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Recuperating Errors in Using Gerunds and Infinitives by Applying Duolingo Gamification

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ABSTRACT

The specific aim of this research is to recuperate Grammar Mastery (GM) in high school students who have difficulty distinguishing between gerunds and infinitives. This research examines the impact of Duolingo Gamification (DG) on students' GM of gerunds and infinitives compared to conventional learning methods. A quasi-experimental research design was used, involving 42 students of Senior High School in Malang who were divided into an experimental group receiving the treatment using Duolingo and a control group having conventional learning based on textbook. Data were collected through pre-test and post-test to evaluate the enhancement of student's grammar mastery. The two groups were determined using random sampling through lottery from intact classes, ensuring that both groups had comparable characteristic before treatment, as reflected by their similar pre-test scores. Statistical analysis including the Mann-Whitney U test revealed significant differences between the two groups of $U = 40.500$, $p = 0.000$. The experimental group obtained a higher mean post-test score ($M = 81.66$) than that of the control group ($M = 45.71$). The final results show that DG effectively recuperates GM of gerund and infinitives. Additionally, students show increased engagement and motivation when using Duolingo due to its interactive elements and direct feedback mechanisms.

Keywords: Gamification; Duolingo; Gerunds and Infinitives; Grammar Mastery

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INTRODUCTION

Grammar Mastery (GM) plays an essential role in enhancing a student's communication skills. Grammar is the foundation of a language due it is one that starts to build language. Grammar has long been defined by Brown (2001), cited in Wijaya (2024), as the system of rules governing the conventional arrangement and relationship of words in a sentence. The accuracy of grammar usage is essential for making proper sentences, expressing ideas clearly, ensuring understanding in both written and spoken communication. GM plays a vital role in composing a sentence in specific ways, referring to the way words are used, classified, and arranged together. People cannot use words unless they know how they should be put together. So, it can be restated that grammar is one of the critical components that students must understand, including in learning English.

Students need to be aware of proper grammar use, sentence structure, and ways to communicate in order to understand English. Research results of Apsari et al. (2019) indicated the students' encouragement to generate proper grammar to convey thoughts, concept, and facts in their daily speaking and writing activities. It can be said that grammar plays a significant role for students in creating proper sentences and combining sentences in a text. In addition, GM is the key in making proper sentences that students can understand. It is very crucial to create the correct sentence structure to avoid the appearance of the wrong meaning that grammar errors would affect all language skills. Without mastering grammar, it is difficult to express sentence both in speaking or in writing. This case happens when students experience confusion in placing subjects, predicates, objects and complements. English grammar is very essential for students to express students mind or students feeling in appropriate way in English. Learning grammar rules can make students construct grammatically correct sentences and use accurately gerund and infinitive. In addition, good command of English grammar is essential for developing students' productive skills.

A previous factual evidence and observation in Malang high school detected the students' difficulties in understanding gerunds and infinitives in the learning of several types or genres of the text. They frequently grappled with the challenge of distinguishing between gerund and infinitives, resulting in what can be categorized by Wijaya (2024), as malformation errors. Besides, they also still have difficulty operating technology. Several students have difficulty maintaining focus on learning in an app-based environment due to distractions from additional features in the application. For high school students, the specific use of gerunds and infinitives might be confusing. Students who are not used to English as their first language struggle with the challenge of determining when to apply gerunds and infinitives. For some students' correct understanding

and employing gerund and infinitives can be extremely difficult, especially when they are unfamiliar with the use of these verb forms, although it must be recognized that mistakes are an inevitable and essential part of the learning curve and that their occurrence is a natural aspect of the learning process. As also experienced by Wulandari et al. (2021), the students' overall linguistic competency may be impacted as a result of this situation, which may lead to errors in their spoken and written language. It can be derived that grammar plays a very important role as a basis for students' mastery of English subjects. Mastery of grammar will affect the way of thinking and creativity of students in the language learning process. This issue is particularly prevalent among high school students who often slow passivity when it comes to learning English language skills. Because of that, students become disinterested and get bored when learning English, especially in learning English grammar. Consequently, they frequently make grammatical errors and experience difficulties.

Students get complex challenge when they are studying grammar. When students study about grammar, sometimes they are complaining that the subject is very difficult. Other difficulties faced by students when learning grammar also came from various internal factors related to the students, as well as external factors such as the learning media, teaching methods, and teaching materials. It was also found in the previous observation, the media used was outdated that made it difficult for the students, who are non-native English speakers, to learn English grammar. So that, there is a way to make students enthusiastic to study grammar. One of the media that could be used is technology.

