

Pre-Task Planning Mediated with Ginger Writer Software to Enhance EFL Tertiary Students' Writing Performance

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ABSTRACT

Background and Objectives: The method of teaching writing has transformed from a product-oriented to a process-oriented approach, emphasizing the need for planning, producing, revising, and editing to enhance students' writing performance. Although pre-task planning (PTP) enhances organization, content, and fluency, previous research has indicated its minimal impact on grammatical accuracy. Additionally, online tools like Ginger Writer software improve vocabulary use and resolve mechanics and grammar problems. However, combining the advantages of PTP and Ginger Writer software in the writing classroom is expected to boost students' writing performance across all aspects of writing. There is still limited research integrating both approaches. Therefore, this study aimed to investigate the effect of combining PTP and Ginger Writer software on tertiary students' writing performance and its specific aspects in the Indonesian EFL (English as a Foreign Language) context.

Methodology: This study employed a quasi-experimental research design with a non-equivalent pre-test and post-test structure involving 42 students from the English department at a private university in Indonesia. The experimental group received instruction combining PTP and Ginger Writer software, while the control group followed the conventional process writing approach using an electronic dictionary without AI-assisted feedback. The data were analyzed by using one-way ANCOVA to control for prior writing ability as a covariate, thereby adjusting for baseline differences between the groups.

Results: The ANCOVA results revealed a significant difference in overall writing performance between the experimental and control groups after controlling for prior writing ability. The combination of PTP and Ginger Writer software produced a large effect, indicating substantial improvement in students' writing performance. Further analysis of each aspect of writing showed significant improvement in organization and mechanics, with

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moderate-to-large effect sizes. However, there was no significant difference in content, vocabulary, and grammar. Overall, integrating PTP with Ginger Writer software enhanced writing quality, particularly in organization and mechanics.

Discussions: The findings revealed that combining PTP and Ginger Writer software significantly enhanced students' overall writing performance, with a large effect size. This supports earlier studies showing the benefits of PTP for organization and Ginger Writer software's effectiveness in improving mechanics. Further analysis indicated that the combination had the most significant effects on organization, while its impact on mechanics remained moderate. These results suggest that using PTP with Ginger Writer software fosters more organized and technically sound writing among tertiary EFL learners, particularly when technology is meaningfully integrated into process-oriented writing instruction.

Conclusions: This study found that the integration of PTP and Ginger Writer software significantly improved tertiary students' writing performance. The combination positively influenced two aspects of writing: organization and mechanics while content, vocabulary, and grammar showed no significant improvement. These findings highlight that PTP helps students generate and organize ideas, whereas Ginger Writer software supports writing mechanics. Therefore, English teachers are encouraged to incorporate both strategies to enhance students' overall writing quality. Future studies are recommended to explore this integration's impact on higher-level writing aspects more in depth.

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Introduction

Writing instruction has increasingly shifted from a product-oriented to a process-oriented approach, reflecting the understanding that effective writing develops through recursive stages of pre-writing exercises, planning, composing, revising, and editing (Fathi & Rahimi, 2022). This shift is grounded in the view that writing is a cognitive process in which learners actively generate, organize, and refine ideas while making linguistic decisions throughout text production (Flower & Hayes, 1981). Consequently, effective writing instruction should incorporate pedagogical strategies that support these cognitive processes, enabling learners to develop both linguistic accuracy and higher-order writing skills (Hyland & Hyland, 2019).

Among the cyclical stages of the writing process, planning is widely recognized as a critical phase since it enables learners to generate ideas, organize content, and define communicative goals before composing. To support this stage, writing instruction often

incorporates pre-task planning (PTP), which provides learners with opportunities to prepare cognitively and linguistically before engaging in a writing task. Numerous studies have demonstrated that PTP positively influences students' writing performance. Specifically, PTP has been shown to improve students' writing ability in terms of organization and content (Ayuningtyas et al., 2018; Rahimi & Zhang, 2018), enhance writing fluency (Tabari, 2024; Wu & Ellis, 2023), as well as impact complexity and accuracy (Tabari, 2024). Using PTP, students can generate more arguments, facts, and ideas before writing.

The application of technology in teaching writing has become an essential component for a more effective teaching practice. Technology has been shown to be effective in enhancing students' writing performance (Imelda et al., 2019). One technological alternative for teaching writing is Artificial Intelligence (AI). In L2 writing classes, various AI tools have been increasingly integrated into writing instruction to support students' writing development (Miranty & Widiati, 2021). AI-powered writing tools can improve students' writing by correcting grammar, punctuation, and spelling (Hajebi, 2018), while also enhancing students' enthusiasm for writing, offering a range of practical writing tools, and supporting students' language development (Kurniati & Fithriani, 2022). Certain AI writing tools are used in classrooms, such as ChatGPT, Copy.ai, Correct English, Essay Writer, Ginger Writer, Jenni, Paperpal, QuillBot, and WordTune (Fitria, 2023; Marzuki et al., 2023). Therefore, teachers need to guide students in using these technologies effectively (Umamah & Cahyono, 2022).

In the current educational context, research on the use of Ginger Writer software for writing in English is becoming more relevant. This software helps users check for writing errors and perform paraphrasing (Restika et al., 2021), gain new vocabulary (Fitria, 2023), and fix a variety of grammatical errors, such as those with subject-verb agreement, singular and plural terms, consecutive nouns, incorrect word usage, and contextual correction of spelling errors (Perdana & Farida, 2019). The ability to employ capital letters in a sentence or paragraph and perform punctuation is another benefit of Ginger Writer software (Widiawati et al., 2023).

