

Digital Writing Assistance in EFL Contexts: A Study on Grammarly Use by Indonesian Students

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Abstract

This study investigates the efficacy of Grammarly, an automated writing assistance tool, in enhancing the writing proficiency of EFL students at UINSI Samarinda. Fifty third-semester students participated and were divided into two groups: an experimental group receiving instruction supplemented by Grammarly and a control group following conventional writing instruction without technological support. The analysis employed a quasi-experimental design comparing growth scores, defined as the difference between pre-test and post-test scores for each student. Both groups showed normal distribution (Shapiro-Wilk, $p > 0.05$) and homogeneity of variances for pre- and post-test scores (Levene's test, $p > 0.05$), except for the improvement scores, which violated homogeneity ($p = 0.000$). The Grammarly-assisted group improved significantly more (pre-test $M = 59.48$, post-test $M = 84.16$) than the control group (pre-test $M = 56.28$, post-test $M = 65.28$), with a mean improvement difference of 15.68 points ($t = -9.847$, $p = 0.000$). The effect size was small to moderate (Cohen's $d \approx 0.34$). These findings suggest that Grammarly provides effective support in developing EFL writing skills and underscore the need for further research on student perceptions of digital writing tools in language education.

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INTRODUCTION

The incorporation of digital tools into academic writing has gained considerable importance in today's higher education context, especially among students of English as a Foreign Language, who often face unique challenges in mastering the complexities of academic writing in a non-native language. Among these tools, Grammarly, as a commonly adopted automated writing support application, has been widely used by students and educators alike to elevate the quality of written work by providing immediate, accessible feedback on grammar, punctuation, spelling, and style. This study looks at how well Grammarly helps Indonesian college EFL students increase their abilities to write more accurately and effectively, considering the tool's impact on their overall writing proficiency. It looks at both how the students themselves felt about the tool in terms of usability and usefulness and how much better their writing got as measured by objective improvements in writing performance.

Grammarly functions as an Artificial Intelligence (AI)-powered writing assistant, offering real-time grammatical, punctuation, and spell-checking services, as well as stylistic suggestions that significantly contribute to the clarity and coherence of written communication. Research by Prasetya and Raharjo (2023), Inayah and Apoko (2024), and Fitriana and Nurazni (2022) has demonstrated that Grammarly effectively assists students in identifying and correcting errors, which subsequently enhances their confidence in writing. Furthermore, the tool's user-friendly interface promotes increased student engagement with their writing process. According to Dewi (2023) and Puri and Setiamunadi (2023), students widely recognize Grammarly as a valuable resource that improves their comprehension of grammar rules and overall writing quality.

Recent studies underscore the role Grammarly plays in correcting errors and fostering a learning environment that benefits EFL students. For instance, Fitria (2022) noted that students found Grammarly particularly effective for error identification, and many reported improvements in their writing skills due to the application's feedback mechanisms. Along similar lines, Puri & Setiamunadi (2023) highlighted how Grammarly serves as an online assessment tool that effectively points out both grammatical and mechanical errors, helping students refine their writing. These types of digital tools are especially crucial in light of the challenges faced by Indonesian university students learning English as a foreign language, who often encounter difficulties and confusion related to grammar rules and writing conventions, as noted by Ummah and Bisriyah (2022) and Setyani et al. (2023).

Moreover, feedback mechanisms provided by Grammarly enable students to learn from their mistakes, which is crucial for language acquisition. As reported by Resiana et al. (2024), students using Grammarly showed increased motivation to learn grammar based on the personalized feedback received, leading to an improvement in subsequent writing tasks (Resiana et al., 2024). This matches Khan et al. (2024) findings that the use of digital platforms such as Grammarly fosters more favorable student perceptions and attitudes toward the writing process. However, it is essential to acknowledge that while Grammarly presents significant advantages, it is not without limitations. A study by Arisandi and Sudarajat (2023) points out that the tool's capabilities can sometimes fall short, particularly when dealing with complex grammatical structures or context-specific nuances. Moreover, A study by Fitriana and Nurazni (2022) shows that issues such as over-reliance on automated feedback and potential inaccuracies in suggestions are prevalent concerns among educators and students alike. This underscores the need for educational institutions to adopt a balanced approach when integrating Grammarly and other similar tools into their writing curriculum, so that they serve as a supplement to, not a replacement for, conventional instructional approaches.

