STUDENTS' ABILITY TO CONDUCT PRE-EDITING OF TEXT PROCEDURE FOR GOOGLE NEURAL MACHINE TRANSLATION

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Abstract

This study aimed to find out students' ability to conduct pre-editing on the text procedure inputs to Google Neural Machine Translation (GNMT). The participants in this study were students of the English Education Program, Faculty of Teacher Training and Education, Mataram University that took "Translation and Interpreting" subject in the fourth semester in Academic Year 2021/2022. The data were collected from assignments completed by 26 students in class A. Supporting data were collected through observation during the class. The data were analyzed using content analysis procedures such as identifying, categorizing, describing, and explaining. The results of this study indicate that almost all students could conduct pre-editing, but not perfectly, and some students failed to conduct pre-editing on the text. The result of pre-editing looked like a revised version of text. The pre-editing shows how the source text changes especially in language structure, word choice, and punctuation. The ability of the students in conducting the pre-editing on the the source text is represented by the good or bad quality of translated text by GNMT. Thus, the more effort performed in the pre-editing of the text context, the more likely it is to generate text to be in better quality in translation by GNMT.

1. Introduction

The translation is a process in which a source language (SL) is translated into a target language (TL), with multiple steps resulting in a qualified translation product. For a good quality of translation, numerous factors must be considered during the process of translating, one of which is to find the equivalents of lexicon of the source language in the target language. With the help of technology, this factor is easily managed. Technology has recently helped people in the process of translation. It has a significant impact on almost every aspect of society including the translation activity. There are many translator-based technologies emerging today that can help with a text translation. Technology has provided its users with numerous benefits and comfortability, including

the ability for students to easily and practically learn any subjects anywhere and at any time. Almost every student has used a smartphone in completing their studies or assignment. Smartphones are frequently used for browsing and searching for various materials. Furthermore, smartphones can assist in translating English words into Indonesian by utilizing the well-known web-based program Google Translate. Students often try to translate the contents from many other languages into Indonesian to initially comprehend the massages, meaning of words and syntactical arrangement of sentences.

Specifically, the field of translation has been affected a lot by technological advancements (Sjahrony & Ahmad, 2013). The machine translation introduced on the internet has been developed to help human work in the language industry. This means that the function and influence of technology is un avoidable in translation practice. Since the translation machine is on purpose developed to facilitate the human to work in translation, it is undeniable that translation in recent time always involves the technology. Research by Guidere (2002) supports the statement that information revolution and the advancement of technologies have driven the growth of language companies and the expansion of multilingualism. With a variety of new technologies and requirements, the use of machine translation has grown at an unprecedented rate.

According to Ayob (2015), human translation and machine translation are the two types of translation, accessible in accordance with the subject and technology. The translation process in human translation is performed completely by people or with the assistance of computer technologies The later type of translation is also known as a computer-assisted translation since it is completed with the assistance of computer technology. Meanwhile, in machine translation, the translation process is typically performed by machines with the help of human. This type of translation is also known as human-assisted translation. The role of human is to edit the text either before the process of translation by machine or in the translation outcomes.

Google Translate is one of many translation machines available online on the internet, and it is widely used by people all around the world. It was first released in 2007, and it is based on a statistical model. In process of translating words, Google Translate uses a word-to-word system operation. Therefore, translating a text using a translation machine, especially Google Translate, cannot provide results as excellent as those produced by a skilled, professional translator, and the translation provides a comprehensive set much below that of human translation. Errors are frequently identified in Google Translate translation, needing human revision to correct the errors and provide a satisfactory translation output.

Regardless of the above circumstances, machine translation (MT) cannot be removed just like that in a process of translating a language. Good input will certainly provide a good output as well. The good quality of input still depends on the type of text to be translated. Udina (2019) states that MT skills including pre-editing and post-editing skills are those that must be developed in addition to the science of translation itself. To get the most out of machine translation, pre-editing is a useful pre-processing strategy. Machine translation delivers far higher-quality translations when given pre-edited optimized text, requiring less or no post-editing.

