



The Downside of Dependence: Examining the Limitations of Machine Translation Apps in English-Based Subjects for Non-Anglophone Students

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سلبيات الاعتماد المفرط: فحص قيود تطبيقات الترجمة الآلية في المواد المدرسة باللغة الإنجليزية للطلاب غير الناطقين بها

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Abstract:

In Libya's educational context, where English remains a challenging language of instruction, machine translation (MT) tools have become indispensable for navigating complex coursework and specialized terminology. This study explores the use of MT applications among 200 university students enrolled in English-medium medical and engineering programs across 10 Libyan universities. An adapted questionnaire was utilized to collect the data for the study. The data of the current study was analyzed by Google Form.

The findings of the present study reveal a significant dependency on translation technology, primarily motivated by convenience and limited access to alternative language resources. However, this reliance carries notable risks: a large majority of students reported misunderstandings due to inaccurate translations, particularly in technical fields where precision is critical. Furthermore, a significant majority acknowledged that frequent MT use discourages the deeper cognitive engagement needed to develop true language proficiency. While many students found MT helpful for pronunciation practice, such benefits may mask embedded errors (Clarke et al., 2001).

Notably, many participants demonstrated limited awareness of MT's limitations, underscoring the need for structured institutional support. The study concludes by advocating for a balanced approach, one that combines MT tools with targeted language instruction, to mitigate academic risks while harnessing technology's utility.

Keywords: machine translation, academic English, language acquisition.

الملخص

في نظام التعليم الليبي، حيث يعتقد أن اللغة الإنجليزية لغة صعبة التدريس، أصبحت أدوات الترجمة الآلية (*Machine Translation (MT)*) ضرورية لمساعدة الطلاب على التعامل مع المقررات الدراسية المعقدة والمصطلحات التخصصية. هذه الدراسة تختبر استخدام تطبيقات الترجمة الآلية لدى 200 طالبا جامعيًا مسجلين في التخصصات الطبية والهندسية والتي تُدرّس باللغة الإنجليزية في 10 جامعات ليبية. وقد استُخدم استبيان مُعدّل لجمع بيانات الدراسة، كما تم تحليل بيانات الدراسة الحالية باستخدام نماذج جوجل (*Google Forms*).

تظهر نتائج الدراسة الحالية أن هنالك اعتمادًا كبير على تقنيات الترجمة الآلية، ويرجع ذلك أساسًا لسهولة استخدامها ومحدودية الوصول إلى مصادر أخرى لتعلم اللغة. على الرغم من أن هذا الاعتماد يحوي مخاطر ملحوظة؛ إذ أفاد عدد كبير من الطلاب بحدوث سوء فهم نتيجة للترجمات غير الدقيقة، خاصة في التخصصات التقنية والطبية والهندسية التي تتطلب درجة عالية من الدقة. أفرت أغلبية المشاركين بأن الاستخدام المتكرر للترجمة الآلية يقلل من الفهم المعرفي

العميق اللازم لتنمية الكفاءة الحقيقية في اللغة. وعلى الرغم من أن العديد من الطلاب وجدوا أن الترجمة الآلية مفيدة في تحسين النطق، فإن هذه الفوائد قد تُخفي أخطاءً كامنة في الترجمة أو النطق (Clarke وآخرون، 2001). وبشكل ملحوظ فإن العديد من المشاركين لديهم وعيًا محدودًا بقيود الترجمة الآلية ومواطن ضعفها، وهذا يؤكد الحاجة إلى توفير دعم مؤسسي منظم وتوجيه أكاديمي لاستخدام هذه الأدوات بفاعلية. خلصت الدراسة إلى ضرورة تبني نهج متوازن يجمع بين استخدام أدوات الترجمة الآلية وتقديم تعليم لغوي هادف وموجّه، ليسهم في الحد من المخاطر الأكاديمية والاستفادة في الوقت نفسه من الإمكانيات التي توفرها التكنولوجيا.