In this digital era, technology has been used in every aspect of our life. Technology in education allows people to easily access any information needed. The technological invention has been supporting the educational aspect by providing many applications or programs to support the educational process. The integration of technology in education has become the main focus to enhance the effectiveness of learning. One of the innovative approaches that has received a lot of significant attention is the application of game elements in a non-game context to increase student motivation and engagement called gamification. Gamification has increasingly become a prominent method in language learning due to the ability to boost engagement and motivation. According to Karl M. Kapp (2012), cited in Rahmani (2020) "Gamification is using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems." This definition emphasizes the importance of integrating game elements into educational settings to create more interactive and effective learning experiences. In the context of English language learning, gamified platforms like Duolingo adopt these principles by offering points, levels, and reward to support student motivation and learning outcomes. This aligns with research by Safitri & Tari (2024) which found that gamification can help increase motivation to

learn English through the use of game elements such as points, levels, and rewards.

The application of gamification in English language learning has become a topic widely researched, such as by Safitri & Tari (2024) and Zamzami (2019). Their research results show that gamification can create interactive and fun learning experiences, increase student motivation, and engagement in the learning process. Research by Mogavi et al. (2022) also shows that the use of learning apps can motivate students to be more active and enthusiastic in learning. Research by Robiatul & Rahmawati (2022) also shows about the use of gamification-based Duolingo application in the language learning process increased student effectiveness by 50% and student motivation by 20%. In addition, the use of applications such as Duolingo has been shown to be effective in enhancing students' GM.

The use of other gamification platforms has also been implemented in English language teaching by Mujadidi et al. (2023) as well as Samad (2024) to them, this approach not only increases student engagement but also facilitates a deeper understanding of the material. In addition, Prihandono et al. (2023) also admitted that technologies such as augmented reality in English learning can increase student motivation and engagement. Another research result by Hadi & Athallah (2020) also shows that the uses of platforms such as Quizizz and Kahoot in learning English can make the learning process more interactive and interesting for students. From these research results it might be inferred that the implementation of gamification in English learning, as also experienced by Rahmani (2020) can also improve 21st century skills, encourage social interaction, and provide freedom to students in learning process. Moreover, as put forward by Samad (2024) the use of application in English learning can create a more interactive and collaborative learning experience.

Mobile application is considered of much help for high school students to enhance their GM, particularly in the use of gerunds and infinitives. In light of that findings, the present research aims to further explore the effectiveness of the use of gamification, specifically the DG, in recuperating the errors in mastering certain aspects of the English language, such as the use of gerund and infinitive, as also conducted by Agustina et al. (2025). It is expected that the results of the present research can provide recommendations for educators to adopt technology and gamification in learning English grammar.

In English language learning, Duolingo app has become one of the popular platforms that adopt the concept of gamification. Shortt et al. (2023) revealed that gamification elements in Duolingo are considered positive because they provide motivation to learn to users. These features encourage users to be actively engaged in game-based learning, thereby enhancing their comprehension of grammar rules that are often perceived

difficult. In another research, Wulantari et al. (2023) highlighted that gamification elements such as points, badges, and leaderboards can significantly enhance students' grammar and vocabulary mastery, more current research by Febriyanti & Sundari (2023) shows that DG has a positive impact on enhancing student learning motivation and Ouyang et al. (2024) confirmed that Duolingo's support to enhance language perspective, engagement, and communicative confidence. Although many studies have explored the benefits of gamification in English language learning, research that specifically evaluates the effectiveness of using gamification through Duolingo in recuperating the student errors in the use of gerunds and infinitives.

The purpose of enhancing students' GM in English language learning, an application called Duolingo is proposed to be used in the present research. Duolingo is an application for language study; it is such a game application that presents the best features to make the students interested in learning grammar due to the effectiveness and efficiency of the media used. This is suggested by Ritonga et al. (2022) that with the Duolingo application installed on their mobile devices that use Android, iOS, and PC or laptop, students may practice English learning at their own convenient place and time. It is believed that Duolingo with a game platform could motivate students to continue practicing their grammar mastery. Duolingo is such an appropriate media for teachers to teach grammar, because Duolingo is comfortable application based on education which created to help students enhance their mastery in English grammar.