Students' current difficulty with Google translate is that they just copy and paste all of the translated text into the Google Translate machine, resulting in text that are sometimes confusing and do not match the target language. There are some methods that students can do to make the translation results accepted and understandable by readers when they use Google Translate (GT). The three ways of utilizing GT are initial

pre-editing, post-editing, and selective use (Garci, 2010). However, the researchers focus on students' conducting pre-editing translation text when using GT. To make better use of such MT systems, one approach is to change source text (ST) such that it is receptive to the intended MT system, i.e., pre-editing.

Based on that, this research is to answer the following question: How is students' ability in conducting pre-editing of the text procedure inputs to Google Naural Machine Translation? This research is formulated to discover the research objective to find the level of students' ability to conduct pre-editing of text to be input to "Google Translate". This study is also to see the development of MT and its use to help students in learning and in communicating ideas in English with the help of that machine.

2. Literature Review
2.1 Definition of Ability

Vanderwood, et al. (1997) define ability as an intrinsic or acquired skill in a certain activity. The term includes capability, aptitude, capacity, skill, strength, talent, comprehension, competence, dexterity, endowment, facility, faculty, intellect, might, potentiality, understanding, resourcefulness, and qualification. She seems to describe the term ability very broadly. The closest meaning of what is intended in this research is skill or capability with good competence.

2.2 Pre-editing

Arenas (2019) explains that pre-editors conform to a set of rules that include not only trying to remove typographical errors and attempting to correct possible content errors, but also writing shorter sentences, employing certain grammatical structures (for example, simplified word order and less passive voice) or semantic choices (the use of consistent terminology), and identifying terms (for example, product names) that may not require translation.

2.3 Google Neural Machine Translation

GT is a Google innovation that was released to the public at the end of 2008. GT helps us automatically translate texts or web pages from one language to another, from the source language (SL) to the target language (TL), to facilitate readers in understanding the content of a web page (Ayob, 2015). Boitet et al., (2009) state that GT is an automatic machine translation made by Google. According to the above definitions, GT is one of the automatic machine translation services offered by Google Company to provide translation services from source languages to target languages.

2.4 Text Procedure

According to Knapp & Watkins (2005), it is understandable that the text procedure provides us with instructions or methods for doing anything. Likewise, the text procedure defines how or what steps to perform or produce anything, as well as what equipment or ingredients need to be prepared. The text procedure is ordered in general with the goal, tools, and steps (Knapp & Watkins, 2005). According to Anderson (2011), language feature is commonly found in text procedure as follows: imperative sentence, temporal conjunctions, adverb of manner, precise terms, and technical language.

2.5 Translation Theory

Numerous theories may be applied to help improve good translation. The parameters are composed of six criteria that are already arranged in a systematic sequence (Baker, 1992a). According to Baker (1992), the structure of these criteria is based on a simple principle: it begins with the most basic level and progresses in complexity by expanding its focus on each criterion. The following are the criteria: equivalence at word level, equivalence above word level, grammatical equivalence, textual equivalence (Thematic and Information Structures), textual equivalence (Cohesion), and pragmatic equivalence.

2.6 Translation Quality

In evaluating translation quality, there are several things to consider. However, the main foundation remains the same, such as the accuracy of the translation itself to achieve fluency, or in other words, intelligibility by the purpose of the translation.

According to Angelone et al. (2019), adequate is easily defined as the extent to which a translated text contains the same information as the source text. The translation must be correct in terms of meaning, as well as accurate and adequate in terms of giving information.

Intelligibility can be defined as clarity or the ease with which a reader can understand the translation (Yusof et al., 2017). Based on Yusof et al. (2017) argued limited completeness is a condition to be considered intelligibility. These criteria include comprehensibility, coherence, and form.

3. Research Method

This research is a qualitative study employing descriptive analysis method. Qualitative research is defined as a research that uses methodologies such as participant, observation or case studies to obtain a narrative and descriptive evaluation of the experience or practice (Sumathipala et al., 2003). Descriptive research is a study to explain the current conditions without carrying out an analysis of the relationship between variables. This method was selected to examine how students conduct pre-editing on the text procedure inputs for GT. The goal is to find out the level of students' ability to utilize the NMT in translation.

