

## Impact of Machine Translation on Japanese Writing Skills

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### ABSTRACT

The purpose of this study was to determine the impact of machine translation on Japanese writing skills. The ability to write Japanese is also understood through the components of writing. This study uses experimental research using a one-group experimental design. It was conducted at Private University in Jakarta. Data collection techniques are documents and written tests. The participants were 60 students who received the Writing Course. To determine the effect of using machine translation on Japanese writing skills, it was analyzed using the t-test: Paired Two Sample for Means. The study results concluded that machine translation had a significant impact on the completion of writing assignments, which led to an increase in writing ability. However, in the study of each writing component, there are still weaknesses in the aspects of grammar and the development of logical ideas. Therefore, this research has implications for understanding how machine translation works, which has limitations, and students must review their writings at the editing stage.

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## 1. INTRODUCTION

Writing activities for students have different goal orientations from high school students. Some of the main differences between writing in school and writing at university. A large part of your education in high school consists largely of developing disciplines in your approach to learning and building a body of knowledge that will prepare you for the outside world – both the social world and the world of work – and for your studies, you may choose to undertake as an undergraduate student. On the contrary, university education exists to build on that foundation to develop further your intelligence and analytical powers, your specialized knowledge of the subject you have chosen to study and your ability to play a role in advancing that field of study through your ideas and creativity. The shift in emphasis as you move from high school to university is reflected in the expectations tutors have of your writing (Murray, 2012). Likewise, for learning to write Japanese at the Japanese Language Study

Program, private universities in Jakarta. In the syllabus for writing courses for second-semester students, they must have writing skills that can be used in their lives. However, writing Japanese is not easy to do because of the difference in context between Indonesian and Japanese.

The results of the learning evaluation in the first semester of the 2020-2021 academic year concluded that the student's writing still had no relevance to the Japanese context. Student writing still has a low percentage level in writing aspects, including (1) organization (introduction, body and conclusion), (2) logical development of ideas, (3) grammar, (4) punctuation, spelling, and mechanics, and (5) styles and quality of expression. Of the five aspects studied, the average percentage in each aspect is 40%-50%. So far, students have always made Indonesian texts and then translated them into Japanese. So students' writing has a level of context sense that is inconsistent with the Japanese context.

However, many previous studies have shown that machine translation positively impacts foreign language learning. Google Translate can help second language (L2) writers produce text in the target language according to the intended meaning (Chon, Shin, & Kim, 2021). It is appropriate that Tsai (2019) showed that students were satisfied with the results of the translation from Google Translate. Machine translation had a positive impact on the translation result (Sabtan, 2020). For some students, the cheapest machine provides different strategies during foreign language writing activities (White & Heidrich, 2013). Moreover, currently, many students and teachers are involved in technology in the teaching and learning process (Barr, 2013). Nowadays, machine translation has become a complex dynamic in classroom teaching (Niño, 2009). The use of MT highlights the strengths and limitations of this technology, explores 21st-century pedagogical solutions designed to leverage the capabilities of MT and alternative technologies and ensure students' academic growth in the field of translation (Ducar & Schocket, 2018).

From the previous study, the gap of the study was carried out to implement Japanese writing activities through machine translation combined with students' ability to understand the components that makeup writing. This concept is a novelty value that wants to be studied more deeply. Moreover, the results of previous studies have shown that students show a dissatisfied attitude toward machine translation for the translation results. This means that the translation of the machine translation does not match the context of the target language. However, the translation process through machine translation helps students to more easily and faster complete the translation task. The results of the translation must be corrected again according to Japanese grammar and the context of the target language. This means that the machine translation used so far is studied in the context of the components of writing so that students' Japanese writing skills can be known in more detail.

Thus, this study aimed to determine the impact of machine translation on Japanese writing skills. The ability to write Japanese is also understood through the components of writing. The results of this study can be used to improve the understanding of lecturers in using machine translation for students. Lecturers can direct students to complete writing assignments using machine translation and also teach the components that must be considered in writing.

