

The Impact of Machine Translation (MT) in Language Education

أثر الترجمة الآلية في تعليم اللغات

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Abstract:

The impact of machine translation on language teaching is the focus of ongoing research and debate. Several studies suggest that machine translation tools can help language learners and teachers in certain contexts. For example, they can help students improve their writing and speaking skills by helping them check their work for errors and understand certain grammatical structures and vocabulary. In addition, machine translation can facilitate learning for students who have difficulty with the target foreign language. However, some researchers believe that the use of machine translation tools can hinder language learning when used as a sole substitute for human interaction. Overall, machine translation tools can be helpful for language learners and teachers. Studies have shown that these technologies can be a useful supplement to other teaching methods, nevertheless they are not considered to be the unique source of learning a language.

Key words: machine translation (MT), technologies, language teaching, foreign language, learning.

إن تأثير الترجمة الآلية على تعليم اللغات يشكل أحد محاور البحث والنقاش المستمر في الوقت الراهن. هناك العديد من الدراسات التي تشير إلى أن أدوات الترجمة الآلية يمكن أن تساعد المتعلمين والمعلمين في بعض السياقات. فعلى سبيل المثال، يمكن لهذه الأدوات أن تساعد الطلاب في تحسين مهارات الكتابة والتحدث فهي توفر أدوات تمكنهم من التحقق من إمكانية وجود الأخطاء التي قد يتضمنها عمل ما وكذا توفر مرجعا لفهم بعض التراكيب النحوية والمفردات.

بالإضافة إلى ذلك، يمكن للترجمة الآلية أن تسهل عملية التعلم للطلاب الذين يواجهون صعوبات في تعلم اللغة الأجنبية المستهدفة. ومع ذلك، يعتقد بعض الباحثين أن استخدام أدوات الترجمة الآلية كبديل وحيد للتفاعل الإنساني يمكن أن يعيق تعلم اللغة. وبصفة عامة، فإن أدوات الترجمة الآلية يمكن أن تلعب دورا فعالا في دعم مُتعلّمي اللغة ومُعلّميها، وقد أظهرت الدراسات أن هذه التقنيات يمكن أن تكون كمكّلا مفيداً لأساليب التدريس الأخرى، ولكنها لا يمكن أن تحل محل الانسان في تعلم اللغة.

كلمات مفتاحية: الترجمة الآلية، تعليم اللغات، التعليم، اللغات الأجنبية، التقنيات.

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Introduction:

Language learning has always been a task that requires a significant amount of time and effort, as learners need to devote countless hours to studying grammar, vocabulary, and cultural nuances. However, with the help of technology, there has been a shift towards incorporating machine translation into language education. Machine translation involves using automated systems to translate text and speech from one language to another. This technology has the potential to revolutionize language education by providing instant access to translations of text and audio materials, assisting with translation tasks, facilitating communication in language exchange programs, and more. This communication aims to explore the role of machine translation in teaching foreign languages, examining its advantages and limitations, and discussing how language learning can use it as a support whether in and out of the classroom.

1. Teaching methods of foreign language:

To educate a foreign language various approaches are possible where each having its own set of advantages and disadvantages. Among the most often used techniques we outline the followings:

- 1) Grammar-translation method: This method of teaching language emphasizes on grammar rules and text translations between the target language and the native language of the learner. Albeit this approach can be helpful for learners to develop their reading and writing skills, it may not be the most effective method for improving their speaking and listening skills.
- 2) The direct method: this approach of teaching a language emphasizes the use of the target language in the classroom. It focuses on communication and conversation. This approach can be beneficial in enhancing speaking and listening skills. However, some learners may need more explicit grammar instruction.
- 3) Audio-lingual method: this approach concentrates on developing speaking and listening skills by using repetitive drills and pattern practice. It can be helpful in developing fluency and accuracy, but it may not provide sufficient context or chances for creative expression.
- 4) Communicative language teaching: this methodology emphasizes the use of the target language for communication and problem-solving in real-world situations. This approach covers up a wider area of skills since learners can improve all four language skills - reading, writing, speaking, and listening. Yet, it requires thorough groundwork and planning to be effective.
- 5) Task-based language teaching: it concentrates on developing language skills by completing meaningful tasks, such as conducting surveys or writing letters. This approach can be useful in developing communication skills and promoting learner autonomy. However, it can also demand a considerable amount of time and resources.
- 6) Content-based language teaching: is a technique that uses the target language to teach a specific subject area like science or history. It enhances both language and content knowledge, but it may require a high level of proficiency in the target language.
- 7) Total physical response: is a method that focuses on using physical actions and gestures to reinforce language learning. It can be effective in developing listening comprehension and motor skills. However, it may not offer enough chances for creative expression or production.