The data collected for this research were from documents in the form of assignments completed by students through pre-editing. In this case, to conduct classroom observations to observe and to know how students respond the assignments in class or study the pre-editing process with the understanding and they have to support these data in achieving the research objective. The collected data will then be examined using several steps that will be applied properly to get good results. According to Miles et al. (2014), the processes or steps of analysis are data condensation, data display, and conclusion drawing/verification. In the condensation stage, the collected data are divided into many sections based on the condition of the data thats suit the translation theories explained in the framework. The data are then carefully examined and incorporated to help in answering the research question. In the data display, the analysis shows the data containing the new version text, not only in general but also in specific and clear display. The analysis is further more discussing sentences selected from text that were already edited from the original source text. The workable and categorized research data in discussion were interpreted, and explained using the framework

consisting of a set of translation theories designed for this research. In the last stage of analysis a clear conclusion was drawn along with the supporting data.

4. Discussion

During the class in the learning pre-editing content, the students were enthusiastic about studying to try on conducting pre-editing of a text given by the lecturer. In learning activities, students were required to comprehend the text. Lecturer explained in detail the meaning of each sentence and special expression in source language as well as the application of translation theories. Then the students tried to correct their own sentences by fixing parts such as grammar, word choice, punctuation, subject/object, and then to determine the proper vocabulary to create acceptable, natural and understandable sentence on the text. Practice is needed to match the vocabulary between the source text and the target text. Dictionary usage is required to assist determining the lexicon or good phrase to make a precise target text in Google Neural Machine Translation.

From the observation of the class situation some data were collected. The process of correcting the sentences in class was observed. Each student writes their new translation of sentence one by one by writing it on telegram group made for this purpose. Two types of text discussed in class and recorded through the telegram group. First text procedure consists of 8 steps with the total of 28 sentences. The second text procedure consists of 8 steps with the total of 11 sentences. From the two texts, there are 853 sentences collected from all students. To identify the quality of the text, the analysis and evaluation have been conducted applying translation theory and adjusting it based on adequacy and intelligibility. The results then showed that the quality of each sentence increased after the student conducted pre-editing on the source text. This is indicating that the pre-editing activities have impact on the translation by GT. Some pre-editing result could be categorized as good, acceptable, and nonsense criteria. The majority of the pre-editing results, however, are still in standard quality as indicated in the following table.

Criteria	Sentence	
	Text 1	**Text 2**
Good	212	91
Acceptable	405	145
Nonsense	-	-

Table 4.1: The quality of the text after conducting Pre-Editing on the source text

According to the findings above, the quality of the text produced by students who conduct pre-editing is capability of resulting in text with both acceptable and good qualities. Students conducting pre-editing can generate the quality of the pre-editing text by making some changes such as word choice, punctuation, subject/object substitution, cutting phrases or sentences, and combining some steps into one step. In addition, there are a few sentences in the first and second texts that have not changed because there are two students who do not conduct pre-editing on the text. The sentences without any change or progress indicate that the two students did no pre-editing on the text. It can be seen that the students are not concentrating in class and ignorant or passive. This happens for text 2. In text 1, however, all participants conducted pre-editing on the text and produce new version pre-edited text.

The translation of edited text looks relatively natural and good. The language in the text sounds like written English. Several additions of words in a new version of a text improve the clarity of the source text. And this makes the translation into the target language by GT read easily. On the other hand, the pre-editing with reduction or deletion of a certain word in the sentence looks like a must since the word seems to be unimportant to make the translation very awkward. Then, these kinds of words that may make sentences become weird should be omitted to get a sense that matches the grammar of the target language. Thus the pre-editing helps GT translate the text better. The result of the translation is shown in the following diagram indicating the percentage of the translation quality.
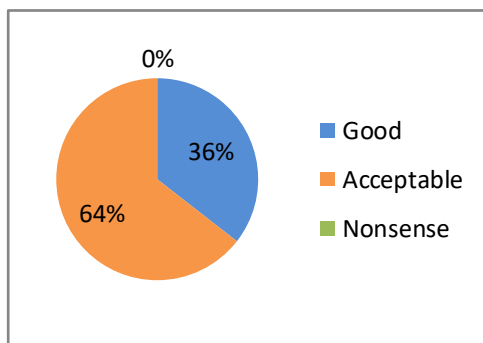

