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A Contrastive Analysis of DeepL Translation vs. Google Translate's Performance in Rendering Academic Texts: Insights from EFL Learners

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Abstract
Numerous online translation tools are available today to assist academic works. This study aimed to explore English students' insights regarding two most popular translation tools, namely DeepL Translation and Google Translate in terms of accuracy, naturalness, grammar, context understanding, terminology translation, speed, language pairs, and additional features of both tools. This research is descriptive qualitative. Thirty English students of Universitas Serambi Mekkah filled in a Likert-scale questionnaire comprising 10 items. Their responses were analyzed using Thematic Analysis. The findings showed that most participants agreed that DeepL Translation is more accurate and natural than Google Translate in rendering academic texts (58.1% and 68.8%, respectively). DeepL is also believed to have better grammar accuracy (56.3%), excels at deciphering context and language nuances (64.5%), and is faster than Google Translate (71%). Despite numerous advantages of DeepL, Google Translate is deemed superior by 68.8% participants in terms of additional features, such as voice translation, image translation, document translation, and more language pairs (61.3%), offering more advantages than DeepL. A majority of the students (67.7%) also prefer to continue using DeepL to Google Translate. This research can benefit EFL learners and academicians who require using such Neural Machine Translations for the execution of academic tasks.

Keywords: google translate, neural machine translation.

INTRODUCTION

Translation tools such as Google Translate and DeepL have become increasingly common in language education, particularly among learners of English as a foreign language. These tools provide quick and accessible translations, helping students comprehend complex text and enhance their language skills. However, the reliability and precision of these tools have been debated, with some studies suggesting the machine translation can introduce errors or misinterpretations (Clifford et al., 2013).

DeepL is an advanced machine translation tool that uses artificial neural networks to provide highly accurate translations in multiple languages. DeepL is known for its accuracy and ability to capture context, often producing translations that appear more natural than other translation tools. The platform's underlying technology, neural machine translation (NMT), is optimized to understand context and language nuances, making it particularly effective for translating idiomatic expressions and complex sentence structures. However, like other machine translation tools, DeepL may struggle with specific techniques or highly specialized vocabulary (Toral & Way, 2018).

DeepL is an increasingly popular translation tool because it can provide translations that are not only accurate but also contextual. It often outperforms other machine translation tools in terms of fluency and naturalness. DeepL uses deep learning algorithms to analyze complex language patterns and adapt to the nuances that are critical to preserving the original meaning of the text. Although DeepL has shown significant progress, it still has certain limitations, especially when translating highly technical terms or very specialized fields that may require human translation to guarantee absolute accuracy (Castilho et al., 2019).

Research showed that DeepL often outperforms Google Translate in terms of translation accuracy and naturalness, especially for complex languages (Asmara & Kembaren, 2014). DeepL's Neural Machine Translation (NMT) technology is designed to capture nuance and context, resulting in more fluent translations that closely approximate human speech. In particular, research shows that DeepL handles idiomatic expressions and complex sentence structures more effectively than Google Translate, making it a preferred choice for professional and academic purposes (Burchardt et al., 2017).

Google Translate, which debuted in 2006, is one of the most popular translation tools due to its broad language support and user-friendly interface. In contrast, DeepL, developed more recently, utilizes advanced AI to offer more contextually accurate translations. Research has shown that DeepL may surpass Google Translate in handling intricate linguistic structures (Lample et al., 2018; Macketanz et al., 2018). This is contrary to the research of Yulianto & Supriatningsih (2021) that reported DeepL's drawback in terms of world knowledge and ability to decipher lexical and structural ambiguities.

Google Translate is a machine translation tool that uses algorithms to translate words, sentences, or paragraphs from one language to another. The tool has

proven to be very useful in language learning, especially because it provides instant and easily accessible translations to understand complex texts. However, the quality of Google Translate's translations remains controversial. Some studies have shown that the tool sometimes provides inaccurate or even misleading translations, especially when translating texts that contain many idioms or figurative language (Clifford et al., 2013).

