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Navigating Machine Translation: Challenges and Consequences Faced by Chinese Non-English Majors in Universiti Putra Malaysia

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Abstract

Presently, non-English majors (hereafter NEMs) in Malaysia have considerable challenges when utilizing machine translation (MT) for their assignments or academic writing at Universiti Putra Malaysia (UPM). Research has revealed significant concerns with the use of machine translation in writing; yet, numerous studies regard it as a supportive tool in foreign language acquisition, encompassing assignments and academic writing. This paper, grounded in the theoretical framework of New Literacies Studies (NLS), seeks to investigate significant

linguistic challenges and consequences faced by NEMs in completing homework and academic writing, as well as their attitude towards MT tools. This research incorporates a purely qualitative approach. The results indicate that students rely on free online machine translation tools (FOMT), FOMT can enhance understanding and productivity; yet, excessive dependence undermines scholarly writing, analytical reasoning, and language development. Universities must instruct students on the ethical use of machine translation while promoting autonomous learning abilities. Additionally, future studies are required to encompass wider demographics and utilize alternative research methodologies.

Keywords: non-English majors, machine translation, challenges, consequences

1. Introduction

Mobility and migration characterize this global epoch. Consequently, higher education has emerged as a global phenomenon, prompting Southeast Asian countries to increase their quotas for overseas students. Current figures indicate that students from China are the primary source of international students in Malaysia. The impressive performance of Chinese students in mathematics, reading, and science on international assessments like the Programme for International Student Assessment (PISA) has incited vigorous discourse regarding learning styles and the archetype of Chinese learners among academics (Dronkers, 2015; Phillips, 2013; V. Strauss, 2014). Nonetheless, despite their designation as "model students," Chinese learners have faced criticism from certain Western scholars for not adhering to learning qualities esteemed in Western traditions, such as critical thinking and creativity. It has been contended that Confucian Heritage Culture has hindered the engagement of Chinese international students with their instructors and curtailed collaboration with peers, thereby restricting educational attainment.

Moreover, international learners lacking a foundation in English studies frequently have significant difficulties in maneuvering through English-medium higher education settings. These challenges encompass restricted academic vocabulary, obstacles with genre-specific writing rules, and apprehension over grammatical accuracy and fluency. For non-English majors, these obstacles can impede their capacity to fully participate in class, articulate intricate concepts, and fulfill institutional requirements, particularly in written assignments and evaluations.

In the face of these obstacles, swift progress in language-related technology, especially within artificial intelligence, has provided novel resources to enhance academic writing and understanding. MT tools like Google Translate and DeepL have grown ubiquitous, while the recent advent of large language models (LLMs) like as OpenAI' s ChatGPT has profoundly altered the realm of academic language support. These technologies offer real-time translation, as well as assistance in paraphrase, grammatical correction, and content development, rendering them appealing choices for students aiming to surmount linguistic barriers. This increasing dependence on AI-assisted writing tools prompts significant concerns regarding

academic integrity, educational results, and the long-term development of language skills, especially for students who are in the process of attaining competency in academic English.

It was not until the twentieth century that significant progress of MT was made. In 1933, *Georges Artsrouni and Petr Trojanskij* greatly contributed to MT by obtaining patents in France and Russia, respectively. These patents marked the first practical proposals and served as crucial milestones in the field's development. They paved the way for the trajectory of MT research and technology (Hutchins, 2007). A major shift occurred in the 1990s when an approach based on statistics and extensive bilingual corpora emerged. This change was influenced by IBM during the late 1980s and early 1990s. (Thierry Poibeau, 2017). *Lawrence Williams*(2006) pointed out that since computer development, translated text's quality much progressed, hence, work focused on MT in fields like chemical safety and legal discourse, etc. In 2006, Google Translate (hereinafter referred to as GT) was published as free service and witnessed a wave of research into statistical era, then turned to neuron translation. Nowadays, MT especially for FOMT turns out a trend as an English as Foreign Language study. Learners, regardless of their language proficiency, relied on online machine translation for both comprehension and production purposes (Lee, 2020; Niño, 2020; Yang et al., 2023). Over the past 10 to 15 years, the synthesis of MT and language training was rapidly intensifying. This was attributed to the advancement of intelligent devices, including the easy access to phones and wireless network connections(Jolley & Maimone, 2022).