Implementing PTP improves students' writing performance in terms of content and organization (Ayuningtyas et al., 2018; Rahimi & Zhang, 2018). However, using PTP has not been shown to improve text quality, such as the accuracy of the text (Wu & Ellis, 2023), which was considered a weakness. This constraint can be described from the perspective of Cognitive Load Theory, which posits that writing in a second language requires students to concurrently manage several cognitive processes, such as idea generation, text organization, lexical selection, and grammar. PTP allows students to arrange and outline their ideas before writing, which lowers cognitive demands, but it offers little assistance in ensuring linguistic accuracy during text production (Sweller, 1988). Previous studies have demonstrated that Ginger Writer software has been shown to be beneficial for vocabulary, punctuation, spelling (mechanics), and grammatical errors (Fitria, 2023; Perdana & Farida, 2019; Restika et al., 2021; Widiawati et al., 2023). From the perspective of the Noticing Hypothesis, learners can consciously see differences between their own language production and target language forms when they get quick corrective feedback, which promotes language progress through revision (Schmidt, 1990). Therefore, integrating PTP with Ginger Writer software is theoretically expected to support both higher-order writing processes, such as idea generation, content organization, and argument development, and lower-order concerns, including grammar, spelling, punctuation, and other mechanical aspects of writing, leading to improved writing performance.

Based upon the above justification, we have been motivated to investigate the effect of PTP on tertiary students' writing performance when combined with Ginger Writer software. Thus, this study aims to examine the impact of combining the two on aspects of writing. Aligned with these objectives, the research questions of the present study are:

1. Does combining pre-task planning and Ginger Writer software significantly affect tertiary students' writing performance?
2. To what extent does combining pre-task planning and Ginger Writer software affect each aspect of writing?

Review of Literature

Pre-Task Planning (PTP)

Planning is crucial for the use of spoken and written language. It involves deciding what should be said and how to say it. Writing down plans is considered a "preparatory reflection" focusing on objectives or goals (Zohoorian, 2023). Ellis (2005) distinguishes between two kinds of planning: within-task and pre-task planning. Pre-task planning is the process of organizing tasks before students begin to write. It can be further subdivided into two categories: rehearsal (also known as drafting) and strategic planning.

Pre-task Planning has been shown to be significantly related to writing performance. Based on several studies, PTP in writing can enhance students' writing performance in content and organization (Rahimi & Zhang, 2018). Another previous study found that students may gather more information, arguments, and by employing PTP before beginning to write. Consequently, the content of students' writing was enhanced (Ayuningtyas et al., 2018). Some studies also found that PTP improves students' content-area English writing (Ayuningtyas et al., 2018), has a measurable influence on the quality of writing concerning higher-level writing skills – content and organization of ideas – in general (Do, 2023), and affects writing fluency (Wu & Ellis, 2023). Additionally, studies have shown that different planning durations used in PTP result in various improvements in writing performance. The appropriate length for PTP is 10 minutes (Tabari, 2024; Rahimi & Zhang, 2018). Following the suggestion, a PTP duration of 10 minutes was used in the current investigation.

Ginger Writer Software

Ginger Writer software is an AI-driven online writing tool that provides automated feedback on grammar, spelling, punctuation, and sentence structure, helping students improve the linguistic accuracy of their writing. Ginger Writer software provides corrections using complete sentences as a framework. As a result, this program assists users in producing grammatically correct sentences and paragraphs for English sentences or paragraphs. It can also help students acquire new vocabulary through written phrases or by providing synonyms and meanings (Daniels & Leslie, 2013). The ability to utilize capital letters in a sentence or paragraph and perform punctuation is another benefit of Ginger Writer software, along with its ability to automatically detect errors in user-produced sentences and recommend appropriate sentence or paragraph organization (Widiawati et al., 2023).

Some previous studies found a relationship between Ginger Writer software and students' writing performance. Fitria (2023) found that with Ginger Writer software, users can produce high-quality writing. Ginger Writer software adds missing words, completes fragmented

sentences, and corrects spelling mistakes. Using Ginger Writer software encourages students to produce fewer writing errors and inspires them to write more and better (Nevisi & Arab, 2023). Ginger Writer software can assist students in strengthening their command of vocabulary and sentence construction (Restika et al., 2021). Taken together, previous studies suggest that using Ginger Writer software may have an impact on writing quality, decreasing the number of students' writing errors, motivating the students to be better writers and write more, developing students' spelling performance, and improving students' vocabulary and sentence structure. Ginger Writer software also access additional grammatical information when developing their writing. Thus, it is believed that integrating this software with PTP will compensate for its weaknesses, particularly in the grammatical aspect. Inevitably, the research done on this particular combination remains underexplored.

Writing Performance

Writing is challenging skill to teach, as writing tasks entail multiple cognitive and linguistic processes (Kim & Graham, 2022). The complexity arises from the numerous aspects of writing, including content, organization, discourse, grammar, vocabulary, mechanics, and structure (Brown, 2001).

Some studies have identified the problems students face in learning to write. Widiawati et al. (2023) argue that students' writing performance problems include sentence structure, inadequate vocabulary knowledge, improper punctuation, and capitalization. Another issue concerns students' lack of knowledge about writing-related topics, including structure, vocabulary, grammar, and mechanics (Toba et al., 2019).

Some evidence shows that PTP can solve students' problems with writing performance. The evidence was based on the results of previous studies, and the data suggest that using PTP to teach writing can improve students' ability to develop content and organize ideas (Ayuningtyas et al., 2018; Do, 2023; Rahimi & Zhang, 2018). Moreover, Ginger Writer software can help students overcome writing performance issues. Studies have found that using Ginger Writer software can help students generate high-quality writing, lower errors in writing, improve the students' spelling ability, and improve students' grammar and vocabulary (Fitria, 2023; Nevisi & Arab, 2023; Restika et al., 2021). Ultimately, the combination of PTP and Ginger Writer software can be a mutually beneficial way to address students' issues with their writing.

However, the integration of PTP and Ginger Writer software may also involve potential trade-offs. Pre-task planning mainly facilitates higher-order writing processes, whereas Ginger Writer software mainly supports lower-order concerns. Thus, overreliance on automated corrective feedback may change students' attention toward linguistic accuracy at the expense of deeper cognitive engagement during writing, although this possibility has received limited empirical investigation. Therefore, a more balanced justification for analyzing PTP and Ginger Writer software's combined effects on students' writing performance is to take into account both their complementary functions and any potential trade-offs.