Google Translate is a widely used online machine translation tool developed by Google to help users translate text into different languages. It is based on Neural Machine Translation (NMT) technology, which learns from a large database of multilingual text to improve translation accuracy over time. Although Google Translate is very effective for basic translation tasks, it has limitations when dealing with context, cultural differences, and complex language structures, which often lead to translation errors. These limitations are particularly noticeable for idiomatic expressions or specialized vocabulary, which can lead to inaccurate translations (Aiken & Balan, 2011).

This study seeks to explore the perceptions of English Department students at Universitas Serambi Mekkah regarding the applications of Google Translate and DeepL. The central research question we would like to answer is: *"What are the students' perceptions towards Google Translate vs. DeepL Translation in translating academic texts?* In other words, it intends to understand their preferred tool and the factors influencing their choice of the tool.

While much research has focused on the effectiveness of machine translation tools (Bahri & Mahadi, 2016), few studies have examined students' perceptions of these tools, especially for the academic purpose in the Indonesian education context. Previous research also mostly focused on the comparison between Google Translate vs. DeepL Translation in terms of accuracy and naturalness, whereas this research includes more variables to be assessed, such as their ability to decipher and maintain contexts and language nuance, grammatical accuracy, speed, translation of academic terms, user-friendliness as well as accessibility of both translation tools. This research aims to fill the gap in literature and contribute to the on-going discussion on the role of machine translation in language learning, providing possible recommendations for their integration into English language curricula.

METHOD

This research employs a qualitative approach to explore English majors' perceptions of two widely used machine translation tools: Google Translate and DeepL Translation. Qualitative method seeks to understand the meaning individuals or groups ascribe to social or human problems (Creswell, 2013) and defines qualitative research as an interpretive, holistic approach that emphasizes the understanding of complex social phenomena through the collection of rich narrative materials (Merriam, 2009). The sample consisted of 30 students from the English department at Serambi Mekkah University using purposive sampling. They were

selected based on a criterion, in which they have ever used both DeepL and Google Translate for their academic tasks. The data were collected using a Likert Scale questionnaire, ranging from 1 to 4, namely Strongly Agree, Agree, Disagree, and Strongly Disagree. There were 10 items (questions) in the questionnaire that addressed the following aspects: accuracy, naturalness, grammatical aspect, context and language nuance understanding ability, translation of terminology, speed, available language choices, and useful additional features for the convenience of users of both translation tools being researched.

Thematic analysis was used for data analysis, enabling the identification of patterns and themes within the qualitative responses. The study's findings aim to provide a comparative analysis of the two translation tools and enhance the understanding of machine translation's role in educational settings.

RESULT AND DISCUSSION

After analyzing the responses of the questionnaire using the Thematic Analysis, the results of the analysis can be presented in the table, as follows:

Table 1

The Students' Perceptions of the Performance of DeepL Translation vs. Google Translate in Rendering Academic Texts.

No.	Questions	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
1.	DeepL is more accurate than Google Translate in translating Academic Texts.	38,7%	58,1%	3,8%	0%	100%
2.	DeepL translation is more natural than Google Translate in translating Academic Texts.	28,1%	68,8%	3,1%	0%	100%
3.	DeepL has better grammar accuracy than Google Translate in translating Academic Texts.	34,4%	56,3%	9,4%	0%	100%
4.	DeepL is better at understanding context and language nuances compared to Google Translate.	32,3%	64,5%	3,2%	0%	100%
5.	DeepL can translate specific academic terms better than Google Translate.	22,6&	64,5%	12,9%	0%	100%

6.	DeepL is faster than Google Translate in providing translation results.	12,9%	71%	16,1%	0%	100%
7.	DeepL supports more languages compared to Google Translate.	22,6%	61,3%	12,9%	3,2%	100%
8.	Google Translate has additional features (such as voice or image translation) that are more useful compared to DeepL.	18,8%	68,8%	9,4%	3%	100%
9.	Google Translate is more practical and easy to access than DeepL for academic use.	25%	53,1%	18,8%	3,1%	100%
10.	I would prefer and continue using DeepL than Google Translate from now on for academic use.	16,1%	67,7%	16,1%	0%	100%

Source: research results 2023

From Table 1, students' perceptions regarding the performance of DeepL Translation and Google Translate can be grouped into several themes, as follows:

1. *DeepL Translation Provides Better Accuracy Than Google Translate.*

Referring to Table 1, it is evident that 38.7% of respondents strongly endorsed DeepL Translation for producing more precise academic translations compared to Google Translate, with an additional 58.1% expressing agreement. Taken together, these responses suggest that a significant majority of respondents depend on DeepL Translation, attributing their preference to its enhanced accuracy. Conversely, only 3.8% of participants disagreed, favoring Google Translate's accuracy instead. This observation aligns with the findings of Bunga and Katemba (2024), who reported DeepL Translation's accuracy at 73%, compared to 48% for Google Translate. Similarly, Sebo and de Lucia (2024) confirmed a higher accuracy rate for DeepL over Google Translate when translating Spanish texts into English. Polakova and Klimova (2023, p. 3) also reported that "the main differences between these two applications are that DeepL Translation is more accurate (69%) than the Google Translate, and it also provides different synonyms when translating (31%)."

2. *DeepL Translation Produces More Natural Rendition Than Google Translate.*

A substantial majority of respondents (68.8%) agreed that DeepL Translation excels in generating more natural-sounding text than Google Translate, with an additional 28.1% expressing strong agreement. These responses collectively suggest

that DeepL is a robust translation tool capable of producing renditions that closely mirror human language. This outcome is consistent with findings from Kamaluddin et al. (2024) but diverges from the assertion by Puchała-Ladzińska (2016) that neural machine translation (NMT) lacks the capacity to produce translations with human-like naturalness. Similarly, Telaumbanua et al. (2024) reported that DeepL surpasses Google Translate in terms of linguistic naturalness, positioning it as a preferred choice among professional translators. However, a small minority of 3.8% of participants in the present study disagreed, asserting that Google Translate yields more natural language.

3. *DeepL Translation Produces Better Grammar Accuracy Compared to Google Translate.*

Although relatively new in the field of translation, DeepL is regarded as capable of producing texts with grammatical structures closely aligned with those of the target language, with 56.3% of respondents agreeing and an additional 34.4% strongly agreeing. This aligns with findings by Noviyani (2024), who reported that Google Translate produces a higher incidence of errors, particularly grammatical errors, compared to DeepL. In a pioneering study, Macketanz et al. (2018) utilized an advanced quality assessment framework, revealing that DeepL Translation outperformed Google Translate across 15 key grammatical categories, including verb tenses, aspect, mood, non-verbal agreements, subordination, ellipsis, function words, ambiguity, and verb valency. However, a minor percentage of participants in the current study (9.4%) considered Google Translate to have greater grammatical precision, suggesting a clear preference for DeepL in terms of grammatical accuracy.

4. *DeepL Translation Has Better Ability in Understanding Context and Nuances Than Google Translate.*

The questionnaire results further reveal a nuanced perspective on DeepL Translation as a newly emerging tool in the translation field. In this study, DeepL is perceived to surpass Google Translate in its ability to comprehend source language context and preserve nuanced meaning, with 32.3% of participants strongly agreeing and 64.5% agreeing. These responses collectively underscore the degree to which DeepL Translation is regarded as more advanced than its counterpart, Google Translate, which often struggles with context, leading to misinterpretations. Only a small fraction of respondents (3.2%) held a contrary view, favoring Google Translate in this area. This finding aligns with Bunga and Katemba's (2024) study, which demonstrated that DeepL Translation effectively retains the source language's context and nuances (78%) compared to Google Translate (44%).

5. *DeepL Translation Renders Academic Terms Better Than Google Translate.*

From the questionnaire, it was also discovered that the respondents perceive DeepL Translation as particularly proficient in interpreting and translating specialized academic terminology. Terminology encompasses complex technical language that often poses challenges in translation (Bello & Abubakar Muhammad, 2023); however, DeepL is regarded as capable of rendering these terms more accurately and contextually, indicating superior terminology management over Google Translate. This finding also indicates that Google Translate is deemed to generate more errors when it comes to rendering difficult terminology like academic terms. Only 12.9% of respondents, nonetheless, believed that Google Translate surpasses DeepL Translation in this aspect. In the same fashion, Bunga & Katemba (2024) found a similar finding, in whichDeepL was superior in handling terminology, achieving accuracy rates of 80% compared to Google Translate's 40%. Kamaluddin et al. (2024) also reported that DeepL Translation consistently tops other translation tools in translating specialized terminology, solidifying its reliability for academic applications.