Nevertheless, FOMT tools were far from perfect. Translation of culture-loaded linguistic elements in different language pairs, faced challenges without human intervention. Additionally, one aim for FOMT was to generate a similar style and context aligning with its source language (SL). So, learners should always avoid the above pitfalls and raise important awareness of practicing a wide range of styles and taking care of contextualization, etc. (Mccarthy, 2004). By far, FOMT has taken a big step on translating efficiency, but its grammar and structure completeness need further promotion. What's more, students realized to address the inaccuracy by cross-referencing the results using dictionaries and seeking guidance (Pham et al., 2022). Some researches proposed an easily neglected question: MT would assist language beginners to enhance their communication skills and achieve proficiency(Garcia, 2010; Yang &Wang, 2019). Despite the shortcomings of MT, foreign language students frequently employed such tool as an inseparable part of their language learning journey (Ryu et al., 2022).

Recently, studying in Malaysia has been one of the first choices for Chinese international students in that it possesses high ranking and is affordable. However, among the international students, not all of them are English majors, which leads them to be lapsed into adversity of completing homework in English. Therefore, NEMs have no option but to resort to MT tools; otherwise, they are at the risk of failing the courses and papers. So, this study will fill the gap of how to combine FOMT with academic and assignment's writing for Chinese NEMs in UPM. At one end, NEMs are encountering various challenges including lower English proficiency themselves and shortcomings of MT tools in UPM; another issue is what are the consequences once NEMs become over-dependent on MT tools.

2. Literature Review

Previous studies explored and discovered what the advantages are of MT. Considering its values, English as Foreign Language (EFL) students held a favorable perception of the Google Translate (GT), appreciating its efficiency, accuracy, and accessibility (Arjulayana, 2019). So, FL learners consciously adopted MT to guide their language learning. Over the past decade, quite a lot of researches explored how MT influenced writing. *O'neill* even thought that online translation (OT) has no detrimental effects on students' writing (2016). Particularly, GT helped students write low-frequency words. It generated longer sentences with extensive vocabulary in their writing(Kol et al., 2018). *Kol'*s study investigated the potential strength of incorporating GT at different levels of tertiary English for Academic purposes (EAP) courses. However, some EFL learners had lower language proficiency, but had to submit their assignment and academic writing in limited time. To meet deadlines was a urgent practice among undergraduate EFL students, which is why GT became popular (Arjulayana, 2019). In the study of *Stapleton et al.* they explored factors that contribute to the quality of good writing and found how we can make use of GT to level up writing skills (2019),and educators must gain a comprehensive understanding of MT technology, thus it will take substantial influence on the written language in L2 contexts (2019). With the rapid development of MT technology, instructors and learners would build the confidence for writing practice. In recent years, research confirmed the fact that FOMT brought positive influence and was regarded as a valuable reference tool for L2 writing (Chon et al., 2021). Learners were gradually trying to use MT to guide their own learning.

MT has long been criticized since it was born. EFL learners, adopting FOMT tools as writing assistance, encountered troubles both from MT weakness and other learning obstacles. For example, the grammar and structures that MT generated would differ from what learners had touched, causing confusion for them in determining the correct one. What's more, "MT made learners lazy"(Marito & Ashari, 2017). Learners of lower English proficiency appeared, on the one hand, skeptical to right answers, on the other hand, hard to Identify errors. Therefore, learning with MT needed higher language proficiency and stronger self-discipline. *Chandra & Yuyun* found that grammar was the least referred to in writing with GT; but that did not mean learners never need grammar revision (2018). Outputs of MT may be not grammatically correct; hence learners have to double-check the target language (TL). Therefore, Grammar is still the shortcoming of many online machine translators. Were MT employed directly without revision, compositions would lead to a higher occurrence of mistakes (Chon et al., 2021).