According to Rido & Wahyudin (2020), the alternative way for lecturers to trigger students to be active and enthusiastic about learning is to use learning application to make the class more interesting and improve their English skills, and make class activities less monotonous. DG as they suggested, provide solutions for students' problems in learning grammar. Their belief is also related to the research by Redjeki & Muhajir (2020) who state that all students enjoy learning English with Duolingo as it is enjoyment, excitement, simple, modern, and adaptable, as long as they have internet access. Students only need to own an E-mail or Facebook account to install Duolingo application to facilitate interactive language learning. The installment is done by first downloading and installing the app from Google Play Store. They are then followed by creating an account to track progress. Then, selecting the English language is done to immediately begin activities. After this step students are able to take placement tests and access themed units such as basics, tenses, food, and family. Each lesson is around 1o to 20 questions that focus on grammar, vocabulary, pronunciation, translation, and listening comprehension. When the lesson has been finished, it levels up to the next lesson and can earn crowns upon completing lessons. Duolingo is also suitable for all levels, so the students can learn English grammar from the basics. Duolingo is also described by Habibie (2020) as a language-learning program specifically

designed for mobile devices, offering a combination of visual, audio, and grammar-related questions. Furthermore, Yudha & Mandasari (2021) state as well that the use of entertaining material, media, and techniques can enhance the students to learn English effectively that Duolingo is recommended to be used in teaching learning activity.

The statement formulated in research background above underlines an important question “Does the implementation of Duolingo significantly enhance students’ grammar mastery of gerunds and infinitives before and after using Duolingo gamification?”. The novelty in present research is advocated in the extensive examination of the effectiveness of learning gerund and infinitive with gamification through Duolingo application, especially focusing on recuperating the errors in English grammar mastery among high school students in Malang.

LITERATURE REVIEW

The research on the use of gamification in language learning has been carried out a lot, one of which is by using the Duolingo application. Research by Simanjuntak et al. (2023) found that the use of DG influenced significantly on the vocabulary mastery of Nusantara Lubuk Pakam Junior High School students. Their findings show that Duolingo is capable to enhance students' ability to memorize and understand new vocabulary in English. Meanwhile, a research conducted by Halimi (2020) demonstrates significant improvement of writing skills of grade XI students of SMK Muhammadiyah Sekampung Timur after the applied of DG. This is due to the existence of repetitive exercises and an interactive learning system that allows students to better understand sentence structure in English. Meanwhile, research by Fatmawati et al. (2023) also revealed that the applied of DG has a positive impact on GM, especially in the use of simple present tense among 7th grade students of MTS Miftahul Huda. The results of this research display that the gamification applied in Duolingo is able to increase students' understanding of grammar rules that are often considered difficult.

The above previous studies have discovered the benefits of gamification in English learning, both in terms of writing skills, vocabulary mastery, and grammar comprehension. However, the present research focuses specifically on Duolingo's effect on gerund and infinitive mastery, which is still a challenge for many students at high school level. Difficulties and errors in distinguishing the use of gerund and infinitive often hinder students' fluency in writing and speaking in English.Therefore, in-depth research on gerund and infinitive is required to recuperate the errors. By considering the findings of the previous research, the present research is done to examine the effect of DG on GM of gerund and infinitive. This is due to the fact that in a high school level there are still many students struggling with this kind of non-finites. The present research uniquely

combines the perception within the context of a generally used of popular mobile application by students to contribute to develop more effective learning methods in teaching gerund and infinitive with a technology-based approach following Creswell (2018) to provide recommendations for educators in adopting technology in learning English grammar.

METHOD

In the present research, a descriptive quantitative method was used with the type of quasi-experimental research design. The research focused on the effect of DG on students' GM of gerunds and infinitives. Based on Creswell's statement (2018) population is the total collection of elements about which we wish to make some inference; population element is the entire group of individuals or cases sharing specific characteristics, which become the focus of the research. Following Creswell (2018), the population of the present research was 11th grade of a high school students at Senior High school in Malang consisting of twenty-one students in each class who were learning gerund and infinitive in the genres of text. Random sampling using a lottery was employed to choose the control group and experimental group from intact classes. This method was selected because the research took place in a fixed classroom setting where class reorganizing was not feasible and each class had to follow the existing school schedule. The selection of classes into control and experimental groups was conducted using a lottery method to ensure equal chance and avoid selection bias. This random sampling aimed to establish comparability between groups. Furthermore, both classes were taught by the same teacher and followed the same learning schedule, which helped control extraneous variables. Two classes were chosen as experimental and control group. Each group consist of 21 students. The control group receiving a textbook using method such as stated in Table 1 and experimental group receiving the treatment of using Duolingo gamification. The hypothesis is tested in order to find out the significant enhancement on students' grammar mastery of gerunds and infinitives before and after using Duolingo gamification.