الكلمات المفتاحية: الترجمة الآلية، اللغة الإنجليزية الأكاديمية، اكتساب اللغة.

1 Introduction

The English language dominates global academia, serving as the primary medium of instruction in many universities worldwide. In Libya, where English was only officially introduced as a foreign language two decades ago, students face unique challenges. They begin learning English in secondary school, and by the time they enter university, many lack the proficiency required to engage confidently with English-based coursework (Mohamed, 2014). This gap is particularly pronounced in specialised fields like medicine and engineering, where technical terminology adds another layer of complexity.

1.2 Problem Statement

In an era of widespread internet access and smartphones, machine translation (MT) tools have become a lifeline for non-Anglophone students. MT tools like Google Translate offer immediate, though not always accurate, solutions for understanding academic texts, completing assignments, and comprehending new vocabulary. However, while these tools provide short-term convenience, their long-term impact on language acquisition and academic integrity remains problematic. Prior research highlights MT's limitations, such as frequent errors in technical terminology (Aleskandarani, 2023) and the risk of fostering dependency over genuine proficiency (Groves & Mundt, 2015). In Libya, where institutional language support is often scarce, students' reliance on MT may be especially common, yet underexplored.

1.3 Research Questions

1. To what extent do undergraduate Libyan students rely on machine translation applications in subjects where English is the medium of instruction?
2. What are the perceived drawbacks of this reliance on those students' learning outcomes?
- 3.

1.4 Research Objectives

To address the research gaps identified, the current study has the following aims:

1. To identify the usage patterns and determine the extent of reliance on machine translation applications among undergraduate Libyan students in subjects where English is the medium of instruction.
2. To investigate the perceived limitations and drawbacks of this reliance and to understand how it impacts the students' language proficiency and academic performance.

1.5 Literature Review

1.5.1 Introduction

This section of the present paper aims to explore previous related literature the researchers considered while conducting the present study. It presents the study from both Arabic and Libyan contexts as well as proving general studies conducted elsewhere that are of relevance to the current study topic.

1.5.2 Theoretical Review

1.5.2.1 English as a Medium of Instruction

Shohamy (2012, p196) defined English as a medium of instruction to be a widespread technique used particularly in education. In its many instances, it is where the subject is taught in a language that is not native to the learner, in this case, English. This method can be operated at any academic level; however most commonly found in further education. In some situations it is a full emersion in the English language where as in other instances it is only partially used.

1.5.2.2 Machine Translation

Machine translation (MT) as defined by Kenny (2018, p429) is a subfield of computational linguistics that uses software to automatically translate text or speech from one language to another. Modern systems use artificial intelligence to analyse the context and structure of sentences to produce fluent output. The primary goal of MT is to overcome language barriers without relying on human translators.

1.5.3 General context

1.5.3.1 Uses of MT tools

A study was done by Tumbal et al. (2021) in Indonesia used a Likert scale questionnaire with 17 statements to gather data from 30 students in their eighth semester. They found that the students used GT for translating words,

sentences, paragraphs and texts, and that they found it helpful, but they also recommended checking the results of GT for accuracy. The study concluded that the students liked translation activities, especially from English to Indonesian, and that they used GT as a tool to assist them.

1.5.3.2 Downsides of MT tools

Moelyono et al. (2023) highlighted students with lower levels of English show the highest dependence on MT. Another important observation that shows the potential risks of this thoughtless usage is the fact that these students rely on MT for translating long pieces of text unlike proficient students who were more likely to only use MT occasionally for single words. An additional conclusion found that the overdependence was a result of the perceived advantages that MT gave students such as the increased confidence. Many participants even expressed concern with the idea of not being able to access some form of MT tool. Niño (2009) states that due to MT's accessibility and the fact that they are generally free students are most likely to turn to them. However, they found that most students are unaware of the fact that they should not be relied upon when it comes to academic use especially due to their 'unnatural writing' and many spelling inaccuracies. Niño's study also reiterates Moelyono et al.'s concern for low-level students.