O'neill explored the reliability of MT and proposed the question to what extent learners attributed to it (2013). It couldn't entirely automatic; machine still relied on human brain to generate high-quality MT-translated content (Liu et al., 2022). In other words, learners viewed MT as an additional strategy to enhance their ability rather than a replacement for their own writing skills(Zhou et al., 2022). Additionally, another trouble for FOMT was how to generate a similar style and context aligning with its SL. So, learners should avoid the above pitfalls and raise awareness, such as practicing a wide range of writing styles and taking care of contextualization, etc. (Mccarthy, 2004). In the foreseeable future, FOMT was unable to solve the style of the text. Complex and creative literary translation mainly depended on the human

brain. Besides, with the development of technology, cheating became more accessible than ever before(Correa, 2014). Although MT could be viewed as dishonesty, students still resort to it. *Megan Case* recommended that teachers shift their perception towards the MT aided approach that students write up assignments (2015). FOMT, in this article, will be taken as an integrated part of writing and learning; thus, using MT will be regarded as a natural and acceptable practice. In general, researches expressed a positive attitude to incorporating MT into language learning, although its imperfection in translating complicated sentences, paragraphs, or even texts (Wei, 2021).

To this end, using MT became a widely accepted trend; thus, research should explore deeply into specific writing fields. *Deng and Yu*'s study explored aspects such as the primary user groups, users' attitudes, and the methods of integrating MT tools with language teaching and learning(2022). Researchers believed that instruction and training, in this regard, needed to be emphasized. Educational institutions would offer training programs for both teachers and learners, and thus integrated the tool into foreign language education. Educators were suggested to promote MT practices for language acquisition (Raído & Torrón, 2020). Additional research to integrate machine translation (MT) into language teaching and learning shall be explored in the new setting.

After reviewing literature, we found critical perceptions of MT using, but the positive attitude took a large proportion. Researches have explored diversified language pairs, such as German, Italian (Somers, 2006) ; Spanish (Enkin & Bikandi, 2016)and Korean (Lee, 2020; Ryu et al., 2022), etc. However, high-quality thesis of Chinese-English MT-guided writing was limited. Additionally, many literatures concerned much on the intermediate-high level learners, but neglected FOMT users who had troubles in assignment and academic writing with lower language proficiency. The study will be guided under the theory of New Literacies Studies (NLS). It takes literacy primarily as a social and cultural occurrence rather than a solely internal mental process (Gee,2009). According to Gee, the occurrence of both spoken and written language cannot be separated from specific cultural and social contexts and practices, emphasizing that they do not occur in isolation within the mind. The emergence of writing has resulted in a close and inseparable connection between technology and literacy (Baron, 2000). To effectively communicate message with MT, students need to employ multiple strategies alongside the tool itself to maximize the accuracy. Though MT tools were not specifically designed to facilitate L2 acquisition, if research justifies its usefulness, language learners would be accessible to this tool. Refusing the tool would hinder L2 learners' writing progress. This theory has much contributed to the development of MT usage strategies and bolstered students' confidence and self-perception.

The study is intended to explore the challenges and consequences NEMs facing when using MT tools to complete homework so as to better understand Chinese international students' experience, decision-making, and voices in UPM. The present study concentrates on the following research questions:

1. What are the primary challenges that NEMs face when completing their homework?

2. What is their perspective on utilizing MT tools for fulfilling their assignments?

3. What are the consequences of NEMs becoming increasingly reliant on MT tools to finish their assignments?

3. Methods

A qualitative research approach is utilized to examine the difficulties and consequences encountered by NEMs at UPM in utilizing MT tools for homework completion. Semi-structured interviews are performed to facilitate regulated yet adaptable data collecting. To prevent the interviews from resembling scripted inquiries, the researcher engaged with translation professionals to elucidate the primary objectives and discern pertinent topics.

An interview protocol which follows a chronological progression is established, encompassing meticulously crafted and ordered questions that match with the research objectives, progressing from challenges to behavior, reflection, and guidance. The methodology has a dual focus, encompassing both practical elements (tool utilization, post-editing) and reflective aspects (learning, risk assessment). Additionally, there are probing questions designed to unearth more profound narratives and personal insights. The interview protocol is included in the Appendix.

A pilot test was undertaken with a small group of volunteers to develop the interview process, enabling the researcher to identify and amend ineffective questions. Besides, informed consent was secured, and confidentiality and anonymity were guaranteed.

The interviews were executed through Tencent Meeting and transcribed utilizing Lark software. The resultant transcripts were analyzed using NVivo, a qualitative data analysis software. Recurring patterns were recognized to create conceptual connections, which guided the formation of thematic strands in the interpretive analysis.

