The Mediating Effect of Vocabulary Knowledge on the Relationship Between Google Translate Usage and Writing Proficiency Among Grade 10 Students

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Abstract

Writing proficiency in English remains a significant challenge in the academic setting. This study explored how vocabulary knowledge mediates the relationship between Google Translate usage and writing proficiency. Mediation analysis was used to select 150 samples using a simple random sampling technique. The results revealed that the variable of interest did not significantly mediate the correlation between the predictive and criterion variables. This result challenged the proposition of the Technology-Enhanced Language Learning (TELL) framework. Further studies should explore other variables that mediate the link between Google Translate usage and writing proficiency. Additionally, educational institutions may introduce students to diverse technological tools to enhance their access to quality education, particularly in writing development.

I. INTRODUCTION

Writing proficiency in English remains a challenge in academic settings, particularly among non-native English-speaking students in countries such China, Saudi Arabia, Indonesia, and the Philippines (Putri et al., 2022; Tong et al., 2023; Altyari, 2017). Filipino students face difficulties organizing and expressing their ideas clearly because their limited vocabulary. Research indicates that a firm grasp of the Academic Word List (AWL) is crucial for effective writing in both educational and business contexts (Nation, 2020). Additionally, Shanahan (2022) highlighted the importance of explicit handwriting and spelling instruction in improving writing fluency, while Ehsan et al. (2024) emphasized structured feedback systems as essential in enhancing creative writing skills in English Language Teaching (ELT) contexts.

Limited vocabulary significantly affects students' academic performance and career opportunities, as they struggle to produce diverse and coherent written work (Nation, 2020). In today's interconnected world, English proficiency is essential to effective business communication and professional success. Studies suggest that greater proficiency in English positively influences global business operations, whereas language barriers often create challenges for international trade (Agustina et al., 2024). Given these implications and the lack of research on effective solutions to these language barriers, this study examined the role of vocabulary knowledge in mediating the relationship between Google Translate usage and writing proficiency.

This study aimed to assess the level of Google Translate usage, vocabulary knowledge, and writing proficiency among Grade 10 students, while determining the relationships among these variables. It also sought to evaluate whether vocabulary knowledge mediates the impact of Google Translate usage on writing proficiency. The study was grounded in the Technology-Enhanced Language Learning (TELL) framework (Warschauer, 2000), which suggests that technology can facilitate, rather than replace, language acquisition. Google Translate served as the independent variable, writing proficiency as the dependent variable, and vocabulary knowledge as the mediating

factor. The findings of this study could provide valuable insights for educators, policymakers, and students to improve English language instruction and digital tool integration in learning environments.

II. METHODS

This study employed a quantitative, non-experimental correlational research design to examine the relationships between Google Translate usage, vocabulary knowledge, and writing proficiency among grade 10 students. Path analysis was used to assess both direct and indirect relationships among these variables, providing insights into how vocabulary knowledge mediates the connection between Google Translate usage and writing proficiency (McLeod, 2018; Wu, 2019). The study sampled 150 grade 10 students from selected public junior high schools in Davao City, Philippines, using simple random sampling to ensure representativeness (Etikan & Bala, 2017). Bootstrapping techniques enhance statistical power and reliability (Fritz & MacKinnon, 2007; Preacher & Hayes, 2008), and ethical approval and informed consent were obtained from authorities, parents, and respondents before participation.

The study utilized a survey questionnaire, vocabulary test, and writing task to measure the three key variables. The Google Translate usage questionnaire (Kok Wei, 2021) achieved a Cronbach's alpha of 0.861, whereas the vocabulary test based on Nation's framework (2001) had reliability of 0.737. Writing proficiency was evaluated using an argumentative essay task, rated using multiple criteria, yielding a Cronbach's alpha of 0.982 (Hikmah et al., 2019). Data collection followed ethical protocols from the DOST-PHREB and the Data Privacy Act of 2012, ensuring confidentiality and participant well-being. For data analysis, descriptive statistics summarized central tendencies (Field, 2013), while Pearson's correlation and multiple regression identified relationships and predictive effects between Google Translate usage, vocabulary knowledge, and writing proficiency (Field, 2018). These methods ensured a systematic and rigorous examination of the study objectives.