## 2. METHODS

This study uses experimental research using a one-group experimental design. This is a one-group pretest-posttest design. The one pretest and posttest designs are quasi-experimental research designs where the same dependent variable is measured in one group of participants before the pretest and after the posttest treatment. This study uses a one-group pretest and posttest design to minimize problems that may arise during the study due to the absence of a control or comparison group

(Creswell & Clark, 2011; Berman, 2017). This study was conducted to understand the impact of using machine translation on Japanese writing skills in Japanese Language and Culture study programs at private universities in Jakarta. Thus, this study can determine the level of students' Japanese writing skills from aspects that build writing that have been determined from the reference to Brown's theory. The participants were 60 students who received the Writing Subject. They ever received the basic writing subject in the previous semester. Techniques of collecting data are documentation and writing test. The document was the students' result of a writing test on Japanese writing. While, the Japanese writing test analyzed some criteria of good writing based on the following criteria: (1) organization (introduction, body and conclusion), (2) logical development of ideas, (3) grammar, (4) punctuation, spelling, and mechanics, and (5) styles and quality of expression (Brown, 2004). To find out the impact of using machine translation on Japanese writing skills, it was analyzed using the t-Test: Paired Two Sample for Means.

### 3. FINDINGS AND DISCUSSION

The results of the pre-test and post-test showed that machine translation had an impact on students' Japanese writing skills. This can be seen from the results of the t-test as follows

**Table 1. The Result of the T-Test**

	<i>Pre-test</i>	<i>Post-test</i>
Mean	61,56	83,5
Variance	142,4531	35,9152
Observations	60	60
Pearson Correlation	0,202125722	
Hypothesized Mean Difference	0	
df	59	
t Stat	-13,897	
P(T<=t) one-tail	1,4503	
t Critical one-tail	1,671	
P(T<=t) two-tail	2,9006	
t Critical two-tail	2,0009	

Table concluded that  $t \text{ Stat} < t\text{-table}$  ( $-13,897 < 2.0009$ ). It can be said that  $H_0$  is rejected and  $H_1$  is accepted. It means that machine translation gave influenced Japanese writing skills. Student writing is assessed using 5 components in the scoring rubric, namely 1) organization, 2) logical idea development, 3) grammar, 4) punctuation, spelling and mechanics, and 5) style and quality of expression. Machine translation has helped students in improving the quality of their Japanese writing, both from the time of processing or understanding the grammatical concepts that they have to adapt to Japanese grammar. The following table shows the Japanese writing scores of each component

**Table 2. Score and percentage of Students' Japanese Writing**

No	Component	Indicator	Score	%
1	Organization	1. Introduction 2. Body 3. Conclusion	1143	23%
2	Logical development of ideas	1. Content	974	19%
3	Grammar	1. Construction are simple, complex but effective	641	13%

		2. Syntax rules		
4	Punctuation, spelling, and mechanics	1. Punctuation and spelling	1054	21%
		2. Writing rules		
5	Styles and quality of expression	1. Diction (word choosing)	1196	24%
		2. Useful word, and		
		3. Choosing and expression, and vocabulary construction.		
Total			5008	100%

The above table showed in chart form. The following is the chart for the percentage of writing components.

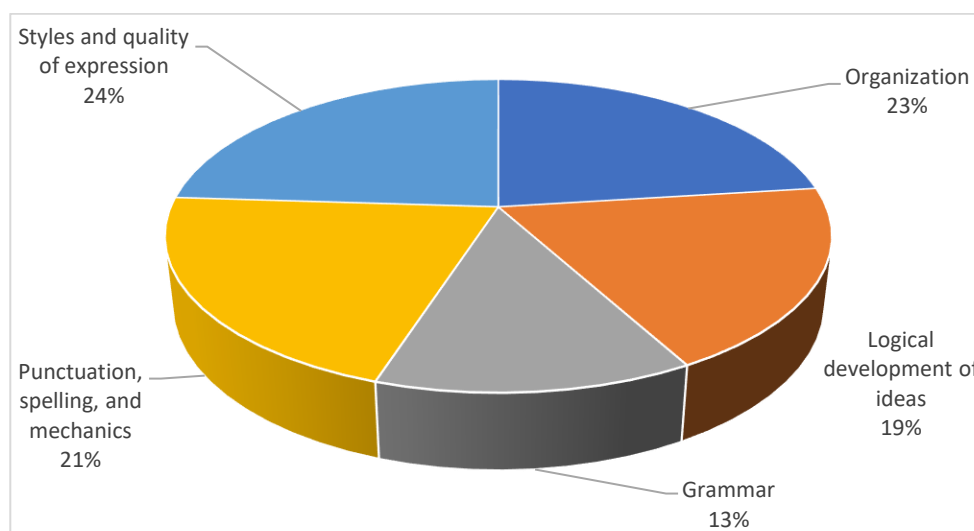


Figure 1. Percentage of Writing Component Score

Table 1 and 2 shows the overall results of improving students' Japanese writing skills. Machine translation has an impact on the level of completion of writing assignments and the number of assignments completed, so this has an impact on the acquisition of scores in Japanese writing courses. Thus, there is an increase in the ability to write Japanese from the results of the t-test before and after using machine translation. However, the results of the analysis of each component of student writing still found deficiencies in aspects of grammar and logical idea development for their writing. There are five components in writing construction. The organizational component shows 23%. However, the students' writing overall showed good writing. Their introductory paragraphs are clear.

