL-ISHLAH: Jurnal Pendidikan*, *13*(2), 1046–1056. https://doi.org/10.35445/alishlah.v13i2.956

Azizah, I., Amalia, S., Mahmudah, F., & Ramdhani, M. I. (2022). The effect of grammar mountain game on students' writing achievement. *International Journal of Education Research and Development*, *2*(2), 61–66. https://doi.org/10.52760/ijerd.v2i2.25

Bielak, J., & Pawlak, M. (2013). Pedagogical options in grammar teaching. In J. Bielak & M. Pawlak (Eds.), *Applying cognitive grammar in the foreign language classroom: Teaching English tense and aspect* (pp. 89–137). Springer. https://doi.org/10.1007/978-3-642-27455-8_4

Buchem, I., Mc Elroy, A., & Tutul, R. (2022). Designing and programming game-based learning with humanoid robots: A case study of the multimodal "make or do" English grammar game with the pepper robot. *ICERI2022 Proceedings*, *1*, 1537–1545. https://doi.org/10.21125/iceri.2022.0403

Campbell, D. T., & Riecken, H. W. (1968). Quasi-experimental design. *Proceedings of the social statistical section, American Statistical Association.* American Statistical Association. http://www.asasrms.org/Proceedings/y1965/Quasi-Experimental%20Design.pdf

Castillo-Cuesta, L. (2020a). Using digital games for enhancing EFL grammar and vocabulary in higher education. *International Journal of Emerging Technologies in Learning (IJET)*, *15*(20), 116–129. https://doi.org/10.3991/ijet.v15i20.16159

Castillo-Cuesta, L. (2020b). Using digital games for enhancing EFL grammar and vocabulary in higher education. *International Journal of Emerging Technologies in Learning (IJET)*, *15*(20), 116–129. https://doi.org/10.3991/ijet.v15i20.16159

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.

Garrett, N. (1986). The problem with grammar: what kind can the language learner use? *The Modern Language Journal*, *70*(2), 133–148. https://doi.org/10.2307/327318

Gayo, H., & Widodo, P. (2018). An analysis of morphological and syntactical errors on the English writing of junior high school Indonesian students. *International Journal of Learning, Teaching and Educational Research*, *17*(4), 58–70. https://doi.org/10.26803/ijlter.17.4.4

Gravetter, F. J., & Wallnau, L. B. (2017). *Statistics for the behavioral sciences* (10th ed.). Cengage Learning.

Helawati, H. (2022). Implementasi metode presentasi kelompok untuk meningkatkan keterampilan komunikasi pada peserta didik dalam pembelajaran [Implementation of group presentation methods to improve communication skills among students in learning]. *Pijar : Jurnal Penelitian Bidang Pendidikan Dan Pembelajaran*, *2*(2), 42–47. https://doi.org/10.56393/pijar.v2i2.1130

Hughes, H. G. A. (2003). *The Cambridge grammar of the English language*. Emerald Group Publishing Limited. https://doi.org/10.1017/9781316423530

Kapatsinski, V. (2014). What is grammar like? A usage-based constructionist perspective.

Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468

Linguistic Issues in Language Technology, *11*. https://doi.org/10.33011/lilt.v11i.1361

Karasakaloglu, N. (2018). Grammar attitude scale: A study of validity and reliability. *International Journal of Progressive Education*, *14*(5), 14–21. https://doi.org/10.29329/ijpe.2018.157.2

Kusumastuti, M., Pratiwi, M., & Husnussalam, H. (2019). Improving grammar skill using EGRA technique for the students' eighth grade at SMPN 5 Cimahi. *PROJECT (Professional Journal of English Education)*, *2*(3), 325. https://doi.org/10.22460/project.v2i3.p325-331

Leaning, M. (2015). A study of the use of games and gamification to enhance student engagement, experience and achievement on a theory-based course of an undergraduate media degree. *Journal of Media Practice*, *16*(2), 155–170. https://doi.org/10.1080/14682753.2015.1041807

Mandasari, B., & Wahyudin, A. Y. (2021). Flipped classroom learning model: Implementation and its impact on EFL learners' satisfaction on grammar class. *Ethical Lingua: Journal of Language Teaching and Literature*, *8*(1), 150–158. https://ethicallingua.org/25409190/article/view/234

Mao, W., Cui, Y., Chiu, M. M., & Lei, H. (2022). Effects of game-based learning on students' critical thinking: A meta-analysis. *Journal of Educational Computing Research*, *59*(8), 1682–1708. https://psycnet.apa.org/doi/10.1177/07356331211007098

Murcia, M. C., & Freeman, D. L. (1999). *The grammar book: An ESL/EFL teacher's course (2nd ed.)*. Heinle & Heinle Publishers.

