EXPLORING THE EFFECT OF WORDTUNE DIGITAL WRITING ASSISTANT AN ARTIFICIAL INTELLIGENCE TOOL: FOCUS ON STUDENTS' ACADEMIC WRITING SKILL

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Abstract: WordTune's digital writing assistant is one of the digital tools generated by AI that can be accessed online. This study aimed to determine the effect of word tune on students' academic writing. This study was experimental research with a quasi-experimental research design. There were 60 participants from a private university in Southeast Sulawesi, Indonesia. They were involved and selected purposively as the sample of the study. They then were grouped into two groups, namely experimental and control groups. Each group consisted of 30 participants who received different treatments, which lasted seven meetings. The data were collected from writing tests and questionnaires. Thus, the participants in both groups did the pretest and post-test and filled out the questionnaire at the end of the study. The finding revealed that wordtune digital writing significantly affected students' academic writing (Sig.00) or p<.005. Another finding showed that the student's support using word tune as the features, namely paraphrase/rewrite, formal, shorten, and expand, help them improve their academic writing performance, specifically on general textual patterns, sentence construction, and linguistic choices. This study suggests that lecturers can employ wordtune to teach academic writing to learners. In addition, this study also advises further research to surveys to get more comprehensive results on word tune and academic writing.

Keywords: *word tune, digital writing, generated artificial intelligence, writing skill*

INTRODUCTION

Academic writing can be challenging for English as a Foreign Language (EFL) students, who often need help with writing barriers. The barriers are mainly related to grammar and punctuation (Derakhshan & Karimian, 2020). Likewise, (Khan, 2011) revealed that common problems with students' writing are related to phoneme clusters, spellings, grammar, doubling of subjects, language interference, doubling of prepositions, articles, tenses, appropriate vocabulary, and wrong use of prefixes, and suffixes. Li and Zeng (2019) proved that the difficulties in academic writing mainly lay in students' vocabulary, grammar, and writing resources.

Despite the difficulties, writing is employed by people in all contexts to accomplish some purposes, such as expressing one's ideas, attitudes, and opinions, sharing information, feelings, and ideas, and persuading others (Derakhshan & Karimian, 2020).

People also write for personal enjoyment through activities like writing in a diary or journal. In the educational context, writing can take essential notes while learning and writing academic reports, theses, essays, and compositions to meet the demands of intended authorities (Hyland, 2013). Thus, writing with multiple purposes is essential for people in different contexts.

Research suggests digital writing tools can positively affect writing quality (Pourdana, 2022; Zhao, 2023). With the development of AI writing artificial intelligence (AI) technologies in education, AI-powered writing tools start to support learners in their English writing processes in an academic context (Coenen et al., 2021) and improve L2 users' writing skills while facilitating their self-directed learning (Pokrivcakova, 2019). Many writing tools mainly focus on the revision and editing stage aspects, such as providing grammar corrections and similarity report options (Winans, 2021). Other technologies have been created to help learners in the writing process. One of the technologies supporting the writing process is the Wordtune digital writing assistant. This wordtune AI-powered technology assists learners during their writing process by understanding the ideas they want to share and helping them formulate them into sentences by offering rephrasing options (https://www.wordtune.com).

Much research has been conducted in the field of writing and digital writing tools focusing on the debate about what digital writing provides in terms of possibilities and constraints on how students' writing is affected by the use of digital writing tools (Dahlstrom & Bostrom, 2017; Mangen & Balsvik, 2016) and review of the technologies designed to support writing instruction (Strobl et al., 2019). Another research focused on the relationship between students' digital access, perceived affordances with digital writing, and student agency (Dahlstrom, 2019). However, there is still scarce attention paid to digital writing assistants, particularly in the academic writing process. Therefore, this current study will focus on *word-tune digital writing and its effects on students' academic writing skills*. The research questions were drawn to guide this current study, namely:

1. To what extent did *world-tune digital writing assistants affect the student's* academic writing skills?

2. How did the students perceive *Wordtune digital writing assistant on their academic writing skills*?

LITERATURE REVIEW

The context of academic writing

Many students face problems writing their academic work in an acceptable form (Paltridge, 2004). The difficulties are mainly due to the lack of familiarity with writing conventions in English as a second language and expectations of academic writing in English-medium universities (Ballard & Clanchy, 1997). Dong (1997) noted that academic writing involves learning a new set of educational rules and learning how to apply the rules. Often, these rules change from discipline to discipline, and the audience and the purpose of writing vary according to each writing context. For non-native students, the

mismatch of writing difficulties and expectations operating in their home countries compound their writing difficulties. The research on second language and native English speaker student writing suggests that each group's writing varies in numerous and significant ways (Silva, 1997). There are often differences in general textual patterns, argument structure, use of background reading texts, reader orientation, patterns of cohesion, the construction of sentences, and lexical choices (Silva, 1997). She has also reported differences in the composing processes of native and non-native speaker student writers. She argues that these differences between native and non-native speaker student writers and their writing have to be acknowledged and addressed if second language students are to receive fair treatment and an equal chance at academic success. Many students may never write more complex texts that focus on EAP analysis.

