Exploring the Challenges of Machine Translation for English Language Learners of Tertiary Level

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Abstract

This research highlights the feasibility of machine translation and the challenges faced by non-native English learners when using machine translators. Learning English for non-native learners can be quite challenging, especially when studying long and complex English texts. Learners worldwide, including those in Bangladesh, are utilizing AI-based machine translators. These machine translation tools, available free of charge on the internet or through smartphone applications, serve as a means to facilitate their learning. Currently, most tertiary-level learners have smartphones with internet connectivity, providing access to online machine translation tools like Google Translation anytime and anywhere. This study aimed to identify the major challenges of machine translation in learning English. Using a descriptive technique, the study surveyed a total of 80 students through semi-structured interviews. The findings revealed that machine translation often produces numerous grammatical errors in the translation results. Additionally, words or phrases with multiple meanings can result in incorrect translations if the context is not properly understood. Idiomatic expressions and cultural references pose challenges as they can be difficult to accurately translate through machine translation, often having unique meanings that may not exist in other languages.

Keywords

descriptive technique, grammatical error, human translator, machine translation
INTRODUCTION

Background of the Study

Machine translation involves the use of computer programs to translate from one language into another language without the involvement of human translators. It goes beyond mere word substitution from one language to another. Learning English for non-native learners is quite challenging, especially when they encounter long and complex English texts. Nowadays, many learners who are interested in English are struggling to master the language. Machine translation tools, available free of charge on the internet or through smartphone applications, offer one solution to facilitate their learning. Currently, most tertiary-level learners have smartphones with internet connectivity, enabling access to online machine translation services like Google Translation anytime and anywhere. Machine translation (MT) applies computers to the task of translating texts from one natural language to another (EAMT, n.d.).

Online machine translation resources such as Google Translator, Translator Online, Foreign Word, Web Trances, and Prompt (Hampshire & Salvia, 2010), along with other applications found in Google Play and Apple Stores, assist learners in their studies. However, Google Translator has emerged as the most common online resource for translation (Alhaisoni & Alhaysony, 2017), and U Dictionary has become the most frequently installed application on smartphones (Chandra & Yuyun, 2018). Farzi (2016) claimed that these tools have become increasingly efficient in recent years and are being used by learners for a wide range of purposes, from translating individual words to more complex tasks. However, the reliance of learners, especially tertiary learners, on machine translation is growing worldwide, including in Bangladesh. This study aimed to identify the challenges faced by tertiary learners when using machine translation.

Literature Review

Machine translation applications like Google Translate provide language learners with valuable resources; however, an ongoing debate questions whether these tools support or hinder English as a foreign language education. Thus, understanding the challenges of machine translation for learning English is crucial.

Shouaib’s (2022) study focuses on identifying and elucidating the challenges faced by English major students specializing in translation at Parwan University's Faculty of Language and Literature, English department, when using Machine Translation to translate from Dari to English. Involving 50 participants, the research aims to identify and characterize these issues, comprehend their root causes, and provide recommendations for mitigation. The findings reveal a spectrum of challenges, including syntactic and semantic issues, particularly in the context of machine-translated tasks. Notably, the machine translator often inaccurately renders the target language, and translating culturally nuanced terms proves to be contextually inappropriate. Examining the perspectives of university students utilizing Google Translate (GT) as a supportive tool in their learning endeavors, Pham et al. (2022) conducted a study with 250 participants from a private educational institution. Employing a 5-point Likert-scale questionnaire and semi-structured interviews, the study comprehensively assesses students’ views. Despite predominantly favorable inclinations towards GT integration, certain impediments were identified, notably incorrect grammar and semantic inaccuracies, leading to potential misunderstandings of the original content.

