# EXAMINING THE RESULT OF MACHINE TRANSLATION FOR LINGUISTIC TEXTBOOK FROM ENGLISH TO INDONESIAN

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## Abstract

Linguistic textbooks recommended by lecturers often are in English. However, an issue always occurs, which is the inability to comprehend the whole message of the books because several students do not speak English or the books use advance level of wordings, which makes the students cannot grasp the materials completely. Such reasons drive them to use machine translation, such as Google Translate, to transfer the materials of the books from English to Indonesian. However, the result of the tool is not always reliable. As technology advances, more machine translations are developed, yet people still stick with Google Translate. Therefore, this study aims to examine and compare the result of machine translation tools for linguistic textbooks from English to Indonesian. The data source was the result of machine translation tools, such as Google Translate, DeepL, and ChatGPT. English textbooks about linguistic, such as syntax, semantics, and phonology were chosen to provide the data. The data were collected through documentation method with note-taking technique. The analysis was conducted by applying descriptive-qualitative method based on Bhattacharrya combined with micro linguistic theories. The result shows that ChatGPT is better to help students to translate the textbooks than Google Translate and DeepL. Current study implies that students are recommended to use ChatGPT to help them translate English materials that are difficult to understand.

*Keywords:  machine translation, English, Indonesian, textbook*

## Introduction

Textbook is an important media in learning process. Even though technology is growing, the role of textbook as learning media cannot be ignored. The use of textbook as learning media is intended to facilitate students in learning process, and also to broaden knowledge. In linguistic, using of textbook as learning media is not only for facilitate learning process, it's also to achieve language skill that have to achieved (Tarigan, 2008, p. 01). This method is often used by all teachers, including lectures. For example in linguistic class, lectures are often recommended textbooks in English. This is due to educational demand designed by The Indonesian Ministry of Education and Culture to achieve the target of graduates who can compete globally. Because of the students are not English active speakers, it causes difficulties for students to understand the contents of textbook. Those obstacles make student use assistive media to filter the information in textbook, one of which is by using a machine translation.

Machine translation is an online based application that translates text from source language to target language (Siswoyo, 2018). The machine translation function as a machine for translating natural language (Hutchins & Somers, 1992, p. 02), which means being able to translating from source language to target language. Machine translation, later called by MT has part of components, such as Natural Language Processing (NLP), and Multilingual Computation which consists of software components, lexical resources building, and others (Bhattacharyya, 2015, p. 01). Those features are so easy to use, and also the results are quickly obtained, make this MT have lots of enthusiast. Currently, along with technology advance, MT is getting more of types and varieties. Recently, MT has even used AI (Artificial Intelligence) technology, which is believed able to change the lives in future. For example, MT which is often used are Google Translate, DeepL, and ChatGPT. Those three MT are able to assist students in translating many languages. However, in practice there are differences in the result of translating on each MT, even though it uses the same sentences. The differences in these results can be seen in this translation result.

The translation result by Google Translate from English into Indonesia.

| SL | TL |
|---|---|
| Agents are typically animate and normally instigate the actions they perform and do so wilfully and intentionally. Some verbs, e.g. murder, require the agent to act intentionally (*Sam murdered his neighbor accidentally), whereas others allow both intentional and unintentional agents, e.g. kill, break (Sam killed his neighbor intentionally/ accidentally). | Agen biasanya **bernyawa** dan biasanya menghasut tindakan yang mereka lakukan dan melakukannya **dengan sengaja dan sengaja**. Beberapa kata kerja, mis. pembunuhan, mengharuskan agen untuk bertindak dengan sengaja (*Sam membunuh tetangganya secara tidak sengaja), sedangkan yang lain mengizinkan agen yang disengaja dan tidak disengaja, mis. **bunuh, hancurkan** (Sam membunuh tetangganya dengan sengaja/tidak sengaja). |
| | (Van Valin, 2001, p. 24) |

The translation result by DeepL from English into Indonesia.

| SL | TL |
|---|---|
| Agents are typically animate and normally instigate the actions they perform and do so wilfully and intentionally. Some verbs, e.g. murder, require the agent to act intentionally (*Sam murdered his neighbor accidentally), whereas others allow both intentional and unintentional agents, e.g. kill, break (Sam killed his neighbor intentionally/ accidentally). | Pelaku biasanya **bernyawa** dan biasanya menghasut tindakan yang mereka lakukan dan melakukannya **dengan sengaja dan disengaja**. Beberapa kata kerja, misalnya pembunuhan, mengharuskan agen untuk bertindak dengan sengaja (*Sam membunuh tetangganya secara tidak sengaja), sementara yang lain memungkinkan agen yang disengaja dan tidak disengaja, misalnya **membunuh, mematahkan** (Sam membunuh tetangganya dengan sengaja/tidak sengaja). |
| | (Van Valin, 2001, p. 24) |

