



## Duolingo application: Its impact on students' grammar in the writing context

<sup>1</sup>Ari Ilsanti, <sup>2</sup>Rosi Anjarwati

<sup>1</sup>English Education Department, Faculty of Teacher Training and Education, Universitas PGRI Jombang, Jl. Pattimura III/20, 61418, Jombang, Indonesia

<sup>2</sup>English Education Department, Faculty of Teacher Training and Education, Universitas PGRI Jombang, Jl. Pattimura III/20, 61418, Jombang, Indonesia

Corresponding author: [rosi.stkipjb@gmail.com](mailto:rosi.stkipjb@gmail.com)

### ARTICLE INFO

Received 26 June 2024  
Accepted 15 July 2024  
Available online 31 July 2024

#### Keywords:

Duolingo, grammar, impact, writing

DOI: 10.26905/enjourme.v10i1.15787

#### How to cite this article (APA Style):

Ilsanti, A. & Anjarwati, R. (2025). Duolingo application: Its impact on students' grammar in the writing context. *EnJourMe (English Journal of Merdeka): Culture, Language, and Teaching of English*, 10(1) 59-68. , doi: <https://doi.org/10.26905/enjourme.v10i1.15787>

### ABSTRACT

Grammar plays a fundamental role in English language learning, serving as a key component for accurately and effectively understanding meaning in written texts. This study investigates the effectiveness of the Duolingo application in enhancing students' grammatical competence in writing recount texts at SMK Negeri 1 Gudo. Employing a quasi-experimental design, the research involved two groups: an experimental group that received treatment using Duolingo and a control group that did not. Data were collected through pre-test and post-test writing tasks focused on personal recounts. Analysis of Covariance (ANCOVA) was applied to assess the differences between the two groups after the treatment. The findings indicate a statistically significant improvement in grammatical achievement among students who utilized Duolingo compared to those in the control group, highlighting the application's potential to support grammar learning in writing contexts.



## 1. Introduction

Both teachers and students in the language teaching and learning process have felt the impact of technology development on theory and practice. For many years, there has been a close relationship and effect between language and technology (Chun et al., 2016). Thus, integrating technology into the English teaching and learning process will be beneficial. To improve and streamline the language teaching and learning process, teachers must be aware of and understand the latest technological advancements. By doing so, they can hopefully pique students' attention by developing a novel and comprehensive approach. While technology has transformed the way students engage with

language learning, its integration also offers innovative ways to enhance grammar skills essential for effective writing. Writing is one of the most important English language skills to acquire. It is crucial to education; several writing-based media have been developed to improve and sustain educational methods (Braun & Unger, 2023). Writing serves as a means to effectively convey information and achieve clear communication with the reader. In writing instruction, teachers often aim to help students articulate their ideas in accordance with a given theme or topic. The purpose of writing, therefore, extends beyond creative expression; it also involves ensuring the accuracy and clarity of the information presented (Dari et. al, 2022)

Due to the challenges that EFL students face, teaching writing is often seen as a daunting task. According to their perspective, writing is challenging due to the disparities between Bahasa Indonesian and English writing, as well as additional challenges with English grammar (H. Al-khresheh & Orak, 2021). The problem was that students struggled to express themselves clearly in written English. One of the things that students must study is structure, and mastering English grammar is crucial since, without it, they are unable to build sentences properly. Acquiring specific skills in sentence construction is a primary objective of learning English grammar.

One of the English language elements that students believe to be the most important component or basis for correctly and quickly grasping a phrase's meaning is grammar. The structure and meaning of language are determined by grammar. Furthermore, Andriani et al (2021) stated that grammar, or the set of language rules, is essential to language instruction and acquisition. English grammar is regarded as a crucial resource for successful English language learning. Humans use grammar whenever they can communicate more successfully using sentences because of the abstract set of rules that define a person's proficiency in their native tongue (Dykes, 2007). The line illustrates how people may naturally pick up the grammar of their native tongue because they use it daily. Acquiring knowledge of grammar, whether at home or in school, entails understanding its rules.