Ningtias, V. A., Supriyono, S., Sutanti, N., & Sari, H. P. (2023). Kahoot application effectiveness to increase the eight grade students' English grammar mastery. *Seminar Nasional Pendidikan*, *1*(1), 185–194.

Puspitasari, H., Maharani, R. F., Setyawan, W. H., & Primasari, Y. (2022). Android-based mobile application for vocabulary learning. *Jurnal Pendidikan dan Pengajaran*, *55*(3), 469–479. https://doi.org/10.23887/jpp.v55i3.40661

Redjeki, I. S., & Muhajir, R. (2021). Gamification in EFL classroom to support teaching and learning in 21st century. *JEES (Journal of English Educators Society)*, *6*(1), 68–78. https://doi.org/10.21070/jees.v6i1.882

Rye, S., Sousa, M., & Sousa, C. (2025). Introduction to game-based learning. In S. Rye , M. Sousa & C. Sousa (Eds.), *Transformative Learning Through Play: Analogue Games as Vehicles for Educational Innovation* (pp. 29–68). Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-031-78523-8_2

Sari, H. P., Maulidyah, S. N., & Aini, M. R. (2022). Developing "SEEY "Android-based game for learning English grammar: Research and development. *EDUCATIO: Journal of Education*, *7*(2), 138–151. https://ejournal.staimnglawak.ac.id/index.php/educatio/article/view/805

Sedgwick, P. (2010). Independent samples *t* test. *Bmj*, *340*, c2673–c2673. https://doi.org/10.1136/bmj.c2673

Stuart, E. A., & Rubin, D. B. (2008). Best practices in quasi-experimental designs: Matching methods for casual inference. In J. Osborne, E. A. Stuart, & D. B. Rubin (Eds.), *Best Practices in Quantitative Methods* (pp. 155–176). SAGE Publications, Inc. https://doi.org/10.4135/9781412995627.d14

Supriyono, S., Sutanti, N., & Sari, H. P. (2022). Developing Journey Castle game to increase students' grammar mastery: Research and development. *EDUCATIO : Journal Of Education*, *6*(4), 389-402. https://doi.org/10.29138/educatio.v6i4.625

Tobias, S., Fletcher, J. D., Bediou, B., Wind, A. P., & Chen, F. (2014). Multimedia learning with computer games. In R. E. Mayer (Ed.), *The Cambridge Handbook of Multimedia Learning* (pp. 762–784). Cambridge University Press. https://doi.org/10.1017/CBO9781139547369.037

Budiaji, W. (2013). Skala pengukuran dan jumlah respon skala Likert [The measurement scale and the number of responses in Likert scale]. *Jurnal Ilmu Pertanian Dan Perikanan*, *2*(2), 127–133. https://doi.org/10.31227/osf.io/k7bgy

Wang, F. (2010). The necessity of grammar teaching. *English Language Teaching*, *3*(2), 78–81. https://doi.org/10.5539/elt.v3n2p78

Yang, S. C., & Chen, Y.-J. (2007). Technology-enhanced language learning: A case study. *Computers in Human Behavior*, *23*(1), 860–879. https://doi.org/10.1016/j.chb.2006.02.015

Yunanto, A. A., Prayogi, Y. R., Akbar, Z. F., Herumurti, D., & Rochimah, S. (2020). Pengembangan aplikasi pembelajaran grammar bahasa Inggris berbasis permainan [Development of a game-based English grammar learning application]. *Proceedings of the 6th Seminar Nasional Terapan Riset Inovatif (SENTRINOV)*. Directory of Scientific Proceedings SENTRINOV: Indonesian Society of Applied Sciences. https://proceeding.isas.or.id/index.php/sentrinov/article/view/550

Zientek, L., Nimon, K., & Hammack-Brown, B. (2016). Analyzing data from a pretest-posttest control group design: The importance of statistical assumptions. *European Journal of Training and Development*, *40*(8/9), 638–659. https://doi.org/10.1108/ejtd-08-2015-0066

Copyright © 2025, *authors*, e-ISSN: 2502-6747, p-ISSN: 2301-9468