The translation result by Chat GPT form English into Indonesia

| SL | TL |
|---|---|
| Agents are typically animate and normally instigate the actions they perform and do so wilfully and intentionally. Some verbs, e.g. murder, require the agent to act intentionally (*Sam murdered his neighbor accidentally), whereas others allow both intentional and unintentional agents, e.g. kill, break (Sam killed his neighbor intentionally/ accidentally). | Agen umumnya berbentuk **benda hidup** dan biasanya memulai tindakan yang mereka lakukan **dengan sengaja dan dengan niat**. Beberapa kata kerja, misalnya "membunuh" (murder), mengharuskan agen bertindak dengan sengaja (*Sam membunuh tetangganya secara tidak sengaja), sedangkan kata kerja lain memungkinkan adanya agen baik yang bertindak dengan sengaja maupun tidak sengaja, misalnya **"membunuh" (kill), "menghancurkan" (break)** (Sam membunuh tetangganya dengan sengaja/tidak sengaja). |
| | (Van Valin, 2001, p. 24) |

As the result of those translation from English into Indonesia, there are differences results in translating from source language to target language. Even though they get same meaning, the diction results are different. Diction *animate* has differences translating in Google Translate, DeepL, and ChatGPT. In Google Transate, it translated to 'bernyawa', in DeepL translated to 'bernyawa' same as Google Translate, and in Chat GPT translated into 'benda

hidup'. Another results happened in sentences "do so wilfully and intentionally". In Google Translate translated to 'dilakukan dengan sengaja dan dan disengaja', in DeepL translated into 'dilakukan dengan sengaja dan disengaja', and in ChatGPT translated into different result 'dilakukan dengan sengaja dan dengan niat'. Those results show that same diction in sentence has different translated. ChatGPT resulting specific meaning, that differed from Google Translate and DeepL. It also show in sentences "kill, break". Google Translate translated into 'membunuh, mematahkan', DeepL translated into 'membunuh, mematahkan', and ChatGPT translated into '"membunuh" (kill), "menghancurkan" (break)'. Those translations are equivalent in meaning, but the problem that arises is acceptability of the dictions by user in translating sentences. This is interesting to be examined about the translation result by MT. This research is focused on the examining the result of three MTs (Google Translation, DeepL, and ChatGPT). Data source is collected on linguistic textbooks and analysed by two indicators, adequacy and fluency (Bhattacharyya, 2015, p. 30). In the end, the goal of this research is to find the comparison of MT result for translating textbook.

**Literature Review**
**Machine Translation**

Machine translation or MT is one of methods to translate from source language into target language. MT has been existence since the 1940's and continuous to develop in recent time (Bhattacharya, 2015, p. 01). MT is computer-based application in natural language processing (NLP). The components of MT operated by computer systems, and save a lot of words in any language. This system work by keyword system in source language into target language. This machine has word memory which is not comparable by human's capacity. This time, there are so many MT are recently used, such as Google Translate, DeepL, and ChatGPT. Those three of MT are recently used by people to translating in any language. Google translate and DeepL have same way to translate, by write the words/sentences in source language and instantly translate to target language. However, DeepL only translate word/sentences that contract from Google translate which can translate in any media such as picture, voice, or writing board (CNN Indonesia, 2022). Whereas, ChatGPT (Generative Pre-Training Transformer) is managed by Artificial Intellegence that raised in 2015. Contrastly with Google Translate and DeepL, ChatGPT work with QnA system. Users write the sentences in chat column, and system will answer the translation. This system is not only can translate language, but also can answer many questions beside to translate languages.

**Linguistic Textbook**

Textbook is a book that giving instruction in a subject used especially in school (Crowther, 1995). Textbook is given to students to facilitate the learning process. It also contains core and basic competency materials. Teacher usually use textbook in conventional class. The using of textbook are arranged by Indonesian Department of Educational in Permendiknas No 2 of 2008. Without textbook are considered more difficult than use the textbook in learning class. This statement made textbook is important to use.