When learning grammar, students frequently encounter challenging problems. Sometimes, students struggle to use the right verbs in the right sentences. It is challenging for students to determine which verb type to utilize in phrases. They frequently gripe about verb tenses, claiming that they are difficult to master and that this makes them drowsy and bored in class (Ajaj, 2022; Al-Mekhlafi & Nagaratnam, 2011; Kesaulya et al., 2024). Nonetheless, there are ways to make grammar learning fun, and one of them is by utilizing engaging media. Students in this decade are accustomed to using electronics and gadgets. Responding to this phenomenon, several studies are utilizing online applications as study tools, which adds excitement to the learning process and inspires students' motivation and enthusiasm. The online application that was produced is known as the gamification application. To transform traditional teacher-centered classrooms into student-centered ones, games played a crucial role. This software offers additional guidance to help teachers and students advance their knowledge. English can be learned through a variety of games (Wichadee & Pattanapichet, 2018).

According to Wichadee & Pattanapichet (2018), several gamification tools are commonly utilized, including ClassDojo, Edmodo, Socrative, Duolingo, and others. The learning process in the classroom can be improved and motivated by using specific games and software. Duolingo, as one of the gamification tools, is a program created in November 2011 by Luis Von Ahn and Severin Hacker. It offers multiple language learning options for both English speakers and non-speakers. Nushi &

Eqbali (2017) stated that Duolingo is the most downloaded app in the education category on Google Play and is available for free on both the web and mobile devices. It has several benefits, such as increasing the students' activeness since Duolingo incorporates gamification aspects in learning, supporting students' practice to improve their vocabulary, and it can be accessed anywhere and everywhere (Munday, 2015).

Duolingo has been used in several studies, for example studies by Hernadijaya (2020) and Purwanto & Syafryadin (2023) who utilized Duolingo in teaching vocabulary. Hernadijaya (2020) found that Duolingo can enhance the students' English vocabulary. In addition, Purwanto & Syafryadin (2023) revealed that students have a positive perception toward the use of Duolingo in learning English vocabulary. Some earlier studies also implemented Duolingo in Grammar teaching and learning process, like those done by Syahputra (2019) who found that the Duolingo application can reduce grammatical errors in writing. In addition, Fatmawati, et al (2023) has revealed that Duolingo has a significant effect on the students' grammar mastery. Recently, Fanni & Maharani (2024) have highlighted the students' perceptions regarding the use of Duolingo to enhance grammar learning.

Despite the growing popularity of Duolingo as a language learning platform, several research gaps remain in its application for teaching grammar, particularly in formal educational settings. Most existing studies focus on vocabulary acquisition and learner engagement, while the platform's effectiveness in developing a deep understanding of grammatical rules is less explored. In conclusion, this study reaffirms the crucial role of grammar in writing, emphasizing that grammatical accuracy is not merely a technical skill, but a foundational element of effective written communication. As highlighted throughout this research, many students continue to struggle with applying grammar correctly in their writing, often facing issues such as tense consistency, sentence structure, and subject-verb agreement. These persistent challenges underscore the need for practical, engaging tools to support grammar acquisition. By investigating the impact of Duolingo as a digital learning platform, this study serves as a bridge between theoretical understanding of grammar instruction and real-world solutions, offering evidence that technology-assisted learning can significantly enhance students' grammatical competence in writing.

## **2. Method**

This study utilized a quasi-experimental study with a pre-test-post-test design. Creswell (2018) states that quasi-experimental design is a type of research design that “involves the use of control and experimental groups but lacks random assignment of participants to groups.” This means that while researchers apply an intervention or treatment and compare its effects, participants are not randomly assigned, which differentiates it from true experimental designs. This is because the researcher was unable to form their experimental groups. There are two groups in this experiment: the experimental group and the control group. A pre-test and a post-test were administered to both groups; the experimental group received the treatment following the pre-test, whereas the control group received no treatment.

The 357 students in the tenth grade at SMK Negeri 1 Gudo in the years 2023–2024 become the study population. For this study, the researcher employed purposive sampling, a method utilized

when the sample target possesses particular traits. Purposive sampling, according to Sugiyono (2015), is a technique for selecting a sample based on specific factors. Two classes were chosen based on the teacher’s recommendation, namely X DKV 1 as the experimental group and X DKV 2 as the control group.