Two kinds of test were used, they were pre-test and post-test as the instrument to obtain and collect the data. As mentioned at Table 1, the procedure is as follows: to measure the results of the students' grammar tests, especially gerunds and infinitives, multiple choice test was used as the type of test taken and adapted from the learning material of grammar for gerunds and inifinitives the students were learning. The research was conducted at 5 meetings for each group. In the first meeting, pre-test were done by giving students the material for each group in order to measure their preliminary knowledge about gerund and infinitive. The second until fourth meetings were the processes of giving the treatments for gerund

and infinitive topic which was Duolingo gamification for the experimental group and learning using textbook as the learning material of grammar for the control group. In the last meeting, post-test was provided for all groups.

Table 1.

Procedures of the Pre-Test, Treatment, and Post-Test for Control Group and Experimental Group

Control Group	Experimental Group
Pre-test (Grammar test in gerund and infinitive without any technique)	Pre-test (Grammar test in gerund and infinitive without any technique)
Conventional learning: grammar explanation using learning material in the textbook	Treatment (Using Duolingo: module grammar in gerund and infinitive)
Practice exercises from the textbook or provided multiple choice	Treatment (Interactive exercise on Duolingo in gerund and infinitive units)
Grammar challenges: giving exercise using traditional grammar card games	Treatment (exercise using Duolingo features)
Post-test (Grammar test in gerund and infinitive to evaluate progress)	Post-test (Grammar test in gerund and infinitive to evaluate progress)

This research analyzed the effect of DG on GM of gerunds and infinitives of the 11th grade students of a particular Senior High school in Malang by taking two sample groups, i.e., 11th grade A class with 21 students as the control group and 11th grade B class with 21 students as the experimental group. Both classes had the same English proficiency, such as they have learned about gerunds and infinitives.

The data were collected from the results of pre-test and post-test, then it is analyzed through 3 stages: (1) normality, (2) homogeneity, and (3) hypothesis testing. Independent sample t-test to analyze the data was employed. The data analysis was used to find the difference of means on students' GM in gerund and infinitive after the application of DG in the experimental group. The data of both groups obtained were calculated using SPSS aiming to find out the accuracy of the data and to be easier to apprehend.

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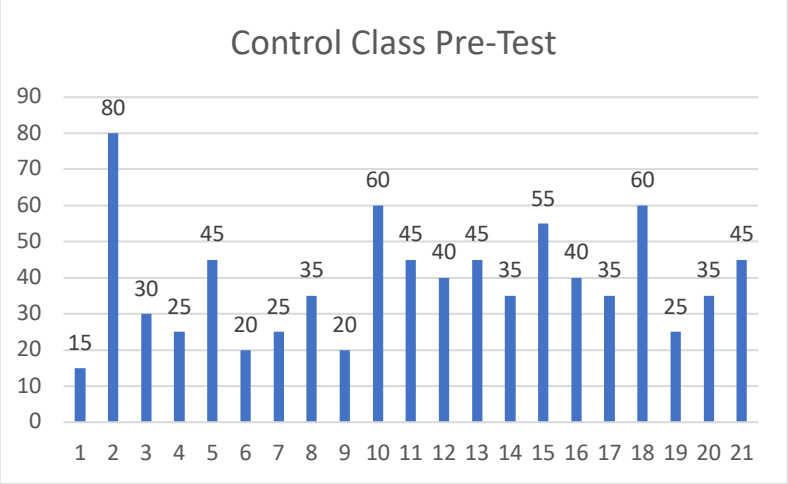
FINDINGS

The data from the research contained of pre-test and post-test results on the GM of gerunds and infinitives. The pre-test was conducted before the class was given special treatment using Duolingo learning method. The purpose of the pre-test was to determine the initial GM of gerunds and infinitive of the students in the English subject. After giving the treatment using DG learning model, a post-test was exercised to measure the result of the students' GM.

The calculation of the pre-test data for both groups was conducted before the treatment to assess the initial abilities of the students, and that of post-test data for both groups was conducted after the treatment to assess the final abilities. Data from the control group are posted in Figure 1.