The participants recruited by poster for this study is six Chinese international students whose native language is Mandarin Chinese as listed in Table 1, excluding those pursuing English majors. According to Francis et al. (2010) and Namey (2017), qualitative research generally regards a minimum of six interviews as ideal for obtaining data saturation. These students whose age are between 28-41 are pursuing doctoral degree in the UPM. Both male and female students who are coming from different provinces of China are included in the study. Before coming to or applying to study in the UPM, all of them have taken IELTS test. Some of them met the language proficiency (with no sub-score below 6) while the others did not. For those who did not meet the language proficiency requirements of UPM, they are required to take language courses for at least one year. Some of these participants are at their fourth semester while others are at their first year. However, all of them have taken or are taking courses which are taught in English, which means they are supposed to finish their assignments in English as well. All of them have encountered some sophisticated English words or sentences especially for those who did not meet English proficiency of this school, which inevitably led them to resort to MT tools eventually.

Table 1. The Demographic Information of Online Interview

Interview Participant	Home Country	First Language	IELTS Score	Major Type
1	China	Mandarin	6	Physical Education
2	China	Mandarin	5.5	Nursing
3	China	Mandarin	6.5	Economic Management
4	China	Mandarin	6	Computer Science
5	China	Mandarin	6	Architecture
6	China	Mandarin	6	Communication

4. Data Analysis

According to Patton's description of interpretation, which Marshall and Rossman (2011) reference: attaching importance to what was discovered, interpreting the data, providing justifications, drawing conclusions, extrapolating lessons, creating inferences, thinking about meanings, and otherwise imposing order (Marshall and Rossman, 2011, p.215). This kind of interpretation and analysis took place across several stages of reading and immersion in the data, categorization and organization of the data, codification of the data, and interpretation and analysis of the data (Marshall & Rossman, 2011; Patton, 2002). The preliminary categories of MT tools were: types; benefits; weakness; and, negative impact.

Using colored highlights, text fragments that meet categories were coded. Despite the likelihood that after I started my investigation, the categories will change(Ryan & Bernard, 2003), the theory-derived categories were initially coded using the following schema: “Types of MT tools” were highlighted in yellow, “Benefits of MT tools” were highlighted in pink，“Weakness of MT tools” were highlighted in blue, “Negative impact of MT tools” were highlighted in red.

According to the interview, Figure 1 and Figure 2 indicate scenarios where students using MT tools and the reasons that are hold accountable for the behavior of using MT tools.