The instrument used in this study is a writing test in the form of a pre-test and a post-test. The writing test required students to compose a recount text about personal experience; it had to be finished in 40 minutes. To compare the written grammar skills of students who received instruction using Duolingo with those of students who did not, pre- and post-tests were administered to both the experimental group and the control group. Before the test was used, the content validity and reliability tests were conducted. The result of students’ writing is then evaluated using an analytical scoring rubric that focuses on English grammar, covering grammar usage, sentence structure, consistency, spelling, punctuation, and grammatical form.

In collecting the data, a pre-test was administered to both the experimental and control groups at the beginning of the research. After that, the experimental group received the treatment (applying Duolingo) for three meetings, while the control group learned using PPT. At the end of the research, both groups got a post-test.

After collecting the data, the prerequisite tests such as homogeneity, normality, linearity, and homogeneity of regression slope would be conducted. It was done to ensure that the data could be analysed by using ANCOVA as a parametric statistical test. ANCOVA (Analysis of Covariance) is an appropriate research method when the objective is to compare the means of two or more groups while controlling for the effect of one or more continuous variables (called covariates). The covariate variable in this research is the pre-test score of students’ writing.

### 3. Results and discussion

#### 3.1 Results

The data obtained from the pre-test and post-test of writing from both experimental and control groups were presented as follows:

**Table 1.** Descriptive statistics of pre-test and post-test results

	N	Minimum	Maximum	Mean	Std.
Pretest_control	31	50	75	59.35	8.53
Pretest_exp	32	50	85	58.59	8.72
Posttest_control	31	65	95	77.74	6.93
Posttest_exp	32	70	95	82.34	6.34

From Table 1. It is revealed that the mean scores before treatment for the control group were 59.35 and 58.59 for the experimental group. The pretest scores indicate that the initial conditions of both groups were similar. Meanwhile, the students’ grammar mean score in writing context after the treatment was 77.74 for the control group and 82.34 for the experimental group.

Since the descriptive statistical results revealed that both groups were equal at the beginning of the stage, the pre-test score is considered a covariate variable in this research. Before doing the ANCOVA test, a prerequisite test was conducted. Firstly, the homogeneity test is presented in Table 2.

**Table 2.** Homogeneity of pre-test variance

		Lavene Statistic	df 1	df 2	Sig.
Pre-test	Based on Mean	.243	1	61	.624
	Based on Median	.510	1	61	.478
	Based on Median and with adjusted df	.510	1	54.920	.478
	Based on trimmed mean	.316	1	61	.576

As shown in Table 2, the results of the Levene's test for the pre-test scores indicate that the data is homogeneous, with all significance values exceeding 0.05. To further confirm homogeneity, Table 3 presents the Levene's test results for the post-test scores, which also demonstrate non-significant differences, thereby supporting the assumption of equal variances.

**Table 3.** Homogeneity of post-test variance

		Lavene Statistic	df 1	df 2	Sig.
Pre-test	Based on Mean	.074	1	61	.786
	Based on Median	.083	1	61	.774
	Based on Median and with adjusted df	.083	1	60.491	.774
	Based on trimmed mean	.316	1	61	.776

As the preceding table (Table 2.) demonstrates, the p-value (.576) is greater than the alpha (.05). In addition, the result of Table 3 also reveals that the p-value (.776) is more than the alpha (.05). Since the p-value is greater than  $\alpha$ , the data is regarded as homogenous.  $H^0$  is approved since the students in both classes are homogeneous and have the same traits.

The second prerequisite test conducted before the primary analysis was the normality test, which aims to determine whether the data in each group are normally distributed. The results of this test are presented in Table 4 and Table 5.

**Table 4.** Normality test of pre-test

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest_Control	.154	31	.059	.937	31	.070
Pretest_Experimental	.130	31	.193	.940	31	.085

Table 4 displays the normality test results for the pre-test scores of both the control and experimental groups, assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. As shown in the table, the Shapiro-Wilk significance values for the control group (.070) and the experimental group (.085) are both greater than the alpha level of .05, indicating that the pre-test data are normally distributed.