III. RESULTS AND DISCUSSION

A. Text Level of Google Translate Usage, Vocabulary Knowledge, and Writing Proficiency among Grade 10 Students

The study found that Grade 10 students in public high schools frequently used Google Translate, with an overall mean of 3.51 (SD = 0.47), indicating a high reliance on the tool for language-related tasks. Among the specific indicators, agreement had the highest mean (M = 3.69, SD = 0.56), followed by frequency (M = 3.43, SD = 0.61), and accuracy (M = 3.40, SD = 0.64), suggesting that students perceived Google Translate as useful and reliable. However, despite this frequent use, the students' vocabulary knowledge remained low (M = 2.42, SD = 0.68), with challenges in form (M = 2.33, SD = 0.86), meaning (M = 2.50, SD = 0.94), and use (M = 2.42, SD = 1.08), highlighting difficulties in comprehension and application. Similarly, students exhibited low writing proficiency (M = 2.12, SD = 0.86), with consistently low scores in grammar (M = 2.04, SD = 0.90), organization (M = 2.09, SD = 0.94), content (M = 2.31, SD = 0.87), mechanics (M = 2.09, SD = 0.90), and style (M = 2.07, SD = 0.90), indicating struggles with structured writing. These results suggest that while Google Translate provided accessibility and basic comprehension, it did not significantly improve the students' vocabulary acquisition or writing proficiency. The findings emphasize the need for instructional interventions that integrate structured vocabulary and writing instruction alongside translation technologies to enhance overall language competency.

The study found that grade 10 students in public high schools frequently use Google Translate, considering it a convenient tool for understanding unfamiliar words, completing assignments, and accessing academic content (Alhaisoni & Alhaysony, 2017; Fajri, 2022). While students generally expressed positive attitudes toward its use, concerns were raised about overdependence, which may limit natural language practice and hinder deeper language learning (Tsai, 2019). Among the three indicators of usage, agreement received the highest rating, suggesting that students strongly believe in its usefulness, while frequency of use remains high despite concerns about accuracy (Pham et al.,

2022; Can, 2023). Although students found Google Translate helpful, its reliability varied, and many users acknowledged the need to verify its outputs owing to potential grammatical and contextual inaccuracies (Fibriana et al., 2021; Phan & Chen, 2021). This widespread use suggests that while Google Translate serves as a valuable academic tool, its effectiveness in enhancing language proficiency depends on how students integrate it with other learning strategies (Ulfa, 2023; Lengari, 2023).

Table 1. Descriptive Levels

	Mean	SD	Descriptive Level
Frequency	3.43	0.61	High
Agreement	3.69	0.56	High
Accuracy	3.40	0.64	High
Google Translate Usage	**3.51**	**0.47**	**High**
Form	2.33	0.86	Low
Meaning	2.50	0.94	Low
Use	2.42	1.08	Low
Vocabulary Knowledge	**2.42**	**0.68**	**Low**
Grammar	2.04	0.90	Low
Organization	2.09	0.94	Low
Content	2.31	0.87	Low
Mechanics	2.09	0.90	Low
Style	2.07	0.90	Low
Writing Proficiency	**2.12**	**0.86**	**Low**

Moreover, the study found that Grade 10 students in public high schools exhibited low levels of vocabulary knowledge, which may hinder their ability to effectively use and retain new words in academic tasks. This aligns with previous research showing that students often struggle with vocabulary comprehension, recognition, and usage, which limits their overall language competency (Perez & Perez, 2022; Sparks et al., 2017). Among the three indicators, understanding word meanings was the most challenging, reflecting difficulties in grasping and applying new vocabulary, which affects students' ability to interact with complex academic content (McKeown et al., 2018; Lawrence et al., 2019). The use of vocabulary in context was also limited, as many students demonstrated inconsistent language applications, emphasizing the need for instructional strategies that promote contextual vocabulary learning (Kapelner et al., 2018; İlter, 2019). Additionally, students face challenges in recognizing and using word forms, such as prefixes and suffixes, which are essential for vocabulary expansion and language fluency (Oz, 2014; Aslamiah, 2020). These findings highlight the importance of direct vocabulary instruction, scaffolded learning, and morphological awareness training in enhancing students' language skills and comprehension.

Furthermore, the study revealed that grade 10 students in public high schools exhibit varied levels of writing proficiency, with most performing below average. While some students demonstrated strong writing skills, many struggled with essential components, such as grammar, organization, mechanics, style, and content development. Prior research confirms that writing proficiency gaps in secondary students necessitate individualized support and structured interventions, including writing practice, personalized feedback, and instructional scaffolding (Javed et al., 2013; Graham et al., 2015). Among the writing indicators, content scored the highest, though still below average, suggesting that students have ideas but struggle with clarity and organization (Applebee et al., 2014). Organizations and mechanics are also areas of difficulty, highlighting the need for structured lessons on logical flow, transitions, spelling, and punctuation (Gasimova, 2021; Debora, 2017). Furthermore, students exhibit weaknesses in grammar and style, making it difficult for them to write coherently and effectively (Sulaiman & Mohammed, 2019; Pratama et al., 2022).