Research Methods

Research Design

The present study employs a quasi-experimental design with a non-equivalent pre-test and post-test structure since the subject group is not randomly chosen. A quasi-experimental design was considered to be most suitable for this study since the objective was to know the

effect of the independent variable on the dependent variable. The combination of PTP and Ginger Writer software was the independent variable; the dependent variable was the students' writing performance and its component aspects.

Population and Sample

The population in this study includes English department students at a private university in Jombang, Indonesia. Using purposive sampling, forty-two students who took an Argumentative Writing class were selected as the sample of the study. The participants were drawn from two existing intact classes, each consisting of twenty-one students. Since institutional scheduling did not permit the random assignment of individual students, the two intact classes were randomly assigned by lottery, with one class designated as the experimental group and the other as the control group. To assess the initial writing proficiency of the two classes, the researchers reviewed the students' previous writing achievement records and confirmed that the two demonstrated different writing proficiency levels before the intervention.

Table 1

Independent Samples Test of Prior Writing Ability

		t-test for Equality of Means						
		T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Prior Writing Ability	Equal variances assumed	-5.158	40	.000	-21.190	4.108	-29.493	-12.888
	Equal variances not assumed	-5.158	39.856	.000	-21.190	4.108	-29.494	-12.887

An independent-samples test of students' prior writing ability (pre-test scores) shows that the significance value is less than the alpha level ($.000 < .05$). This indicates a statistically significant difference between the experimental and control groups' prior writing abilities (see Table 1). The differences in prior abilities between the two groups could affect the variables under investigation and distort the findings, a potential source of bias known as covariates. Since the covariate is not of interest in the present study, it needed to be controlled to adjust for its effects. Choosing the appropriate statistical techniques to adjust for potential confounding effects is one way to achieve it.

Instruments

The instruments used in this study consisted of a pre-test and a post-test in writing. Both tests employed the same writing task to ensure comparability of students' performance before and after the treatment. The prompts were designed to be familiar to university students while allowing them sufficient flexibility to develop and support their arguments. To ensure it is appropriate for university-level students, it was adjusted to align with the learning outcome of the Argumentative Writing Course, which is adapted from CEFR B2. The task required students

to write an argumentative essay of at least 300 words on one of several contemporary issues within 90 minutes.

To establish content validity, the writing task and scoring rubric were evaluated by two experts in English writing instruction with more than 5 years of university-level teaching experience. The experts examined the instrument for topic relevance, genre appropriateness, clarity of instructions, language suitability, and level of difficulty. Based on their feedback, minor revisions were made to improve the clarity of the writing prompts and instructions prior to instrument administration.

Students' writing performance on both the pre-test and post-test was assessed using the same analytical scoring rubric adapted from Weigle (2002), ensuring consistent evaluation across both testing occasions. The rubric assessed five dimensions of writing: content, organization, vocabulary, mechanics, and grammar. Each dimension was rated on a four-point scale ranging from 1 (poor) to 4 (excellent), with detailed descriptors provided for each performance level to guide scoring consistency. The overall writing score was calculated by summing the scores across the five dimensions and multiplying the total by 5, resulting in a maximum possible score of 100. The dimensions of writing were analyzed to ensure that the components of the rubric consistently measure the same underlying construct. The results are presented in Table 2.

Table 2
Correlation Among Rubric Components

		Correlations				
		Content	Organization	Vocabulary	Mechanics	Grammar
Content	Pearson	.602**	.817**	.766**	.543*	.648**
	Correlation					
	Sig. (2-tailed)		.000	.001	.193	.007
	N	16	16	16	16	16
Organization	Pearson	.817**	1	.738**	.556*	.611*
	Correlation					
	Sig. (2-tailed)	.000		.001	.025	.012
	N	16	16	16	16	16
Vocabulary	Pearson	.766**	.738**	1	.700**	.864**
	Correlation					
	Sig. (2-tailed)	.001	.001		.003	.000
	N	16	16	16	16	16
Mechanic	Pearson	.343	.556*	.700**	1	.743**
	Correlation					
	Sig. (2-tailed)	.193	.025	.003		.001
	N	16	16	16	16	16
Grammar	Pearson	.648**	.611*	.864**	.743**	.521*
	Correlation					
	Sig. (2-tailed)	.007	.012	.000	.001	
	N	16	16	16	16	16

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

The inter-item correlation matrix shows that most dimensions were moderately to strongly correlated with Pearson correlation coefficients ranging from .521 to .864, and the majority of correlations were statistically significant ($p < .05$). Therefore, the scoring criteria are highly homogeneous and reliable for assessing students' writing performance.

To ensure the instrument's reliability, inter-rater reliability was assessed. The Intraclass Correlation Coefficient (ICC) results are presented in Table 3.

Table 3

Intraclass Correlation Coefficient

	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.597 ^a	.418	.791	15.826	15	135	.000
Average Measures	.937 ^c	.878	.974	15.826	15	135	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

The Single Measures ICC (.597) indicates that the agreement between any single rater and another rater is moderate. This suggests that ratings may vary somewhat when only one rater is used. However, the Average Measures ICC (.937) demonstrates excellent inter-rater reliability when the scores from all raters are averaged. The narrow confidence interval (.878–.974) further supports the stability and precision of this estimate. Additionally, the ICC was statistically significant ($F = 15.826$, $p < .001$), indicating that the observed agreement among raters was substantially greater than would be expected by chance.