Furthermore, it was explained that many factors affect students' decisions when writing academic texts. These include the purpose of the text, the educational and cultural context of the text, the extent to which the writer is advised on the positioning and organization of the text (Prior, 1995), the student's perceptions of the audience of their text (Casanave, 2004), the discipline in which the student is writing, the values and expectations of the academic community (Newman et al., 2003), and the relationship between the text and other relevant texts. Silva and Matsuda (2002) highlight that writing is permanently embedded in a complex web of relationships between writers, readers, the text, and reality. These relationships are constantly changing. They add that the writer's task is not as

simple as constructing an accurate representation of reality, where the writer also needs to negotiate, through the construction of the text, the writer's point of view of the elements of writing (Silva & Matsuda, 2002). Academic writers do not write in isolation but within networks of more and less powerfully situated colleagues and community members. They learn to forge alliances with those community members with whom they share values or perceive will benefit them in some way and resist when accommodating does not suit them (Casanave, 2002).

Wordtune digital writing tool assistant

Wordtune is an AI-based digital writing assistant that provides the writing option to rephrase the text by changing the sentence structure or replacing words with synonyms while retaining their original meaning. It utilizes engineering machine learning (Natural et al.), which trains machines to understand and generate natural text based on data sets of written materials with extensive coverage and capacity. Powered by AI technology, Wordtune recognizes patterns learned from large data sets to provide options for rewriting original sentences.

Wordtune can be accessed online as a web browser extension (Chrome et al. add-on) or through its web-based editor. As a browser extension, this program is compatible with various online applications, such as Gmail, Google Docs, Facebook, Twitter, LinkedIn, WhatsApp (web version), etc. After adding a web browser, users can directly open web-based applications for writing (e.g., Google Docs, Gmail). Then, a purple circle with the letter 'W' will appear on the highlighted text. Users can eventually click

the icon to see a list of writing options and repeat the selected text. Wordtune provides various features for rewriting, including essential, casual, and formal rewrites, shortened texts, and expanded texts (Figure 1).

Figure 1. The features of Wordtune Digital writing tools
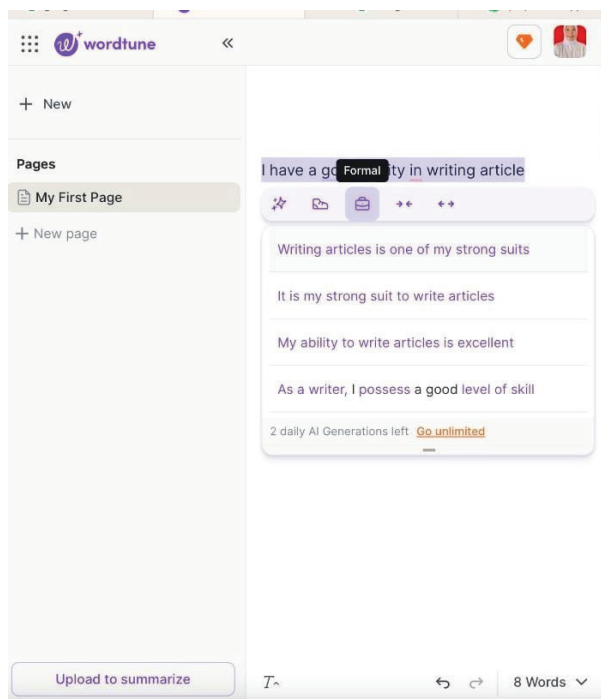
Furthermore, wordtune offers a helpful rewrite option for users to make a cognitive connection between thinking and writing processes. Especially for EFL writers, awareness of the learning level is a prerequisite for mastering a second language (Schmidt, 1990). Rewriting allows writers to notice dissonance in their writing and create meaningful learning through revision (Sommers, 1980). As Zhao (2023) suggests, taking dissonance into account between their writing and more effective rewriting options, EFL writers can build an interlanguage system and improve their English writing proficiency

through independent learning. Wordtune is suitable for users with any level of English proficiency. For example, the translation feature is handy for beginner English students. The beginners can even write language sentences in English consisting of several phrases and then use Wordtune to generate rewriting or paraphrasing options in English. This technology will help them maintain a continuous flow of English writing rather than getting stuck on one particular phrase or expression. For intermediate and advanced students, the rewriting option of AI-powered can improve their English writing by offering appropriate synonyms and enabling them to eliminate incorrect words and adopt a preferred writing tone Fitria (2021). Learners can also use shortening or lengthening to make the writing more concise or produce more content ideas.