Diagram 4.1: Percentage with the criteria of text quality

The diagram above shows the percentage of text quality that students produced in conducting pre-editing. It shows that most of the pre-editing quality is "acceptable" with 64%, followed by "good" with 36% in the second place. No sentence is categorized as non-sense which means that for the two texts, GT is actually acceptable even though without pre-editing but with low quality of translation.

The source text of this study is a text procedure that needs an editing process. The source text is the procedure text in the Indonesian language with two different texts, with the first procedure text entitled *Bagaimana Cara Menambal ban bocor* and the second text procedure entitled *Bagaimana Cara Membuat Anyaman*.

Text	Source Text	Pre-editing	Google Neural MT
Text 1	*Keempat, berikan tanda pada ban bocor, karena biasanya lubang bocor, berukuran kecil. Kita dapat menggunakan kapur untuk memberikan tanda, membuatnya lebih mudah untuk mencari*	*4. Beri tanda pada bagian ban dalam yang bocor karena biasanya lubang bocornya kecil. Kita bisa menggunakan kapur untuk menandainya agar lebih mudah ditemukan.*	4. Put a mark on the part of the tire that is leaking because it is usually a small hole. We can use chalk to mark it to make it easier to find.
Text 2	*Setelah dapat potongan bambu, waktunya menganyam.*	*Setelah dapat potongan bambu waktunya untuk mengolah bambu menjadi anyaman.*	After getting the bamboo piece, it is time to process the bamboo into wicker

Table 4.2: An example of text that produces the quality of the text with good criteria in conducting pre-editing

Based on sentences 1 and 2 above, the changes in the source text have been obtained in the pre-editing text by making improvements such as word choice and language structure in the text to produce a good translation of the target text. The changes in the whole text above in terms of word choice, language structure, and rearrangement of phrases can produce the pre-editing text with clearer text information. From both texts above, the text target results of Pre-editing-GNMT is clearly and appropriately translated from the source text. However, through pre-editing of the source text, the target text results from the source text after pre-editing become more reasonable and easier to understand by a reader. Although the translation in pre-editing text/new version text would still be less perfect in terms of meaning from the perspective of a native speaker, the text is already able to accurately provide information to the target text. This student can be considered able to edit the text well enough and efficiently and improve the quality of the source text for translation by GT. The sentence that has been pre-edited by a student and the text resulted in by GT are completely appropriate and look proper in translation. This is with the standard of adequacy and intelligibility of translation quality.

The example of a sentence in pre-editing text produced by the students is categorized as good quality is the following but, slightly inappropriate in terms of the equivalence of word used within the text.

Text	Source Text	Pre-editing	Google Neural MT
Text 1	*Kesembilan, ban dibakar selama ± 20 menit. Kemudian api dimatikan, dan ban dikeluarkan dari alat yang berbentuk seperti pembakaran.*	*Ban dibakar selama ± 20 menit. Kemudian matikan api dan keluarkan ban dari alat tersebut.*	The tires are burned for ± 20 minutes. Then turn off the fire and remove the tire from the tool.
Text 2	*Belah bambu menurut ruas – ruasnya dan pilih yang lurus ya, jemur bambu selama beberapa hari sampai kering.*	*Setelah itu bambu dipotong menurut ruas - ruasnya dan pilih yang paling lurus setelah itu jemur bambu selama beberapa hari hingga kering.*	After that, cut the bamboo according to the segments and choose the straightest one, then dry the bamboo for a few days to dry.