**Review of Previous Studies**

Machine Translation (MT) used for translating from source language into target language. Sometimes, the results are not accurate to target language. It makes problem's research which is an interesting research to study. Some researches that discussed about MT have been research before. All of these previous researches are useful for this research. First, research from Nadhianti (2016) with the title "An Analysis of Accuracy Level of Google Translate in English-Bahasa Indonesia and Bahasa Indonesia-English Translations". This research is to investigating the accuracy level of Google Translate in English-Indonesia or Indonesia-English. The instruments that used are data cards and data sheet for accuracy of the result translation. The categories of accuracy showed from calculation of Google Translate. The result that show more than 50% is accurate, and inaccurate show less than 50%. The results

showed that Google Translate, both English-Indonesia or Indonesia-English translations are considered as inaccurate results. It based on the percentage that showed less than 50% (49.1% and 37.1%), which indicate four inaccuracy indicators (omission, addition, different meaning, and zero meaning). This research is useful for next research, to find the novelty of research based on machine translation. However, the next research is not just focus on Google Translate, but to examine and compare the result of another MT beside Google Translate.

Second, research from Sandra (2018) "From English to Indonesia: Translation Problems and Strategies of EFL Student Teachers-A Literature Review". The problems of this research are to articulate the problems of translating English to Indonesia, and its strategies of EFL students-teachers. Also, this research tried to emphasize and to convince why finding the problems and strategies of translation is very prominent to help the mapping in English Learning. This research used three concepts of translation's problems from Arnold (2008), and the strategies of translation by Hervey and Higgins (1986). The results showed that the problems in translating English-Indonesia or both, are ambiguity of function that not commonly into target language, the differences of structural and lexical between language, and the collocations. The strategies are to write just the way of its written from source language into target language, and customize some word into target language, that are not commonly in source language. This research contributed to understanding of translation method, but the research that conduct is to examine and find the differences of the result of MT.

Third, research from Sutrisno (2020) "The Accuracy and Shortcomings of Google Translate Translating English Sentences to Indonesia" is try to examine the accuracy of the result of Google Translate in translating English to Indonesia, in order to critically engage the complaints made by Google Translate. The data was assessed for accuracy using a table adapted from Memsource criteria. The original sentences and its translated were analysed using a sentences pair matrix to determine the result's error for improvement. The result showed that Google Translate is not only effective with words and phrases. On the contrary, Memsource showed 60.37% of the result on accuracy of English-Indonesia translation, which show the results was accurate. Those all of previous researches give the contribution in translation methods and practices in English-Indonesia and Indonesia-English. However, the goals of this research are to examine and compare the result of three MT (Google Translate, ChatGPT, and DeepL) in translating English-Indonesia.

**Research Methodology**

This study uses data from the results of translating linguistic textbooks using machine translation systems such as Google Translate, DeepL, and ChatGPT. The data was obtained by translating sentences from linguistic textbooks in English into Indonesian using Google Translate, DeepL, and ChatGPT. These three machine translation systems were selected due to the widespread usage of machine translation for language translation. This study focused in error analysis, adequacy, and fluency translation form Google Translate, DeepL, and ChatGPT. The data was collected through a verification method and comparing text. This methods where used to identify the data that not in accordance with English grammar to Indonesian. The data that found where contrasted and analysed based on the error founds. The verification method is supported with questionnaire to contrasting the result of translated language.

After the data were collected, descriptive-qualitative method were used to analyze the data with the application of Bhattacharyya (2015) theory of machine translation focused in adequacy and fluency. Bhattacharyya (2015) propose a theory of machine translation that have three paradigms: rule-based machine translation (RBMT), example-based machine translation (EBMT), and statistical machine translation (SMT). The differences between them are the way it handle analysis, transfer, and generation which a three fundamental processed in machine translation. RBMT focused in rules, SMT uses data like examples of parallel translation, and EBMT as the combination of both. Adequacy in machine translation is how the meaning of a

sentence is source language is equal to its target language (Bhattacharyya, 2015, p. 30). In machine translation it is called faithfulness in SMT. Fluency is how native speaker accept the translated sentence, it requires word choice, word order, and register (Bhattacharyya, 2015, p. 30).

This study also incorporated Error Analysis of Machine Translation by Vilar, et al. (2006). They found that evaluation on machine translation output still discussed by the community. They concerning to present a framework for human to analysing error of machine translation output. The error analysis were classified into four errors: word order, missing words, incorrect words, punctuation error, . Word order error is found when the machine translation cannot match we word order to target language. The missing word error is found when generating a translation, it is missing a word. Incorrect word error is found when the system can't found a correct translation. Punctuation error rarely found in machine translation (Vilar et al., 2006, p. 697).

Data analysis is conducted in several stages. Firstly, the translated sentences are identified according to the errors that occur using Error Analysis of Machine Translation by Vilar et al., (2006) the error analysis is contrasted by each MT with the same example form source language in linguistics text book. After identification, the data were analysed the adequacy and fluency in machine translation by Bhattacharyya (2015). The adequacy were analysed the similarity of each MT form source language to target language. Third, to verify the fluency, questionnaire is used as a validation form translated sentence. The analysis is presented in formal and informal method. The data were shown using numeric and table to see the differences of each MT. the description of adequacy analysis for each MT is presented in sentences.

