GOOGLE TRANSLATE AND PAPER DICTIONARY ON STUDENTS' VOCABULARY AT SMK N 2 BUKITTINGGI: A COMPARATIVE STUDY

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ABSTRACT

Vocabulary plays a central role in students' ability to understand and use English effectively, particularly in vocational education where learners are expected to apply language skills in practical, work-related contexts. This study examines whether there is a significant difference in vocabulary achievement between students who use Google Translate and those who use a paper dictionary during English learning. A comparative quantitative design was employed, involving two groups of tenth-grade students at SMK N 2 Bukittinggi. Ninety students were selected through simple random sampling and divided evenly into a Google Translate group and a paper dictionary group. A vocabulary test consisting of multiple-choice items was administered to measure students' knowledge of word form, meaning, and use. The test results were analyzed using an independent sample t-test to compare the performance of the two groups. The findings show that the mean score of the paper dictionary group was slightly higher than that of the Google Translate group; however, the difference was not statistically significant. This indicates that both tools provide comparable support for vocabulary learning. The results suggest that the effectiveness of vocabulary acquisition does not depend solely on the type of tool used, but rather on how learners interact with the tool and apply vocabulary in meaningful contexts. The study underscores the value of allowing students to use either resource according to their preferences and highlights the importance of integrating both digital and traditional tools to promote balanced and strategic vocabulary learning in vocational classrooms.

Keywords: Vocabulary, Google Translate, Paper Dictionary

A. INTRODUCTION

Vocabulary is widely recognized as the foundation of language proficiency and a key component of language learning, as it provides the basis for developing the four language skills. Ekasari (2020) purpose that vocabulary is not restricted to single words but also includes multi-word expressions and idioms that carry specific meanings. In line with this, Wardani (2015) explains that vocabulary is not merely a collection of words; rather, it refers to the set of words that learners are able to understand and use appropriately within context, which highlights the importance of contextual comprehension. Similarly, Ilxomovich (2024) emphasizes that

vocabulary encompasses not only individual words but also phrases and fixed expressions that convey meaning. stated that vocabulary is defined as a system of words and as a language component which has noteworthy part in a language (Irwandi et al., 2018). In summary, vocabulary is a key component in both language learning and communication. It is not just a list of words, but a set of lexical items used meaningfully in context.

The crucial role of vocabulary in language learning is to help students to understand texts, express ideas, and communicate with others. Also enables students to speak, write, and perform other language skills. Having a limited vocabulary can negatively affect students' abilities. In contrast, a rich vocabulary allows them to communicate, read, listen, and write more effectively (Vitriani et al., 2024). Furthermore, Handayani & Sujito (2025) explained that grammar organizes language, but vocabulary gives meaning to it. In Indonesia vocational high schools, vocabulary has an even bigger role because students are expected to use English not only for their studies but also for their future jobs, such as reading manuals, writing short reports, or speaking with clients (Rahmawati et al., 2023).

Besides, Nugroho (2017) propose that knowledge of vocabulary is essential in learning any language, as it is strongly connected to the intellectual growth of learners and significantly contributes to improve their skills in listening, speaking, reading, and writing. These perspectives demonstrate that vocabulary is indispensable for achieving meaningful communication. A strong vocabulary enables learners to construct coherent and purposeful sentences since limited vocabulary knowledge can prevent learners from expressing ideas clearly (Daulay, 2021). It is essential to explore effective tools and strategies for vocabulary learning because mastering vocabulary is not only simply about memorizing words but also equipping learners with the ability to use language meaningfully and communicatively (Alqahtani, 2015).