- 8) Machine Translation method: Referred to as MT, it is a technique that can be used for teaching foreign languages. It involves providing translations of text and audio materials, assisting learners with translation tasks, and facilitating communication in language exchange programs. As discussed earlier, machine translation can be considered as one of the effective methods for language learning.

There are several ways to teach a foreign language, and teachers usually use a mix of methods based on their students' requirements and objectives. The above-mentioned techniques are only a few of them.

➤ **Historical facts:**

One of the teaching methods referred to previously that remain paramount in children's schools is grammar translation approach. Still, many reactions in private language schools seem to appear against it.

In the late 19th century, Heness and Sauveur opened a language school in the United States teaching German and French. They employed what they called the **Natural Method**, because it was felt to mirror the way first languages are naturally learned by children. However, the approach came to be more commonly referred to as the **Direct Method**. (Richards & Rodgers, 2001, p. 12)

Through the following list, we delineate the principles of the Natural/Direct Method, as laid out by Richards and Rogers are:

- Classroom instruction was conducted exclusively in the target language.
- Oral communication skills were built up in a carefully graded progression organized around question-and-answer exchanges between teachers and students in small, intensive classes.
- Grammar was taught inductively.
- Concrete vocabulary was taught through demonstration, objects and pictures; abstract vocabulary was taught by association of ideas.
- New teaching points were introduced orally.
- Only everyday vocabulary and sentences were taught.
- Correct pronunciation and grammar were emphasized
- Both speech and listening comprehension were taught. (Richards & Rodgers, 2001, p. 12)

2. What is Machine Translation:

The term 'machine translation' (MT) refers to computerized systems responsible for the production of translations with or without human assistance. It excludes computer-based translation tools which support translators by providing access to on-line dictionaries, remote terminology databanks, transmission and reception of texts, etc. The boundaries between machine-aided human translation (MAHT) and human aided machine translation (HAMT) are often uncertain and the term computer-aided translation (CAT) can cover both, but the central core of MT itself is the automation of the full translation process (Hutchins, 1995).

All definition would agree on the fact that machine translation accounts for the process of using computer algorithms along with artificial intelligence tools to produce an automatic translation of texts from one language to another. It makes use of advanced algorithms that analyze the structure and meaning of sentences, and create equivalent translations in the target language.

The machine translation process consists of three primary stages:

- a) Analysis: In this step, the machine translation system analyzes the original text in the source language to determine the grammatical structure and meaning of each sentence.
- b) Translation: The system then uses the analysis to create a preliminary translation of the text into the target language.
- c) Synthesis: Finally, the system synthesizes the translated text to produce a final output that can be easily understood by a speaker of the target language.

Machine translation systems can be categorized into three types - rule-based, statistical (SMT) and neural (NMT). Rule-based systems use a set of linguistic rules to translate text, whereas statistical and neural systems rely on large datasets of human-translated text to generate translations.

The use of SMT methods greatly improved the translation quality, such methods employ log-linear models to integrate multiple manually designed components such as a translation model, a language model, and a reordering model, which usually results in a serious reordering problem for distant language pairs. With strong progress in deep learning technology in speech, vision, and

other fields, researchers began to apply deep learning technology to MT (Bahdanau, , Cho, & Bengio, 2015).

Sutskever proposed end-to-end neural network translation models and formally used the term “neural machine translation.” The basic idea of NMT is to map the source language into a dense semantic representation, and then generate the translation by using an attention mechanism (Sutskever, Vinyals, & Le, 2014).