Procedures

The pre-test was conducted in class during the first week of the semester. The students were given 90 minutes to complete a paragraph-writing task, and the lecturers who taught the course assessed the students' writing using the established scoring rubric. For the following two meetings, the experimental group received instruction through PTP combined with Ginger Writer software. During the pre-writing stage, students were given 10 minutes to prepare an outline before writing. The writing prompt required students to write an argumentative essay on one controversial issue, such as *whether university students should be required to participate in community service, whether online learning is more effective than face-to-face learning, or whether social media has a positive impact on students' academic achievement*. Students were free to choose one topic and were instructed to present a clear position supported by logical arguments and relevant evidence. During the planning stage, they organized their ideas by identifying the thesis statement, formulating the main arguments, providing supporting evidence and examples, considering a counterargument when appropriate, and preparing a concluding statement. The completed outline then served as the basis for developing the first draft of the

essay. After completing the first draft, students used Ginger Writer software during the revision and editing stage. Before the treatment, they received a brief orientation on how to use the software and interpret its feedback. Students were encouraged to critically evaluate each suggestion generated by Ginger Writer software, rather than automatically accept all corrections. They were allowed to accept or reject the suggested revisions based on their own judgment, while considering grammatical accuracy, vocabulary use, and sentence clarity.

Meanwhile, the control group was taught using the conventional process-writing approach without Ginger Writer software. To ensure equivalent writing conditions, students in the control group were also allocated 10 minutes for the pre-writing stage before drafting. During this stage, they were free to use any pre-writing technique, such as brainstorming, listing, clustering, or outlining, according to their own preference. Afterward, they developed their ideas into the draft of an argumentative essay and revised and edited their writing using an electronic dictionary without AI-assisted feedback.

In the final meeting, both the experimental and control groups completed the post-test under the same testing conditions. The students were given 90 minutes to write an argumentative essay using a prompt comparable in difficulty to that of the pre-test. The testing duration was determined based on the procedure adopted by Ameilia et al. (2023).

Data Analysis

Since a discernible difference in previous writing proficiency of the experimental and control groups was found, the hypothesis testing in this present study was conducted using a one-way ANCOVA (analysis of covariance) to statistically control for the covariate (previous writing proficiency), which is believed to affect the results. Prior to the one-way ANCOVA, the data obtained were analyzed to check whether they met the assumptions of normality, homogeneity, linearity, homoscedasticity, and homogeneity of regression slopes. These assumptions should be met for one-way ANCOVA to give valid results. Thus, to answer the research questions, the data analyses in the present study were conducted in two steps. The first step involved verifying that the assumptions required for parametric tests were met, and the second step involved testing the hypotheses.

Answering the first research question, the assumption and hypothesis tests were conducted on overall students' writing performance. The assumptions of normality, homogeneity of variance, linearity, homoscedasticity, and homogeneity of regression slopes were examined and found to be satisfactorily met prior to conducting ANCOVA. Thus, the researchers analyzed the difference between overall post-test scores of the experimental and control groups using the one-way ANCOVA by considering the pre-test (students' prior writing ability) as a covariate. Partial eta squared values were also calculated to determine the effect size for all main effects and interactions, with the effects classified as small (.01 - .059), moderate (.06 - .137), and large (> .138) (Richardson, 2011). Following the analyses, another data analysis to gauge each aspect of writing performance was carried out to answer the second research question. Since all assumptions were examined and found to be satisfactorily met, ANCOVA was conducted.

Findings

The presentation of results follows the research questions that need to be answered: 1) Does combining pre-task planning and Ginger Writer software significantly affect tertiary students' writing performance? and 2) To what extent does combining pre-task planning and Ginger Writer software affect each writing aspect?

Does Combining Pre-Task Planning and Ginger Writer Software Significantly Affect Tertiary Students' Writing Performance?

The researchers tested the hypotheses using one-way ANCOVA to answer the research question after ensuring that the assumptions of normality, homogeneity, linearity, homoscedasticity, and homogeneity of regression slopes were met. The hypotheses were examined to determine whether there was a significant difference in the overall writing performance between students in the experimental and control groups.

Table 4

Descriptive Statistics and Estimates of Overall Writing Performance

Group	Mean	Std. Deviation	Mean ^a	Std. Error
Experimental	77.62	11.685	80.940 ^a	3.081
Control	70.00	13.784	66.679 ^a	3.081

^a Covariates appearing in the model are evaluated at the following values: Prior Writing Ability = 72.02

Table 4, which presents descriptive statistics and an estimate of overall writing performance, showed the mean score of the experimental group was 77.62 with a standard deviation of 11.685, while the control group's mean score was 70.00 with a standard deviation of 13.784. Compared with the control group, the experimental group performed better in writing, with a mean difference of 7.62 ($77.62 > 70.00$). Furthermore, the control group's standard deviation was greater than that of the experimental group ($13.784 > 11.685$), which indicated a greater variation in the control group's scores than in the experimental group. The mean difference between the two groups was even greater after being adjusted for the covariate in which the experimental group outperformed the control group by 14.261 points ($80.940 > 66.679$).

The main result of the data analysis utilizing the one-way ANCOVA provided information on whether the different interventions produced significantly different results after being adjusted for the covariate. In other words, there was a significant difference in students' writing performance between different interventions (with PTP and Ginger Writer software for the experimental group and without any of those tools for the control group) once the mean scores had been adjusted for students' prior writing ability.

Table 5*Test of Between-Subject Effects of Overall Writing Performance*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1305.726 ^a	2	652.863	4.364	.019	.183
Intercept	3474.096	1	3474.096	23.221	.000	.373
Prior Skill	696.202	1	696.202	4.653	.037	.107
Group	1282.267	1	1282.267	8.571	.006	.180
Error	5834.751	39	149.609			
Total	235950.000	42				
Corrected Total	7140.476	41				

^a R Squared = .183 (Adjusted R Squared = .141)

The outcome presented in Table 5, which reports the Test of Between-Subject Effects of Overall Writing Performance, demonstrated that the significance value for the Group was less than the alpha value ($.006 < .05$). This means that after adjusting for the covariate, the mean scores of the two groups of students showed a substantial difference in their writing performance, with the experimental group outperforming the control group. However, the Prior Skill's significance value ($.037 < .05$), likewise less than the alpha value, suggested that the covariate substantially impacted the students' writing performance.

The partial eta squared values of the independent variable and the covariate were .180 and .107 respectively. Those values indicated that the independent variable had a large effect on the dependent variable, while the covariate's effect was moderate (Richardson, 2011).