Recent years have witnessed the increasing use of digital tools in language learning, one of them is Google Translate that emerge as one of the most widely used applications (Rivera-Trigueros, 2022). Google Translate is defined as a machine translation service offered by Google to convert text from one language to other language. This tool is utilized to support students in developing their writing, reading and vocabulary skills (Chandra & Yuyun, 2018; Hidayat & Anam, 2023; Wirantaka & Fijanah, 2021). The are several advantages of using Google Translate in language learning. First, Google Translate provides learners with immediate access to word meanings and examples of usage, which can support vocabulary expansion in a more efficient way (Setiawan et al., 2020). Second, using Google Translate as a learning tool had been shown to enhance student

engagement, self-awareness, and learner responsibility (Bahri, 2016). Third, students preferred electronic ones for their convenience and pronunciation features not available in print versions (Anh et al., 2021). Fourth, Google Translate contributed significantly to enhancing grammatical accuracy and sentence construction, especially in simple sentence forms (Arif et al., 2024).

On the other hand, there are some limitations that concerns about students' excessive dependence on this tool, as it may weaken their ability to interpret meaning from context, limit their critical thinking, and even result in inaccurate word choices (Sutrisno et al. 2025; Medvedev, 2016). Furthermore, students frequently depended on Google Translate to convert short texts or specific words for everyday communication and academic tasks, particularly reading and writing assignments (Insan Pratiwi et al. 2023; Murtisari et al. 2019). This indicates that while the use of Google Translate offers considerable advantages for vocabulary acquisition, its pedagogical effectiveness requires careful evaluation to ensure that it promotes independent learning, encourages appropriate language use, and does not become a substitute for the development of essential vocabulary learning strategies.

Paper dictionary is also widely used by students in Indonesia. As tool in helping students in learning English. It is defined as a list of words for any kind of information printed on paper and organized by letter sequence (Marjun, 2021; Maden, 2020). According to Anh et al. (2021) A paper dictionary has advantage of providing a deeper context for word usage, as well as additional information such as etymology and example sentences. In addition, paper dictionary helped students to improve understanding and memory of words. Students who used Paper dictionary to understand unfamiliar words showed greater vocabulary growth than those who relied only on context (Zorigt & Tumurbat, 2022; Alahmadi & Foltz, 2020). Moreover, using a paper dictionary helps students improve their focus and train their logical thinking which supports them in learning and forming words more effectively (Polhaupessy, 2024; Awaliyah et al., 2020). Furthermore, Individuals who were proficient in using a paper dictionary were able to continue learning beyond the classroom, which enhances their capacity for independent language acquisition (Jones, 2018). It can be concluded that the experience of using a Paper dictionary can help students develop research skills that were useful beyond the context of language learning. Thus, a Paper dictionary not only served as a helpful tool but also as a means to build good study habits. Overall, a Paper dictionary played a very important role in supporting students in language learning.

Nevertheless, many students perceive paper dictionary as less practical because using them requires more time and effort

compared to digital one (Indrawati et al., 2024; Sadieda et al., 2020). Furthermore, Paper dictionary helps reducing the anxiety often experienced by students when faced with a foreign language, as they can refer back to a more familiar language (Jones, 2018; Wibowo & Oktavia, 2024). In conclusion paper dictionary supports a deeper and more understanding of vocabulary, their practicality and relevance in modern classrooms need to be reconsidered, particularly in comparison to the speed, accessibility, and efficiency offered by digital tools.

There were several studies that compare about both tools in various areas in language skills and language components. First, students who used Google Translate and those who used paper dictionary had similar results in vocabulary tests, although paper dictionary users scored slightly higher (Indrawati et al., 2024). Second, using both together might be the best choice because they balance each other's strengths and weaknesses (Beikian et al., 2021). However, most of these studies were carried out in universities or general high schools. Vocational high school students have not been studied much, even though their needs and goals are different. Many vocational students learn English for practical reasons, such as finding a job, which means the way they use tools may also be different. In short, vocabulary learning is very important for vocational high school students, but many still face serious problems. Both Google Translate and paper

dictionary are widely used, yet studies that directly compare the two tools are still limited, while most previous research has examined them separately. This research will fill that gap by comparing the two tools in SMK N 2 Bukittinggi with applied different research design was comparative and vocabulary test instrument, and also provide useful information for teachers and students in improving vocabulary learning.

