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ONLINE MACHINE TRANSLATION AS A CALL TOOL: ENHANCING EFL WRITING ACCURACY IN INDONESIA

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Abstract
The integration of technology in language learning, particularly Computer-Assisted Language Learning (CALL), has made online machine translation (OMT) a common tool for EFL students. However, its impact on specific writing skills, such as grammatical accuracy, remains a subject of debate, with concerns about over-reliance and passive learning. This study aimed to empirically investigate the effect of using OMT as a CALL tool on the grammatical accuracy and vocabulary diversity in the writing of Indonesian EFL students. A quasi-experimental design was employed with 57 first-year EFL students, divided into an experimental group (n=30) that used OMT and a control group (n=27) that did not. Data were collected through pre-test and post-test writing assessments and analysed using paired and independent t-tests. A supplementary survey provided qualitative insights into the students' experiences. The experimental group demonstrated a statistically significant improvement in writing scores (mean pre-test=40.83, post-test=76.93; $p < 0.001$), far exceeding the minimal gain in the control group (mean pre-test=42.70, post-test=45.78). An independent t-test confirmed a significant difference between the groups post-intervention ($t=18.004$, $p < 0.001$). Qualitatively, while 80% of users reported proficiency with OMT, 40% noted challenges with contextual understanding. In conclusion, the use of OMT as a CALL tool significantly enhances EFL students' writing performance, particularly in grammatical accuracy. However, to mitigate over-reliance and maximize learning outcomes, educator guidance is crucial to ensure critical and autonomous use of this technology.

Keywords— CALL, EFL Writing, Grammatical Accuracy, Indonesia, Online Machine Translation

Introduction

The digital era has profoundly transformed foreign language pedagogy, with Computer-Assisted Language Learning (CALL) becoming integral to English as a Foreign Language (EFL) classroom. CALL provides diverse tools, from interactive software to translation applications, offering flexible and engaging learning experiences (Chen et al., 2021). The COVID-19 pandemic further accelerated this shift, demonstrating technology's potential to sustain and enhance language education (Adedoyin & Soykan, 2023). Within this technological landscape, online machine translation (OMT) tools like Google Translate and DeepL have become ubiquitous. They offer instant text conversion, allowing students to comprehend foreign texts rapidly and aiding in the writing process (Jolley & Maimone, 2022)

Despite their popularity, the educational value of OMTs is contested. Some studies highlight their benefits; for instance, Tsai (2022) found that Google Translate served as an effective alternative medium for translation, aiding students' comprehension and writing. Conversely, other research warns of potential drawbacks, such as reduced student creativity and

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grammatical accuracy due to over-reliance, which can diminish the teacher's role and foster passive learning (Mumtaz et al., 2023). This dependency may prevent students from internalizing language rules and developing their own writing skills (Araújo et al., 2020). Furthermore, OMTs can struggle with contextual nuances, leading to misunderstandings if used uncritically (Vieira, 2020).

This divergence in previous findings underscores a significant research gap regarding the specific, measurable impact of OMT on foundational writing components like grammatical accuracy and vocabulary diversity in an EFL context. While OMT is widely used, a holistic understanding of its efficacy and limitations in a structured learning environment is needed. This study, therefore, seeks to fill this gap by employing an experimental design to isolate the effects of OMT use.

The primary objective of this research is to quantitatively and qualitatively assess the impact of using OMT as a CALL tool on the writing skills of Indonesian EFL students, with a specific focus on grammatical accuracy and vocabulary diversity. The research questions are: 1) Is there a significant improvement in grammatical accuracy after students use OMT? 2) Can the use of OMT enhance students' understanding of grammar?

Literature Review

The integration of technology in language learning is well-established, with CALL being a dominant paradigm. Chen et al. (2021) emphasize that CALL's primary aim is to enhance the efficiency and effectiveness of language acquisition by providing interactive and individualized learning experiences. The theory underpinning CALL suggests that technology can create responsive environments that adapt to individual learner needs, thereby increasing motivation and engagement (Aslan & Kuşçu, 2023; Kohnke, 2023). However, scholars like Surden (2021) and Barrot (2023) caution against potential drawbacks, including reduced direct student-teacher interaction and the digital divide, which can affect learning outcomes.