However, the aspect of developing logical ideas is still low because the percentage score obtained is 13%, so students must continue to re-learn the relationship between general sentences and thesis statements or main ideas. Also, there are still weaknesses in the grammatical aspect which is indicated by the percentage of 19%. Students must be able to edit writing well and follow the rules of Japanese grammar. As for the components you read, spelling and mechanics are quite good with a percentage level of 21%, and the components of style and quality of expression are also 24%. This means that in these two aspects, the machine translation is better, and students also only correct their writing in more detail so that their writing results are more comprehensive. So, students must be equipped

with an understanding of metalinguistic concepts as a means to increase student participation in learning. The nature of metalinguistic understanding can be used as how learners engage with grammatical concepts (Chen & Myhill, 2016). Thus, understanding linguistic theory helps students develop good writing in terms of grammatical order (Wargadinata, Risalah, Elmi, Maimunah, & Mei, 2021).

This finding explains that students must know grammar, cohesion, development of main ideas, and compatibility between sentences and paragraphs so that the writing made can have a clear meaning. Moreover, the use of machine translation has not yet become the accuracy of the text that has been translated. Because students are still required to make adjustments to the text with proper Japanese grammar. Machine translations have limited capabilities at present, depending on language pairs, language directions, genres, etc. (Niño, 2020). Uliyanti et al. (2021) conclude that although translation tools have a good impact on students, there are some problematic points. Students must re-examine the components of writing in their writing. However, the condition of using technology that is so large in learning activities, especially for students to translate writing, is unavoidable. Students feel the great benefits of machine translation in helping to write Japanese. For students who understand the limitations of machine translation, they use machine translation as a tool to make it easier to translate their Indonesian writing into Japanese.

However, the results of his writings are still being corrected and readjusted to the Japanese context. In addition, students can still use a dictionary as a companion (O'Neill, 2019). However, these findings differ from the results of Lee's (2020) study, which concluded that MT helps students reduce lexico-grammatical errors. Students also view the use of MT in writing positively. MT will continue to grow, and this technology will have a major impact on the teaching of Languages for Academic Purposes, and with imaginative use, will allow this influence to be positive for both students and teachers (Groves & Mundt, 2015). So, these findings clarify the position of machine translation that is often used by students in helping to complete assignments. This means that machine translation is only a tool that can be used to make it easier to compose Japanese sentences, but not as a tool that is considered accurate in doing Japanese writing because the resulting context can be different. Students must understand the concept of learning to write. They must comprehensively understand the theory and practice of writing steps.

#### **4. CONCLUSION**

The results of the study concluded that machine translation had a positive impact on the completion of Japanese writing tasks, and students' Japanese writing skills increased. This can be seen from the results of the t-test and the average value, which has increased to 83.5. However, if it is identified for each writing component, it still shows that the grammar and logical development of ideas components are still low. This means that machine translation helps students complete writing assignments easily, but students must understand the weaknesses of machine translation. The weaknesses found are seen in the use of grammar and the development of logical ideas between sentences or paragraphs. So, the results of this study can provide an understanding to teachers that students must be directed to the essence of translating using machine translation. They must be able to carry out the editing and proofreading processes to find out the harmony and acceptability of the results of written translations using machine translation. The results of the translation must be corrected again according to Japanese grammar and language context. This is because the machine is man-made and has limitations. So, every student still has to make corrections to every sentence that is generated from the machine translation.

The results of the research have implications for the understanding of learning to write Japanese. Teachers can use machine translation for students to make translations of their writings so

that students can understand the concept of good and correct writing. However, the teachers also continued to describe the concept of the accuracy of machine translation assistance in doing Japanese writing. This means that machine translation is only a tool for translating Indonesian text into Japanese. So, the results of this study suggest that teachers can guide students in using machine translation and direct the process of doing direct writing using Japanese, which is compiled by themselves without machine translation tools. This can help them to improve their mastery of Japanese grammar. The results of this study are still limited to testing the impact of using machine translation to carry out Japanese writing activities and analyzing the level of accuracy of each writing component. So, further researchers can still develop this research from the aspect of the level of accuracy or acceptance of student writing that has been produced.

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