At SMK N 2 Bukittinggi, where this study was carried out, each group that taught by two English teachers, both of them were given different treatment for each group in terms of the different tools used to support vocabulary learning. The Google Translate group was instructed to use the application on their smartphones when encountering unfamiliar words, while the paper dictionary group was required to use a printed dictionary. Both groups were given the same instructional materials and vocabulary learning activities to ensure that the only difference was the tool used. By during three times observation in November 2024 at SMK N 2 Bukittinggi, especially for tenth-grade students. it found several problems on their learning. Many students relied too much on Google Translate. This helped them write faster, but the texts they produced often did not show real understanding. When smartphones were not allowed, they could not write much at all which showed their limitation on vocabulary knowledge. On the other hand, students who used paper dictionary

often became frustrated because it took too much time to find words, and the explanations were not always clear. Many of them also failed to find the right words because they did not know the correct spelling or the base form, such as looking for *went* instead of *go*. These problems show the gap between the convenience of digital tools and the depth of traditional dictionary, and they are the main reasons for doing this research. The study is based on Nation, (2001) theory of vocabulary knowledge, which says that knowing a word includes its form, meaning, and use. Google Translate makes it easier to see forms and meanings quickly, but it does not always help students use words correctly in context. Paper dictionary made students think more about meaning and usage, but they are slow and sometimes difficult to use.

Based on the explanation above, this study aims to find out whether there is a difference between students using Google Translate and those who use paper dictionary on their vocabulary. The main research question is formulated as "Is there a significant difference between students who use Google Translate and those who use a paper dictionary on their vocabulary?". Moreover, the null hypothesis (H_0) of this research proposes that "There is no significant difference between students who use Google Translate and those who use a paper dictionary on their vocabulary" and alternative hypothesis (H_a) proposes that "There is significant difference between students who use Google Translate and those who use a paper dictionary on their vocabulary".

B. RESEARCH METHOD

Quantitative approach with a comparative design was utilized in this study. The design was selected because the main purpose of the research was to compare two groups of students who used different tools, namely Google Translate and a paper dictionary. A comparative design is appropriate when the objective is to examine whether there are differences in competencies between two or more independent groups (Soesana et al., 2023; Sugiyono, 2021; Creswell, 2009) Furthermore, Ibrahim et al. (2018), stated that causal-comparative research, or ex post facto research, was a systematic empirical study in which the researcher did not manipulate the independent variables because these variables had already occurred or could not be manipulated. In this case, the study attempted to determine whether there was a significant difference between students who used Google Translate and students who used a paper dictionary on their vocabulary. The participants of this study were six classes of tenth-grade students at SMK N 2 Bukittinggi in the academic year 2024/2025. The total number of six classes tenth-grade students at the school was 210. From this population, a sample of 90 students was selected using a simple random sampling technique, and this procedure was chosen because it

gave each student in the population an equal chance of being included, thereby increasing the representativeness of the sample and reducing selection bias(Gay et al., 2012). The sample was divided equally into two groups there was 45 students in the Google Translate group and 45 students in the paper dictionary group. The students were separated in terms of the used of different tools when learning English in class and different teachers who taught them. The main instrument used to collect data was a vocabulary test in the form of multiple-choice questions. The test was developed by the researcher and was designed to measure three dimensions of vocabulary knowledge, namely form, meaning, and use, following Nation's (2001) framework. The test consisted of 25 items, each with four answer options, and was constructed to reflect the vocabulary level appropriate for tenth-grade vocational high school students. The items covered a range of topics from descriptive texts, which are commonly taught at this level.