Online Machine Translation represents a specific, widely adopted application of CALL. These tools are designed to provide instantaneous cross-linguistic transfer, functioning as a digital aid in educational, business, and daily communication contexts. In language education, OMT is often used to expedite comprehension of foreign texts and assist in the writing process through revision and verification of translated output. The efficacy of OMT in education, however, is not automatic. Niño (2020) highlights a central challenge: ensuring that students use OMT as an aid to develop their own language skills rather than as a mental crutch that bypasses cognitive engagement. This underscores the necessity of guided use.

Previous research on OMT's impact on writing skills presents conflicting evidence, illustrating the complexity of its role. On one hand, studies report positive outcomes. Sun et al. (2022), in a study at an Indonesian university, found that Google Translate could function as an effective alternative medium for translation, helping students improve their comprehension and writing coherence. Similarly, Lee (2020) and Chung & Ahn (2022) found that with proper instructor guidance, OMT could significantly improve students' grammatical accuracy and lexical diversity, as students learned to verify and adapt machine-generated output. A review by Jolley and Maimone (2022) also concluded that OMT, when used pedagogically, can be a valuable scaffold. A recent review by Xu et al. (2025) highlighted the growing body of research on technology-assisted writing, though noting the specific effects of OMT warrant further empirical investigation.

On the other hand, a significant body of literature warns of negative consequences. Cancino and Isami (2025) found that over-reliance on OMT could reduce student creativity and diminish their own grammatical accuracy, as it shifts the cognitive load from the learner to the machine. This aligns with concerns raised by Araújo et al. (2020) regarding potential

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dependency, which can undermine autonomous language mastery. A critical issue often cited is the tool's inability to perfectly handle contextual nuances and cultural subtleties, which can lead to misunderstandings and unnatural phrasing in student writing Vieira (2020)

This review identifies a clear gap: while the potential benefits and risks of OMT are documented, there is a lack of controlled experimental studies, particularly in the Indonesian EFL context, that quantitatively measure its specific impact on discrete writing components like grammatical accuracy. Furthermore, there is a need to juxtapose these quantitative findings with qualitative data on student experiences to provide a holistic view. This study aims to address this gap by investigating the effect of a structured OMT intervention on EFL writing, thereby contributing a nuanced perspective to the existing literature.

Research Method

This study utilized a quasi-experimental design with a pre-test and post-test control group to investigate the research questions (Takona, 2024). The population consisted of first-year EFL students at Universitas Hafshawaty Zainul Hasan, Indonesia. A convenience sampling technique was used to select 60 students, who were then divided into an experimental group (n=30) and a control group (n=30). Due to attrition, the final sample was 57 students (experimental n=30, control n=27).

The independent variable was the use of OMT, while the dependent variable was students' writing skills, operationalized through scores on writing assessments focusing on grammatical accuracy and vocabulary diversity. The research was conducted over six months, following three main stages: planning (literature review, instrument design, validation), implementation (pre-test, intervention, post-test, survey), and reporting.

The intervention involved a two-week period where the experimental group was instructed to use OMT tools (e.g., Google Translate, DeepL) to assist them in completing writing tasks. The control group completed the same tasks without using OMT. The primary instrument was a writing test administered as a pre-test and post-test. The tests were graded using an online grammar checker and assessed for vocabulary use. A survey was also administered to the experimental group to gather qualitative data on their perceptions and experiences with OMT.

Data analysis involved both quantitative and qualitative methods. Quantitatively, the pre-test and post-test scores were analysed for normality and homogeneity of variance using Shapiro-Wilk and Levene's tests, respectively. Paired sample t-tests were used to compare score changes within each group, and an independent sample t-test was used to compare the post-test results between the experimental and control groups. All quantitative analyses were performed using SPSS software. Qualitatively, thematic analysis was applied to the open-ended survey responses to identify common themes and challenges.

Results

Quantitative Results

The study involved a total of 57 first-year EFL students from Universitas Hafshawaty Zainul Hasan, divided into an experimental group (30 students) and a control group (27 students). The participant pool was predominantly female (91.2%) from various health science programs registered in the university. The majority of students (73.7%) were between 18-19 years old, with the remainder aged 20-21.

Descriptive statistics (Table 1) reveal a substantial increase in the mean writing scores for the experimental group, from 40.83 (SD=5.427) in the pre-test to 76.93 (SD=7.134) in the post-test. In contrast, the control group showed only a minimal increase, from 42.70 (SD=5.830) to 45.78 (SD=5.767).