A study done by Groves and Mundt (2015) further strengthens the notion that MT is riddled with errors. It was apparent to observers that although there is an evident improvement of MT over the years it was still very much far from perfect. There was an acknowledgement that this technology has one of the biggest influences on the process of foreign language learning however, a well thought out approach must be taken in order to be able to successfully rely on this technology.

Pratiwi et al. (2023) further strengthens the fact that dependence on MT may be highly unethical. The idea that students depend on a machine to perform on their behalf and using it to interact with academics is to many researchers completely unethical and some even refer to it as cheating as they are not using their own skills. Despite this notion under than a third of students surveyed in this study agree that MT is unethical this could be seen as a true testament to their lack of self-awareness. The research acknowledges the fact the students face anxiety towards working in a foreign language and the fact that MT tools are some of the most accessible and easiest fixes to their immediate problems.

1.5.3.3 Reasons for dependence on MT tools

According to Alsout (2013) due to the increased usage of English as media of instruction in Libyan universities in most courses students feel an added pressure. One important aspect mentioned in this study was the fact that students are now expected to read or write large passages in a language they are not proficient at from reading academic papers to writing exams in this foreign language.

Use of machine translation (MT) is becoming increasing more common among students; one field where this noticeable is medicine. According to Sheppard (2011) the allure of using MT is very high for medical students studying with English as a media of instruction. Some of the perceived benefits by students include cheaper and more accessible than a regular dictionary, has many languages available to translate to and from, for a foreign student that may not be proficient at English this a game changer.

In a study done in Lithuania Kaspere et al. (2021) also looked into MT from student perspective as one of the most common use of MT centred around academic or educational usage. There results evidently pointed at the fact the highest dissatisfaction came from proficient people. The more a student's level was high at English the more likely they were to be dissatisfied with the translation of MT. This important realization illuminates the potential risks of low-level students relying on MT tools. Another important conclusion from this study was the fact that students question the ethicality of using MT tools in academics. However, they seem to accept this as a necessary part of technological development. Another interesting finding in this research was the fact that young people (people under 29 years of age) make up almost half of MT users.

1.5.4 Arabic Context

Ismail Omar (2021) examined how machine translation affects the vocabulary learning of students. The study's participants were L2 learners who speak Arabic. The results indicated that machine translation requires enhanced metacognitive abilities like critical thinking and contextual word usage. Furthermore, the results indicated that online translators do not offer the best solution to address the challenges of utilizing machine translation for enhancing vocabulary knowledge.

Alhaisoni and Alhaysony (2017) conducted an analysis into the attitudes of 92 Saudi EFL University students regarding the use of GT. A questionnaire was employed to collect the study data. The study found that the majority of participants reported using GT. Translating texts was one of the more common uses of GT. Common uses included interpreting new words, writing assignments, and reading English textbooks. Students scored GT's accuracy higher for single words and technical writings, but lower for complicated grammatical frameworks and literary materials. These data indicate that, while GT is a popular and valuable tool, students understand its limitations.

1.5.5 Libyan Context

In a 2024 case study, researchers Abolkasim and Hasan looked into the potential role of ChatGPT in Libya's higher education system. Their findings were based on an analysis of survey responses from over a thousand students and academics across the country's universities. Issues raised include potential overreliance on artificial intelligence, leading to laziness and compromising integrity and creativity among students. The study emphasizes the need for rules and regulations for artificial intelligence tool usage.

Study done by Alkhalidi (2024) investigated Libyan students' attitudes towards using machine translation (MT) in their EFL (English as a Foreign Language) writing. Moreover, it aimed to explore the challenges and hurdles these students faced while using MT tools. 32 students at the Language and Translation Faculty of Misrata University partook in an open-ended questionnaire. Students faced multiple issues when it came to using MT tools like GT (Google Translate) such as grammatical and semantic errors that kept on reoccurring throughout students' usage of these tools.