The data collection procedure followed several steps. First, validation of the research instrument which was conducted by expert validators namely three English lecturers. After the validation of instrument, vocabulary test was distributed for both groups. The last, when the vocabulary test was distributed to the students, researcher conducted data tabulation and statistical analysis to compare the vocabulary performance between two groups. The data obtained from the vocabulary test were analyzed using statistical procedures. The students' scores were first tabulated and checked for completeness. Descriptive statistics, including mean, minimum, maximum, and standard deviation, were calculated to provide an overview of the data distribution. The data were analyzed by using independent sample t-test. This test was chosen because it is suitable for comparing two independent groups; they are Google Translate and paper dictionary groups. The significance level was set at 0.05, meaning that differences between groups would be considered statistically significant if the significant-value was less than 0.05, and also the difference between Google Translate and paper dictionary would statistically significant if the t observe was greater than the t-table. By using this analysis, the research could directly answer the main research question and test the hypothesis, namely whether there was a significant difference between of students who used Google Translate and those used paper dictionary on their vocabulary.

C. RESULT AND DISCUSSION
Result

The study found that there was no statistically significant difference between those who used Google Translate and those who used a paper dictionary on their vocabulary. The aims of this study to compare the difference between Google Translate and paper dictionary on students'

vocabulary. The following data presents the key findings of the research.

Table 1. Descriptive Statistics of Vocabulary Test Scores

Statistic	Google Translate	Paper Dictionary
Mean	59.73	60.40
Std. Deviation	13.860	14.787

The table shows that the paper dictionary group obtained a slightly higher mean score was 60.40 compared to the Google Translate group of 59.73. The standard deviations were relatively similar were 13.860 and 14.787, indicating that the variation in scores across both groups was consistent. These results mean that, on average, the performance of students using a paper dictionary was only marginally better than those using Google Translate. However, the small difference in mean scores and the similarity in standard deviations point to the fact that the overall performance levels of the two groups were almost the same. It implied that both tools contributed comparably to vocabulary learning, and neither provided a clear advantage over the other. The findings also indicated that students who regardless of whether they relied on Google Translate or a paper dictionary, achieved relatively similar results on their vocabulary, highlighting the balanced effectiveness of the two tools. The following figures showed That there was no significant difference between students' who use Google Translate and those who use paper dictionary on their vocabulary.
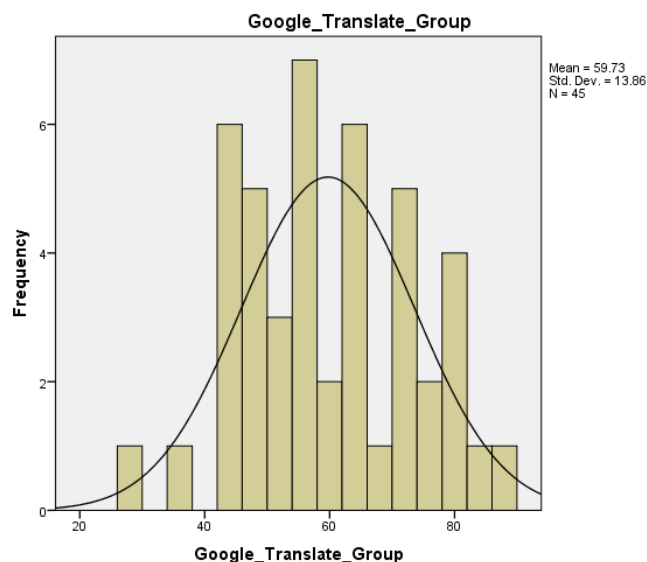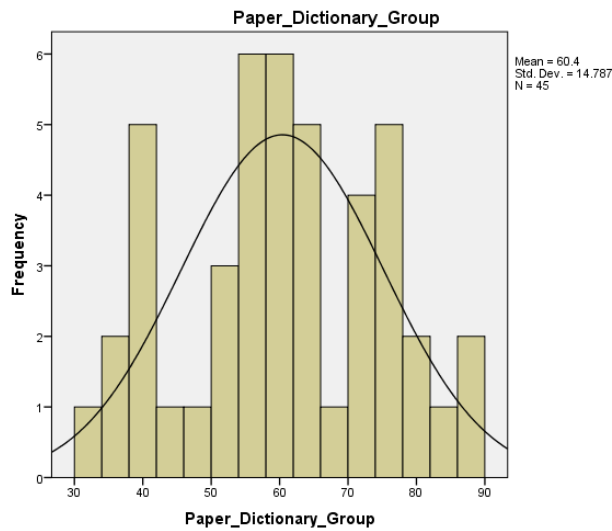
Figure 1. Frequency of Google Translate