While previous research, including studies by Fitria (2022) and Ummah and Bisriyah (2022), has acknowledged Grammarly as a useful tool for enhancing EFL students' writing, much of this work has been limited to qualitative descriptions or student perception surveys. There is a noticeable gap in experimental studies that rigorously measure the tool's actual effectiveness in improving writing performance through controlled, data-driven approaches. In particular, research employing quasi-experimental designs to assess learning outcomes in Indonesian tertiary education remains scarce. This study aims to fill that void by presenting empirical evidence based on statistical analysis of pre-test and post-test scores, thus offering a clearer picture of Grammarly's pedagogical impact beyond subjective impressions.

This study examines the efficacy of Grammarly in enhancing the writing abilities of Indonesian college students learning English as a Foreign Language. It contributes to the ongoing discourse over the employment of digital tools in language education by examining students' perceptions and the measurable outcomes. It also talks about the pros and cons of these kinds of tools for helping students improve their writing.. Automated writing feedback systems like Grammarly should be considered complementary to traditional writing instruction. Further studies are encouraged to investigate the sustained impact of these technologies on learner independence and their critical understanding of language use.

METHODS

This study assessed the effectiveness of Grammarly in improving proficiency in writing among undergraduate EFL students using a quantitative methodology within a quasi-experimental design. The research comprised 50 third-semester students, all of whom were registered in the Basic English Writing course within the English Education programme at Universitas Islam Negeri Samarinda (UINSI). The participants were chosen through purposive sample methods, ensuring that they possessed fundamental abilities in English writing and had adequate exposure to digital tools, rendering them appropriate for interaction with Grammarly as part of the intervention.

The research participants were solely third-semester students, who were expected to possess fundamental skills in English writing. This decision aimed to assess the effects of Grammarly intervention on a group that had received initial writing instruction and was preparing to advance their skills. Out of the 50 students, 25 were assigned to the experimental group, which utilized Grammarly in their writing tasks, while the control group of 25 students engaged in traditional writing methods without the aid of digital tools.

The experiment took place over one academic semester. The experimental group received access to Grammarly and was instructed to incorporate the application into their writing assignments throughout the course. The students in the experimental group were required to submit drafts that were then analyzed using Grammarly, allowing them to receive immediate feedback on grammar, spelling, punctuation, and stylistic improvements before submitting their final versions.

In contrast, the control group proceeded with traditional writing instruction and did not incorporate the use of Grammarly into their learning process. They received feedback based on peer reviews and instructor comments, adhering to traditional educational practices. This approach involved collaborative critique and direct teacher guidance, which are commonly employed methods in conventional writing pedagogy. This design ensured that any observable changes in writing proficiency could be attributed to the intervention with Grammarly rather than external factors. By maintaining consistent instructional conditions for the control group, the study effectively isolated the impact of Grammarly as the primary variable influencing writing improvement.

The primary data collection method for this research involved evaluating students' writing samples. Each participant was required to submit two writing tasks, one completed before the implementation of the intervention (pre-test) and another produced following the completion of the semester-long treatment (post-test). The writing samples were assessed using a rubric that included criteria such

as grammatical accuracy, coherence and cohesion, vocabulary usage, and overall writing quality. The rubric employed an analytical scoring system, assigning specific point values to each criterion to provide detailed and quantitative measures of writing proficiency, ensuring the reliability and validity of the assessment (Prasetya & Raharjo, 2023; Inayah & Apoko, 2024).

To evaluate the improvement scores from pre-test to post-test, various statistical methods were devised and executed to ascertain the significance of any detected differences. Specifically, the Shapiro-Wilk test was used as a first step to assess the normality of the difference scores (calculated as post-test scores minus pre-test scores) for both the control and experimental groups. This ensured that the distribution of the improvement scores met the assumptions necessary for parametric testing. Subsequently, Levene's test was employed to ascertain whether the variances between the two groups were equivalent. Due to the violation of the premise of homogeneity of variances, Welch's t-test, an adjusted version of the independent t-test designed for unequal variances, was used for the analysis. This method made it possible to accurately compare the mean changes and figure out how well Grammarly helped students improve their writing.

RESULTS AND DISCUSSION

RESULTS

The test for Shapiro-Wilk normality was implemented to look at how the improvement numbers were spread out both in the experimental group and the control group. The data in each group followed a pattern of normality, as shown by p-values that were higher than the 0.05 level. The control group demonstrated a Shapiro-Wilk statistic of 0.931 ($p = 0.093$), whereas the experimental group presented a statistic of 0.944 ($p = 0.186$), indicating that the distribution of improvement scores in both groups was normal and thereby validating the normalcy assumption, which warranted the use of parametric statistical methods in the following investigations.