3. The role machine translation plays in teaching languages:

Machine translation can have a substantial impact on language education by facilitating communication:

- Enabling communication: It can prove especially useful in situations where there is an urgent requirement for translation, such as customer service interactions or online chats, to bridge the language gap between speakers of different languages.
- Providing language learning resources: Machine translation systems have the potential to offer language learning resources by providing translations of written, audio, and video content. This can assist learners in comprehending new vocabulary and grammatical structures while also improving their reading and listening skills.
- Assisting with writing and editing: Machine translation can serve as a valuable tool for language learners in writing and editing tasks. By utilizing machine translation, learners can verify the precision of their writing and identify any errors in grammar and sentence structure.
- Facilitating cross-cultural understanding: machine translation can also contribute to promoting cross-cultural understanding. It enables individuals to access and comprehend content in various languages, which can aid in comprehending other cultures and perspectives.

Language-learning efforts in the EU tend to be concentrated on a small number of large languages, and that learners do not always reach desired levels of competence in their chosen foreign languages. These circumstances suggest that further support for language learning is needed, and it behooves us to investigate whether such support could come in the form of machine translation. As neural machine translation learns faster than any foreign language learner, it could, in theory, be used to help learners read complex texts and develop more advanced

written skills in their second language. They could learn how to make the most of machine translation in the second language so that they could detect and edit machine translation mistakes based on their knowledge of the second language (Torres-Hostench & Kenny , 2022, p. 11/12).

It is essential to understand that machine translation cannot replace the process of human language learning and teaching. Although machine translation can aid language learners, it has limitations in capturing the subtleties and intricacies of language. As a result, it may not always provide accurate or natural translations.

4. Tools of MT in teaching foreign languages:

Machine translation is gaining significance in language education, and it is proving to be a valuable tool in making language learning more accessible, engaging, and effective. Several specific applications of machine translation in language education are as follows:

- Online language courses: Various online language learning platforms have integrated machine translation technology to provide translations of text and audio materials. This facilitates learners to comprehend new vocabulary and grammatical structures, as well as enhance their reading and listening skills.
- Language learning apps: that have become a popular tool for those seeking to learn a new language. Duolingo and Babbel are two such apps that use machine translation to help learners understand new vocabulary and practice their speaking and writing skills.
- Language exchange programs: which offer learners the opportunity to communicate with others who speak a different language. Machine translation can be used in these programs to help overcome language barriers and facilitate cross-cultural communication.
- Translation tasks: For language learners with translation tasks, MT can assist in translating texts from their native language into the target language. This kind of assistance serves to develop their translation skills and gain a deeper understanding of the grammatical and syntactical differences between languages.

Furthermore, there are a couple of additional applications for machine translation in language education. Firstly, language learning chatbots have advanced with the incorporation of machine translation. These chatbots can now communicate with learners in their native tongue, providing a low-stress environment for learners to practice speaking and writing. The chatbots can also offer instant feedback and corrections. Secondly, machine translation is utilized in linguistic research to examine language data and recognize patterns and tendencies in language usage. This research can enhance machine translation algorithms and aid in creating more effective language teaching approaches. Thirdly, Machine translation is now being utilized to enhance accessibility for individuals with disabilities who are language learners. This technology can provide real-time translations for people who are deaf or hard of hearing, and it can also translate text materials for learners with visual impairments.

It is crucial to understand that although machine translation can be beneficial in language education, it cannot replace human interaction and instruction. Language learners must continue to hone their speaking and listening abilities through communication with native speakers, and seek the assistance and direction of qualified instructors to receive helpful feedback.

5. Benefits of using MT in language education:

Machine translation software can revolutionize language education in numerous ways. Firstly, it can enhance the learning experience of students by enabling them to learn a new language more efficiently. With machine translation software, students can quickly translate text and learn faster, it is actually one of the main advantages of using machine translation in language teaching thanks to its ability to provide instant feedback to students. With machine translation software, students can input text or speech and receive immediate translations, allowing them to quickly identify and correct mistakes.

Moreover, MT can facilitate communication between teachers and students who speak different languages. Real-time translation allows effective communication between them. Likewise, it can make language learning more accessible to people worldwide. Through machine translation software, people can learn a new language from their homes, expanding the scope of language education beyond the confines of the classroom.