**Findings and Discussion**

The analysis of result of machine translation in translating linguistic textbooks is based on Bhattacharyya's adequacy and fluency theories (2015) to evaluate the result. As mentioned in methodology, this study involved micro linguistic theories; therefore, to determine the most proper adequacy among the three machine translation tools chosen, the analysis of adequacy consisted integrated morpho-syntax and semantic theories. Furthermore, this study also applied the error taxonomy of machine translation output by Vilar et al. (2006). This study attempted to examine whether the tools are able to grammatically and semantically translate the linguistic textbooks without minimum error. In terms of fluency, as it relies on the judgement of humans, a questionnaire was given to linguistic students to assess the result of the translation.

**Adequacy**

**Data 1**

SL: In English and many other languages, it is possible to express an event in more than one way using the same words. For example, if one wanted to report the state of affairs in which a woman had used soap and water to make some clothes clean, one could say either **The woman washed the clothes** or **The clothes were washed by the woman**. In both sentences the woman is the doer of the action, the washer, and the clothes are the thing affected by the action, the washed (Van Valin, 2001, p. 22).

Google Translate: *Dalam bahasa Inggris dan banyak bahasa lainnya, dimungkinkan untuk mengungkapkan suatu peristiwa dengan lebih dari satu cara menggunakan kata-kata yang sama. Misalnya, jika seseorang ingin melaporkan keadaan di mana seorang wanita menggunakan sabun dan air untuk membersihkan pakaian, seseorang dapat mengatakan* **Wanita yang mencuci pakaian** *atau* **Pakaian yang dicuci oleh wanita**. *Dalam kedua kalimat tersebut wanita adalah pelaku perbuatan, pencuci, dan pakaian adalah benda yang terkena perbuatan, yang dicuci.*

DeepL: *Dalam bahasa Inggris dan banyak bahasa lainnya, kita dapat mengekspresikan sebuah peristiwa dengan lebih dari satu cara menggunakan kata-kata yang sama. Sebagai*

*contoh, jika seseorang ingin melaporkan keadaan di mana seorang wanita telah menggunakan sabun dan air untuk membuat beberapa pakaian bersih, kita dapat mengatakan **The woman washed the clothes** atau **The clothes were washed by the woman**. Pada kedua kalimat tersebut, wanita adalah pelaku tindakan, si pencuci, dan pakaian adalah sesuatu yang terkena dampak dari tindakan tersebut, yaitu yang dicuci.*

ChatGPT: *Dalam bahasa Inggris dan banyak bahasa lainnya, mungkin ada lebih dari satu cara untuk mengungkapkan suatu peristiwa menggunakan kata-kata yang sama. Sebagai contoh, jika seseorang ingin melaporkan keadaan di mana seorang wanita telah menggunakan sabun dan air untuk membersihkan pakaian, bisa dikatakan baik **"The woman washed the clothes"** atau **"The clothes were washed by the woman"**. Pada kedua kalimat tersebut, wanita adalah pelaku tindakan, yaitu yang mencuci, dan pakaian adalah benda yang terpengaruh oleh tindakan tersebut, yaitu yang dicuci.*

The data 1 demonstrates that three machine translation tools treat the source language text differently. The source language gives a mark of capitalized first letter of the examples as shown by the sentences in bold above. Perhaps for several students, this mark is sufficient to help the differentiate the examples and the rest of the texts. However, when looking at the way the machine translation tools translate the source text, each gives different treatment to the examples, yet ChatGPT gives more distinguished marker. Google Translate translated data 1 into Indonesian. DeepL did not translate the examples. ChatGPT maintained the source language for the examples and provided quotation marks, which the marks are not present originally in the source text; thus, the examples are discriminable from the other texts.

In terms of capturing the meaning of the examples, Google Translate changed the syntactic structure from a sentence to a noun phrase. The presence of the word *yang* in Indonesian translation creates the notion of noun phrase because it complements the head noun *wanita*. This affects the faithfulness of the source text, which can hamper the understanding of the students. DeepL and ChatGPT did not translate the examples into Indonesian; thus, the students need more effort to individually translate the example if they completely do not understand English. However, if the students have moderate English skills, the examples can be understood even though they are not translated.

Another interesting examination is that DeepL translated the source text in a more interactive manner as it used the pronoun *kita*, which creates a situation where the textbook includes the reader. The use of the pronoun also lessens the formality level of academic writings.

**Data 2**

SL: A patient argument is either in a state or condition or undergoes a change of state or condition, e.g. **The bird is dead** (state) versus **The bird died** (change of state) (Van Valin, 2001, p. 24).