To confirm the normality of the post-test data, the results are presented in Table 5. Similar to the pre-test, the Shapiro-Wilk values for the control group (.084) and the experimental group (.171) exceed the .05 threshold, suggesting that the post-test scores also follow a normal distribution.

**Table 5.** Normality test of post-test

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Postest_Control	.161	31	.041	.940	31	.084
Postest_Experimental	.147	31	.088	.951	31	.171

The results of Table 4 and Table 5, as shown by the Shapiro-Wilk test, indicate that the Sig. the value of both groups in pre-test and post-test is greater than the alpha value (.05). It signifies that the data was normally distributed. Therefore, based on the Shapiro-Wilk values from both tables, it can be concluded that the data from both the pre-test and post-test are normally distributed, satisfying the normality assumption for further statistical analysis.

After the homogeneity and normality test were fulfilled, the next test is linearity. It is used to assess whether there is a substantial linear relationship between the independent and dependent variables. This test is crucial for ensuring that the linear model used in the analysis accurately represents the data, thereby ensuring the reliability and trustworthiness of the conclusions. It is presented in Table 6.

**Table 6.** Linearity

			Anova Table				
			Sum of Squares	df	Mean Square	F	Sig.
Dependent *independent	Between Groups	(combined)	1783.084	8	222.885	8.533	.000
		Linearity	1491.966	1	1491.966	57.116	.000
		Deviation from Linearity	291.118	7	41.588	1.592	.158
	Within Groups	1410.567	54	26.122			
	Total	3193.651	62				

Significant results on the relationship between the independent and dependent variables are shown in the ANOVA table. With an F-statistic of 8.533 and a p-value of .000, the “Combined” row under “Between Groups” indicates a significant difference among group averages, indicating if the independent variable has a substantial impact on the dependent variable. With a p-value of .000 and an F-statistic of 57.116, the “Linearity” row further demonstrates a strong linear relationship between the variables. The relationship can be appropriately defined as linear; nevertheless, as the “Deviation from Linearity” row shows, departures from this linear trend are not statistically significant ( $p = 0.158$ ). The variability within certain groups that the independent variable cannot explain is

shown in the "Within Groups" variance. The findings demonstrate a strong linear correlation between the variables, with no meaningful deviations from linearity.

The last prerequisite test is called the homogeneity of regression slope. It is used to make sure that the relationship between variables in a set of data remains consistent across different groups or circumstances. It suggests that the relationship between the result and prediction variables is constant, which is essential for reliable results and precise forecasts. Breaking this premise may result in imprecise results and reduced model effectiveness. It is described in Table 7.

**Table 7.** Homogeneity of Regression Slope

Based on the result of Table 7., pre-test performance ( $F=27.686$ ,  $p<.001$ )  $F = 27.686$ ,  $p <.001$ )

Test of Between-Subjects Effects						
Dependent Variable: Posttest						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	
Corrected Model	1238.775 <sup>a</sup>	3	412.925	13.642	.000	
Intercept	4173.078	1	4173.078	137.870	.000	
Class	105.342	1	105.342	3.480	.067	
Pre_test	837.995	1	837.995	27.686	.000	
Class*Pre_test	54.726	1	54.726	1.808	.184	
Error	1785.828	59	30.268			
Total	407025.000	63				
Corrected Total	3024.603	62				

a. R Squared = .410 (Adjusted R Square =.380)

and class ( $F=3.480$ ,  $p=.067$ ,  $F= 3.480$ ,  $p =.067$ ) had substantial major impacts on post-test scores. Nevertheless, there was no statistically significant interaction between class and pre-test performance ( $F = 1.808$ ,  $p = .184$ ). The association between pre-test performance and post-test scores is consistent throughout the various class groups, according to this result, which supports the hypothesis of homogeneity of regression slopes.

After adjusting for participants' initial scores, an ANCOVA was performed to see whether the independent variable had a significant impact on the dependent variable. Table 8. below formulates the results.