METHOD
Research Design

This research employed experimental research design, especially quasi-experimental design. The data were collected and analyzed quantitatively. Creswell (2014) describes **experimental research** as a systematic approach to determining cause-and-effect relationships between variables. He continues that the researcher needs to manipulate the independent variable to examine the effect on the dependent variable. Creswell also highlights the importance of random assignment and control in experimental design to minimize biases and ensure the validity of the findings. The collected data was analyzed statistically, and this research aimed to test the hypotheses. The quantitative data were presented in numbers.

Sixty participants were selected purposively. The participants were from one of the private universities in southeast Sulawesi, Indonesia. The participants were selected due to the result of an interview with the lecturer on the preliminary study, in which they mainly struggled with academic writing. Those participants were then grouped into two groups of 30 of each group. The First group was an experimental group in which the participants received a treatment that was learning academic writing using a Wordtune digital writing assistant. Academic writing focuses on descriptive text. The second group was the control group, in which the participants learned academic writing through conventional learning media. The treatments of both groups have lasted seven meetings.

Techniques for Analyzing the Data

After the data was obtained, the normality test was used. It was carried out to determine whether the received data were normally distributed. Hence, the researchers could decide to use nonparametric or parametric tests to examine the students' academic writing improvement. The result of the normality test can be seen in the following table 1:

	Kolmogorov-Smirnov		Shapiro-Wilk	
	Statistics	Sig.	Statistics	Sig.
Pretest Experimental	.355	.000	.790	.000
Post-test Experimental	.207	.002	.909	.014
Pretest Control	.314	.000	.840	.000
Post-test Control	.240	.000	.877	.002

Table 1. The result of the Normality Test

Furthermore, experimental and control were tested using the Wilcoxon and Mann-Whitney test to measure the difference in the mean score of the two groups since the data were not normally distributed sig .000 or $p<0.05$ (table 1). Then, the questionnaire used a 4-point Likert scale: strongly agree, agree, neutral, and disagree. Then, the results of the questionnaire were calculated and presented in the form of a percentage.

RESULT AND DISCUSSION

Based on the collected data, the findings are presented and discussed as follows:

To what extent did *Wordtune digital writing assistants affect the student's academic writing skills*?

The descriptive statistics for the tests were utilized to examine the students' academic writing in the experimental and control groups before and after the treatment. The pretest result illustrated that the mean score of the student's academic writing in the experimental group was (*Mean* 62.00, *SD* 4.068), and the control group *had a mean* of 61.67, *SD* 4.420), indicating they were at the same level. Furthermore, the post-test result revealed that the mean score of the student's academic writing in the experimental group is higher (*Mean* 73.00, *SD* 5.509) than that in the control group (*Mean* 64.00 *SD* 4.235). Hence, these results indicated that the students' academic writing performance differed after the treatment, as shown in Table 2.

Table 2. Summary of students' academic writing performance

	N	Min	Max	Mean	SD
Pretest Experiment	30	55	70	62.00	4.068
Post-Test Experiment	30	65	85	73.00	5.509
Pretest Control	30	55	70	61.67	4.420
Post-Test Control	30	55	75	64.00	4.235
Valid N (listwise)	30				

Since the data were not normally distributed, a nonparametric test, namely the Wilcoxon test, was used to compare the difference in EFL students' academic writing performance of each group before and after the intervention. Table 3 displays that both groups showed improvement in their academic writing performance in which the result of the experimental group was significant at the level of (.00) or $p<.005$ while the control group was at the level of (.002) or $p<.005$ (see table 3).

Table 3. Wilcoxon result of students' academic writing improvement

	SD	Asymp. Sig. (2-tailed)
Experimental Group	5.509	.000
Control Group	4.235	.002

After receiving different interventions, a Mann-Whitney test was utilized to evaluate the mean scores of academic writing in both experimental and control groups. Table 4 shows that there is a significant difference in the writing scores of both groups, proved by the result being at the level of (.00) or $p<.005$ (see Table 4) and the result of the mean score of the post-test on both groups.