6. *DeepL Translation Has Better Speed than Google Translate.*

Google Translate has long been recognized as the fastest neural machine translation system to ever exist among its counterparts (Gestanti et al., 2019; Yanti & Meka, 2021; Cahyaningrum & Widiyantari, 2018). Surprisingly, our research revealed that DeepL is viewed as the system with higher processing speed. A significant majority of respondents (71%) agreed that DeepL operates faster than Google Translate, with an additional 12.9% strongly agreeing, based on their personal experiences with both translation tools. However, a small subset of respondents (16.1%) disregard DeepL application as a faster translation service than Google Translate.

7. *Google Translate Supports More Languages than DeepL Translation.*

Despite its superiority in accuracy, naturalness, grammar, speed, context and nuance maintenance, DeepL Translation has a smaller language selection than its predecessor, Google Translate which has long previously existed, with 61,3% agreeing to it and 22,6% strongly agreeing to it. This finding is similar to the finding of Fitria (2023) and Asmara & Kembaren (2024) that reported DeepL Translation's drawback in terms of available language choices. Hitherto, it only supports 33 languages, which only include the major ones or most widely used ones in the world. Meanwhile, Google Translate can cover up to 249 languages, which encompasses commonly spoken languages in the world as well as the minor ones, making it a convenient choice for a diverse range of language users around the world that need automatic translation service.

8. *Google Translate Has More Useful Features than DeepL Translation.*

Based on the questionnaire's responses, it was found that 68,8% respondents agreed that Google Translate is better than DeepL Translation in terms of additional

features offered to its users, followed by 18,8% strongly agreeing to this statement. The additional features of Google Translate encompass image translation, voice translation, and document translation. Image translation enables users to capture an image containing text in it, which will then be processed by Google Translate's system and converted into text of the desired target language. Voice translation allows users to speak to the existing microphone, providing input to the Google Translate's system in the form of speech which will then be processed quickly and translated into text of the chosen target language. Document translation helps the users to translate a whole document by only uploading it to the system. These kinds of advantages are not available in DeepL Translation, making it a less favorable choice among the respondents when they seek more benefits or convenience.

9. *Google Translate is More User-Friendly and Accessible than DeepL Translation.*

In regards to user-friendliness and accessibility, Google Translate is considered to outdo DeepL Translation for academic use. Over half of the respondents (53,1%) agreed that Google Translate is easier to navigate, with 25% respondents strongly agreeing with it. This finding reflects their experiences with the tools as the students are acquainted with them and use them nearly every day for academic purposes. Due to frequent use, they viewed Google Translate as a translation tool with better practicality and ease of access. Only 18,8% and 3,1% who disagreed and strongly disagreed with it, respectively. This is in line with the research of Pratiwi et al. (2023, p.111) which stated that "the popularity of GT is attributed to its user-friendly interface, mobile accessibility, and free availability, making it an indispensable tool for students seeking quick translations, language assistance, and reference support in their academic endeavors."

10. Continuity to Use Google Translate vs. DeepL Translation in the Future.

The questionnaire results indicate a strong inclination among students to favor DeepL Translation over Google Translate for future use. A substantial proportion of students expressed a preference for relying on DeepL Translation in their academic work, with 67.7% agreeing and 16.1% strongly agreeing to its continued use. Conversely, a minority (16.1%) indicated a preference for Google Translate over DeepL Translation in their future endeavors.

CONCLUSION

Based on the findings, it can be concluded that DeepL Translation is significantly preferred over Google Translate by students at Serambi Mekkah University for academic purposes. DeepL Translation is perceived to outperform Google Translate in nearly all evaluated aspects, including accuracy, naturalness, speed, contextual and nuanced interpretation, terminology management, and translation of academic texts. However, in regards to additional features,

convenience, user-friendliness, accessibility, and language selection, Google Translate surpasses DeepL. The students' expressed willingness to continue using DeepL Translation further highlights their reliance on and comfort with the tool for tasks such as translation and writing. The results of this study are expected to provide valuable insights for other EFL learners and academics who may also utilize online translation tools for similar purposes. This study does have limitations, notably its small sample size. Future research is therefore recommended to involve a larger sample in order to strengthen the findings.

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