Figure 2. Frequency of Paper Dictionary

To determine whether the difference in mean scores was statistically significant, independent sample t-test was conducted.

The result of the independent sample t-test can be seen in Table 2.

Table 2. Independent Sample t-test

Variable	t	df	Sig. (2-tailed)	Mean Difference
Vocabulary Scores	0.221	88	0.826	0.66667

The analysis showed that the t-observed was 0.221 with 88 degrees of freedom, and the significance value or p-value obtained was 0.826. When compared with the standard significance level of 0.05, the p-value was greater than the threshold, which led to the acceptance of the null hypothesis (H_0) and the rejection of the alternative hypothesis. it means that there was no statistically significant difference between the two groups.

To strengthen this finding, the absolute value of the t-observed was compared with the critical t-value from the distribution table. At the 0.05 significance level for a two-tailed test with 88 degrees of freedom, the t-table was 1.987. Since the t observed of 0.221 was much smaller than 1.987, the result clearly fell within the acceptance of the null hypothesis (H_0) and provide sufficient evidence to reject the alternative hypothesis (H_a).

The finding showed that neither Google Translate nor paper dictionary provided a superior advantage in supporting students' vocabulary learning outcomes. The findings also align with studies such as Indrawati et al. (2024), who reported no significant difference between students using printed dictionary and those using Google Translate, even though

dictionary users had slightly higher mean scores. In the same way, Beikian et al. (2021) suggested that both tools can complement each other, with Google Translate providing speed and accessibility, while dictionary offer more detailed explanations. To sum up, the hypothesis testing revealed that students' vocabulary mastery did not differ significantly between those who used Google Translate and those who used a paper dictionary. it indicated that both tools were equally effective in supporting vocabulary learning. Although the students who used the paper dictionary obtained slightly higher average scores, the difference was not statistically meaningful.

Discussion

The findings of this study revealed no statistically significant difference between of students who used Google Translate and those who used a paper dictionary on their vocabulary, despite the slightly higher mean score of the dictionary group. The result of this research also mirrored previous findings by Indrawati et al. (2024) found that dictionary users obtained slightly higher scores than students using Google Translate, but the difference was not statistically significant. This mirrors the current results, supporting the idea that both tools are equally effective for immediate vocabulary learning in classroom contexts. The small gap in mean scores reported by Indrawati et al.'s explained that while paper dictionary may encourage

learners to engage more deeply with word forms and definitions, the additional effort did not necessarily translate into significantly higher test performance in the short term. Furthermore, the close similarity between the two groups' outcomes reinforces the view that the effectiveness of vocabulary learning was not determined by the tool itself but by how learners interact with it during the learning process, which was consistent with findings of this study. In this way, this study extends the evidence presented by Indrawati et al.'s by showing that in a vocational high school setting, the practical use of both tools leads to comparable levels of vocabulary, thereby underscoring the pedagogical value of giving students the flexibility to choose the tool that best suits their preferences and learning strategies.