Google Translate: *Argumen pasien baik dalam keadaan atau kondisi atau mengalami perubahan keadaan atau kondisi, mis. **Burung mati** (keadaan) versus **Burung mati** (perubahan keadaan).*

DeepL: *Argumen pasien berada dalam suatu keadaan atau kondisi atau mengalami perubahan keadaan atau kondisi, misalnya **Burung itu mati** (keadaan) versus **Burung itu mati** (perubahan keadaan).*

ChatGPT: *Argumen pasien dapat berada dalam keadaan atau kondisi tertentu atau mengalami perubahan keadaan atau kondisi, misalnya: **Burung tersebut dalam keadaan mati** (keadaan) versus **Burung tersebut telah mati** (perubahan keadaan).*

Data 2 exhibits the way the machine translation tools treat the source text. Apparently, ChatGPT can either maintain the source language or translate the source text into target language. However, there is a change in the way ChatGPT treated the examples, where in data

2, no quotation marks are given, but the function of the marks has been replaced by the word *misalnya* to stress examples. Looking at the result of the translation, Google Translate performed reduction of determiner, whereas DeepL kept the determiner *the* and translated it into *itu*, while ChatGPT provided a more extensive translation.

The examples being translated into Indonesian can make the information vogue because in Indonesian, to say an object is dead or died use the word *mati*. Therefore, the understanding of in a state and change of state mainly relies of the Indonesian students to process the logic. Both Google Translate and DeepL translated the examples of *the bird is dead* and *the bird died* in the same words. However, ChatGPT could clarify the notion of the two examples. Based on data 2, ChatGPT is able to understand the concepts of in a state and change of state; thus it provided better understanding of the materials. The translation *burung tersebut dalam keadaan mati* shows a concept of in a state. The addition of prepositional phrase *dalam keadaan* stresses that the example conveys about a condition of an object. The translation *burung tersebut telah mati* shows a concept of a change of state. The word *telah* creates a presupposition that the bird was alive previously and now is dead; therefore, it brings the information of changing condition.

**Data 3**

SL: In the first sentence, the **NP** referring to the doer of the action is the subject and the **NP** referring to the thing affected is the direct object, while in the second the **NP** referring to the thing affected is the subject and the **NP** referring to the doer of the action is the object of the preposition by. This contrast is captured in the notion of **'voice'**: the first sentence is in active **voice**, while the second is in passive **voice** (Van Valin, 2001, p. 22).

Google Translate: *Pada kalimat pertama, **NP** yang merujuk pada pelaku tindakan adalah subjek dan **NP** yang merujuk pada hal yang terkena adalah objek langsung, sedangkan pada kalimat kedua **NP** yang merujuk pada hal yang terpengaruh adalah subjek dan **NP** yang merujuk. kepada pelaku tindakan adalah objek dari preposisi oleh. Kontras ini ditangkap dalam pengertian **'suara'**: kalimat pertama dengan **suara** aktif, sedangkan kalimat kedua dengan **suara** pasif.*

DeepL: *Pada kalimat pertama, **NP** yang merujuk pada pelaku tindakan adalah subjek dan **NP** yang merujuk pada hal yang terkena dampak adalah objek langsung, sedangkan pada kalimat kedua, **NP** yang merujuk pada hal yang terkena dampak adalah subjek dan **NP** yang merujuk pada pelaku tindakan adalah objek dari kata depan oleh. Kontras ini ditangkap dalam pengertian **'suara'**: kalimat pertama menggunakan kalimat aktif, sedangkan kalimat kedua menggunakan kalimat pasif.*

ChatGPT: *Pada kalimat pertama, **frasa benda** yang mengacu pada pelaku tindakan adalah subjek dan **frasa benda** yang mengacu pada benda yang terpengaruh adalah objek langsung, sedangkan pada kalimat kedua, **frasa benda** yang mengacu pada benda yang terpengaruh adalah subjek dan **frasa benda** yang mengacu pada pelaku tindakan adalah objek dari kata depan "by". Perbedaan ini tercakup dalam konsep **'suara' (voice)**: kalimat pertama menggunakan **suara** aktif (active **voice**), sementara kalimat kedua menggunakan **suara** pasif (passive **voice**).*

Data 3 shows that ChatGPT is able to acknowledge the abbreviation of NP, which stands for noun phrase; thus, it correctly translated the abbreviation into *frasa benda*. Furthermore, ChatGPT maintained the technical term of *voice*, although it attempted to translate the term, but the result is wrong. It is true that the word *voice* is *suara* in Indonesian; however, the translation is not suitable for the context of syntax. The word *voice* has the equivalent of *diatesis* in Indonesian, which derived from the term *diathesis* that is similar to the term *voice*. The way ChaGPT maintained the term makes up with the mistranslation. Different with Google Translate and DeepL where they maintained the abbreviation and translated the term *voice*, ChatGPT can give better understanding to the concept of syntax and the term used in English to discuss syntax.