Figure 1.

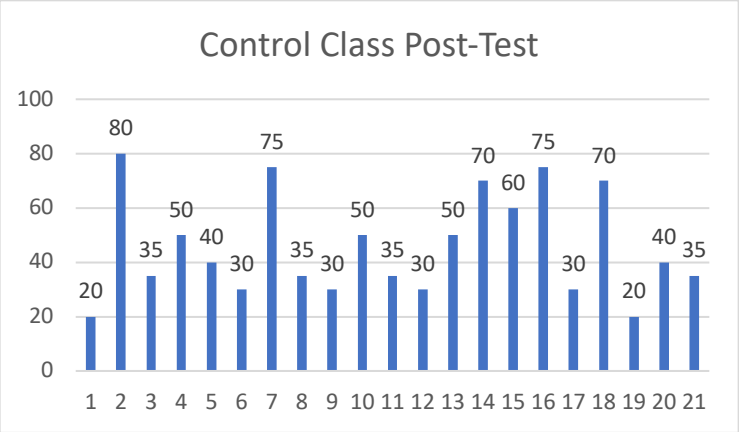
Pre-test Results of Grammar Mastery on Gerunds and Infinitives of the Control Group



From the data in Figure 1, the pre-test results of the control group can be seen the highest pre-test score, the lowest score, and the average score of 80, 15, and 38.80 consecutively. Meanwhile, from those of the post-test, the highest, the lowest, and the average scores are successively 80, 20, and 45.71.

Figure 2.

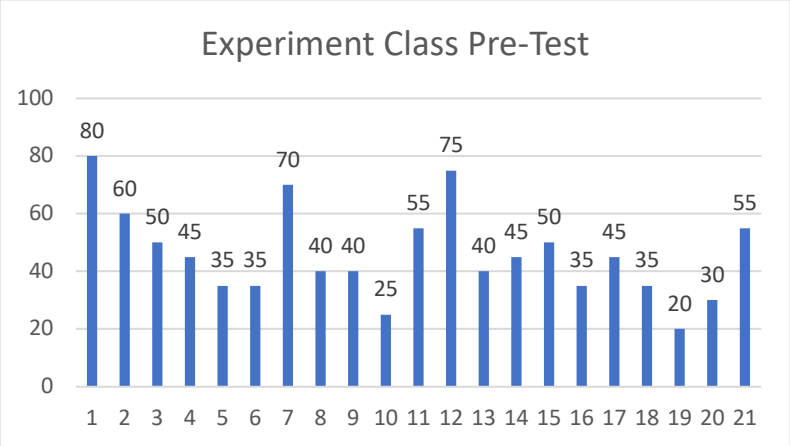
Post-test Results of Grammar Mastery on Gerunds and Infinitives of the Control Group



Meanwhile the post-test in Figure 2, the highest, the lowest, and the average scores are successively 80, 20, and 45.71.

Figure 3.

Pre-test Results of Grammar Mastery on Gerunds and Infinitives of the Experimental Group



The data in Figure 3 show the pre-test results of the experimental group, in which the highest pre-test score is 80, the lowest score is 20, and the average is 45.95.

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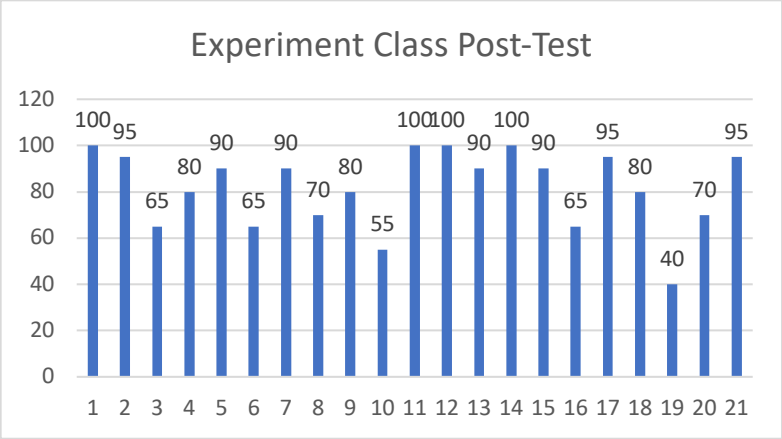
Figure 4.

Post-test Results of Grammar Mastery on Gerunds and Infinitives of the Experimental Group



From the post-test in Figure 4, the highest score of 100, the lowest of 40, and the average of 81.66 are depicted.