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Table 1. Descriptive Statistics of Writing Tests

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Experiment	30	31	50	40.83	5.427
Post-Test Experiment	30	64	90	76.93	7.134
Pre-Test Control	27	34	55	42.70	5.830
Post-Test Control	27	37	58	45.78	5.767
Valid N (listwise)	27				

Tests for normality (Shapiro-Wilk, $p > 0.05$ for all groups) and homogeneity of variance (Levene's test, $p = 0.226$) confirmed that the parametric assumptions were met. A paired sample t-test (Table 2) indicated that the improvement in the experimental group was statistically significant ($t(29) = -83.996$, $p < .001$). The control group's minimal change was also significant, though the effect was negative and small ($t(26) = -59.852$, $p < .001$).

Table 2. Paired Samples Test (Experimental Group)

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Pre-Test Experiment - Post-Test Experiment	-36.100	2.354	.430	-36.979	-35.221	-83.996	29	.000
Pair 2	Pre-Test Control - Post-Test Control	-3.074	.267	.051	-3.180	-2.968	-59.852	26	.000

Critically, an independent samples t-test (Table 3) comparing the post-test scores of the two groups showed a significant difference ($t(55) = 18.004$, $p < .001$), with a mean difference of 31.156 points in favour of the experimental group.

Table 3. Independent Samples Test (Post-Test Scores)

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper

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Test Result	Equal variances assumed	1.502	.226	18.004	55	.000	31.156	1.730	27.688	34.624
	Equal variances not assumed			18.207	54.408	.000	31.156	1.711	27.725	34.586

Qualitative Results

The survey of the experimental group indicated that 80% of respondents felt "proficient" or "very proficient" in using OMT services. However, 40% reported facing challenges, primarily related to understanding contextual nuances in the translations. One respondent noted, "I find it difficult to get the exact meaning I need," highlighting a gap between literal translation and contextual understanding. Suggestions for improvement included a desire for more training on how to use OMT tools more effectively and critically.

Discussion

The findings of this study clearly demonstrate that the structured use of OMT as a CALL tool can have a profoundly positive impact on the writing performance of EFL students. The dramatic improvement in the experimental group's scores (a mean increase of 36.1 points) strongly suggests that OMT provides immediate access to correct grammatical structures and a wider range of vocabulary, which students can then incorporate into their own writing. This supports the findings of Lee (2020) and Chung and Ahn (2022), who noted that guided use of translation technology can enhance writing output. This finding is supported by a recent meta-analysis, which confirmed the overall positive effects of machine translation on L2 writing performance (Lee, 2023).

The minimal improvement in the control group, coupled with a statistically significant decline in their paired t-test, is a notable finding. This may be attributed to the lack of a supportive technological tool, potentially leading to frustration or demotivation when facing difficult writing tasks, aligning with concerns raised by Cancino and Isami (2025) and Mumtaz et al. (2023) about engagement in traditional learning settings.

The significant difference confirmed by the independent t-test provides robust evidence that the intervention itself, the use of OMT, was the primary factor behind the performance gap. This reinforces the theoretical foundations of CALL, which posit that technology can create more effective and responsive learning environments (Chen et al., 2021; Trojszczak, 2022). The qualitative data, however, add a crucial layer of nuance. While students were technically proficient with the tools, their difficulties with context mirror the warnings of Vieira (2020) and Niño (2020) about the limitations of OMT in capturing linguistic subtleties.

Therefore, the pedagogical implication is not simply to encourage OMT use, but to integrate it strategically within a blended learning framework. As suggested by Panagiotidis et al. (2023), OMT should be positioned as an aid, not a replacement for learning. Educators must provide guidance on critical evaluation of OMT outputs, cross-checking meanings, and understanding the "why" behind grammatical corrections to prevent passive dependence and promote long-term language acquisition.

Conclusion

This study concludes that online machine translation, when utilized as a CALL tool, has a significant positive effect on the grammatical accuracy and overall quality of EFL students' writing. The quantitative results provide strong evidence of its effectiveness in improving test

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scores. However, the qualitative insights reveal that this effectiveness is contingent upon critical and guided use. To maximize benefits and minimize the risks of over-reliance, it is essential for educators to provide scaffolding and explicit instruction on how to use OMT as a learning aid rather than a crutch. Future research should explore the long-term impacts of OMT use on autonomous writing skills and investigate specific pedagogical models for its effective integration into EFL curricula.

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