Delving into the critical limitations of Google Translate as a translation tool, Brahmana et al. (2020) focused on identifying challenges encountered by users. Drawing upon established theoretical frameworks, the study collected data through questionnaires administered to students in the English Literature Department of USU. Analysis revealed significant issues such as inaccuracies and semantic mismatches in translation outputs, underscoring the continued need for human intervention and critical engagement with the translation process. Ardila’s (2021) investigation elucidates the perspectives of students enrolled in the Islamic Education Department at STAI Rasyidiyah Khalidiyah Amuntai regarding the integration of machine translation into English language pedagogy. Despite challenges in translation quality, students express confidence in their ability to address these issues through effective strategies. Ali’s (2016) study examines the challenges faced by Saudi students of translation at Kazan University when using machine translator (MT) for translating from Arabic to English. The research identifies syntactic and semantic problems, as well as unsatisfactory quality and accuracy of MT output. Stankevicute et al. (2017) address the examination of machine translation applied to colloquial language in Lithuanian-English and English-Lithuanian language pairs. Despite research advancements, existing systems are unable to consistently achieve a minimum of 50% correctness in translation.

Upon examination of the literature, there is a noticeable gap in research exploring the challenges faced by tertiary-level learners in Khulna when using Machine Translation for English language acquisition. Therefore, the present study aims to fill this gap by identifying and describing the barriers that students face during the translation process while using machine translation, with a focus on investigating the negative effects on learners’ English language proficiency.

Research Objectives

The research objectives of this study encompass two primary aims. Firstly, it seeks to identify the challenges encountered by tertiary learners when utilizing a machine translator for translation tasks. This involves a comprehensive examination of the issues and difficulties faced by learners during the translation process, shedding light on the specific obstacles that hinder their effective use of machine translation tools. Secondly, the study aims to investigate the adverse effects that machine translation has on learners’ acquisition of the English language. The research aims to provide insights into how these tools may impede rather than facilitate the development of English language proficiency among tertiary learners. Through these dual objectives, the study endeavors to contribute to a deeper understanding of the role and limitations of machine translation in language education.
Statement of the Problem

It is anticipated that translators working in the scientific field will increasingly collaborate with machine translators as interest in and demand for machine translation grows. However, researchers have observed that the higher the expectation, the more limited the capabilities of machine translators become. While much research in this field has focused on computational and experimental studies in software engineering, there has been a noticeable gap in research within Translation Studies itself. Therefore, it is imperative to investigate the challenges of Machine Translation from the perspective of Translation Studies, incorporating practical experiments involving English language learners. This study seeks to address the following questions:

1. What challenges do learners encounter in translation when using a machine translator?
2. How does machine translation negatively impact learners’ acquisition of the English language?

Methods

Research Design

This study employed a descriptive technique, utilizing both qualitative and quantitative approaches to data collection. A survey method was applied, employing a questionnaire comprising both multiple-choice and open-ended questions to gather quantitative data. The questionnaire consisted of 15 questions, with one question being open-ended and the remainder multiple-choice. Additionally, due to the non-experimental and descriptive nature of the study, semi-structured interviews were conducted to obtain specific information related to the study’s objectives.

Sample and Sampling Technique

The survey was administered to students from two universities: the Northern University of Business and Technology and Khulna University. A total of 80 students from various departments participated in the survey. Participants were selected using purposive sampling, a non-probability sampling technique in which individuals are chosen based on specific characteristics required to fulfill the researcher’s objectives. The participants were tertiary-level students in Khulna, with 62 students from the Northern University of Business and Technology Khulna, and 18 students from Khulna University included in the survey.

Table 1
Participants of the Survey

<table>
<thead>
<tr>
<th>Institute</th>
<th>Department</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern University of Business and Technology</td>
<td>English</td>
<td>50</td>
</tr>
<tr>
<td>Technology Khulna</td>
<td>CSE</td>
<td>12</td>
</tr>
<tr>
<td>Khulna University</td>
<td>English</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Environment Science</td>
<td>11</td>
</tr>
</tbody>
</table>

Research Instrument

A survey method was employed, utilizing a questionnaire as the research instrument, which consisted of both multiple-choice and open-ended questions for data collection.