Looking at the choice of words, apparently ChatGPT is outdated because it uses the word *benda* to make a phrase of *frasa benda* and *the* phrase *kata depan* as the translation of preposition, rather than using the word *nomina* to make *frasa nomina* and *preposisi* to replace *kata depan.* However, all terms are acceptable because they carry the same information, but it is better to acknowledge more sophisticated terms for university students.

**Data 4**

**SL**: Patient arguments typically occur with verbs like kill**, smash, break, crush,** wash**,** and **destroy**, while themes typically occur with verbs like put, place, give, send, and buy. The role of Dana in Chris gave the notebook to Dana is recipient. Recipient arguments can appear syntactically as an indirect object, as in this sentence, or as a subject, in a sentence like Sandy received the message from Kim (Van Valin, 2001, p. 24).

Google Translate: Argumen pasien biasanya muncul dengan kata kerja seperti bunuh**, hancurkan, hancurkan, hancurkan,** cuci**,** dan **hancurkan,** sedangkan tema biasanya muncul dengan kata kerja seperti letakkan, tempatkan, berikan, kirim, dan beli. Peran Dana dalam Chris memberikan notebook kepada Dana adalah penerima. Argumen penerima dapat muncul secara sintaksis sebagai objek tidak langsung, seperti dalam kalimat ini, atau sebagai subjek, dalam kalimat seperti Sandy menerima pesan dari Kim.

DeepL: Argumen pasien biasanya muncul dengan kata kerja seperti membunuh**, menghancurkan, mematahkan, menghancurkan,** mencuci**,** dan **menghancurkan**, sementara tema biasanya muncul dengan kata kerja seperti meletakkan, menempatkan, memberi, mengirim, dan membeli. Peran Dana dalam kalimat Chris memberikan buku catatan kepada Dana adalah penerima. Argumen penerima dapat muncul secara sintaksis sebagai objek tidak langsung, seperti dalam kalimat ini, atau sebagai subjek, dalam kalimat seperti Sandy menerima pesan dari Kim.

ChatGPT: Argumen pasien umumnya muncul dengan kata kerja seperti membunuh**, memecahkan, menghancurkan,** mencuci**,** dan **merusak**, sedangkan tema umumnya muncul dengan kata kerja seperti meletakkan, menempatkan, memberi, mengirim, dan membeli. Peran Dana dalam kalimat "Chris memberi buku catatan kepada Dana" adalah penerima. Argumen penerima dapat muncul secara sintaksis sebagai objek tidak langsung, seperti dalam kalimat ini, atau sebagai subjek, dalam kalimat seperti "Sandy menerima pesan dari Kim".

Words in bold in data 4 above are synonymous. Based on Oxford Advanced Learners Dictionary, the word *smash* means to break something violently and noisily into many pieces; the words *break* means to damage or separate into two or more parts as a result of force; the word *crush* means to break something into small pieces by pressing hard; and the word *destroy* means to damage something so badly. The meanings of the four words above are similar, which to break or to damage. Each machine translation tool translated the synonymous words differently.

Google Translate was not able to distinguish the four words as it translated them into the same Indonesian equivalence, which is *hancurkan.* In Indonesian dictionary, *Kamus Besar Bahasa Indonesia,* the meaning of *hancurkan* is to make something broken. The translation is acceptable, but because it is not able to provide the translation for the other words, it does not contribute well to the understanding of the examples in the material.

DeepL performed better than Google Translate as it provided more varied translations. Although the Indonesian translation *menghancurkan* occurred thrice, DeepL was able to differentiate to at least capture the details of one of the synonymous words. Based on the sequence, the word *break* was translated into *mematahkan*, whereas the other words were translated into *menghancurkan*.

ChatGPT performed very well compared to the previous two tools. It was able to provide discriminable synonymous words on the Indonesian translation. Although it had error of missing word as the Indonesian translation only had three words instead of four like the source text, the error can be considered minor. Based on the word order, the word *smash* was translated

into *memecahkan,* the words *break* and *crush* were translated into *menghancurkan*, and the word *destroy* was translated into *merusak.* The translation is acceptable because it captures the meanings of the source text.

Furthermore, Google Translate apparently encountered an error of unknown word shown by the word *notebook* because it is not translated. The other tools were able to translate it. This shows a prediction that perhaps in other texts, Google Translate may not be able to translate certain ordinary word in a quite long text.