Moreover, the result of the descriptive analysis of the experimental group and the control group can be observed in Table 2. Based on results of the descriptive analysis put out in the above table, the average score for gerund and infinitive material in the experimental group (N=21) was higher compared to that of the control group (N=21). The average score of 63.8, the lowest score of 20 and the highest score of 100 are shown for the experimental group. Meanwhile, the average score for the control group is 42.26 with the lowest score of 15 and the highest score of 80.

Table 2.

Results of Descriptive Analysis

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Control Group	21	60	20	80	45.71	18.927	358.214
Experimental Group	21	60	40	100	81.67	16.907	285.833
Valid N (listwise)	21						

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The data then were tested for normality and homogeneity using SPSS. The Shapiro-Wilk test was applied to do the normality test with the criterion that if the significance value is <0.005, then the data are not normally distributed. The result of the calculation is presented in Table 3.

From the calculation of the normality test of the post-test data for the control group and the experimental group employing Shapiro-Wilk, it is figured out in Table 3 that the significance value for the control post-test is 0.035 and that of the experimental post-test is 0.031. In conclusion, the post-test data of both groups are not normally distributed because the significance values are less than 0.05.

Table 3.

Results of Normality Tests for Post-Test Data of Control Group and of Experimental Group of Grammar Mastery of Gerunds and Infinitives

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
CONTROL	.191	21	.045	.900	21	.035
EXPERIMENTAL	.213	21	.014	.897	21	.031

a = Lilliefors Significance Correction

After conducting the normality test, a homogeneity test was performed to find out if both groups come from populations with similar variances. From the homogeneity test as mentioned in Table 4 below, a significance value of 0.466 is obtained. According to the homogeneity test criteria, if the significance value is greater than 0.05, the data are considered homogeneous. Since the significance value is 0.466, it can be concluded that the data variance is homogeneous.

Table 4.

Results of Homogeneity Tests for Post-Test Data of Control Groupand of Experimental Group of Grammar Mastery of Gerunds and Infinitives

Test of Homogeneity of Variances
SCORE POSTTEST

Levene Statistic	df1	df2	Sig.
.542	1	40	.466

Hereinafter, as shown in Table 5, the experimental group consisting

of 21 students gives a mean rank of 30.07, which means that some of the students' scores are much higher than that of the control group scores. Meanwhile, the control group consisting of 21 students has a mean rank of 12.93, which indicates lower than that of the experimental group. The sum of rank of the experimental group, furthermore, is 631.50, conforming a higher number than than that of the control group. Meanwhile, the sum of rank of the control class is 271.50, marking lower level than that of the experimental one. All in all, this indicates that the results of the experimental group are higher than the control group.

As indicated in the statistic test output in the experimental group, it can be refered the values of Mann-Whitney U of 40.500, Wilcoxon W of 271.500, Z of -4.542, and Asymp.Sig. (2-tailed) of 0.000, which all mean <0.05. Therefore, based on the decision-making basis of the Mann-Whitney test above, it can be concluded that “Ha is accepted” that there is a significant enhancement on students’ GM of gerunds and infinitives between the control group and experimental group before and after the application of DG with a higher difference in mean rank that it can be restated a higher acquisition of grammar of gerunds and infinitives learning outcomes in the experimental group.

Table 5.

Result of Mann-Whitney Tests for Post-Test Data of Control Group and of Experimental Group of Grammar Mastery of Gerunds and Infinitives

Ranks

	GROUP	N	Mean Rank	Sum of Ranks
SCORE POSTTEST	EXPERIMENTAL	21	30.07	631.50
	CONTROL	21	12.93	271.50
	Total	42		

Test Statistics[a]

	POSTTEST SCORE
Mann-Whitney U	40.500
Wilcoxon W	271.500
Z	-4.542
Asymp. Sig. (2-tailed)	.000

a = Grouping Variable: GROUP

In conclusion, the experimental group had statistically higher post-

test scores correlated to that of the control group. Furthermore, based on the hypothesis criteria used in the present research with the significance value of 0.000<0.05, it can be concluded that the t-count value ≥ t-table value, which means Ho is rejected and Ha is accepted. Thus, it can be restated that "There is a significant enhancement on students' Grammar Mastery (GM) of gerunds and infinitives after using Duolingo Gamification (DG) of the 11th grade students of Senior High school in Malang".