These findings underscore the importance of targeted writing instruction, direct grammar lessons, and structured feedback in enhancing students' writing proficiency and overall academic performance.

B. Relationship Between Google Translate, Vocabulary Knowledge, and Writing Proficiency of Grade 10 Students

Table 2 presents the correlation analysis, revealing no significant relationship between Google Translate usage and writing proficiency, as indicated by an extremely weak negative correlation (r = -0.003) and p-value of 0.969, suggesting that reliance on the tool does not directly impact students' writing skills. Similarly, Google Translate usage showed no significant correlation with vocabulary knowledge (r = 0.031, p = 0.709), implying that students may not be effectively using it for vocabulary development. In contrast, a moderate positive correlation was observed between vocabulary knowledge and writing proficiency (r = 0.479, p = 0.000), confirming that students with stronger vocabulary tended to perform better in writing. These findings highlight the importance of vocabulary acquisition in writing development while suggesting that Google Translate may not be a sufficient tool for improving either vocabulary or writing proficiency.

Table 2. Relationship Between Variables

	r	p-value	Decision on H_o	Interpretation
Writing Proficiency				
Google Translate Usage	-.003	.969	Accept	Not Significant
Vocabulary Knowledge	.479	.000	Reject	Significant
Vocabulary Knowledge				
	r	p-value	Decision on H_o	Interpretation
Google Translate Usage	.031	.709	Accept	Not Significant

The findings in Table 2 indicate no significant correlation between Google Translate usage and vocabulary knowledge, suggesting that translation tools may not effectively aid vocabulary acquisition, as they provide immediate translations but do not support deep learning or retention (Ting & Tan, 2021; Arfiana et al., 2022). Similarly, Google Translate usage and writing proficiency showed no significant relationship, reinforcing the idea that translation tools alone do not enhance writing skills, and structured writing instruction may be necessary (Alrajhi, 2021; Kurniawan et al., 2022). However, a significant positive correlation exists between vocabulary knowledge and writing proficiency, indicating that students with a strong vocabulary base tend to produce better-structured writing (Rafique et al., 2023; Zhang et al., 2022). While some studies argue that vocabulary alone does not determine writing success (Yuhariah & Sujarwati, 2023; Nugraheni et al., 2024), these results emphasize the need for explicit vocabulary instruction, structured writing exercises, and peer feedback, rather than reliance on translation tools for language development.

C. Mediating Effect of Vocabulary Knowledge on the Relationship Between Google Translate Usage and Writing Proficiency Among Grade 10 Students

The findings in Table 3 reveal that Google Translate usage has an extremely weak and statistically insignificant negative effect on writing proficiency among Grade 10 students, as indicated by a regression weight of -0.01 and a p-value of 0.969. The high error variance (0.73) suggests that other factors, such as vocabulary knowledge, grammar instruction, and writing practice, play a more substantial role in shaping students' writing proficiency. The path diagram (Figure 2) further illustrates the negligible impact, reinforcing that reliance on Google Translate does not meaningfully contribute to independent writing-skill development. Since students may depend on direct translations rather than actively processing language, educators should prioritize explicit vocabulary instruction, structured writing exercises, and interactive learning strategies to effectively enhance writing proficiency.

Table 3. Regression Weights (Total Effect)

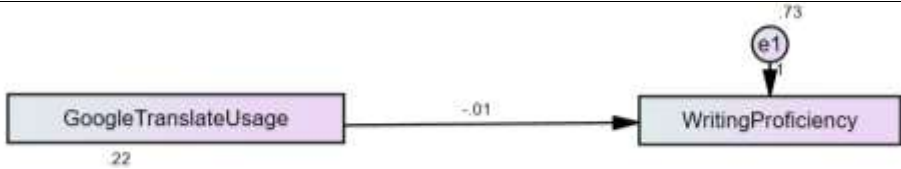|			Estimate	S.E.	P	Decision on Ho	Interpretation
Google Translate Usage	→	Writing Proficiency	-0.01	0.15	0.969	Accept	Not Significant

Figure 2. Path Diagram for Google Translate on Writing Proficiency

Moreover, Table 4 presents a mediation analysis examining the role of vocabulary knowledge in the relationship between Google Translate usage and writing proficiency among grade 10 students. The results indicate that Google Translate usage does not significantly impact vocabulary knowledge (p = 0.707) or directly influence writing proficiency (p = 0.803), leading to the acceptance of the null hypothesis (H$_0$) in both cases. However, vocabulary knowledge significantly contributed to writing proficiency (p = 0.000), reinforcing its essential role in writing development. As Google Translate does not enhance vocabulary knowledge, it does not mediate the relationship between translation tool usage and writing proficiency. These findings suggest that Google Translate is ineffective in improving writing proficiency, either directly or indirectly, and that students should adopt alternative vocabulary-building strategies, such as explicit instruction and active language engagement, to enhance their writing skills.