Table 4.3: An example of text with quality categorized as good in pre-editing

In the first text, the sentence has been changed to make it shorter. Elimination of the usage of punctuation in the source text and the cut of a phrase at the end of the sentence seems to do on purpose. The phrase *alat yang berbentuk seperti pembakaran* at the end of the sentence is translated into *alat tersebut* to apply the theory of equivalence as proposed by Baker (1992b). There has been textual equivalency between the two versions of source and target text. The source text before pre-editing as shown on the Raw-TT sounds inaccurate with such content as there is word *dimatikan* that is translated into "extinguished" which means cause (fire or light), to cease, to burn or to shine. Actually to meet the good context, the appropriate translation should be "turned-off" which means an instance of turning or switching something off from something shaped like combustion as mentioned above. At the end of the sentence the phrase *alat yang berbentuk seperti pembakaran* should be translated "shaped like a combustion".

This translation would be better since the information intended in the source text is like what is meant by the expression, and this will be well accepted in the readership of target text. In terms of *the Equivalence at Word Level*, the word *ban* was translated into plural form "tires", whereas in source text, the word *ban* is actually singular. It is true that in *Bahasa Indonesia* as the source text, plural and singular have the same form of word, except that the plural is in repetition.

In the second sentence, the text is clear after being modified, with the addition of the temporal conjunction such as *setelah itu* at the beginning of the sentence. The change of several words such as *bilah* into *potong* in pre-editing text is also the example of the pre-editing result. The change into *bilah* instead of using the word *potong* is to make the translation easier for the machine since the machine is sometimes has no ability to distinguish between the two Indonesian words *bilah* and *potong*. The editing makes the translation by GNMT become more accurate and better accepted in target language. The word *bilah* in bahasa Indonesia to refer to cutting tire is actually not acceptable, but the word "split" in English is a proper word to show how the tires is split during the repairing of the tire. Thus the change of word *potong* into *bilah* results in better output in GNMT.

In addition, some other words in source text are not a good choice and result in a bad and inaccurate translation by GNMT. Therefore, the pre-editing process for the text prior the input of text in GNMT is urgent to do. In some way, sentence structures are normal with a proper punctuation. The use of punctuation is to separate ideas in phrases or sentences. However, the pre-editing-GNMT was able to produce a text in which the information from the pre-editing text was completely translated. No grammatical errors in the target text were found in the translation. This means that the pre-editing completed on the above sentences was able to produce new version text that is much better and more capable for translation because of the pre-editing.

Text	Source Text	Pre-editing	Google Neural MT
Text 1	*Keenam, pasir bagian-bagian di sekitar lubang. Amplas harus selebar ukuran saat kita akan memberikan tambalan pada ban. Tujuan dari amplas ini adalah agar tambalan dapat menempel dengan kuat.*	*Amplas bagian yang bocor dan sekitarnya agar memperkuat tempelan amplas.*	Sand the leaking part and its surroundings to strengthen the sandpaper paste
Text 2	*Yang terakhir bentuk menjadi alat – alat rumah tangga.*	*Yang terakhir bentuk anyaman tersebut menjadi alat - alat rumah tangga.*	Finally, the woven form is used as household utensils

Table 4.4: An example of pre-editing text categorized as acceptable

In the first sentence, the change has been made. The sentence in source text was modified and transformed into a short imperative sentence. The source text is actually an explanatory sentence referring to an object used as sandpaper. The sandpaper is needed in grating the leaky part to clear out the tire. To the reader how sandpaper should be used in the process of tire repairing is explained in this sentence. In pre-editing text, the uses of sandpaper make the sentence clearer after the verb being replaced by the appropriate one. The imperative sentence *amplas bagian yang bocor*

dan sekitarnya would be better if the object of the sentence is mentioned. Then, the sentence is followed *agar memperkuat tempelan amplas*; in this case, pre-editing text effort is needed to make the sentence clearer for comprehension. In contrast, the sentence found in the source text is meant to give the information that the use of the sandpaper was to a leaky tire. The use of sandpaper is to strengthen the patch when the tube is attached to the tire.