Data Gathering Procedure

The questionnaire, comprising 15 questions, was distributed to students from different majors to explore the challenges of machine translation in English language learning. Participants responded to semi-structured interviews, providing their insights to the best of their ability. Various strategies were employed to extract valid and reliable data from the interviewees. With consent, interview responses were audio recorded, and note-taking techniques were utilized to capture important information during the interview sessions.

Results and Discussion

Results

The current study was aimed to figure out the shortcomings of machine translation that tertiary learners face while using machine translation as machine translation is a blessing of technology and learners are using it for their learning purpose. The findings of this study disclosed that machine translation represents actual obstacles for tertiary learners in translating from Bangla language to English language.

Table 2
Usages of Machine Translation for English Language Learning

<table>
<thead>
<tr>
<th>Question 1</th>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you use Machine Translation?</td>
<td>Yes</td>
<td>76</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The survey of the first question was aimed to find out whether the learners use Machine Translation or not. Here, 76 out of 80 students responded that they use Machine translation, and only 4 students denied it.
This question of the survey was aimed to figure out what kind of Machine Translation learners are using for learning English. Here, 67 students out of 80 responded that they use ‘Google Translate’, 13 students responded that they use ‘Bangla Dictionary offline’, and none of them responded ‘Others’. This question was aimed to find out how often learners are using Machine Translation for English language learning. Here, 11 students responded that they ‘Often’ use Machine Translation, 7 out of 80 responded ‘Sometimes’, 1 student responded ‘Rarely’, and the rest 61, the majority of students responded that they use Machine Translation for ‘Every find difficult and new word’.

Table 4
Challenges of Machine Translation for English Language Learning

<table>
<thead>
<tr>
<th>Problem 2</th>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learners need to recheck and rearrange the result of translation.</td>
<td>Yes</td>
<td>69</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>11</td>
<td>14</td>
</tr>
</tbody>
</table>

The purpose of this question was to find out whether learners believe in the challenges of Machine translation or not. Here, majority of the students who participated in the survey agreed with this statement. 69 out of 80 students agreed and only 11 students denied.

Table 5
Challenges of Machine Translation for English Language Learning

<table>
<thead>
<tr>
<th>Problem 3</th>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does Machine Translation serve the purpose of sense for sense translation?</td>
<td>Yes</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>50</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>To some extent</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Needs Improvement</td>
<td>12</td>
<td>15</td>
</tr>
</tbody>
</table>

This question was aimed to figure out whether Machine Translation serves the purpose of sense for sense translation or not. 50, the majority of the students agreed with ‘No’, 8 out of 80 students responded ‘Yes’. 10 students responded ‘To some extent’, and 12 out of 80 students responded ‘Needs Improvement’. The purpose of this question was to find out whether the language is utilized in the Machine Translation simple to understand or not. Learners use Machine Translation for their learning purpose. So, it is necessary to know whether the language utilized in Machine Translation is simple for learners to understand. 7 out of 80 students responded ‘Yes’, 34 students responded ‘No’, 8 students responded ‘Somehow’, and the rest 31 students responded ‘Needs Improvement’.

Table 7
Grammatical Errors in Translation Results.

<table>
<thead>
<tr>
<th>Problem 4</th>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Translation gives grammatical errors in translation results.</td>
<td>Strongly Agree</td>
<td>65</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
This question was aimed to figure out the grammatical errors that machine translation gives from translation results. 65, majority of the students responded ‘Strongly Agree’, 12 out of 80 students responded ‘Agree’, 7 students were neutral, and none of the students responded ‘Disagree’ and ‘Strongly Disagree’. These responses clearly indicate that Machine Translation has limitation in giving correct results.