The data analysis results indicate that using PTP and Ginger Writer software substantially affected tertiary students' writing performance (large effect). Nevertheless, students' prior skill in writing has also been shown to moderately affect their writing performance in the post-test.

To What Extent Does Combining Pre-Task Planning and Ginger Writer Software Affect Each Writing Aspect?

Further analyses were then conducted to compute the differences in the means of each aspect of writing performance, which consisted of content, organization, vocabulary, mechanics, and grammar. Analytic scores from 1 (the lowest) to 4 (the highest) in each aspect were analyzed using one-way ANCOVA to assess the hypotheses.

Content

Before the hypotheses were tested, a descriptive analysis was performed to determine the mean scores for each group's content aspect, as well as the adjusted mean scores after the covariate was considered (adjusted mean score). The results of the descriptive analysis on the content aspect (see Table 6) showed that the experimental group had a .24 higher mean score than the control group (3.10 compared to 2.86). Furthermore, comparable standard deviations (.625 and .655) were observed between the experimental and control groups, indicating a similar variation in the scores.

Table 6*Descriptive Statistics and Estimates of Content*

Group	Mean	Std. Deviation	Mean ^a	Std. Error
Experimental	3.10	.625	3.208 ^a	.154
Control	2.86	.655	2.744 ^a	.154

^a Covariates appearing in the model are evaluated at the following values: Prior Content = 2.90

Furthermore, the output indicated that, after being adjusted for the covariate, the mean scores of the groups were 3.208 and 2.744 for the experimental and control groups, respectively, with a 0.464 points difference.

The primary outcome of the hypothesis testing using the one-way ANCOVA provided information about whether the various treatments (with PTP and Ginger Writer software and without PTP and Ginger Writer software) produced statistically different results on the content aspect after controlling the covariate, students' prior content aspect.

Table 7*Test of Between-Subject Effects of Content*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.610 ^a	2	.805	2.044	.143	.095
Intercept	10.683	1	10.683	27.115	.000	.410
Prior Content	1.015	1	1.015	2.576	.117	.062
Group	1.479	1	1.479	3.754	.060	.088
Error	15.366	39	.394			
Total	389.000	42				
Corrected Total	16.976	41				

^a R Squared = .095 (Adjusted R Squared = .048)

The Group variable had a significance value of 0.060, according to the data analysis results shown in Table 7. As it was greater than the alpha value ($0.060 > 0.05$), the significance value indicated no differences in results on the content aspect between the observed groups. In other words, it can be claimed that the PTP and Ginger Writer software usage did not significantly impact the content aspect. In contrast to the insignificant effect supported by the significance value, the partial eta squared value of the Group (0.088) indicated that the combination of the method and media had a moderate effect on the aspect (Richardson, 2011).

Organization

Similar to the previous analysis, a descriptive analysis was conducted first to gather information about students' writing performance in terms of organization before and after being adjusted to the prior organization aspect as the covariate. Table 8 displays the results of the analysis.

Table 8*Descriptive Statistics and Estimates of Organization*

Group	Mean	Std. Deviation	Mean ^a	Std. Error
Experimental	3.05	.740	3.254 ^a	.150
Control	2.67	.730	2.461 ^a	.150

^a Covariates appearing in the model are evaluated at the following values: Prior Organization = 2.76

The experimental group outperformed the control group, as indicated by the descriptive analysis results in Table 8, which showed that the experimental group's mean was 3.05 and the control group's mean was 2.67, with a mean difference of 0.38. The experimental group's standard deviation (0.740) was comparable to that of the control group (0.730). This indicated little difference in the experimental and control groups' score variations. In addition, the output revealed that the experimental and control groups had adjusted mean scores of 3.254 and 2.461, respectively, which varied by 0.793 points.

Following the descriptive analysis, the primary data analysis determined whether the various treatments produced statistically different results on the organization aspect. The analysis results demonstrated that the Group's significant value was smaller than the alpha value ($0.001 < 0.05$). This indicated that, following covariate adjustment, there was a considerable difference between the two student groups adjusted mean organization scores, with the experimental group outperforming the control group (see Table 9).

Table 9*Test of Between-Subject Effects of Organization*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7.231 ^a	2	3.616	8.862	.001	.312
Intercept	2.480	1	2.480	6.078	.018	.135
Prior Organization	5.708	1	5.708	13.990	.001	.264
Group	5.030	1	5.030	12.330	.001	.240
Error	15.911	39	.408			
Total	366.000	42				
Corrected Total	23.143	41				

^a R Squared = .312 (Adjusted R Squared = .277)

Nonetheless, the significance value of the Prior Organization was also less than the alpha value ($0.001 < 0.05$). This indicated that the students' prior skill, particularly in the organization aspect as the covariate, had a significant effect on their organization scores.

Referring to the results of the data analyses, it can be inferred that students' writing performance, in terms of organization aspect, was largely impacted by the use of PTP and Ginger Writer software as well as their prior skill as shown from the partial eta squared values of 0.240 and 0.264 respectively.

Vocabulary

Further analysis of the vocabulary aspect's score was conducted after the data on the content and organization elements were analyzed. The analysis was to determine whether the interventions also significantly affected the students' post-test performance in this aspect. The descriptive analysis results of the vocabulary aspect in writing performance are shown in Table 10.

Table 10

Descriptive Statistics and Estimates of Vocabulary

Group	Mean	Std. Deviation	Mean ^a	Std. Error
Experimental	3.05	.498	3.056 ^a	.114
Control	2.95	.498	2.944 ^a	.114

^a Covariates appearing in the model are evaluated at the following values: Prior Vocabulary = 3.05

Concerning Table 10, the mean for the experimental group was 3.05, whereas the mean for the control group was 2.95, indicating a 0.1 mean difference. The standard deviation of the experimental group was similar to that of the control group (0.498). This indicated that the score variations of the experimental and control groups were the same. The adjusted mean scores showed similar disparities (0.112), with the experimental group receiving 3.056 and the control group receiving 2.944.