**Data 5**

| | |
|---|---|
| SL: | a John gave **Mary his old radio**. |
| | b John gave **his old radio to Mary**. (Kroeger, 2005, p. 61) |
| Google Translate: | a. John memberi **Mary radio lamanya**. |
| | b. Yohanes memberikan **radio lamanya kepada Maria**. |
| DeepL: | a. John memberikan **radio lamanya kepada Mary**. |
| | b. Yohanes memberikan **radio lamanya kepada Mary**. |
| ChatGPT: | a. John memberikan **Mary radio lamanya**. |
| | b. John memberikan **radio lamanya kepada Mary**. |

In syntax, word order in a sentence is very vital because specific position denotes a specific function, such as primary and secondary object. The data 5 above differentiates the presence of primary and secondary objects, in (a), and direct and indirect objects, in (b). The meaning of the examples (a) and (b) is the same. However, sentence structure is significant to be retained in the target translation in order to match the materials.

Google Translate was able to maintain the source sentence structure as observed in the Indonesian translation. This denotes that Google Translate may prioritize form-based translation. ChatGPT also translated the source text based on the sentence structure. Therefore, ChatGPT and Google Translate, from the translation of data 5, can help students in understanding the concept of primary-secondary and direct-indirect objects. However, there is an inconsistency in the result of Google Translate in translating names.

DeepL, on the other hand, was not able to distinguish the different sentence structure. It translated the source text based on the meaning; therefore, it denotes that DeepL may focus more on meaning-based translation. Thus, DeepL cannot help students to understand the material.

**Data 6**

SL: The following example from **Votic** (Russia) illustrates one way in which the account of **phonological alternations** can be made tractable by analyzing the alternations in terms of the interaction between independent phonological processes. In these examples, [ɫ] represents a velarized l. (Odden, 2005, p. 100).

Google Translate: *Contoh berikut dari **Votic** (Rusia) mengilustrasikan satu cara di mana penjelasan **pergantian fonologis** dapat dibuat dapat ditelusuri dengan menganalisis pergantian tersebut dalam kaitannya dengan interaksi antara proses-proses fonologis independen. Dalam contoh ini, [ɫ] merepresentasikan l yang divelarisasi.*

DeepL: *Contoh berikut dari **Votic** (Rusia) mengilustrasikan salah satu cara di mana penjelasan tentang **pergantian fonologis** dapat dibuat mudah dipahami dengan menganalisis pergantian dalam hal interaksi antara proses fonologis yang independen. Dalam contoh ini, [ɫ] mewakili l yang divelariasikan.*

ChatGPT: *Contoh berikut dari bahasa **Votik** (Rusia) menggambarkan salah satu cara di mana analisis **alternasi fonologis** dapat diatasi dengan menganalisis alternasi tersebut dalam hubungan antara proses fonologis independen. Dalam contoh-contoh ini, [ɫ] mewakili sebuah konsonan l yang tervelarisasi.*

Data 6 above demonstrates that ChatGPT was able to translate unstranslated word in Google Translate and DeepL. The language of Votic is a name of language in Russia. Although it is a name, the word is still able to be translated to Indonesian. Several English words that ends in *-ic* are translated to Indonesian as words end with *-ik*, such as *authentic-otentik, aesthestic-estetik, lyric-lirik, characteristic-karakteristik,* and *linguistic-linguistik.* Therefore, the name Votic can be adjusted to Indonesian translation to match the natural pronunciation in Indonesia, which is *Votik* as ChatGPT translated. Google Translate and DeepL were not able to translate the name Votic. They maintained the source text.

Furthermore, data 6 also shows that ChatGPT has better word choice in translating specific phonological term. The phrase in bold *phonological alternation* is translated into *alternasi fonologis*. This choice of words is acceptable because it uses naturalized borrowing. The translated phrase is also searchable when searched in Google. In contrast to ChatGPT, Google Translate and DeepL translated the phrase into *pergantian fonologis,* which are considered foreign because no articles in Google use the term *pergantian fonologis*. Therefore, it can misdirect the students to understand the term. Although *pergantian* and *alternasi* have similar meaning, the word chosen by Google Translate and DeepL is not suitable.

In the translation from DeepL, it is found a missing alphabet that results into incorrect word shown by the word *divelariasikan*. The word is translated from the source word *velarized.* The word is supposed to be translated into *divelarisasi* or *tervelarisasi,* yet DeepL translation misses the the first letter "s".

**Fluency**

The analysis of adequacy above shows that ChatGPT performs better than Google Translate and DeepL from the perspective of linguistic. In order to strengthen the analysis that ChatGPT is truly better in translation, a questionnaire was given to the linguistic students of Udayana University. They were required to give value to the five-point scales for fluency and adequacy rating provided by Bhattacharyya (2015). The overall result and each result of each tool can be seen below.