The primary aim of Aleskandarani's (2023) research is to demonstrate that machine translation does not accurately translate medical terminology from English to Arabic. Additionally, it seeks to identify which of the three online translators—Yandex, Bing, and Google—has the fewest translation errors and which one is the most precise. This study found that the accuracy of these online translation tools was very low as two of them had an accuracy rate of 27% and the highest had an accuracy rate of 40%. They contained many substantial errors when it came to translating medical terms and it was concluded that human expertise was vital as the errors produced were potentially dangerous. This study used medical records that were initially translated by a professional to conduct the experiment.

Thus, based on previous literature and to contribute to the growing body of research on use of machine translation in English-based subjects, the present study is aimed to answer the following research questions.

Q1. To what extent do undergraduate Libyan students rely on machine translation applications in subjects where English is the medium of instruction?

Q2. What are the perceived drawbacks of this reliance on those students' learning outcomes?

2 Material and methods

2.1 Methods of Data Collection

The primary tool for data collection was a structured, close-ended questionnaire. The questionnaire was adapted from validated instruments used in prior studies by Alharbi (2023), Cakir and Bayhan (2021), Moelyono et al. (2023), and Almusharraf and Bailey (2023). These source studies employed a similar thematic structure for their questionnaires, which served as a model.

The adapted questionnaire for this study consisted of four main thematic sections, excluding the demographic information segment. These sections were designed to investigate: (1) how students use Machine Translation (MT) tools, (2) the perceived drawbacks associated with MT use, (3) the extent of students' reliance on MT, and (4) the primary reasons motivating their use of these tools. The questionnaire was designed and administered digitally using Google Forms.

2.2 Data Collection Procedures

Data collection was conducted entirely online to ensure efficiency and reach a wide range of participants across different geographical locations. The Google Forms questionnaire was distributed through various accessible online media platforms and channels frequently used by the target student population. This method was deemed the most suitable given the sample size of 200 and the practical need for widespread, efficient data gathering.

2.3 Participants

The study included a total of 200 non-native English-speaking undergraduate students. The participants were enrolled in courses where English is the primary medium of instruction, with a specific focus on students from medical and engineering faculties. A randomized sampling technique was employed to select participants, aiming to ensure diversity and participant anonymity across the sample. All participants were drawn from the Libyan university student population.

2.4 Ethical Considerations

To uphold ethical standards, participant anonymity was a key priority. The randomized sampling technique and the use of an online questionnaire where no personally identifiable information was collected helped protect participant identity. Furthermore, participation was voluntary, and informed consent was obtained from all participants at the beginning of the digital questionnaire.

2.5 Data Analysis

The data collected via the online questionnaire were managed and processed using Google Forms, which facilitated the initial organization and basic aggregation of responses. The analysis focused on quantifying responses from the closed-ended questions to identify patterns, frequencies, and central tendencies related to MT usage, reliance, perceived drawbacks, and reasons for use. The quantitative results were then discussed in relation to the existing literature to interpret the findings.