Another benefit is that machine translation can help students learn at their own pace. Unlike traditional classroom settings where students must keep up with the pace of the class, machine translation allows students to work at their own speed and focus on areas where they need more practice.

Numerous studies have confirmed that MT helps students reduce orthographic, lexical, and grammatical errors and focus more on content, and as a result, students with MT produce revisions with a greater number of successful edits and a better quality of L2 writing.(Lee, 2021, p. 4)

6. MT drawbacks in language education:

Machine translation has its advantages and disadvantages in language education. One of the main challenges is the inaccuracy of the software, which can result in miscommunication due to mistranslations. Another issue is the inability of the software to accurately translate idiomatic expressions and cultural references, which can be a hindrance for language learners.

One major issue is the lack of context provided by machine translation software. Without an understanding of the cultural and linguistic nuances of a language, machine translation can produce inaccurate or inappropriate translations.

Another drawback is the potential for overreliance on machine translation. Students may become too dependent on the software and fail to develop their own language skills or critical thinking abilities. Consequently, the software's dependence on algorithms and statistical models may lead to a lack of human interaction in language education.

The entire exercise of machine translation has been sobering - even "depressing," Hovy says - because the best MT systems so far appear to have less to do with linguistic breakthroughs at a conceptual level than with simple doggedness. "It doesn't matter how brain-damaged the approach," Hovy says. "The older the system, the better" -- because the programs need repeated and extensive fine-tuning, lexicon building, and tweaking of the rules (Bishofs, 1998).

7. MT technologies incorporation in teaching foreign languages:

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The advancement of language education has undergone a significant transformation from the conventional approach of textbook-based teaching. Previously, language acquisition was restricted to classroom-based instruction, relying solely on textbooks and educators to acquire a new language. However, with the emergence of technology, language education has undergone a remarkable change and has become more readily available to individuals worldwide. The internet has facilitated the acquisition of a new language from the comfort of one's own home, while machine translation has simplified communication.

Various techniques can be useful in order to embed machine translation in language education. Initially, we can talk about a software that teachers can use to convert text into the desired language for students. This will help students to learn a new language more effectively. Secondly, teachers can use machine translation software to communicate with students who speak different languages. It enables teachers to provide feedback to students in their native language. Lastly, teachers can use machine translation software to develop assignments and quizzes for students. This allows students to practice their language abilities in a more interactive manner.

Dale Bostad thinks the biggest payoff may come from combining computers and people in a way that exploits the natural talents of each. A document can be given a once-over by MT, and a professional translator can then clean up the glitches. Bostad is developing software that will automatically flag the iffy sentences generated by machine translators' output (such as those containing acronyms, unfamiliar words, or improbable word sequences), so that the human beings can focus effort where it is needed most. Working in tandem with an MT system, Bostad finds, some people can produce eighteen pages an hour, whereas the standard quota for a professional government translator is five to six pages a day. Younger translators in particular have embraced this approach, Bostad says. Their attitude toward computers is, if you can't beat them, join them (Bishofs, 1998).

In the realm of language education, there are certain practices that can enhance the use of machine translation. Teachers should essentially regard to machine translation software as a complement to traditional teaching methods, rather than a substitute. In addition, teachers must ensure that the software they use is reliable and effective. Finally, encouraging students to practice their

language skills with machine translation software can help them improve their abilities and become more skilled in the language they are studying.

8. Criticism of MT in language education:

Although machine translation has numerous advantages in language education, it has also faced criticism. Some individuals argue that the accuracy of machine translation software is not up to the mark for language education. So, Machine translation can be inaccurate, especially when it comes to complex texts and expressions that require a deep understanding of the cultural and linguistic context. Machine translation also struggles with ambiguity and nuance because it does not understand these elements as well as humans do. Others believe that machine translation software eliminates the human element from language education, nevertheless, machine translation is not personalized to the individual learner's needs, preferences, and level of proficiency. This can cause difficulty for the learner to maximize the benefits of machine translation tools. Despite these concerns, the advantages of utilizing machine translation in language education cannot be ignored and it's important to note that while these criticisms are valid, they do not necessarily negate the potential benefits of machine translation in language education. Rather, they should be taken into consideration when using machine translation tools and should be balanced with other methods of language instruction to ensure the best possible learning outcomes.