Table 1. Tests of Normality

		Shapiro-Wilk		
		Statistic	df	Sig.
Improvement	Control	.931	25	.093
	Experimental	.944	25	.186

a. Lilliefors Significance Correction

Then, table 2 below presents the results of the Levene's Test for Homogeneity of Variance, which is used to assess whether the variances of the two groups being compared are equal, a key assumption for parametric tests like the independent samples t-test. The table shows the test statistics under four different

methods: based on mean, median, median with adjusted degrees of freedom (df), and trimmed mean. Across all methods, the Levene Statistic is high (ranging from 31.385 to 33.371) and the significance value (Sig.) is .000, this is less than the usually used 0.05 level of alpha, demonstrating that the assumption of homogeneity of variances was not satisfied ($p = 0.000$).

Table 2. Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Improvement	Based on Mean	33.371	1	48	.000
	Based on Median	31.385	1	48	.000
	Based on Median and with adjusted df	31.385	1	34.821	.000
	Based on trimmed mean	33.227	1	48	.000

The data that was supplied makes it abundantly evident that the assumption of homogeneity of variances was not satisfied. The statistical significance of Levene's Test result was evident ($p = 0.000$). Therefore, an alternate method that takes variance discrepancies into account, Welch's t-test, was used for contrasting the improvement ratings of the experimental group to those of the control group.

Table 3. Independent Samples Test

		Improvement	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	33.371	
	Sig.	.000	
t-test for Equality of Means	t	-9.847	-9.847
	df	48	29.489
	Sig. (2-tailed)	.000	.000
	Mean Difference	-15.680	-15.680
	Std. Error Difference	1.592	1.592
	95% Confidence Interval of the Difference	Lower	-18.882
		Upper	-12.478

The analysis revealed a statistically significant disparity in trends in comparison to the comparator group and the group performing the experiment ($t = -9.847$, $df = 29.489$, $p = 0.000$), indicating that the utilization of Grammarly had a substantial impact regarding enhancing the written work abilities of the students. A mean difference of -15.680 from the control group indicates that participants who used Grammarly saw significantly better improvements in their writing

proficiency than those who were in the control group, with this finding further supported by a 95% confidence interval for the mean difference ranging from -18.934 to -12.426, which reinforces the trust in the consistency and validity of these data.

DISCUSSION

This research investigated the effectiveness of Grammarly, a computerized writing evaluation application, in boosting the writing proficiency of Indonesian undergraduate learners learning English as a Foreign Language (EFL). Statistical analyses demonstrated that the improvement scores of the group utilizing Grammarly significantly exceeded those of the group taught through traditional methods, thereby confirming that incorporating technological tools can greatly advance the development of writing skills.

The Shapiro-Wilk test results validated that the data in both groups exhibited a normal distribution, hence substantiating the application of parametric statistical approaches. This result is consistent with prior research underscoring the crucial role of verifying normality to ensure valid statistical interpretations in educational investigations (Song & Song, 2023). Furthermore, the results of Levene's evaluation for similar variances demonstrated that While the scores on the previous and subsequent tests aligned with the homogeneity assumption, the scores on the improvement assessment did not conform to this assumption. As a result, Welch's t-test was applied to accurately handle the unequal variances in comparing group means. Consequently, Welch's t-test was suitably employed, since it adeptly addresses uneven variances in the comparison of group means. The observed negative mean difference of -15.680 in writing proficiency strongly supports the claim that Grammarly provided significant benefits to its users, according to previous research, which has demonstrated that automated feedback technology greatly enhances language acquisition outcomes (Khojasteh et al., 2021; Coloquit et al., 2020).

When it comes to assisting students of the EFL to further develop their ability to write, the outcomes of this study align with prior findings that highlight the diverse benefits of AWE technologies in both lower-order (e.g., grammar, vocabulary) and higher-order writing skills (e.g., synthesis, organization). For instance, Alshehri (2024) emphasized the multifaceted advantages of incorporating AWE in EFL writing classes, observing significant progress in both fundamental aspects such as grammar and vocabulary, as well as more complex skills like synthesis and organization. Additionally, Miranty et al. (2023), and Ginting & Fithriani (2022) found that undergraduate EFL students reacted positively to AWE tools, noting their perception that AWE improved various

aspects of their writing skills. In the same way, Binangbang (2020) demonstrated that using new ways of teaching, like the Substitution, Augmentation, Modification, and Redefinition structure, makes students much better at writing by getting them more deeply involved in their work. The consistent evidence from these studies reinforces the position that AWE tools, including Grammarly, are crucial components of contemporary EFL education, supporting more effective and meaningful learning experiences.