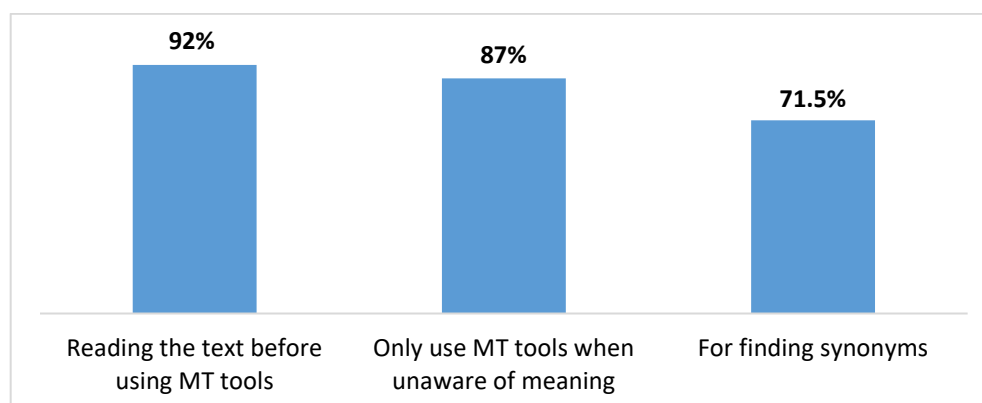
3 Results and Discussion

This section presents and discusses the main findings of the study based on data collected from 200 Libyan university students enrolled in English-medium medical and engineering programs. The analysis focuses on four key areas: students' use of machine translation (MT) tools, their level of reliance on such technologies, the perceived drawbacks associated with MT use, and the main reasons motivating students to depend on these tools. The discussion connects the quantitative results with previous literature to identify emerging patterns, similarities, and discrepancies between the current findings and earlier research. Through this examination, the section aims to provide a comprehensive understanding of how MT use affects students' academic performance and English language development within the Libyan higher education context.

3.1 Thematic results with discussion

3.1.1 Uses of machine translation tools

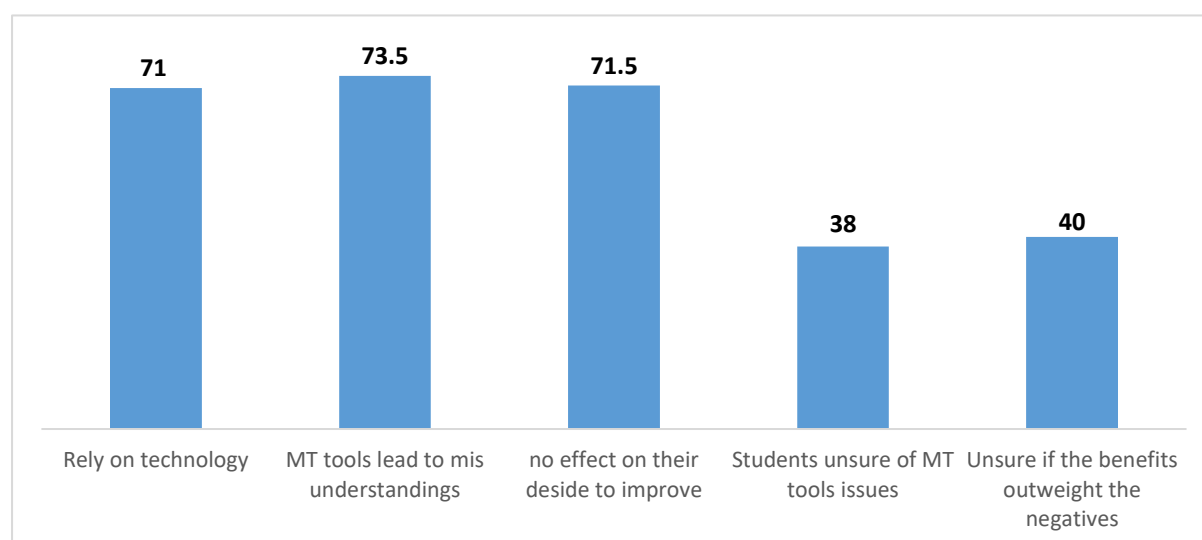
Students' reliance on MT was reflected by the way they claimed to use these programmes. It is evident that as shown in graph 1 below despite majority (92%) of students do in fact read the full text before resorting to MT tool they still require its assistance to complete tasks as three quarters of the students (87%) claimed that they only rely on MT tools if they do not know the meaning of the words. An observation was made that students engage with the full text indicates a willingness to understand the material, but their dependency on MT reveals that they may not have the necessary skills to fully grasp the content and ideas presented. So, despite reading the text it can be observed that student levels are simply too low to be able to fully comprehend the academic content they study (Moelyono et al., 2023). The results also indicated that 71.5% of students rely on MT tools for finding synonyms. This is especially problematic since according to Escartín et al. (2017) not using the proper tools to translate technical terms can lead to significant inaccuracies, lack of standardization, outdated terminology usage, and a general failure to convey precise and correct information, all of which are critical in technical fields. This is especially relevant since the students who had participated in this research were Medical and Engineering students. The need to check work and the prevalence of beginner mistakes highlights a gap in students' foundational language skills. This suggests that educational programs may needed in order to improve the student's English language level. Also, possible slower learning process as they depend on assistance rather than developing their comprehension skills (Groves and Mundt, 2015). Finally, while MT tools provide significant support, they have limitations, particularly in understanding context and nuances in language. As stated by Patil and Davies (2014) the accuracy rate of programs like Google Translate in medical fields is only 68% and most of the errors cause high chance of clinical harm. This dependence on tools for simpler tasks may hinder students from developing a deeper understanding of the material (Sheppard, 2011). Overall, it is important to emphasize that there is a need for targeted interventions, for example English language programs for all students at the university, to improve students' academic language skills and reduce their reliance on MT tools, fostering greater independence in their studies. According to Alsout (2013) that would be the best path for improvement in Libyan university students.