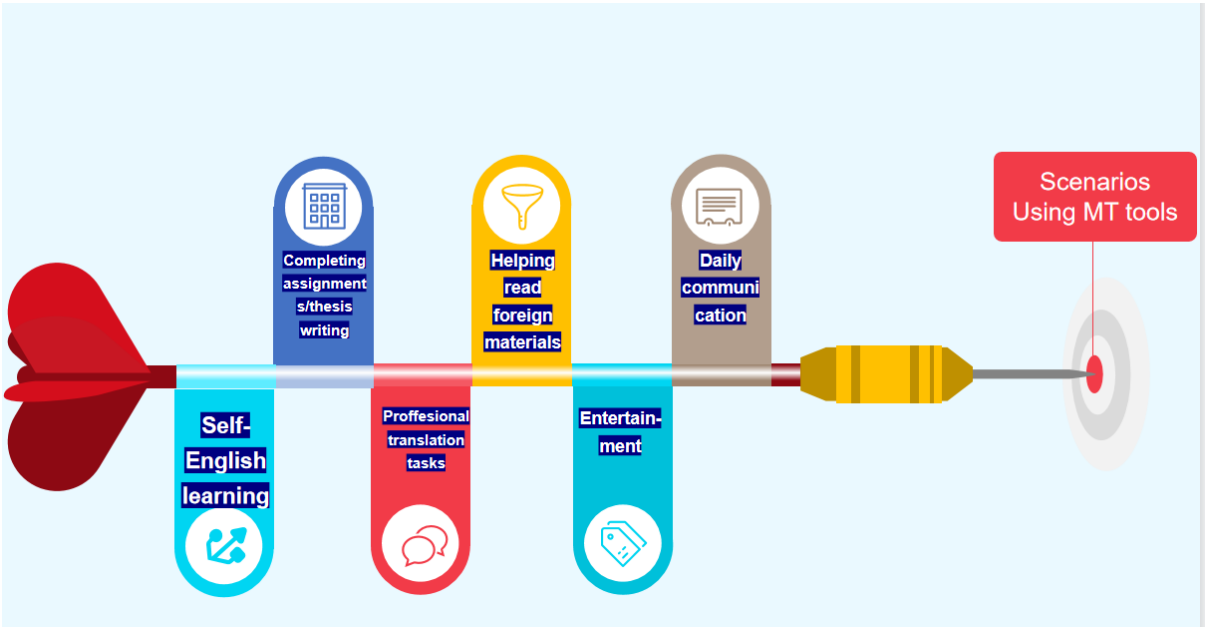

Figure 1. Scenarios Where Students Using MT Tools

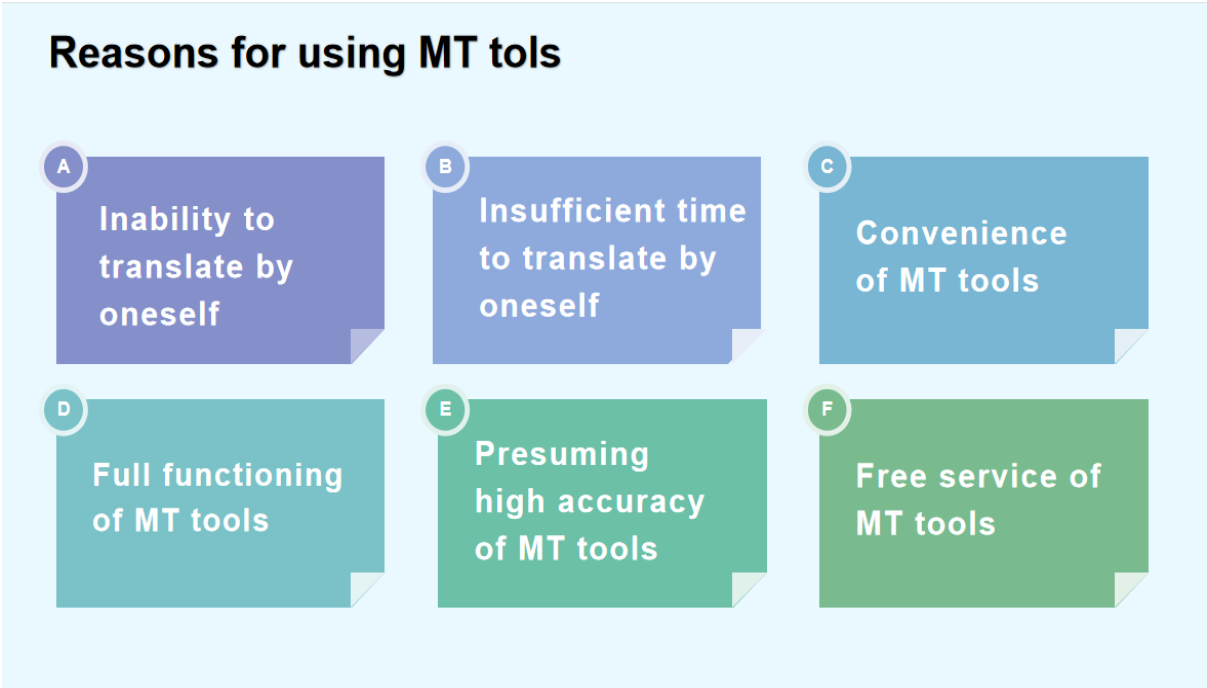

Figure 2. The Reasons for using MT tools

Table 2. Data-driven codes, definitions and samples

Codes	Description	Examples
Types of MT	A category of things having common characteristics	1. Powerword 2. NetEase 3. Youdao Dictionary 4. Google translation 5. DeepL 6. ChatGPT
Benefits of MT	An advantage or profit gained from something.	1. The cost of translation is reduced overall because to machine translation. 2. Machine translation enables you to compromise on price, quality, and turnaround time. 3. Translation by machine is more effective.
Weakness in MT	Qualities or features of MT regarded as disadvantage or faults	1.MT inaccurate translation 2.Grammatical problems 3.Rendering needs revision 4.Rigid, machine-like and inflexible rendering
Negative impact of MT	Any disruption, destruction, impairment or harmful alteration to any living things	1. Become addicted to MT. 2. Become dependent on MT 3. Become lazy and slothful 4. Causing plagiarism 5. Limited improvement in English. 6. Unhelpful to improve English

Table 3. What are the consequences of NEMs increasingly relying on MT tools to fulfill their assignments?