Table 4. Mediating Effect

Step			Estimate	Std. Error	p-value	Decision on Ho	Interpretation
Google Translate Usage	→	Vocabulary Knowledge	0.09	0.231	.707	Accept	Not Significant
Vocabulary Knowledge	→	Writing Proficiency	0.31	0.046	.000	Reject	Significant
Google Translate Usage	→	Writing Proficiency	-0.03	0.130	.803	Accept	Not Significant

Figure 1 further illustrates the mediation analysis of vocabulary knowledge in the relationship between Google Translate usage and writing proficiency, showing that Google Translate does not significantly impact either vocabulary knowledge (β = 0.09, p = 0.707) or writing proficiency (β = -0.03, p = 0.803). However, vocabulary knowledge was a strong predictor of writing proficiency (β = 0.31, p = 0.000), confirming that students with better vocabulary knowledge tended to have stronger writing skills. Since Google Translate usage does not significantly influence vocabulary knowledge or writing proficiency, no mediation is observed, meaning that Google Translate is ineffective in enhancing writing proficiency either directly or indirectly. Additionally, the high error variances (e1 = 0.56, e2 = 1.77) suggest that other factors contributed more substantially to vocabulary knowledge and writing proficiency. These findings reinforce the importance of structured vocabulary instruction and interactive learning methods, rather than relying on translation tools for language development.

The findings of this study align with previous research, indicating that while Google Translate provides quick word translations, it does not facilitate deeper language processing, leading to superficial understanding and limited writing development (Ferlazzo, 2024).
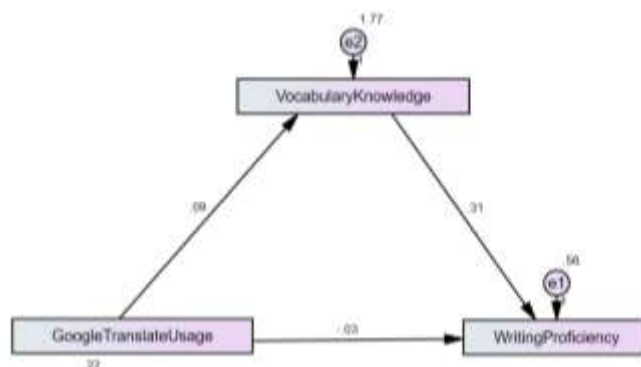
Figure 1. Path Analysis Showing the Variables of the Study

Furthermore, studies have shown that Google Translate can introduce errors and awkward phrasing, as it often fails to capture context-specific nuances, making it an unreliable tool for improving writing quality (van Lieshout & Cardoso, 2022). However, contradictory evidence suggests that Google Translate may be beneficial when used effectively. Studies have demonstrated that students who use Google Translate strategically, such as revising their writing, achieve better vocabulary richness, grammatical accuracy, and overall text quality (Tsai, 2020). Additionally, research on indigenous learners and narrative writing found that Google Translate significantly enhanced vocabulary learning and helped students structure their sentences more effectively (Kai & Hua, 2021; Khairunisa & Fajaryani, 2022). These conflicting findings highlight the need for structured pedagogical guidance and the integration of translation tools into language learning to ensure their effective use in developing vocabulary and writing proficiency.

In summary, the study found that Google Translate usage was high, indicating frequent use for language-related tasks, whereas both vocabulary knowledge and writing proficiency were low, suggesting poor overall language skills. A significant correlation was found between vocabulary knowledge and writing proficiency, thus highlighting the importance of vocabulary in writing development. However, Google Translate usage was not significantly correlated with either vocabulary knowledge or writing proficiency, and vocabulary knowledge did not mediate the relationship between Google Translate usage and writing proficiency, indicating that reliance on translation tools does not directly enhance writing skills.

IV. CONCLUSIONS

Based on the findings of this study, it can be concluded that vocabulary knowledge does not significantly mediate the correlation between Google Translate usage and writing proficiency. This conclusion challenged the Technology-Enhanced Language Learning (TELL) framework, proposing the potential of digital tools to provide meaningful and interactive language exposure, suggesting that mere access to technology does not automatically translate into improved linguistic outcomes.