The disparity of the adjusted mean scores was found not significantly different based on the primary data analysis using one-way ANCOVA. The output presented in Table 11 showed the Group's significance value of 0.512, which was above the alpha value of 0.05. Thus, the different treatments did not produce statistically different results in terms of the vocabulary aspect.

Table 11

Test of Between-Subject Effects of Vocabulary

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.111 ^a	2	.056	.219	.804	.011
Intercept	17.798	1	17.798	70.193	.000	.643
Prior Vocabulary	.016	1	.016	.063	.803	.002
Group	.111	1	.111	.438	.512	.011
Error	9.889	39	.254			
Total	388.000	42				
Corrected Total	10.000	41				

^a R Squared = .011 (Adjusted R Squared = -.040)

Referring back to the analysis's purpose, which was to ascertain whether teaching writing with PTP and Ginger Writer software and without using the method and media combination differed from one another overall in a statistically significant way to indicate the independent variable's significant effect, the analysis's findings showed that the independent variable, PTP and Ginger Writer software, did not typically have a substantial impact on the vocabulary aspect.

Mechanics

The mechanics of writing performance were the next aspect to be examined. The findings of the descriptive analysis, which included the mean scores before and after being adjusted for the covariate, the students' prior mechanics score, are shown in Table 12 below.

Table 12

Descriptive Statistics and Estimates of Mechanics

Group	Mean	Std. Deviation	Mean ^a	Std. Error
Experimental	3.24	.625	3.321 ^a	.167
Control	2.81	.750	2.726 ^a	.167

^a Covariates appearing in the model are evaluated at the following values: Prior Mechanics = 2.86

The results of the descriptive analysis presented in Table 12 indicated that the experimental group's mean was 3.24, while the control group's mean was 2.81, with a mean difference of 0.43, which indicated that the experimental group had a higher mean score than the control group. The control group's higher standard deviation than the experimental group (0.750 > 0.625) suggested that the control group's scores were more diverse than the experimental group. A higher difference was discovered after adjusting the mean score for the covariate. A variation of 0.595 existed, comparing the adjusted mean scores of the experimental and control groups (3.321 compared to 2.726). To know whether the two groups' adjusted means scores differed significantly, we need to consult the results of the one-way ANCOVA presented in Table 13 below.

Table 13

Test of Between-Subject Effects of Mechanics

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2.553 ^a	2	1.276	2.702	.080	.122
Intercept	22.577	1	22.577	47.792	.000	.551
Prior Mechanics	.624	1	.624	1.321	.257	.033
Group	2.536	1	2.536	5.368	.026	.121
Error	18.423	39	.472			
Total	405.000	42				
Corrected Total	20.976	41				

^a R Squared = .122 (Adjusted R Squared = .077)

The primary results of the one-way ANCOVA test data analysis indicated that the various treatments produced statistically different results in mechanics. It was shown by the significance value that was lower than the alpha value ($0.026 < 0.05$). Supported by the descriptive analysis results that showed the higher adjusted mean score of the experimental group, the results confirmed that the independent variable, the use of pre-task planning and Ginger Writer software, affected the mechanics aspect significantly. By looking up the partial eta

squared of the variable (0.121), it can be said that pre-task planning and Ginger Writer software impacted the mechanics aspect moderately.

Grammar

Grammar was the final aspect this study examined. The outcome of a descriptive investigation of the grammatical aspect is shown in Table 14.

Table 14

Descriptive Statistics and Estimates of Grammar

Group	Mean	Std. Deviation	Mean ^a	Std. Error
Experimental	3.10	.539	3.137 ^a	.153
Control	2.71	.717	2.673 ^a	.153

^a Covariates appearing in the model are evaluated at the following values: Prior Grammar = 2.83

The experimental group surpassed the control group, as indicated by the descriptive analysis results shown in Table 14, which showed that the experimental group's mean was 3.10 and the control group's mean was 2.71, with a mean difference of 0.39. The control group's standard deviation was greater than the experimental group (0.717 > 0.539). This indicated greater variation in the control group's scores than in the experimental group. Further, the adjusted mean scores of the two groups showed a 0.464-point difference in which the experimental group exceeded the control group (3.137 > 2.673).

As in the data analyses of other aspects, the primary data analysis in this aspect was to confirm whether the different treatments gave statistically different results on the grammar aspect. The results of the analysis are displayed in Table 15.

Table 15

Test of Between-Subject Effects of Grammar

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.703 ^a	2	.852	2.087	.138	.097
Intercept	17.403	1	17.403	42.643	.000	.522
Prior Grammar	.179	1	.179	.440	.511	.011
Group	1.610	1	1.610	3.946	.054	.092
Error	15.916	39	.408			
Total	372.000	42				
Corrected Total	17.619	41				

^a R Squared = .097 (Adjusted R Squared = .050)

The ANCOVA results showed that, after controlling for prior grammar ability, the effect of group on grammar performance was not statistically significant ($p = 0.054$). Although the result approached the alpha value of 0.05, it did not reach statistical significance. Therefore, there was

insufficient evidence to conclude that using PTP and Ginger Writer software in teaching writing produced significantly different grammar outcomes between the groups.

Discussions

Based on the results presented, the discussion is divided into two main sections: first, discussing the effect of PTP and Ginger Writer software on tertiary students' writing performance, and second, discussing the effect of combining PTP and Ginger Writer software on each writing aspect.

The Effect of Combining Pre-Task Planning and Ginger Writer Software on Tertiary Students' Writing Performance

This study investigated the effect of combining PTP and Ginger Writer software on EFL tertiary students' writing performance. Ten minutes of PTP was administered to the experimental group following the recommendation that this is the ideal duration for PTP (Tabari, 2024; Rahimi & Zhang, 2018). The Ginger Writer software was combined with the method, overcoming the weakness of PTP found by Wu and Ellis (2023).