In addition, Beikian et al. (2021) argued that Google Translate and dictionary serve complementary purposes there were translation tools provide speed and accessibility, while dictionary provide deeper explanations. The finding of this study was consistent with this view, as they explained that either tool can support vocabulary learning effectively, and differences in results was minimal when measured statistically. This similarity in outcomes may be explained by the fact that students who relied on Google Translate could complete tasks more quickly, yet their learning was still balanced by the need to check meaning and usage in context, while dictionary users engaged in more careful analysis

even though the process was slower. Moreover, the lack of significant differences supports the idea that the choice of tool may depend more on learners' preferences, strategies, and familiarity rather than on the inherent superiority of one tool over the other, which reflects Beikian et al.'s emphasis on complementarity. In practical terms, this means that when integrated thoughtfully into instruction, both tools could work side by side, with Google Translate offering efficiency for immediate translation needs and dictionary providing opportunities for deeper exploration of word forms and meanings. Consequently, this study not only aligns with Beikian et al.'s findings but also extends them by showing that, in a vocational high school context, students achieved similar result regardless of the tool used, confirming the complementary nature of the two tools in real classroom practice.

In line with this, a comparable conclusion was also drawn by Wibowo and Wibowo & Oktavia, (2024), in their research, they investigated the quality of student translations using two different methods; the traditional use of printed dictionary and the more modern approach of post-editing machine translation outputs such as those generated by Google Translate. Although the results revealed that the group engaged in post-editing achieved slightly higher scores in overall translation quality, averaging 2.65 compared to 2.20 in the printed dictionary group, the difference was relatively small. More importantly, both groups produced translations with similar levels of accuracy. This close performance between traditional and digital methods mirrored the findings of the present study, which found no statistically significant difference in vocabulary outcomes between students who used a paper dictionary and those who used Google Translate.

The implications of both researches showed that digital tools may have offered certain advantages in terms of speed and convenience but these features alone did not guarantee superior learning outcome s. Students might have benefited from the efficiency of machine translation and the structured information of printed dictionary, but ultimately, the cognitive effort they invested such as verifying meanings, contextualizing terms, and engaging in self-correction played a more pivotal role in language learning success. Therefore, these findings reinforced the view that both traditional and technological tools could serve as effective aids, provided they were integrated thoughtfully into the learning strategy. This study, in agreement with Wibowo and Oktavia's work, confirmed that meaningful learner interaction with language tools was more crucial than the choice of tool itself in determining the quality of vocabulary acquisition and language performance.

The results could also be compared with Medvedev (2016), who argued that reliance on digital

translation tools often leads to shallow learning because learners may depend on quick translations without internalizing the meaning. However, in this study found that such shallow processing did not disadvantage students in terms of immediate test outcomes, since the Google Translate group achieved scores comparable to those of dictionary users. This contrast may be explained by the fact that although Google Translate encourages rapid access to vocabulary, students in this study appeared to use it effectively enough to perform at a level similar to their peers who relied on dictionary. Furthermore, while previous research emphasized the potential long-term drawbacks of digital tools, the current results indicate that in short-term assessments, these drawbacks may not be as visible or influential as previously assumed. Thus, the findings of this study both challenge and complement Medvedev's perspective by showing that although translation tools may promote surface-level engagement, they can still support learners in achieving outcomes comparable to those gained through more traditional, effortful approaches in vocabulary learning.

Based on several studies mentioned above, which emphasized that internal vocabulary mastery played a more crucial role than external tools in determining reading performance, this research likewise confirmed that while both Google Translate and paper dictionaries supported vocabulary learning,

neither proved significantly superior in terms of outcomes. Supporting this, Syahadah & Kembaren (2024) found that Google Translate helped improve students' grammatical accuracy and sentence construction. In this study, students in the Google Translate group also benefited from features such as audio pronunciation and translation suggestions, which encouraged independent learning. However, as in their study, this advantage did not result in significantly higher vocabulary scores.

Similarly, the performance of the paper dictionary group reflect the findings from Zorigt & Tumurbat (2022), who noted that students using paper dictionaries gained deeper contextual understanding and retention through reflective use. In this study, although students who used paper dictionaries engaged more deliberately with new vocabulary, their outcomes remained comparable to those of students using digital tools. These findings collectively reinforced the idea that the effectiveness of any tool did not lie in its format, but in how it was used by learners within the learning process.