V. RECOMMENDATIONS

Based on the conclusion, it is recommended that further studies may be conducted using other variables not covered in this study that may significantly mediate the correlation between Google Translate usage and writing proficiency. Likewise, educational institutions may provide ample opportunities for students to be exposed to technological tools other than Google Translate, such as an Artificial Intelligence (AI) translator, to enhance their writing proficiency, which is an interest related to the Sustainable Development Goal (SDG), specifically for greater access to quality education.

REFERENCES

[1] Agustina, V., Thamrin, N. R., & Oktoma, E. (2024). The role of English language proficiency in the global economy and business communication. *International Journal of Administration, Business & Organization, 5*(4), 82–90. https://doi.org/10.61242/ijabo.24.423

[2] Alahmadi, N. S., & Foltz, A. (2020). Influence of translation tools on vocabulary learning strategies among EFL students. *Journal of Psycholinguistic Research, 49*(6), 1053–1070. https://doi.org/10.1007/s10936-020-09720-9

[3] Alhaisoni, E., & Alhaysony, M. (2017). An investigation of Saudi EFL university students' attitudes towards the use of Google Translate. *International Journal of English Language Education, 5*(1), 72–82. https://doi.org/10.5296/ijele.v5i1.10696

[4] Alhaisoni, E., & Alhaysony, M. (2017). An investigation of translation strategies and Google Translate usage among Saudi EFL students. *International Journal of English Linguistics, 7*(4), 28–38. https://doi.org/10.5539/ijel.v7n4p28

[5] Alrajhi, M. (2021). The genre effect on Google Translate-assisted L2 writing output quality. *ReCALL, 33*(2), 163–178. https://doi.org/10.1017/S0958344021000037

[6] Altyari, A. W. (2017). *English vocabulary uptake by Saudi Arabic-speaking students at public schools.* British Journal of English Linguistics, 5(1), 10–16. European Centre for Research Training and Development UK. Retrieved from https://www.eajournals.org

[7] Applebee, A. N., Langer, J. A., & Nystrand, M. (2014). Discussion-based approaches to developing understanding and writing in English language arts. *American Educational Research Journal, 50*(3), 685–726. https://doi.org/10.3102/0002831213488628

[8] Arfiana, A., Sabarun, S., & Widiastuty, H. (2022). Correlation between students' writing ability and learning motivation in Google Translate writing class. *Project (Professional Journal of English Education, 5*(2), 334–343. https://doi.org/10.22460/project.v5i2.p334-343

[9] Aslamiah, S. (2020). The use of prefixes and suffixes for increasing vocabulary students. *Fikruna, 2*(2). https://doi.org/10.56489/fik.v2i2.19

[10] Babar, M., Rahman, G., & Ashraf, S. (2020). An analysis of the problems in learning English words through word formation processes by undergraduate students at Hazara University. *Global Social Sciences Review, 5*(4), 84–96. https://doi.org/10.31703/gssr.2020(V-IV).09

[11] Bahri, H., & Mahadi, T. S. T. (2016). Google Translate as a supplementary tool for learning Malay: A case study at Universiti Sultan Zainal Abidin (UniSZA), Terengganu, Malaysia. *Journal of Foreign Language Teaching and Learning, 1*(1), 53–57. Retrieved from https://ejournal.unis.ac.id/index.php/Foremost/article/download/4578/2307

[12] Can, S. (2023). Instructors' perceptions of students' Google Translate use in language learning. *Söylem Filoloji Dergisi, 8*(2), 102–112. https://doi.org/10.29110/soylemdergi.1186593

[13] Debora, M. (2017). Implementing organizational skills in the classroom. *Bahas, 26*(3), 145–158. https://doi.org/10.24114/bhs.v26i3.5595

[14] Ehsan, M., Fatima, N., Darazi, M. A., Majeed, A., & Chaudhary, A. A. (2024). The role of feedback in enhancing creative writing skills in ELT contexts. *Remittances Review, 9*(3), 350–368. DOI: 10.33282/rr.vx9i2.18

[15] Etikan, I., & Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal, 5*(6), 215–217. https://doi.org/10.15406/bbij.2017.05.00149

[16] Fajrie, R. (2022). Students' perception on the use of Google Translate for academic assignment. *Language, Literature, and Culture, 2*(1), 449–457. Retrieved from http://publikasi.dinus.ac.id/index.php/unclle

[17] Ferlazzo, L. (2024, June 25). When is it OK to use Google Translate in the English-learner classroom? *Education Week.* https://www.edweek.org/teaching-learning/opinion-the-use-or-misuse-of-google-translate-in-the-ell-classroomwhen-is-it-ok-to-use-google-translate-in-the-english-learner-classroom/2024/06

[18] Fibriana, I., Ardini, S., & Affini, L. (2021). Google Translate and its role in academic writing for university students. *Journal of Applied English Studies, 4*(1), 26–33. https://doi.org/10.47354/jaes.v4i1.96

[19] Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). SAGE Publications.