9. Reported study case:

There is no doubt about a short-term advantage that learners can gain when using MT to accomplish particular tasks. Here is a study reported on by O'Neill (2019), in which 310 American intermediate-level students at university wrote short compositions in French and Spanish; they were put under different conditions, including the use of: Google Translate with and without prior training for students; an online dictionary with and without prior training; or with no technical aid at all.

The Results gave distinct scores. The students who used Google Translate with prior training in the use of this tool, scored better than all others on their compositions. The following score was gotten by students who used an online dictionary with prior training as well. A subsequent post-test conducted a week later, and another delayed post-test conducted about three to four weeks later, during which students had no longer access to the tools in question. We

noticed that they no longer performed better than the other groups. It turned out that any advantage they had gained by using the tool was dependent on the continued availability of the tool and is of a short-lived effect on their performance.

A separate study had been conducted by Fredholm (2019) who managed to track lexical diversity in written compositions. Thirty-one Swedish upper secondary school pupils of Spanish as a foreign language had been tested over the course of a full school year. About roughly half the pupils used a printed dictionary as a translation tool whereas the other half used Google Translate. He could notice that MT use was associated with higher lexical diversity, which led to better performance, provided that students continued dispose the tool. However, the effect perished once access was removed. Again, the benefit bestowed by use of MT seemed dependent on the continued availability of the tool (Carréa, Kenny, Rossi, SánchezGijón, & Torres-Hostench, 2022, p. 190).

So, using MT in language learning is not all bad. In both studies, the tool use did not cause harm to the students in the long run. There was no difference between students who made use of MT and those who did not when the tool was no longer on hand. On the other hand, students who used MT were better performant than the others in the short term. So, whether you benefit from using MT or not seems to depend on whether you are thinking in the short or long term, and more importantly it depends on whether you are focusing most of your attention on a task in particular in order to achieve it as an end, or on improving your skills as a language learner.

10.The future of MT in language education:

The integration of machine translation is closely tied to the future of language education. With the continuous evolution of technology, machine translation will become more efficient and accurate. This will make language education more accessible to people around the globe. Moreover, the use of machine translation will facilitate effective communication between teachers and students, thereby leading to efficient language learning. The future of language education will be a blend of traditional teaching methods and technology. It's

worth noting that the future of machine translation in language education is promising, as technology continues to advance and more advanced machine learning algorithms are developed. Here are some potential developments and trends that we can expect to see in the near future:

- Improved accuracy: as machine translation algorithms become more sophisticated and are trained on larger and more diverse datasets, we can expect to see a significant improvement in accuracy. This will make machine translation tools more reliable and useful for language learners.
- The use of natural language processing (NLP) to improve accuracy, provide natural-sounding translations, and enhance the user experience is already being used at MT. In the future, it is expected that even more sophisticated NLP technology will be used on MT.
- Customized translations for specific industries: As MT technology becomes more sophisticated, we may see the development of customized translations for specific industries, such as medical or legal translations.
- Advancements in real-time translation: Real-time translation tools, such as translation earbuds, are already available, but we can expect to see more advancements in this area in the future, making it easier for language learners to communicate with native speakers in real-time.

All in all, the future of MT in the language classroom is exciting as technology continues to evolve and provide new opportunities for language learners. While it is important to be aware of the limitations and criticisms of MT, it is clear that these tools have the potential to greatly enhance language learning.

Conclusion:

In summary, machine translation is increasingly shaping the landscape of language education. It offers several advantages, such as improving accessibility, facilitating faster communication, and promoting interactive language learning. Despite some challenges and negative feedback, the benefits of machine translation in language teaching outweigh the drawbacks. In the future, language teaching will use a mixture of conventional teaching methods and technology, including machine translation. The role of machine translation in foreign language teaching is complex and multifaceted. Ultimately, the

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effectiveness of machine translation in the language classroom will depend on how it is implemented and integrated into existing curricula. As a language teacher, I am eager to see how machine translation will impact the language classroom.

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