Table 8
Connotative Thoughts

<table>
<thead>
<tr>
<th>Problem 5</th>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT cannot translate connotative thoughts.</td>
<td>Strongly Agree</td>
<td>36</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>35</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The purpose of this question was to find out whether Machine Translation makes learners confused about the meanings of words. The findings show that 36 out of 80 students responded ‘Strongly Agree’, 35 students responded ‘Agree’, 7 students were neutral, 1 student was disagreed with this fact, and none of the students responded ‘Strongly Disagree’.

Table 9
Challenges of Machine Translation for English Language Learning

<table>
<thead>
<tr>
<th>Problem 6</th>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT is unable to translate proverbs and idioms.</td>
<td>Strongly Agree</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Neutral</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The purpose of this question was to figure out whether MT is unable to translate proverbs and idioms. Here, 45% students were strongly agree, 30% students were agree, 21% students were neutral, and only 4% students disagree. This question was aimed to examine the authenticity whether Machine Translation can translate phrases and idioms. 92 % students who participated in the survey found ‘কাউকক ঠান্ডা কাড় দিন’, 5% students found ‘তোমার ঠান্ডা কাড় কাউকে দেও’, and only 3% students found ‘ইঙ্গুকারভাবে কারোকে উপেক্ষা করা’. These findings clearly show that MT is unable to translate phrases and idioms. The purpose of this question was to figure out the validity whether Machine Translation is able to give correct translation result. 100% students who participated in the survey found “I will cut my hair” by using Machine Translation that they use. The findings indicate that Machine Translation gives grammatical mistakes.

Table 10
Challenges of Machine Translation for English Language Learning

<table>
<thead>
<tr>
<th>Problem 7</th>
<th>Responses</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the challenges that you face while using machine translation?</td>
<td>MT gives grammatical errors.</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>MT is unable to translate sense to sense.</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Sometimes the language is very difficult to understand from the translation result.</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Most of the time MT is unable to translate phrases and idioms.</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

This open ended question was aimed to figure out the challenges that the learners face while using Machine Translation. 60% students who participated in the survey wrote that ‘MT gives grammatical errors’, 26% students wrote that ‘MT is unable to translate sense to sense’, 10% students wrote ‘Sometimes the language is very difficult to understand from the translation result’, and only 4% students wrote ‘Most of time MT is unable to translate phrases and idioms’.

Analysis of Semi-Structured Interview Data

Total 12 students participated in the semi-structured interview who also participated in the survey. The findings of the semi-structured interview are following: Most of the students were reported to admit that they have found a lot of grammatical errors from the translation results and it is causing problems in their learning. Majority of the students who participated in the semi-structured interview opined that they think MT is unable to translate sense to sense and this inability of MT makes difficulty in their learning English. 72% students opined that they agree with this statement, and 28% students denied this statement. 64% students opined that they agree with this statement, and 36% students opined that they do not agree with this statement because MT is very much helpful to them.

Discussion

Rechecking and Rearrangement Issues

Most of the learners had the same experience with the result of translation in regard to recheck and rearrange issues. Sometimes the results from the translation being ambiguous and for this reason learners have to recheck the results of translation. Furthermore, machine translation often makes wrong structural sentences. As a result, learners have to rearrange the results of the translation.
**Sense for Sense Translation**

The findings show that majority of the participants believe that machine translation is unable to serve the purpose of sense for sense translation. The sense of certain cultural notions in the source language must be completely recreated in the target language during the translation process, whether it is done by a machine or by a human. Although this seems on the surface, it is far more intricate. Translation goes beyond just substituting words for words. Every element in the text needs to be explained, examined, and understood in relation to every other word by the translator. This requires a high level of target language and cultural competence. The most challenging aspect is how machine translation can yield translations of publishable quality.