Codes	Description	Examples
Academic Consequences	Potential Benefits & Risks in terms of Scholarly Ramifications	"Machine translation solutions assist overseas students in surmounting linguistic obstacles and expediting assignment completion." "They facilitate comprehension of intricate academic materials by offering rapid translations." "MT tools may misread technical terminology, idiomatic expressions, and discipline-specific language, resulting in misunderstandings or erroneous assignments." "Reliance on machine translation may impede students' capacity to formulate original arguments, paraphrase effectively, and critically interact with sources."
Linguistic Consequences	Benefits and Challenges in terms of Linguistic Consequences	"Machine translation can function as an educational tool, strengthening grammatical structures and augmenting vocabulary." "Students may depend on machine translation rather than actively enhancing their English proficiency, so undermining their writing and critical thinking abilities." "MT encounters difficulties with academic wording, resulting in odd or inappropriate expressions in assignments."

		"Excessive dependence on machine translation undermines autonomous problem-solving and the capacity to formulate intricate arguments."
Cognitive Consequences	Risks & Challenges in Terms of Cognitive Consequences	"Students may invest an inordinate amount of effort rectifying machine translation-generated content, resulting in frustration and diminished academic achievement."
Ethical & Academic Integrity Concerns	Concerns Regarding Ethical and Academic Integrity	"There are plagiarism risks. Certain colleges categorize raw machine translation outputs as unoriginal work, resulting in academic misconduct concerns."
		"Students may inadvertently engage in "machine plagiarism" by submitting work generated by machine translation without appropriate acknowledgment."

As indicated in Table 2 and Table 3, NEMs have acknowledged both the beneficial and detrimental effects of MT tools. MT tools can enhance understanding and productivity; yet, excessive dependence undermines academic writing, critical analysis, and language development. Consistent with prior research, despite the limitations of machine translation, foreign language learners often utilize this tool as an integral component of their language acquisition process (Ryu et al., 2022). Given that MT tools present both advantages and disadvantages, colleges must instruct students on the ethical use of MT while promoting independent learning capabilities.

5. Discussion and Conclusion

5.1 Answering the Research Questions

1. What are the primary linguistic challenges that NEMs face while completing their homework?

The primary linguistic barrier is the deficiency of confidence and assurance in the execution of tasks. The vast majority of participants indicated that the primary purposes for use MT tools were to finalize essays and presentations for English courses and other subjects, with reading comprehension being the next most significant purpose. The Chinese NEMs encounter challenges in translating individual words, complete phrases, sentences, and paragraphs. All participants notably expressed that their limited skill in English engendered a profound sense of inadequacy. “I envy individuals who have such confidence throughout presentations. I feel self-contemptuous and embarrassed by my inadequate English.” (Participant 6)

2. NEMs’ perspective on machine translation tools

Machine translation technologies such as ChatGPT have gained significant attention, amassing hundreds of millions of users within just one month of its inception. “I believe Baidu in China resembles an encyclopedia more closely.” It provides responses to any inquiries made. However, I believe it is not entirely correct; hence, it is not my preferred option.” (Respondent 2). The translation of individual words is often precise and appropriate; nevertheless, the translation of complete phrases, sentences, and paragraphs is occasionally inaccurate or overly stiff and mechanical, necessitating post-editing before to use in assignments. Consequently, participants have a neutral disposition towards MT tools. They acknowledged the advantages of MT tools in improving efficiency; nevertheless, they also conceded their shortcomings, such as fostering over-reliance, misinterpretation, and cultural insensitivity.