Graph 1: Uses of MT Tools.

3.1.2 Over-reliance concerns regarding machine translation tools

As can be seen in Graph 2 below, the students displayed an agreement with the fact that they over rely on technology (71%). The over-reliance on machine translation (MT) tools among students can significantly hinder their development of language skills, fostering a cycle of dependency that diminishes their confidence in linguistic abilities. This reliance often results in a limited vocabulary, as MT tools typically offer a narrow range of words, restricting students' capacity to express ideas accurately, particularly in technical or nuanced contexts. According to Ismail Omar (2021) although a considerable number of students utilize machine translation (MT) to assist with the comprehension of word meanings, the research indicates that MT may occasionally impede the process of vocabulary acquisition by offering instantaneous translations instead of promoting the active recall and learning of new terms. Furthermore, almost three quarters (73.5%) of students agree that these tools tend to lead to misunderstandings when students apply MT-generated translations in advanced academic work. As stated by Kwun and Han (2023) when translating a text some words are mistranslated many times and the mistakes varied greatly. While MT tools may facilitate certain tasks, there is a growing concern that excessive dependence on them could undermine students' intrinsic motivation to learn the language, as they might feel less inclined to invest effort into enhancing their comprehension and skills. According to Almulla & Al-rahmi (2023), students who use these tools frequently may become less likely to use critical thinking because machine translation makes complex language tasks easier allowing users to avoid the deeper cognitive processes involved. However, despite this problem 71.5% of students claim that MT tools do not affect their desire to improve when it comes to their English language abilities. There was a very evident uncertainty when it came to whether there was any room for improvement when it came to MT tools as 76 students claimed to be unsure when it came to this topic. A further point of uncertainty for students was whether not the benefits actually outweigh the negatives since 80 students stated they were unsure about this. Additionally, uncertainty about potential improvements in MT tools may leave students feeling stuck in their current learning paths; if they perceive these tools as insufficient or lacking direction, it could lead to frustration and negatively impact their overall learning experience. This point is vital for this study as it further notes the students lack of awareness when it comes to any potential negative impacts their use of MT may have on them (Nchindia & Bennett, 2021). Furthermore, the ongoing debate about whether the benefits of MT tools outweigh their drawbacks highlights a complex relationship between technology and learning—students may appreciate the immediate assistance provided by these tools but also recognize potential long-term consequences, such as diminished self-reliance and critical thinking. A survey was done at Duke University involving 900 students and although 91% of the students claimed to use MT tools majority stated that they were un aware of any potential drawbacks. As maintained by Niño (2009) while there does seem to be slight immediate benefits, the drawbacks of MT cannot be ignored as it prevents students from developing necessary skills in language developments especially pertaining the mastering and acquiring of the English language because English is the language of instruction in medical and engineering programmes at Libyan Universities. Although some features of MT tools can boost confidence in pronunciation, as 64% of the students reported that MT do aid in better learning the correct pronunciation, this benefit may be counterproductive if not accompanied by accurate usage and understanding, potentially leading to the perpetuation of mispronunciations and improper language use. According to Clarke et al. (2001) while MT improves immediate confidence in pronunciation, long-term use can cause major embedded errors.