**Table 8** Analysis of Covariance Tests of Between-Subjects Effects Dependent Variable: Post-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	
Corrected Model	1204.902 <sup>a</sup>	2	602.451	18.176	.000	
Intercept	9427.979	1	9427.979	284.439	.000	
Pretest	895.122	1	895.122	27.006	.000	
Instructional media	304.690	1	304.690	9.192	.004	
Error	1988.749	60	33.146			
Total	403200.000	63				
Corrected Total	3193.651	62				

a. R Squared = ,377 (Adjusted R Squared = ,357)

As can be seen from the Table 2, the pre-test had a significant impact on the post-test scores by  $F(27.006)$  and  $P=0.000$ , indicating that the participants' pre-test scores influenced their post-test scores, and the type of intervention (the group) also had a significant impact on the post-test scores. With  $F(9.192)$  and  $p = 0.004$ , it was determined that there were significant differences in outcomes between the groups following the intervention. The overall model, which includes both the Pretest and the Group, was significant,  $F(18.176)$  and  $p = 0.000$ . The R-squared value of 0.377 showed that the model could account for 37.7% of the variation in the post-test scores.

### 3.2 Discussion

Both the pre-test and post-test results showed that the experimental class's writing grammar had improved. Nonetheless, the majority of students reported using grammar, consistency, tense, subject-verb agreement, spelling, and punctuation more frequently, particularly when it came to past-tense verbs. Students need to be able to write using the proper pronouns, subject-verb agreement, and tenses in grammar. No needless shifts in perspective or tense are present. Some of these students' results demonstrate that using the Duolingo program can help students improve their grammar. This finding is consistent with Fann & Maharani (2024) assertion that the Duolingo program could improve students' grammatical skills based on essay grammar tests.

Using Duolingo, students can become familiar with a new medium that makes them more engaged and enthusiastic about learning verbs and does not make them bored or feel that learning verbs is difficult. This result is in line with the study of Chun et al (2016) The gamification system in Duolingo helps students decide which verbs need to be used to write a good recount text. Students can also enjoy learning a language while feeling like they're playing games.

Researchers employed the Duolingo for School feature in this research. To track student achievement, researchers specifically urged students to log in using the provided link. Students who score points and those who fail to complete the Duolingo application tasks will be identified. Increased engagement, accessibility, and a learning pace catered to each student's requirements are just a few advantages for both educators and learners. The gamified learning experience is enjoyable for pupils, and teachers find it to be a helpful supplemental tool. This study agrees with the findings of Fatmawati et al. (2023). To ensure the Duolingo program was used appropriately, teachers and students collaborated throughout the learning process in this study.

The mastery of proper grammar usage, precise punctuation, exact spelling, and efficient sentence structure are all included in the notable gain in grammar achievement. These skills all help to make the written text more coherent and clear overall. This study supports the findings of a prior study by Nushi & Iqbali (2017) and Syahputra (2019), which concluded that Duolingo is a useful tool for helping students become more proficient writers.

The outcomes are consistent with Munday's (2015) theory. According to the study, using Duolingo can help students become more active, at ease, and conscious during the learning process. It can also improve students' understanding of grammatical skills when writing past-tense verbs. At SMK Negeri 1 Gudo, the Duolingo program has greatly improved pupils' understanding of grammatical competency in past tense verbs. The results of this study corroborate previous investigations

into the efficacy of the Duolingo app. The researchers examined the grammar in students' writing outcomes, focusing on past tense verbs, which differs from earlier studies. Research on this subject is therefore seen as novel and crucial to education.

#### 4. Conclusion

In conclusion, the research on the impact of Duolingo on students' grammar in writing context reveals that the use of Duolingo significantly enhances students' grammatical accuracy in writing. The findings suggest that consistent engagement with Duolingo's interactive and adaptive exercises facilitates learners' internalization of grammatical rules, resulting in noticeable improvements in sentence structure, verb usage, and overall coherence in their written work. These results suggest that integrating Duolingo into language learning curricula can be an effective strategy for supporting grammar development, particularly in writing tasks. Therefore, educators may consider leveraging such digital tools to supplement traditional grammar instruction and promote more autonomous, engaging learning experiences.