[20] Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics.* 5th Edition, Sage, Newbury Park.

[21] Fitrawati, F., & Safitri, D. (2021). Students' grammatical errors in essay writing: A pedagogical grammar reflection. *International Journal of Language Education, 5*(2), 14–25. https://doi.org/10.26858/ijole.v5i2.16128

[22] Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science, 18*(3), 233–239. https://doi.org/10.1111/j.1467-9280.2007.01882.x

[23] Gallagher, M., Barber, A., Beck, J., & Buehl, M. (2019). Academic vocabulary: Explicit and incidental instruction for students of diverse language backgrounds. *Reading & Writing Quarterly, 35*(2), 102–118. https://doi.org/10.1080/10573569.2018.1510796

[24] Garduce, S., & Baluyos, E. (2023). Common errors in grammar and mechanics in academic writing by senior high school students. *International Journal for Multidisciplinary Research, 5*(6), 15–28. https://doi.org/10.36948/ijfmr.2023.v05i06.9135

[25] Gasimova, H. (2021). Formation of organizational abilities in high school students as a requirement of new pedagogical thinking. *International Journal of Multidisciplinary Research, 7,* 450–454. https://doi.org/10.33619/2414-2948/65/53

[26] Graham, S., Harris, K. R., & Santangelo, T. (2015). Research-based writing practices and the Common Core: Meta-analysis and recommendations. *Educational Researcher, 44*(1), 38–47. https://doi.org/10.3102/0013189X15570388

[27] Hendel, R. (2014). Enhancing writing through strengthened executive function. *Journal on Systemics, Cybernetics and Informatics, 12*(2), 17–22. https://www.iiisci.org/journal/pdv/sci/pdfs/EA920DW14.pdf

[28] Hikmah, I., Fitriana, Y., & Diah, E. (2019). Developing a writing rubric for assessing writing proficiency. *Journal of English Education, 4*(2), 104–114. https://doi.org/10.4108/eai.6-10-2019.2291013

[29] İlter, İ. (2019). The efficacy of context clue strategy instruction on middle grades students' vocabulary development. *RMLE Online, 42*(1), 1–15. https://doi.org/10.1080/19404476.2018.1554522

[30] Jaganathan, P., Hamzah, M., & Subramaniam, I. (2014). An analysis of Google Translate use in decoding contextual semanticity among EFL learners. *Asian Journal of Research in Social Sciences and Humanities, 4*(1), 1–13. https://doi.org/10.5958/2249-7315.2014.00962.9

[31] Javed, M., Juan, W. X., & Nazli, S. (2013). A study of students' assessment in writing skills of the English language. *International Journal of Instruction, 6*(2), 129–144. https://files.eric.ed.gov/fulltext/ED544075.pdf

[32] Kai, T., & Hua, T. (2021). Enhancing English language vocabulary learning among indigenous learners through Google Translate. *Journal of Education and e-Learning Research, 8*(2), 143–148. https://doi.org/10.20448/JOURNAL.509.2021.82.143.148

[33] Kapelner, A., Soterwood, J., Nessaiver, S., & Adlof, S. (2018). Predicting contextual informativeness for vocabulary learning. *IEEE Transactions on Learning Technologies, 11*(1), 13–26. https://doi.org/10.1109/TLT.2018.2789900

[34] Khairunisa, N., & Fajaryani, N. (2022). The use of Google Translate by students in writing a narrative essay. *JELT (Jambi-English Language Teaching), 6*(2). https://doi.org/10.22437/jelt.v6i2.18477

[35] Kok Wei, L. (2021). The use of Google Translate in English language learning: How students view it. *International Journal of Advanced Research in Education and Society, 3*(1), 47-53. https://myjms.mohe.gov.my/index.php/ijares/article/view/12459

[36] Kurniawan, R., Yunita, W., & Sofyan, D. (2022). The correlation between students' perception of Google Translate and their English writing skill. *Wacana: Jurnal Penelitian Bahasa, Sastra, dan Pengajaran, 19*(1). https://doi.org/10.33369/jwacana.v19i1.23047

[37] Lawrence, J., Hagen, Å., Hwang, J., Lin, G., & Lervåg, A. (2019). Academic vocabulary and reading comprehension: Exploring the relationships across measures of vocabulary knowledge. *Reading and Writing, 32*(2), 285–306. https://doi.org/10.1007/s11145-018-9865-2