Graph 2: Over-reliance Concerns Regarding Machine Translation Tools.

3.1.3 Usage of MT tools

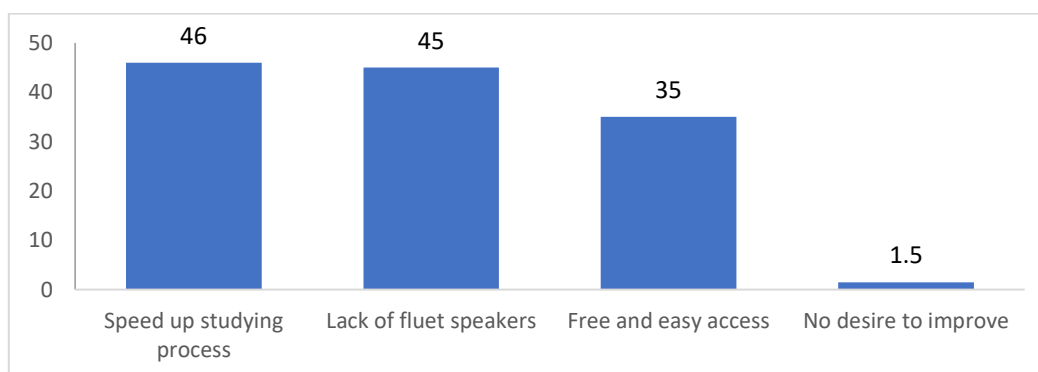
When asked on a scale of 1-10, one being rarely and 10 being always, how often they used MT tools for their university work students showed a high dependence on MT tools. Only 6% of students claim to have use MT tools only rarely. If we look at all the students who use it more than half of the time, so anyone who answered between 7-10, it comes to more than half of the participants (53%). This can be extremely concerning on one hand as according to Escartín et al. (2017) MT tools lead to a lot of technical errors particularly in specialised fields. There may need to be an intervention, such as English language programs for students at the university, at Libyan universities as previously mentioned by Alsout (2013) to help decrease this high reliance. It should at least be decreased to occasional usage even if it is not eliminated entirely as according to Groves and Mundt (2015) the usage of MT is a sign of poor language skills.