In the second text, there is a slight change in the above short imperative sentence. Two version of source text produce different translation. First, the pre-editing text really makes the sentence becomes clear with the addition of the subject *anyaman tersebut*. The original text seems to have no subject that will make GNMT have no appropriate translation. Thus, the addition of subject in the sentence gives a clear explanation. Pre-editing text indicates that there is additional punctuation as a comma at the beginning of the sentence. But the sentence still produces an incorrect translation. The pre-editing text *bentuk anyaman tersebut menjadi* (imperative sentence) is translated into "the woven form is used" (a not clear phrase). In GNMT translation, the word "the woven form" is equivalent to *bentuk anyaman* which is actually not imperative sentence, but noun phrase. If the word *bentuk* is inserted separately into GNMT, it will be correctly translated into "form".

Next, at the end of the sentence, the phrase *alat-alat rumah tangga* is translated into "household utensils". In both original and new versions of source text they were translated with textual equivalence, according to Baker theory. The word utensils can be interpreted as an instrument or device for specific types used in the kitchen. In this context, the household tool was intended for all household objects, not only those that could be used in the kitchen. So, the more appropriate translation should be "household appliance". A household appliance means an implement, an instrument or apparatus designed (or at least used) as a means to a specific end (often specified), used at home to perform domestic functions including in the kitchen. In this case, the phrase is more likely to be translated into "household appliances" since *alat - alat rumah tangga* means the same as "household appliance".

The source text above can produce the pre-editing text as the main information in understanding the target text is needed with several efforts. Both versions of the text above have errors in each section. In the first text, the information from the source text becomes less clear and no improvements in meaning during the pre-editing process. Trimming sentences, word choice, and sentence structure structures in the pre-editing text were not quite good. The translation into target text is not equivalent or less equivalent to the source text. This makes the translation become difficult to understand. In the second sentence, the pre-editing text successfully makes the text easier to understand than the source text. However, the result of the target text does not have the full-text information from the pre-editing text which makes the translation remain still inaccurate. The source text sentence structure and the target text sentence structure are different so that the translation looks inconsistent or causing distortion in meaning.

Some of the above problems were detected in both texts. The information or message received by readers of text targets is still inaccurate. The grammar, word choice, and meaning were different. This affects the quality of translation. In some ways, more sentences and text were changed into better understanding and translation. The following data show a certain case where pre-editing seems to be not needed. The quality of source text is already good and easy to translate by GNMT.

Text	Source Text	Pre-editing	Google Neural MT
Text 2	*Siapkan bambu yang sudah matang tapi jangan terlalu tua, yang penting mudah dibelah dengan serat bambu yang sudah melunak.*	*Siapkan bambu yang sudah matang tapi jangan terlalu tua, yang penting mudah dibelah dengan serat bambu yang sudah melunak.*	Prepare bamboo that is ripe but not too old, the important thing is that it is easy to split with softened bamboo fibers.

Table 4.5: An example of a sentence that does not need to be changed or without conducting pre-editing on text

The text above can be interpreted as sentences with no necessary change. The word order, the word choice, and the sentence structure are properly provided so that no necessary changes are required. No effort from the students is performed. But this does not mean that the students are not working for the pre-editing. The students should analyze whether the sentence has already been correctly constructed or not. Students should know and analyze the form of words, sentence grammar, and the possible translation that may distort from the original text.

From the explanation above, it is clear that the abilities of student to conduct pre-editing in source text are still demanding an encouragement and practice. To improve the ability of students to conduct pre-editing, it is necessary to design a course specifically for this purpose. The course consisting of pre-editing prior to input the text into GNMT or other machine translation is urgent. This recommendation is for the head of English curriculum designer to really consider the significance of this skill in bachelorette degree or in diploma 3 or diploma 4. GNMT and other machine translation need to be researched for a better production of text in other languages.

5. Conclusion

Based on the findings, the majority of the students have sufficient command in conducting pre-editing to the source text before being input to the GNMT. Their ability to conduct pre-editing and produce new version of source text, however, needs to be improved to meet the requirements of producing better text. The ability, as measured with Baker's theory of equivalence level, is still in lower level. Less than 50% of the pre-editing result is considered good, while the major pre-editing result is categorized as acceptable. The students should learn more about the differences between Indonesian and English rules of punctuation. In changing source text, students should master sentence construction either in Bahasa Indonesia or in English. Expressions and idioms are also important matters in pre-editing. Students should be equipped with those sets of knowledge.

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