[38] Lengari, Y. (2023). Students' perception of Google Translate in improving writing skill. *Saintara: Jurnal Ilmiah Ilmu-Ilmu Maritim, 7*(1). https://doi.org/10.52475/saintara.v7i1.204

[39] McGraw-Hill Education. (2001). *Vocabulary power* (pp. 1–119). The McGraw-Hill Companies, Inc. Retrieved September 7, 2024, from https://ummassadhomeschool.com/wp-content/uploads/2015/10/vocabulary-workbook-10.pdf

[40] McKeown, M., Crosson, A., Moore, D., & Beck, I. (2018). Word knowledge and comprehension effects of an academic vocabulary intervention for middle school students. *American Educational Research Journal, 55*(3), 572–616. https://doi.org/10.3102/0002831217744181

[41] McLeod, S. (2018). Correlation definitions, examples & interpretation. *Simply Psychology.* https://www.simplypsychology.org/correlation.html

[42] Nafiah, U. (2019). Writing style: Analyzing how the students express their ideas in descriptive paragraph. *Inovish Journal, 4*(1). https://doi.org/10.35314/inovish.v4i1.937

[43] Nasir, K. (2019). Grammatical difficulties faced by second language (L2) learners in writing sentences. *ITQAN: Jurnal Ilmu-Ilmu Kependidikan, 10*(1), 1–10. https://www.researchgate.net/publication/349579639_GRAMMATICAL_DIFFICULTIES_FACED_BY_SECOND_LANGUAGE_L2_LEARNERS_IN_WRITING_SENTENCES

[44] Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge University Press. https://doi.org/10.1017/CBO9781139524759

[45] Nation, I. S. P. (2020). *Learning vocabulary in another language* (2nd ed.). Cambridge University Press.

[46] National Center for Education Statistics. (2011). *Writing 2011: National Assessment of Educational Progress at grades 8 and 12*. U.S. Department of Education. Retrieved from https://www.amacad.org/humanities-indicators/k-12-education/writing-proficiency

[47] Norhayati, & Elmayantie, C. (2022). Context clues in reading text for improving EFL students' reading skills. *ENLIT Journal, 2*(2), 83–87. https://doi.org/10.33654/enlit.v2i2.1922

[48] Nugraha, R., Ratnawati, A., & Surachmat, F. (2018). Students' perspectives on Google Translate use in vocabulary learning. *International Journal of Language Education, 2*(1), 54–66. https://doi.org/10.17509/ijle.v2i1.14864

[49] Nugraheni, A., Arvianti, G., & Arochman, T. (2024). The Correlation between The Vocabulary Mastery and Writing Skills of the Ninth Graders of SMP Negeri 1 Bandongan. *Seltics Journal: Scope of English Language Teaching Literature and Linguistics*. https://doi.org/10.46918/seltics.v7i1.2134.

[50] Öz, H. (2014). Morphological awareness and some implications for English language teaching. *Procedia - Social and Behavioral Sciences, 136*, 98–103. https://doi.org/10.1016/j.sbspro.2014.05.296

[51] Perez, A. C., & Perez, L. (2024, January 28). Multiple-level vocabulary knowledge among senior high-school students. *Puissant, 5*(1), 1201–1221. Retrieved from //puissant.stepacademic.net/puissant/article/view/239

[52] Pham, A., Nguyen, Y., Tran, L., Huynh, K., Le, N., & Huynh, P. (2022). University students' perceptions on the use of Google Translate: Problems and solutions. *International Journal of Emerging Technologies in Learning, 17*(4), 79–94. https://doi.org/10.3991/ijet.v17i04.28179

[53] Phan, N., & Chen, C. (2021). Vietnamese engineering students' perceptions of the use of Google Translation Tool. *Journal of Science and Technology - IUH, 48*(6). https://doi.org/10.46242/jst-iuh.v48i6.1610

[54] Pratama, L., Prasetiyo, T., & Pambayun, R. (2022). An analysis of students' lexical choice in writing descriptive text. *LUNAR, 6*(1). https://doi.org/10.36526/ln.v6i1.2066

[55] Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879–891. https://doi.org/10.3758/BRM.40.3.879

[56] Putri, A. L. D., Tambusai, A., & Hasibuan, A. L. (2022). Students' difficulties in acquiring English writing. *International Journal of Educational Research Excellence, 1*(1), Article 21. https://doi.org/10.55299/ijere.v1i1.21

[57] Rafique, S., Waqas, A., & Shahid, C. (2023). The Correlation between Vocabulary Knowledge and English Language Proficiency at Undergraduate Level. *Pakistan Journal of Humanities and Social Sciences*. https://doi.org/10.52131/pjhss.2023.1102.0422.