Table 1: Usage of MT Tools on a scale of 1-10

Range	10	9	8	7	6	5	4	3	2	1
percentage	31	10.5	4.5	7	6.5	14	9.5	7	4	6

3.1.4 Reasons for relying MT tools

The results shown in Graph 3, revealed that convenience was evidently the biggest contributing factor in students rely on MT tools as 46% of students use them to speed up their studying process. This may cause an issue for students as MT tools are predominantly used by students of lower levels (Moelyono et al., 2023). This leads to further problems such as a false sense of security among these students. Although they are now able to go through the material much faster this does not mean their language skills are actually improving. As the participants of the study are going into medical and engineering fields, the content they are exposed to is naturally much denser, they therefore face higher academic pressure when compared to most other fields of study. This false sense of confidence might cause further issues as these tools are not entirely accurate at translating specialised terminology which the students in the medical and engineering field will be faced with as previously stated by Escartín et al. (2017). The second most common reason students relied on MT tools was the lack of proficient English speakers they could turn to (45%). This explains the high usage rate of MT tools among students as students are then left to use the tools available to them. This problem causes a cycle since students with lower English proficiency are more likely to turn to MT tool and therefore, they don't improve their language skills. Now this problem is carried forward and the students that follow would also not have fellow students to aid them and therefore they also turn to MT tools (Kaspere et al., 2021). This cycle is problematic due to the faults in MT tools and how they can be inaccurate particularly in the fields in which the study participants are in (Aleskandarani, 2023). Overall, it is clear that one effective method to break this cycle there must be external intervention among students in Libya who study in English. This type of intervention would greatly benefit the students as only 1.5% of the 200 students partaking in the questionnaire claimed they do not wish to improve their English language abilities. There many different types of interventions that could be applied such as summer programs for students wishing to enter fields taught primarily in English. Also, a program for students at universities, who are studying in fields where English is the medium of teaching, is a great type of intervention. Around a third of participants (35%) chose MT tools being free and easy to access as one of the reasons they chose to rely on it. Due to its ease of access students are very liberal in the use of MT tools (Clarke et al., 2001). Alharbi (2023) stated that 93% of participants were willing to use MT tools for full texts and not just words or sentences they didn't know the meaning of. According to a study done by Fitria (2021) MT tools should only ever be used occasionally and not as a primary source of translation. The inaccuracies that were found by looking into multiple popular sites commonly used by students showed a high rate of mistranslation. In the context of translating medical terms to and from Arabic the most accurate tool was Google Translate yet it only had an accuracy rate of 47% according to research done by Aleskandarani (2023).



Graph 3: Reasons for Relying MT Tools

4 Conclusion and Recommendations

4.1 Conclusion

This study employed a quantitative survey methodology to investigate the reliance on machine translation (MT) tools among 200 Libyan medical and engineering students in English-medium instruction programs. The findings reveal a significant dependency on this technology, primarily driven by its convenience and a lack of accessible alternative language support. This aligns with prior findings by Moelyono et al. (2023), who noted that students with lower proficiency levels tend to exhibit the highest dependence on MT, using it as a substitute for genuine comprehension rather than as a supplementary aid.

This reliance, however, carries considerable academic risks. A large majority of students reported experiencing misunderstandings due to inaccurate translations, a critical issue in technical fields where precision is paramount, as also emphasized by Aleskandarani (2023) and Escartín et al. (2017), who both found high error rates when translating specialized medical or technical terminology. The persistence of such inaccuracies can be particularly detrimental in disciplines where even minor mistranslations can lead to serious misunderstandings.

Furthermore, the findings suggest that frequent MT use discourages the deep cognitive engagement necessary for developing genuine language proficiency, a concern previously raised by Groves and Mundt (2015) and Ismail Omar (2021). These studies argued that overreliance on automated translation tools can hinder the development of critical thinking and language-processing skills, leading to superficial understanding. Similarly, Almulla and Al-Rahmi (2023) highlight that constant use of such technology may reduce students' problem-solving and analytical capabilities.

In addition, ethical and academic integrity concerns emerge from the normalization of MT in higher education. As Pratiwi et al. (2023) note, the uncritical use of MT tools blurs the boundary between legitimate assistance and academic dishonesty, suggesting a growing need for awareness and digital literacy training among students. This is further reinforced by Niño (2009), who observed that while MT provides short-term benefits, it ultimately obstructs students from developing the linguistic independence necessary for academic success.

4.2 Recommendation

Based on these results, it is recommended that Libyan universities implement structured institutional support, such as dedicated academic English programs, to help students develop the language skills needed to use MT tools more critically and effectively. According to Alsout (2013), improving English proficiency through targeted instruction remains essential for students enrolled in English-medium programs. Additionally, as suggested by Kaspere et al. (2021), promoting sustainable and informed use of MT requires universities to integrate awareness programs that highlight both the capabilities and the limitations of these tools.

Future research should expand on this study by employing qualitative methods, such as interviews, to gain a deeper understanding of student experiences and behaviors. Additionally, longitudinal studies are needed to better assess the long-term impact of MT reliance on language acquisition and academic performance, as proposed by Groves and Mundt (2015) and Rizky and Rohmana (2025), who emphasize the importance of continuous observation in evaluating MT's evolving role in education.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflict of interest.

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