**Table 1. Fluency Score for Google Translation**

| Respondent | Google Translate | | | | | | Average |
|---|---|---|---|---|---|---|---|
| | Score | | | | | | |
| | Data 1 | Data 2 | Data 3 | Data 4 | Data 5 | Data 6 | |
| Student 1 | 5 | 3 | 3 | 2 | 5 | 4 | 3,7 |
| Student 2 | 5 | 4 | 4 | 2 | 4 | 4 | 3,8 |
| Student 3 | 5 | 4 | 4 | 3 | 5 | 4 | 4,2 |
| Student 4 | 5 | 4 | 3 | 2 | 4 | 4 | 3,7 |
| Student 5 | 5 | 4 | 4 | 3 | 5 | 4 | 4,2 |
| Total Score | | | | | | | 3,9 |

Table 1 shows how the students rate the result of Google Translation. Mostly, they gave fair to good score to the result, excluding to data 4. They also explained that Google Translation translated the materials quite well; thus, the materials are able to be understood. However, in technical terms, Google Translate make the students cannot recognize the term of the concept. Therefore, the result of Google Translate shows a value of 3,9 meaning that the translation is non-native with possibly a few minor errors.

**Table 2. Fluency Score for DeepL**

| Respondent | DeepL | | | | | | Average |
|---|---|---|---|---|---|---|---|
| | Score | | | | | | |
| | Data 1 | Data 2 | Data 3 | Data 4 | Data 5 | Data 6 | |
| Student 1 | 5 | 4 | 4 | 3 | 3 | 4 | 3,8 |
| Student 2 | 5 | 3 | 4 | 3 | 4 | 4 | 3,8 |
| Student 3 | 3 | 4 | 4 | 5 | 3 | 4 | 3,8 |
| Student 4 | 5 | 4 | 4 | 3 | 3 | 4 | 3,8 |
| Student 5 | 3 | 4 | 4 | 5 | 3 | 4 | 3,8 |
| Total Score | | | | | | | 3,8 |

Table 2 shows the score for the result of DeepL. According to the respondents, DeepL is not able to capture the materials well because there are errors in sentences or terms. DeepL also makes the translation less formal, which is not suitable for academic textbooks. The score for DeepL is very close to Google Translate's, which means that DeepL is considered non-native with minor errors present in the result of translation.

**Table 3. Fluency Score for ChatGPT**

| Respondent | ChatGPT | | | | | | Average |
|---|---|---|---|---|---|---|---|
| | Score | | | | | | |
| | Data 1 | Data 2 | Data 3 | Data 4 | Data 5 | Data 6 | |
| Student 1 | 5 | 5 | 5 | 5 | 5 | 5 | 5,0 |
| Student 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5,0 |
| Student 3 | 4 | 5 | 5 | 5 | 5 | 5 | 4,8 |
| Student 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5,0 |
| Student 5 | 4 | 5 | 5 | 5 | 5 | 5 | 4,8 |
| Total Score | | | | | | | 4,9 |

Table 3 shows the result of ChatGPT translation. Based on the students' opinion, the translation result of the ChatGPT is more natural and able to translate the materials very well. Although there is error in certain term, such as in Data 3 for *voice*, it already makes up its error by retaining the source text; therefore, the students understand the term. Furthermore, the translation by ChatGPT can provide a more accurate information about concepts. The students gave almost a perfect score to the result of ChatGPT, which is 4,9 that indicates good.

**Table 4. Fluency Score for All Machine Translation Tools**

| Machine Translation | Score |
|---|---|
| Google Translation | 3,9 |
| DeepL | 3,8 |
| ChatGPT | 4,9 |

Table 4 shows that the score comparison of the three machine translation tools. It is known that ChatGPT performs better as the score is the highest. Based on the result, ChatGPT can help the students better to understand the materials provided in linguistic textbooks.

**Conclusion**
After examining the result of three machine translation tools, namely Google Translate, DeepL, and ChatGPT, there are several distinctions found that lead ChatGPT as the best

machine translation among the three. Google Translate and DeepL are quite good for translating materials, however, ChatGPT advances in terms of capturing the core of the materials. ChatGPT is able to differentiate examples, clarify examples, acknowledge abbreviation, maintain technical terms, discriminate synonymous words, discriminate sentence structure with the same information, translate untranslated words, and provide suitable word choice. ChatGPT also receives the highest score compared to the other two by the linguistic students as respondents. The score indicates that ChatGPT performs translation task better than Google Translation and DeepL.

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