**Grammatical Errors**

Machine translation gives some grammatical errors from the translation results. It may produce grammatically incorrect translations due to the complexities of English grammar and syntax. This is another major challenge of machine translation for English language learning because grammatical errors are one of the major obstacles of writing. Machine translation often gives grammatical errors. These grammatical errors mislead the learners. Sometimes learners willfully accept machine translation findings, and by doing so they pick up incorrect linguistic patterns. Thus, this has a detrimental effect on learners as well.

**Confusion about the Meaning of Words**

Machine translation makes learners confused about the meaning of word by providing inappropriate meaning of a word. It is relied on the frequently occurring mistranslation that comes from machine translation. It makes learners confused about the true meaning and feel compelled to double-check. As a result, learners need to double-check the translation by pulling up a different dictionary, consulting a friend, and asking their lecturer to explain.

**Unable to Translate Phrases and Idioms**

Most of the students who participated in the survey opined that machine translation is unable to translate phrases and idioms. Idioms are expressions that have a figurative different from their meaning different from literal interpretation. Translating idioms with machine translation can be challenging due to cultural differences, contextual understanding.

**Issues of Dependency and Laziness**

According to the opinions of the students about the issues of dependency and laziness, the use of machine translation had negative impacts. Relying on machine translation makes them lazy to read and write English and in memorizing new words. Some students claimed that because the translation is completed rapidly, it makes harder to memorize new words. Some of them, did, however, assert that there were no drawbacks to utilizing machine translation in learning English.

In the light of the above discussion it can be stated that the findings of the study reveal that Machine Translation represents actual obstacles in learning English. The challenges of machine translation are it struggles to accurately capture the intended meaning and context of English phrases and sentences, it often fails to interpret idiomatic expressions correctly and resulting inaccurate translations, it may produce grammatically incorrect translations due to the complexities of English grammar and syntax, machine translation struggles to capture cultural nuances and may produce translations that are inappropriate or offensive in certain contexts.

**Findings**

The major findings of the study highlight several significant challenges associated with machine translation. Firstly, machine translators fail to accurately translate social and cultural codes, and even AI-based translators struggle with connotative thoughts. Secondly, learners often need to recheck and rearrange the results of translations, which wastes their time and causes confusion. Additionally, machine translation is unable to achieve sense-for-sense translation, and literal translations can result in content with entirely different meanings, negatively impacting learners. Moreover, machine translation frequently produces grammatical errors, further complicating the learning process. It also confuses learners by providing inappropriate meanings for words, making it difficult for them to grasp the correct context. Most of the time, machine translation is unable to accurately translate phrases and idioms. Learners also believe that relying on machine translation makes them lazy to think and hinders their cognitive engagement with the language. Lastly, the grammatical errors from translation results mislead learners, further exacerbating the issues.

**CONCLUSION AND RECOMMENDATIONS**

The findings of the investigation demonstrate several challenges encountered during the machine translation process when translating from Bangla to English. Tertiary learners face problems while using machine translation. This study identified the shortcomings of machine translation in learning English. Idiomatic expressions and cultural allusions can be challenging to translate successfully since they often have specific meanings that may not exist in other languages. Words or phrases with multiple meanings might result in inaccurate translations if the context is not fully understood. Differences in grammar and sentence structure between languages can lead to awkward or incorrect translations. Understanding the context of a sentence or text is crucial for accurate translation, as words can have different meanings depending on the surrounding words or phrases. These shortcomings of machine translation are causing problems for learners in learning English.
Furthermore, dependency on machine translation is making learners lazy to think, which negatively impacts them. Relying on machine translation makes them lazy to read and write English and memorize new words. Machine translation also introduces grammatical errors. Sometimes learners willfully accept machine translation findings, and by doing so, they pick up incorrect linguistic patterns. These grammatical mistakes in translation outcomes further negatively impact learners.

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**Author(s)’ Statements on Ethics and Conflict of Interest**

**Ethics Statement**
The author/s hereby declare that research/publication ethics and citing principles have been considered in all the stages of the study. The author/s take full responsibility for the content of the paper in case of dispute.

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