The strength of this study lies primarily in its application of a comparative research design, which allowed the researcher to directly examine differences between two of the most widely used vocabulary learning tools, namely Google Translate and the paper dictionary. This design was particularly valuable because it enabled the study to

provide empirical evidence rather than relying on general opinions or assumptions about the superiority of one tool over the other. Another strength is that the vocabulary test was developed based on Nation's (2001) framework, ensuring that the instrument did not merely assess word recognition but also covered the dimensions of form, meaning, and use, which are central to comprehensive vocabulary knowledg e. In addition, the instrument was validated by three English lecturers and was piloted with a different group of students, which together enhanced the reliability and fairness of the test items. By combining a solid research design with a theoretically grounded and well-validated instrument, this study was able to produce findings that not only reflect the immediate outcomes of vocabulary learning but also contribute to the broader discussion on the effectiveness of traditional and digital learning tools in English language education.

However, one of the main limitations of this research lies in the instructional steps applied for both tools, which were not fully developed or systematically refined. The procedures used to guide students in utilizing Google Translate from Doni Dewansyah (2024) and the paper dictionary from Grabe et al. (2011) in this study did not follow a comprehensive pedagogical framework. As a result, the potential benefits of each tool may not have been maximized, which could partly explain the absence of a statistically significant difference in vocabulary

outcomes between the two groups. Future research is encouraged to design more structured and detailed instructional procedures tailored to the specific features and strengths of each tool in order to ensure more consistent and effective use during the learning process.

Another limitation of this study is that it did not account for extended learner-related factors that may influence vocabulary acquisition, such as students' motivation, learning preferences, prior experience with the tools, and digital literacy. The research focused solely on comparing vocabulary test scores without exploring how these underlying factors might have shaped the way students interacted with each tool. Consequently, the findings reflect students' observable performance but may not capture the full complexity of individual learning processes. Future studies should incorporate these variables to provide a more comprehensive understanding of tool effectiveness in diverse learning contexts.

The practical implications of the findings are significant, as they demonstrate that neither Google Translate nor paper dictionary hold a decisive advantage, which means that teachers can confidently allow students to use either tool according to their preferences without fearing negative effects on learning outcomes. Since both resources provide comparable results, educators are encouraged to integrate them flexibly into classroom practice, and this flexibility may

increase student autonomy by letting learners select the method that aligns with their comfort and learning style. Moreover, because vocabulary learning is most effective when words are used in meaningful contexts, teachers should design tasks that push students to apply new vocabulary in writing and speaking rather than relying solely on word lookup, thus fostering deeper retention. This approach not only ensures accuracy and fluency but also balances the efficiency of digital translation tools with the depth of traditional dictionary, creating a more comprehensive learning environment. Ultimately, the study suggests that blending both tools within pedagogical practices can empower students to become more strategic and independent learners, which is especially important for vocational high school contexts where practical language use is a priority.

D. CONCLUSION

This study set out to compare the effectiveness of Google Translate and paper dictionary in supporting vocabulary learning among vocational high school students, and the results revealed that there was no statistically significant difference between the two groups, even though the paper dictionary group achieved a slightly higher mean score. These findings indicate that both tools contributed in similar ways to students' vocabulary mastery, which suggests that the type of resource itself may not be as decisive as the ways in which students engage with it

during the learning process. Although the study confirmed that neither Google Translate nor paper dictionary produced a clear advantage, it also highlighted that both tools have unique strengths digital tools provide accessibility and immediacy, while dictionary foster more detailed engagement with form and meaning that can complement one another when integrated thoughtfully into instruction.

Despite its contributions, the study has several limitations that need to be acknowledged. The research design was limited to post-test measurements, meaning that the findings may not fully represent long-term retention or be generalizable to broader populations. Furthermore, factors such as learners' motivation, prior experience, and digital literacy were not controlled. These limitations suggest that future research should explore the long-term impact of different vocabulary learning tools, include the extended factors of learners and and future research could employ a mixed-method design combining quantitative and qualitative approaches.

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