It is suggested that educators consider integrating Duolingo as a supplementary tool in grammar instruction. The findings indicate that Duolingo's interactive and gamified learning approach can positively influence students' understanding and application of grammar rules in writing. Therefore, to enhance students' grammatical accuracy and engagement in writing tasks, language instructors may incorporate regular, targeted Duolingo exercises alongside traditional classroom instruction. Further research could investigate the long-term effects and compare outcomes with those of other digital learning platforms to validate and extend these findings.

#### 5. References

- Ajaj, I. E. (2022). Investigating the difficulties of learning English Grammar and suggested methods to overcome them. *Journal of Tikrit University for Humanities*, 29(6), 45–58. <https://doi.org/10.25130/jtuh.29.6.2022.24>
- Al-Mekhlafi, A. M., & Nagaratnam, R. P. (2011). Difficulties in teaching and learning grammar in an EFL context. *International Journal of Instruction*, 4(2), 69–92.
- 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>
- Braun, R., & Unger, J. W. (2023). Diffuse consecration: How modes of authorship shape literary prizes. *Poetics*, 101, 101825. <https://doi.org/10.1016/j.poetic.2023.101825>
- Chun, D. S., Kern, R., & Smith, B. (2016). Technology in language use, language, language teaching, and language learning. *100(1)*, 64–80.
- Creswell, J. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE.

- Dari, R. W., Akhriyah, S., Rahmawati, E., Nugroho, H. A., & Martiana, T. D. (2023). Student's ability in writing annotated bibliography: Teaching critical writing. *EnJourMe (English Journal of Merdeka) : Culture, Language, and Teaching of English*, 7(2), 264–274. <https://doi.org/10.26905/enjourme.v7i2.9034>
- Dykes, B. (2007). *Grammar for everyone*.
- Fanni, S. M., & Maharani, M. M. (2024). Students' perceptions regarding the use of Duolingo to enhance grammar learning. *Indonesian Journal of Education and Pedagogy*, 1(3), 185–193. <https://doi.org/10.61251/ijoep.v1i3.98>
- Fatmawati, I., Sudirman, A., & Munawaroh, T. (2023). The effect of using Duolingo application towards students' grammar mastery in simple present tense. *Journal of English Pedagogy and Applied Linguistics*, 3(2), 77–85.
- Al-khresheh, M., & Orak, S. D. (2021). The place of grammar instruction in the 21st Century: Exploring global perspectives of English teachers towards the role of teaching grammar in EFL/ESL classrooms. *World Journal of English Language*, 11(1), 9. <https://doi.org/10.5430/wjel.v11n1p9>
- Hernadijaya, N. S. (2020). The Use of Duolingo Application to Enhance English Vocabulary of Junior High School. *RETAIN : Journal of Research in English Language Teaching*, 8(2). Retrieved from <https://ejournal.unesa.ac.id/index.php/retain/article/view/33055>
- Kesaulya, G., Lekawael, R., & Rijoly, H. (2024). Exploring students' difficulties and strategies in learning English grammar at English Education Study Program. *Pattimura Excellent Journal of Language and Culture*, 4(2), 97–110.
- Munday, P. (2015). The case for using Duolingo as part of the language classroom experience. *RIED. Revista Iberoamericana de Educación a Distancia*, 19(1). <https://doi.org/10.5944/ried.19.1.14581>
- Nushi, M., & Eqbali, M. H. (2017). Duolingo: A mobile application to assist second language learning. *Teaching English with Technology*, 17(1), 89–98.
- Purwanto, A. A. & Syafryadin. (2023). Students' perception on using duolingo for learning English vocabulary. *JET (Journal of English Teaching)*, 9(1). <https://doi.org/10.33541/jet.v9i1.4506>
- Sugiyono. (2015). *Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Syahputra, M. (2019). Duolingo gamification: Does it reduce students' grammatical errors in writing?
- Wichadee, S., & Pattanapichet, F. (2018). Enhancement of performance and motivation through application of digital games in an English Language class. *Teaching English with Technology*, 18(1), 77–92.