The analysis of the independent variable's impacts on students' overall writing performance revealed a significant difference between the means of the experimental and control groups (Sig. (2-tailed) = 0.006). After comparing the adjusted mean scores of the two groups, it was evident that the experimental group outperformed the control group by 14.261 points (80.940 compared to 66.679). According to the obtained value, the experimental group's students performed noticeably better than the control group. Stated differently, combining PTP and Ginger Writer software significantly affected students' writing performance. It was also supported by the partial eta squared value of 0.180, which showed the variable's large effect (Richardson, 2011).

The present study demonstrated that combining PTP and Ginger Writing software significantly affected students' overall writing performance. This finding generally supports previous research highlighting the effectiveness of PTP in enhancing writing quality. Earlier studies have consistently reported that planning before writing enables learners to organize their thoughts, generate relevant ideas, and reduce cognitive demands encountered during the writing process, thereby contributing to better writing performance (Ayuningtyas et al., 2018; Do, 2023; Rahimi & Zhang, 2018). Moreover, recent studies by Tabari (2023) and Wu and Ellis (2023) demonstrated that allocating sufficient planning time before writing promotes greater writing fluency, allowing learners to produce texts more efficiently and with fewer interruptions during the composing process.

The results also supported earlier research on the impact of Ginger Writing software on writing performance. The findings of previous studies indicated that Ginger Writer software enhances students' writing skills by helping them write better and more frequently with fewer errors (Nevisi & Arab, 2023), produce higher-quality texts (Fitria, 2023), and strengthen their vocabulary and sentence construction (Restika et al., 2021). Widiawati et al. (2023) also found that students' overall writing skills improved when using the software. Unlike PTP, which directly supports the cognitive process involved in planning ideas, Ginger Writer primarily provides feedback on linguistics accuracy rather than assisting writers in generating content. This

complementary nature of the two interventions may explain the significant difference in students' overall writing quality.

Rather than allowing the students' prior knowledge, which was also proven to moderately impact their writing performance ($p = 0.037$, partial $\eta^2 = 0.107$) to influence the results, the one-way ANCOVA statistically controlled for that covariate. Thus, the present study demonstrated that the two interventions appeared to address complementary dimensions of writing. PTP prepares learners cognitively before composing, while Ginger Writer software supports linguistic refinement after ideas have been expressed. This complementary mechanism provides a theoretical explanation for the significant results observed in students' overall writing performance.

The Effect of Combining Pre-Task Planning and Ginger Writer Software on Each Writing Aspect

Further, the effect of the variable on each aspect of writing performance was also examined. Thus, an analytical scoring rubric was used to assess students' writing performance, focusing on five aspects: content, organization, vocabulary, mechanics, and grammar, as adopted from Weigle (2002).

An analysis of the subject-to-subject effects of various aspects of students' writing performance revealed that the intervention did not affect all aspects of writing equally. Statistically significant differences between the two groups were observed only in the organization and mechanics aspects. In contrast, content, vocabulary, and grammar did not reach statistical significance after controlling for students' prior performance. Nevertheless, the effect sizes suggest that the intervention had a large practical effect on organization, a moderate effect on content, mechanics, and grammar, and a negligible effect on vocabulary, according to Richardson's (2011) classification of effect sizes.

Among all writing aspects observed in this study, organization exhibited the greatest improvement. After adjusting for students' prior organizational ability, the experimental group obtained a substantially higher adjusted mean than the control group ($3.254 > 2.461$), and the group effect was statistically significant with a large effect size ($p = 0.001$, partial $\eta^2 = 0.240$). This finding supports the theoretical role of PTP, which allows writers to organize ideas before drafting. Because students had already developed an outline and determined the logical sequence of their arguments during the planning stage, they could give more attention to expressing their ideas coherently while writing. These findings were highly consistent with Rahimi and Zhang (2018) and Do (2023), who found that PTP primarily strengthens the organizational quality of students' compositions.

The implementation of the intervention was shown to significantly affect the mechanics aspect. The experimental group achieved a higher adjusted mean than the control group ($3.321 > 2.726$), with a moderate effect size ($p = 0.026$, partial $\eta^2 = 0.121$). The finding emphasized the advantages of Ginger Writer software in providing immediate feedback on spelling, punctuation, capitalization, and related mechanical errors. Consequently, students were able to identify and revise their errors before submitting their writing product. Similar results in mechanics have also been reported by Perdana and Farida (2019), Restika et al. (2021), and Widiawati (2023), who found that automated writing assistants effectively reduced mechanical errors in writing.

Contrary to expectations, a more detailed analysis of the content aspect revealed a somewhat different pattern. While the combination of PTP and Ginger Writer software

significantly improved students' overall writing performance as well as the organization and mechanics aspects, the content aspect alone did not reach significance after controlling for prior writing ability ($p = 0.060$), although it demonstrated a moderate effect size (partial $\eta^2 = 0.088$). This finding only partially aligned with the previous studies reporting significant improvements in content through PTP (Ayuningtyas et al., 2018; Rahimi & Zhang, 2018). One possible explanation is that although planning enabled students to generate ideas before writing, transforming those ideas into richer, more elaborate content requires not only planning but also sufficient background knowledge, familiarity with the topic, and higher-level composing skills. In other words, PTP may effectively support idea generation and initial content organization, but it cannot fully compensate for students' limited conceptual knowledge or ability to elaborate ideas within the writing task.

In addition, the findings in the grammar aspect showed a similar pattern to the content aspect. Although the experimental group achieved a higher adjusted mean score than the control group ($3.137 > 2.673$), the difference was not significant ($p = 0.054$), despite the moderate effect size (partial $\eta^2 = 0.092$). These findings partially support the previous findings demonstrating that Ginger Writing software improves grammatical accuracy (Fitria, 2023; Nevisi & Arab, 2023; Perdana & Farida, 2019). However, unlike previous studies, the present study suggests that the software may not have a significant effect on students' grammar accuracy during the intervention. Grammar development may require a longer period of exposure to corrective feedback, explicit instruction, and opportunities for students to understand grammatical rules, rather than simply accepting automated corrections provided by the software.