Table 4. Mann Whitney result of students' academic writing

	Post-Test Result
Mann-Whitney U	94.000
Wilcoxon W	559.000
Z	-5.409
Asymp. Sig. (2-tailed)	.000

Students' perception of the implementation of *Wordtune* digital writing assistant on their academic writing performance

There are five items in the questionnaire asking about students' opinions on using the five features of Wordtune digital writing assistant in learning academic writing: rewrite, casual, formal, shorten, and *expand*. The questionnaire was developed based on the result of quantitative data, and it is displayed in the form of percentages (see Table 5). The questionnaire was assessed using a Likert scale, and the result of each statement on the questionnaire relating to 3 main categories of students' academic writing aspects: general textual patterns, the construction of sentences, and linguistic choices presented in detail as follows:

1. General Textual Patterns

Regarding textual patterns (question 1), the participants considered that they could learn general textual patterns of academic writing using a Wordtune digital writing assistant. Seventy-seven percent of the

respondents strongly agreed, 15 percent agreed, 10 were neutral, and 3 percent disagreed. The general textual pattern is mainly for a formal writing style suitable for academic writing. The students can use *formal* features to access the formal sentences. Zhao et al. (2023) found that learners benefit from rephrasing and writing sentences more grammatically using Wordtune digital writing assistant. Another study revealed that digital writing with AI platforms supports learners' writing performance and enables them to engage in writing practices (Stornaiuolo et al., 2024).

Table 5. The perception of students on ***wording*** digital writing assistant

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I can learn the pattern of formal sentences in the word tune application	77%	15%	10%	3%	0%
2. I can learn sentence construction (shorten) in the word tune application	80%	17%	3%	0%	0%
3. I can learn sentence construction (expand) in word tune application	68%	12%	20%	0%	0%
4. I can learn sentence construction (paraphrase/rewrite) in the word tune application	60%	32%	4%	4%	0%
5. I can learn more vocabulary choices in word tune application	79%	11%	10%	0%	0%

The construction of sentences

The second statement focuses on sentence construction (questions 2, 3, and 4 in Table 5), which they can access using the Wordtune AI tool. The questions were about the sentence constructions provided in the Wordtune AI tool: shorten, expand, and *paraphrase/rewrite* the sentences. The data revealed that 80% of participants were very optimistic about the availability of a shortened sentence. They also responded positively to the expanded (68%) and *paraphrasing/rewrite* (60%) features of wordtune. These features allow the learners to copy and learn different sentence forms and constructions from the Wordtune AI tool. In the implementation, the learners can use other features to construct their sentences depending on their needs and the teachers' instruction in academic writing. This finding is similar to the study conducted by Fitria (2021), who found that AI writing tools such as Wordtune enhanced the students' writing in sentence construction. She also adds that learners can utilize the features to help them improve the clarity and style of their writing. Learners can use *shortening to concisely limit their words to convey the message or focus on expanding the features to give more detailed and in-depth* sentences. In addition, they can also utilize *paraphrase/rewrite* to get more nuanced sentences. However, every sentence AI produces needs to be re-

checked for accuracy to ensure the consistency and readability of meaning.

2. Lexical choices

The last statement was about the linguistic aspect (question number 5) they gained from using the Wordtune AI tool in learning academic writing. The participants responded positively, showing that 79% strongly agreed and 11% agreed. This means that the learners considered it effective in accommodating learners' vocabulary learning for their academic writing. The *wordtune* digital allows learners to enrich their vocabulary since it contains more lexical choices they can access online. Mahmud (2023) in his study demonstrated that learners showed improvement on their lexical level after using wordtune. He highlights that the lexical gains included more concrete nouns, vivid adjectives, and precise verbs for students' academic writing.

CONCLUSION AND IMPLICATION

The findings of this study indicated that the *Wordtune digital writing assistant positively impacts students' academic writing skills*. Hence, the lecturers should involve this AI writing tool in teaching writing to EFL learners. The lecturers can guide the learners so that they know how to use it correctly to ensure the accuracy of grammar and the meaning of the sentences produced by Wordtune. Furthermore, the participants showed relatively positive opinions on the availability of some features that support their academic writing process, namely paraphrase/rewrite, formal, shorten, and *expand*. Each feature was believed to support particular aspects of academic writing, such as general textual patterns, sentence construction, and linguistic choices. For instance, *formal* features show general textual patterns in formal writing. The other features, namely shortening, expanding, and rewriting/paraphrasing, give different sentence construction forms, which can be adjusted depending on the teachers' instruction and the learners' needs. However, the details of this finding need to be investigated further through other data collection techniques, samples, instruments, and methods. The findings of this research could be a reference for researchers who want to specify their studies on digital writing assistants. Besides, the result of this study can guide the lecturers in choosing the appropriate features of Wordtune to teach the students about academic writing aspects.

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