THE IMPACT OF MACHINE TRANSLATION ON STUDENT TRANSLATORS' LEXICAL ACCURACY AND CRITICAL THINKING

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Abstract. *Translation methods have changed dramatically as machine translation (MT) techniques are increasingly used in professional and academic settings, especially in translator education. Although MT technologies are quick and easy, there is still debate about their educational implications. This study investigates how machine translation affects the lexical accuracy and critical thinking abilities of student translators. The study compares student translations created with and without machine translation assistance using a mixed-method research methodology. Lexical error analysis, reflective surveys, and translation activities were used to gather data. The results show that while machine translation improves surface-level lexical correctness, students' critical thinking, analytical reasoning, and autonomous decision-making are adversely affected by an over-reliance on MT. The study highlights how crucial it is for translation training programs to use machine translation in a supervised and critical manner.*

Keywords: machine translation, lexical accuracy, critical thinking, translation education, student translators.

Introduction

Translation is a sophisticated cognitive process that calls for critical thinking, contextual knowledge, cultural sensitivity, and language proficiency. To create precise and insightful translations, translators have historically depended on their linguistic expertise and problem-solving abilities. However, the translation landscape has changed due to the quick development of machine translation technology, especially in educational settings. Students frequently use machine translation programs like DeepL and Google Translate because of their effectiveness and accessibility. Concerns have been expressed about students' increasing reliance on automated translation, even while these technologies can help students comprehend original literature and pick up new language. Over-reliance on machine translation can hinder students' capacity to critically engage with materials and assess translation decisions on their own.

Lexical accuracy, which includes suitable word choice, collocation, and contextual fit, is a crucial determinant of translation quality. Critical thinking is equally vital, as it enables translators to evaluate various translation options, identify errors, and justify their choices. The impact of machine translation accuracy on students' cognitive processes has received little attention, despite the rising corpus of research on this topic.

By examining how machine translation affects student translators' lexical accuracy and critical thinking abilities, this study seeks to close this gap.

Literature Review

The growing importance of technology in translation instruction has been noted in earlier research. According to Bowker (2015), when properly included in pedagogy, machine translation can serve as a helpful learning aid.

In a similar vein, O'Brien (2012) highlights the significance of human-computer interaction in translation procedures. Other scholars, however, advise against using machine translation carelessly. Technology may change translators' cognitive behavior by promoting acceptance of automated solutions, according to Pym (2011). In order to build professional competence, Kiraly (2014) emphasizes that reflective and constructivist learning should be given top priority in translation education.

Lexical accuracy research shows that machine translation works well with common language but has problems with context-dependent meanings, idiomatic phrases, and pragmatic subtleties. Furthermore, critical thinking research indicates that overreliance on automated technologies may limit learners' participation in analytical reasoning.

Despite the existing findings, empirical research in this area has looked at the combined influence of machine translation on lexical accuracy and critical thinking in translator training programs. This work aims to add to this underexplored area.

Methodology

3.1 Research Design

Both quantitative and qualitative data were collected using a mixed-method research methodology. This approach allowed for the analysis of lexical accuracy and cognitive engagement in great detail.

3.2 Participants

Twenty-five undergraduate translation studies majors from a university participated in the study. Each participant had previously used machine translation technologies and had intermediate to upper-intermediate English ability.

3.3 Research Instruments

- Translation tasks: Students translated texts with and without MT.
- Lexical error analysis checklist: Categorized errors (incorrect word choice, collocation errors, contextual mismatch, and connotation errors).
- Reflective questionnaire: Assessed translation strategies, decision-making, and confidence.

3.4 Research Procedure

The study was conducted in six stages:

1. **Participant Selection**: Identified students meeting the inclusion criteria.
2. **Pre-Translation Task**: Translated texts without MT.
3. **MT-Assisted Task**: Translated similar texts using MT and revised outputs.
4. **Lexical Error Analysis**: Compared lexical errors across conditions.
5. **Reflective Questionnaire**: Collected qualitative data on critical thinking and translation strategies.
6. **Data Comparison and Interpretation**: Combined quantitative and qualitative outcomes for in-depth analysis.

3.5 Data Analysis

Lexical mistake kinds and frequency were compared between the two translation settings in order to assess quantitative data. To find trends pertaining to critical thinking and decision-making, qualitative data from questionnaires were subjected to thematic analysis.

Table 1. Comparison of Lexical Errors

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Translation Condition	Average Number of Lexical Errors
Without MT	14.6
With MT	8.2

Table 2. Lexical Error Types and Their

Error Type	Without MT	With MT
Incorrect word choice	High	Medium
Collocation errors	Medium	High
Contextual mismatch	Medium	High
Connotation errors	Low	Medium

Distribution

Results

4.1 Lexical Accuracy

Especially in high-frequency vocabulary, MT dramatically decreased surface-level lexical mistakes. Non-MT translations showed more deliberate word choice but also more lexical mistakes.

4.2 Critical Thinking

Students who relied on MT were less likely to question word choices or consider alternatives, according to reflective questionnaires. Non-MT translations demonstrated critical thinking, self-correction, and active participation.

4.3 Combined Insights

In general, MT increases productivity and basic lexical correctness, but excessive use may impair critical thinking.

Discussion

The dual impact of MT is evident:

- Positive: Helps with word recognition, speeds up translations, and minimizes simple lexical errors.

- Negative: Diminishes critical analysis, independent decision-making, and analytical engagement.

In translation education, constructivist methods provide a strong emphasis on cognitive engagement and reflective learning. Teachers can encourage students to critically assess results and make well-informed decisions by promoting guided MT use.

The study confirms earlier findings that MT is a useful tool rather than a replacement for human reasoning (Bowker, 2015; Kiraly, 2014).

Table 3. Summary of MT Effects on Student Translators

Aspect	Positive Effect	Negative Effect
Lexical Accuracy	Fewer surface-level errors	Contextual and collocation issues

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Critical Thinking	N/A	Reduced analytical reasoning
Efficiency	Faster translation	Overreliance may reduce skill

According to the results, machine translation has two functions in translation education. On the one hand, it improves productivity and lowers simple lexical mistakes. However, an over-reliance on MT could impair students' analytical involvement and critical thinking.

Pupils who translated without the use of machine translation showed a better understanding of lexical subtleties and were more engaged in the decision-making process. These results are consistent with constructivist methods to translator education, which place a strong emphasis on cognitive engagement and reflective learning.

The findings bolster the claim that rather than taking the role of human reasoning, machine translation should be employed as a teaching tool. Teachers ought to push students to assess MT output critically and provide evidence for their translation decisions.

Conclusion

According to the study's findings, machine translation has a major impact on the lexical accuracy and critical thinking abilities of student translators. Although MT tools increase surface-level accuracy, an excessive reliance on them may hinder students' ability to think critically and make their own decisions. Through guided exercises that stimulate introspection, assessment, and critical engagement, translation educators are encouraged to incorporate machine translation into their courses.

Larger sample sizes and longitudinal designs should be used in future studies to investigate the long-term cognitive impacts of using machine translation.

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