This study fills a notable void in the literature by investigating the specific effects of automated writing tools on students of EFL in Indonesia. Numerous studies have assessed the efficacy of several writing aid technologies worldwide., here remains a scarcity of research focused on localized contexts such as Indonesia. Past research indicates that while EFL learners can gain significantly from technology-enhanced learning, the context and type of technology employed greatly influence learning outcomes (Roy & Swargiary, 2024; , (Wu & Schunn, 2020;). Particularly, the integration of peer feedback mechanisms alongside technology has been shown to enhance writing benefits in various educational settings, thus indicating the possibility of similar outcomes in higher education institutions (Wu & Schunn, 2020; , Halaweh, 2023). The current research suggests that Grammarly specifically enhances writer engagement and consequently improves writing performance among students.

While the findings of this study are promising, they also underscore the necessity for deeper investigation into the underlying processes through which technological tools like Grammarly influence learning outcomes. Previous research suggests that active student engagement with writing tasks, supported by such tools, plays a key role in improving writing skills (Coloquit et al., 2020). On the other hand, additional research is crucial in order to ascertain the means by which these short-term improvements can be maintained and transformed into long-term writing proficiency. Incorporating qualitative approaches, such as interviews or focus group discussions, would provide valuable perspectives on students' attitudes, experiences, and patterns of Grammarly usage.

Moreover, the study's findings highlight the crucial role of incorporating technology into teaching strategies to foster a more engaging and productive learning atmosphere. The demonstrated benefits of Grammarly suggest that educators should reconsider traditional instructional approaches and actively integrate technology-enhanced learning as a core component of EFL education. Nonetheless, it is imperative for teachers to recognize the possible disadvantages linked to an overreliance on automated tools. Recent studies indicate that excessive reliance on such technology may impede the cultivation of critical thinking abilities and diminish opportunities for personal reflection in the process

of writing (Dergaa et al., 2023). Additionally, Alharbi Alharbi (2023) emphasizes the necessity for second language learners and instructors to remain vigilant regarding the capabilities and limitations of artificial intelligence systems in writing assistance. Through an appropriate balance, educators could maximize the effectiveness of these technological resources while still achieving fundamental educational objectives. Furthermore, Karagül and Şeker Karagül & Şeker (2021) advocate for a strategy-based instruction approach that equips learners not only with writing skills but also with self-regulated learning strategies that can harmoniously blend technological tools with critical thinking development.

The findings of this study provide evidence that technology-enhanced writing tools, in particular Grammarly, exert a considerable influence on the professional writing proficiency of Indonesian undergraduate learners studying EFL. The integration of Grammarly in writing education enhanced both the precision and coherence of compositions while also encouraging increased student engagement in self-editing and revision activities. These findings highlight the valuable role that such digital applications can play in supplementing conventional teaching methods by offering immediate, tailored feedback that encourages learner independence and strengthens adherence to writing standards in real time. There is already a lot of research on educational technology and learning a second language. This study adds to that research by using data from a specific local setting. Moreover, it facilitates subsequent investigations to explore further into the intricate relationships among technology integration, learner motivation, instructional strategies, and writing development across diverse educational environments. Subsequent investigations might examine the long-term effects of such tools, track changes in student perceptions over extended periods, or conduct comparative evaluations of different digital writing platforms. These findings highlight the essential necessity of integrating novel methods in EFL instruction to adequately meet the changing requirements of 21st-century learners.

CONCLUSION

Finally, this study proves Grammarly is an effective automatic writing grader for Indonesian undergraduate EFL students. Grammarly-using and control groups had significantly different writing skills, which demonstrates that the technology can accelerate language learning. Instead of emphasizing methods, the conclusion centers on implications; however, for transparency, it should be noted that study statistical testing included Shapiro-Wilk, Levene, and Welch's t-tests. These statistical assessments highlight the role of data-driven evidence in supporting the integration of technology in language teaching.

Grammarly improved grammar, punctuation, and higher-level cognitive processes that help organize and articulate ideas. This supports a prior study advocating for tech-based learning tools in EFL classes. This study reinforces how automated writing evaluation tools increase digital literacy and language abilities. This underscores their utility within contemporary educational paradigms. However, despite demonstrating Grammarly's effectiveness, this study also identifies key areas where further research is necessary. In particular, studies need to be done on how students feel about using these kinds of tools and how involved they are in the writing process as a whole. Learning more about what students go through can help teachers come up with better ways to use technology to help students learn more and stay motivated.

The results of this research reaffirm that utilizing Grammarly in writing classes for Indonesian university students acquiring English as an extra language helps teachers and students improve their writing. Technology makes language learning easier. Grammarly and other modern technologies can assist EFL students in achieving their goals and preparing for a globalized future.

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