[58] Rahimi, M., & Shadiev, R. (2019). Effects of using online translation tools on vocabulary learning and retention among EFL learners. *Educational Technology & Society, 22*(4), 38–49. https://www.j-ets.net/ETS/journals/22_4/4.pdf

[59] Sari, I. (2014). Mechanics problems in writing faced by the fourth semester students of the English study program. *ELTS Journal*, *2*(2), 24-29. Retrieved from https://123dok.com/document/zxvdq8ry-mechanics-problems-in-writing-faced-by-the-fourth-semester-students-of-the-english-study-program

[60] Shanahan, T. (2022). How to teach writing fluency. *Shanahan on Literacy*. https://www.shanahanonliteracy.com/blog/how-to-teach-writing-fluency

[61] Sparks, R., Luebbers, J., & Castañeda, M. (2017). How well do U.S. high school students achieve in Spanish when compared to native Spanish speakers. *Foreign Language Annals, 50*(2), 339–366. https://doi.org/10.1111/flan.12268

[62] Sulaiman, M., & Mohammed, H. (2019). Evaluating grammatical competence in Kurdish EFL junior students' writings at the English Department, College of Languages, University of Duhok. *The Journal of University of Duhok, 22*(2), 16-30. https://doi.org/10.26682/hjuod.2019.22.2.16

[63] Ting, Y. L., & Tan, C. Y. (2021). The effects of Google Translate on vocabulary acquisition among indigenous learners. *Journal of Language and Education Research, 14*(3), 127–138. Retrieved from https://eric.ed.gov/?id=EJ1300106

[64] Tong, Y., Hasim, Z., & Halim, H. A. (2023). The role of L2 vocabulary knowledge in writing proficiency from the perspective of mediating effect of fluency. *Arab World English Journal, 14*(3), 210–230. https://doi.org/10.24093/awej/vol14no3.14

[65] Tsai, S. (2020). Chinese students' perceptions of using Google Translate as a translingual CALL tool in EFL writing. *Computer Assisted Language Learning, 35*, 1250–1272. https://doi.org/10.1080/09588221.2020.1799412

[66] Tsai, S. C. (2019). Using google translate in EFL drafts: a preliminary investigation. *Computer Assisted Language Learning*, *32*(5–6), 510–526. https://doi.org/10.1080/09588221.2018.1527361

[67] Ulfa, M. (2023). The correlation between students' translation ability and the frequency of using Google Translate of English study program students at Riau University. *Madah: Jurnal Bahasa dan Sastra, 14*(1). https://doi.org/10.31503/madah.v14i1.518

[68] van Lieshout, C., & Cardoso, W. (2022). Google Translate as a tool for self-directed language learning. *Language Learning & Technology, 26*(1), 1–19. https://scholarspace.manoa.hawaii.edu/bitstreams/8d064a8c-e771-47db-99c0-97fb583a6d2d/download

[69] Warschauer, M. (2000). *The death of the author? Technologies, literacies, and identities in a digital world*. *Language Learning & Technology, 4*(2), 1-13. https://doi.org/10125/25137

[70] Winans, M. (2021). Grammarly's Tone Detector: Helping students write pragmatically appropriate texts. *RELC Journal, 52*, 348–352. https://doi.org/10.1177/00336882211010506

[71] Wirantaka, A., & Fijanah, N. (2021). Effective use of Google Translate in writing. *ResearchGate*. https://www.researchgate.net/publication/357706237_Effective_Use_of_Google_Translate_in_Writing

[72] Wu, H.-S. (2019). Introduction to path analysis. *CFDR Workshop Series.* Bowling Green State University. https://www.bgsu.edu/content/dam/BGSU/college-of-arts-and-sciences/center-for-family-and-demographic-research/documents/Workshops/2020-path-analysis-handout.pdf

[73] Yuhariah, F., & Sujarwati, I. (2023). The correlation between high school students' vocabulary mastery and writing ability. *Pedagonal: Jurnal Ilmiah Pendidikan, 7*(2). https://doi.org/10.55215/pedagonal.v7i2.6649

[74] Yuliawati, L. (2021). The mechanics accuracy of students' writing. *English Teaching Journal: A Journal of English Literature, Language and Education*. https://doi.org/10.25273/ETJ.V9I1.8890

[75] Zhang, T., Yi, W., & Hu, L. (2022). A study on the correlation between vocabulary breadth and depth and English majors' writing proficiency. *International Journal of Frontiers in Sociology*. https://doi.org/10.25236/ijfs.2022.041212.