DISCUSSION

The findings of this research reveal that the use of Duolingo significantly enhance students' mastery of grammar especially in gerunds and infinitives, as shown by the higher mean scores and statistical significance in the experimental group. This is in line with Simanjuntak et al. (2023) who found that the use of gamification-based Duolingo applications in the language learning process improves the ability to memorize and understand new vocabulary in English. These findings show that Duolingo is able to improve students' ability to memorize and understand current English vocabulary. In addition, research conducted by Halimi (2020) showed that students' writing skills improved significantly after using DG. Repeated exercises and an interactive learning system that makes students better understand sentence structure in English. this emphasizes the importance of balancing the use of DG and repetitive exercises to ensure learning goals are achieved without interruption. Furthermore, research by Fatmawati et al. (2023) revealed DG has a positive impact on GM, especially in the use of simple present tenses. The gamification implemented in Duolingo is able to improve students' understanding of grammar rules that are often considered difficult. These findings are theoretically supported by Kapp (2012), who stated that the gamification increases engagement and learning effectiveness through motivational elements.

The results also demonstrate a significant improvement in the GM of students in experimental group compared to the control group after the application of the gamification method through DG. To test the significance of these differences, the Mann-Whitney test was used. This suggests that there is a significant difference between the experimental group and control group. It can be observed from the value is less than 0.05. Therefore, the alternative hypothesis or Ha was accepted and the null hypothesis or Ho was rejected. This indicate that Duolingo significantly enhances students' GM, especially in gerunds and infinitives. The findings of previous research by Simanjuntak et al. (2023) was in line with this, it showed that the use of Duolingo has a significant effect on enhancing students' capacity to learn and memorize new English vocabulary. Gamification enhances memory retention by exposing students to vocabulary repeatedly, which helps students retain and use the words they have learned in a variety of situations.

Furthermore, the results of the Mann-Whitney analysis indicate that the experimental group had a higher mean rank compared to the control group (30.07 vs. 12.93), which indicates that the Duolingo-based learning method is more capable and effective compared to the conventional method in enhancing students' understanding of gerunds and infinitives. This significant difference supports the previous findings that gamification can enhance learning motivation and understanding of grammatical concepts in a more engaging and interactive way. The findings align with the research of Fatmawati et al. (2023), which found that Duolingo positively impacts GM, particularly in understanding simple present tense. The gamification features in Duolingo, such as structured repetition and engaging exercises, facilitate a deeper understanding of grammar rules that those students often find difficult. The present researches are supported by the gamified learning approach of Duolingo, which is equally effective in improving students' mastery of gerunds and infinitives. In the end, the final results of the Mann-Whitney test in the present research support conclusion that using DG as a learning platform can significantly affect students' GM that enhance their understanding about them. However, it is important to consider other factors such as active student engagement and balanced learning design in order for gamification features to remain supportive of key academic goals.

Considering the final results of this research, it can be accomplished that the use of Duolingo as a grammar learning approach, especially in understanding gerunds and infinitives, provides significant effectiveness for students. However, the implementation of gamification, educators must still combine with other teaching strategies in order to achieve optimal learning outcomes as supported by the previous research by Halimi (2020) which claimed the importance of a balance among DG and repetitive exercises in language learning.

CONCLUSION

This research examined the effectiveness of DG in enhancing students' mastery of gerunds and infinitives in English grammar. The findings exposed that gamified learning might recuperate the students' errors and difficulties in enhancing grammatical mastery, specifically in a part where students commonly struggle. In order to make learning activity more enjoyable for students, Duolingo application is useful to applied during the learning process as a new learning media. The homogenization of Duolingo in the learning process generated in increased engagement, motivation, and academic performance. It is reflected in the higher post-test scores of the experimental group compared to the control group. The statistical analysis including the Mann-Whitney U test, confirmed that the experimental group demonstrated significantly better enhancements than the control group, validating the effectiveness of gamification as an additionally learning tool.

However, difficulties such as potential distractions from non-educational game features emphasize must be implemented carefully to keep students' focus on learning goals. In summary, this research supports the use of Duolingo and similar gamification tools in teaching English grammar, particularly for complex structures like gerunds and infinitives. While gamification enhances student motivation and learning outcomes, its effect requires careful integration with conventional teaching method. Future researchers and educators should investigate long-term effects, recuperate gamification techniques, and examine their application across different linguistic skills to further improve language learning experiences.

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