Concerning the disagreement surrounding the results and the earlier study, the results of this investigation run counter to those of Restika et al. (2021), who claim that using Ginger Writer software can help students become more proficient in vocabulary and sentence construction. Furthermore, Fitria (2023) notes that students might acquire new vocabulary using Ginger Writer software. This indicates an improvement in vocabulary selection skills. The present finding, however, revealed comparable inconsistencies, with the vocabulary aspect showing neither statistical significance nor meaningful practical impact ($p = 0.512$, partial $\eta^2 = 0.011$). The adjusted mean for the experimental group was 3.056, and the control group was 2.944. Therefore, the result showed that the combination of PTP and Ginger Writer software indeed does not significantly affect students' writing performance in the vocabulary performance in writing. Although Ginger Writer provides synonym suggestions and vocabulary recommendations (Daniels & Leslie, 2013; Fitria, 2023), the features may not necessarily translate into measurable vocabulary development during a relatively short instructional period. Students may have relied primarily on familiar vocabulary when completing their writing tasks rather than exploring suggested lexical alternatives. Consequently, vocabulary growth likely requires more sustained instructional interventions beyond automated writing assistance.

The study's findings demonstrated that the experimental group instructed using PTP and Ginger Writer software in combination, performed better than the control group, which was instructed without using either tool. There was a statistically significant difference in the means of the two groups. However, the detailed findings on each writing aspect suggest that the combination of PTP and Ginger Writer software contributes differently across these aspects. The intervention was particularly effective in improving organization and mechanics, while its influence on content and grammar was promising but did not reach statistical significance. Vocabulary, meanwhile, was not significantly impacted.

The present findings are particularly relevant within the Indonesian EFL context, where writing has consistently been identified as one of the most challenging English language skills for university students. Previous studies conducted in Indonesia have reported that many EFL learners continue to experience difficulties in generating and developing ideas, organizing arguments coherently, and producing grammatically accurate texts (Toba et al., 2019; Widiawati et al., 2023). These challenges are often accompanied by limited opportunities for individualized writing feedback due to large class sizes and constrained instructional time, making it difficult for lecturers to provide continuous guidance throughout the writing process. The combination of PTP and Ginger Writer software offers a practical pedagogical solution by simultaneously supporting students' cognitive preparation before writing and providing immediate language feedback during revision. Consequently, the intervention has the potential to complement classroom instruction while promoting greater learner autonomy in writing.

Beyond the Indonesian context, these findings also resonate with broader global developments in English-language education. Across many EFL settings worldwide, higher education institutions are increasingly integrating AI-assisted writing technologies into language instruction as part of the ongoing digital transformation of education. At the same time, educators continue to emphasize process-oriented approaches that encourage learners to engage in planning, drafting, revising, and reflecting throughout the writing process. The present study suggested that combining cognitive writing strategies with AI-supported feedback may represent a balanced instructional approach that capitalizes on the strengths of both the human learning process and educational technology. Rather than viewing AI merely as an automated proofreading tool, the findings highlight its potential as a complementary pedagogical strategy that fosters students' writing development.

Conclusion

Some inferences can be made in light of the previous discussion. First, the combination of PTP and Ginger Writer software in the writing course significantly affected the student's writing performance. Second, two aspects of writing performance, organization and mechanics, were significantly affected, and three aspects of writing performance, content, vocabulary, and grammar, were not significantly affected.

This study demonstrated that students' writing ability is, in fact, greatly impacted by the use of PTP and Ginger Writer software. It also demonstrated that the effect was significant at the two levels of students' writing performance: organization and mechanics. This indicates that the treatments assist the students in achieving a higher level of success in organizing their ideas and understanding the use of mechanics in writing.

However, content, vocabulary, and grammar are other aspects of students' writing performance that are unaffected by the combination of the method and media. The insignificant difference in the mean scores indicated that the interventions in the experimental and control groups similarly affected the students' writing performance in the content, vocabulary, and grammar aspect.

This study has a practical implication that English teachers can apply a combination of PTP and Ginger Writer software in their writing classes, as it has been demonstrated to substantially impact students' writing performance, particularly in the majority of writing aspects. By using this combination, teachers can improve their students' writing abilities and

motivate them to organize their ideas, draft, revise, and edit their writing projects. Additionally, it will support teachers in enhancing their students' understanding and application of writing techniques.

There are several limitations of this study. First, the quasi-experimental design using intact classes without random assignment may have affected group equivalence despite efforts to ensure comparable baseline characteristics. Second, the results of this study may not be as applicable to different EFL tertiary contexts due to the participants' selection from a single university.

This study recommends that future research employ randomized experimental designs involving participants from multiple institutions to strengthen internal validity and improve the generalizability of the findings. Further research may also explore this integration's impact or examine its long-term effects on students' writing performance and higher-level writing aspects more in depth.

Author Contributions

ICC: Conceptualization, Investigation, Writing – Original Draft Preparation, and Project Administration. MAB: Resources, Writing, Review and Editing, Visualization, and Funding Acquisition. UW: Validation and Supervision, NS: Validation and Supervision, MA: Validation and Supervision. RA: Methodology, Software, and Writing – Original Draft Preparation. DH: Formal Analysis, Data Curation, and Writing – Original Draft Preparation.

Declaration of the Use of Generative AI

During the preparation of this manuscript, the authors used ChatGPT (OpenAI). The tool was used solely in the preparation of this manuscript to assist in developing the initial research ideas, refining the conceptual framework, and improving the clarity of academic writing. Grammarly was also used to support grammar checking, spelling, correction, punctuation, and other writing mechanics. The authors carefully reviewed, verified, and edited all AI-assisted outputs and take full responsibility for the accuracy, originality, interpretation, and integrity of the manuscript.

Ethics

This study received ethical approval from the Research and Community Service Institute of Universitas Negeri Malang, Indonesia, Approval No. 27.03.03/UN32.14.2.8/LT/2025. All procedures followed relevant ethical guidelines, and informed consent was obtained from all participants.

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