3. What are the consequences of NEMs becoming increasingly reliant on MT tools to finish their assignments?

According to Lee (2020), Niño (2020) and Yang et al. (2023), learners, regardless of their language proficiency, relied on online machine translation for both comprehension and production purposes. However, there are four repercussions: academic consequences, language consequences, cognitive consequences, and ethical and academic integrity concerns. There are both potential benefits and risks for academic and language outcomes. The three primary advantages of NEMs utilizing MT tools are efficiency, accessibility, and enhanced comprehension. Concerns regarding inaccuracies in academic content and excessive reliance on sources that diminish academic writing skills should not be overlooked. Although MT Tools may augment students' familiarity with English grammar and vocabulary, they can also diminish language learning motivation, resulting in literal translations and a lack of nuance. For instance, a student utilizing machine translation for an academic essay may generate grammatically correct yet illogical arguments due to the technology's deficiency in contextual awareness. A Chinese student translating an essay directly from Mandarin may generate literal translations that do not adhere to English academic conventions. Decreased critical thinking and analytical skills also warrant careful consideration. Additionally, excessive dependence on machine translation undermines independent problem-solving and the capacity to formulate

intricate arguments. Moreover, the risk of plagiarism is another worry that both colleges and academia should regulate more stringently.

5.2 Conclusion and Implications

This qualitative research indicates that NEMs encounter numerous hurdles, including difficulties in selecting appropriate and cost-effective MT technologies, the time-consuming nature of post-editing texts created by MT tools, and a feeling of inadequacy when utilizing MT tools. The issues confronting students include addiction to machine translation, dependence on machine translation, lethargy, plagiarism, and minimal enhancement of English skills. Furthermore, language issues persist. The linguistic obstacles encountered by NEMs in UPM, such as restricted academic terminology, genre-specific writing hurdles, and excessive dependence on machine translation tools, highlight the pressing necessity for more inclusive and flexible language policy. These issues not only obstruct academic achievement but may also foster long-term reliance on AI tools, hindering genuine language acquisition and critical thinking abilities.

However, NEMs maintain a neutral stance toward MT techniques, acknowledging the implications related to academic, linguistic, cognitive, and ethical integrity issues. Besides, they have recognized the advantages of MT tools, such as improved efficiency and understanding. Conversely, over reliance on machine translation systems undermines critical thinking skills and leads to plagiarism. Thus, the current study possesses institutional and instructional ramifications. Universities should instruct students on the responsible use of machine translation, ensuring academic integrity by promoting engagement with original materials rather than dependence on automated translations. Furthermore, universities must delineate the circumstances and manner in which machine translation techniques are authorized in academic assignments.

Therefore, institutions must reassess their language assistance systems to accommodate the varied linguistic requirements of overseas students. Incorporating specialized English for Academic Purposes (EAP) modules into non-language fields, specifically designed for science, technology, and business students, may promote more sustainable language advancement. Simultaneously, language policies should foster digital literacy, instructing students on the ethical and effective use of translation technology without compromising their language acquisition. Furthermore, curriculum design must prioritize formative assessment procedures, support academic writing assignments through scaffolding, and promote reflective practices that connect students' native language resources with English-medium expectations. By synchronizing language policy with pedagogical reality, institutions can cultivate a more equal academic atmosphere that promotes both linguistic development and academic achievement.

However, the present study has limitations. For instance, the sample is not large enough so that the result cannot be generalized to other international students. Secondly, future studies should include quantitative research or mix-methods research to dive deeply into the essence of the research question.

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Appendix

The Interview Protocol

1. What are the main language barriers you encountered when writing your homework?
Probe: can you share an example/story that you have met in language barrier?
2. When completing coursework, why choose MT tools for assistance?
Probe: how did it work with MT tools? What are advantages of MT?
3. To what extent do MT tools help you overcome language barriers in your homework?
Probe: what are the language problems that MT can't address?
4. I' m guessing you use MT tools in some forms, tell me Which MT tool you have used is the best with the respect of your homework and why?
Probe: I think you must have heard of ChatGPT which is an advanced technology for translation, how do you think that kind of phenomenon?
5. In your view, what is a good standard of translation, when using MT tools for homework?
6. After using machine translation, what kind of post-editing will you do to ensure the correctness of the translation?

7. Have you ever compared the MT with your own translation for a same word or sentence, can you tell what the difference between them?
Probe: What will you do to improve your own translation?
8. Based on your past experience, what have you learned from the MT process?
9. What are the positive and negative impacts in language learning with the help of translation tools?
10. Are there any potential risks for resorting to MT translation all the time? And do you have any suggestions for students who are facing the same adversities in UPM? (Further thinking)

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