THE ROLE OF AI AND MACHINE TRANSLATION IN STUDENTS' TRANSLATION TRAINING

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Abstract:
The purpose of this study is to examine what influence the machine translation tools using the elements of Artificial Intelligence (AI) have on students' translation training.
In the theoretical part such notions as machine translation, AI and machine translation education are presented according to Fengqi, Yuxuan (2025), Kruk, Kałużna (2024), Chiu et al. (2023), Bahdanau et al. (2016).
The analysis is based on the translation project in which students are asked to compare the applicability of the selected machine translation tools using AI with those machine translation tools that are not equipped with AI. Additionally, students' interviews are examined as to their opinions about AI machine translation tools in students' translation training. The findings are scrutinized quantitatively and qualitatively.
Finally, conclusions are drawn.

Keywords: Artificial Intelligence (AI), machine translation, translation training, translation education

1. Introduction

Nowadays translators work in the rapidly changing world in which Artificial Intelligence (AI) and machine translation play a significant role. The state of the constant flux exposes the translators to new challenges that were non-existent in the past. The educational system needs new solutions that would enable future translators to find their position in the demanding labour market. Today, apart from language competence, translators are expected to be the IT specialists, proof-readers and post-editors. How can such versatile competence be taught? What is the role of AI and machine translation in the process of teaching students the craft of translation? The purpose of this article is to find the answers to the above-mentioned questions. In the theoretical part of the paper such notions as machine translation, AI and

machine translation education are presented according to Fengqi, Yuxuan (2025), Kruk, Kałużna (2024), Chiu et al. (2023), Bahdanau et al. (2016). The analysis is based on the translation project in which students are asked to compare the applicability of the selected machine translation tools using AI with those machine translation tools that are not equipped with AI. Additionally, students' interviews are analysed to explore their opinions about AI machine translation tools in students' translation training. The findings are scrutinized quantitatively and qualitatively.

2. Literature review

This subsection includes definitions regarding machine translation, AI, and the usage of machine translation and AI in education as well as in the process of teaching translation.

2.1. Basic definitions

Artificial intelligence (AI) is referred to as "technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy" (www.ibm.com). According to another definition AI is associated with computer systems that can perform tasks done by human beings (www.nasa.gov) and intelligent beings (www.britannica.com; Chiu et al. 2022). Thus, the concept of AI, by definition, should imitate the human way of thinking and substitute the human solutions for the ones offered and performed by the computer.

AI, as an integral part of human existence, has become so natural that we can hardly imagine life without it. Its usefulness can be appreciated in language learning, language teaching, education, translation, and many other areas. When it comes to translation, technology plays a significant role, which can be noticeable in machine translation (MT) tools available online, and its long history (Hutchins 2006). Initially, the role of MT was to produce a string of words from the source into the target language in a literal way, closely related to the source text (Moorkens et al. 2018). Such a translation required a follow-up human intervention performed by a translator. As MT performs the translation of a text automatically by means of computer software (Rothwell et al. 2023), the room for human intervention is limited to the necessity to post-edit the translated text generated by the machine. The situation with the Computer-Assisted Translation (CAT) is different as it assists translators in the process of translation by offering them functionalities such as glossary, translation memory or term base (Rothwell et al. 2023, p. 11) which can be useful with the linguistic, terminological and cultural decisions translators have to make in the translation process.

Over the course of time the emergence of Neural Machine Translation (NMT) brought new light into translation replacing traditional MT by its more advanced, statistical AI translation that relied on neural networks (Forcada 2017). Such a shift has forced a change towards learning and teaching English (Klimova

et al. 2023) and towards machine translation (Bouras 2024). NMT works upon sentences by "building and training a single, large neural network that reads a sentence and outputs a [relevant] translation" (Bahdanau et al. 2015, p. 1). Thus, NMT is able to manage sentences, though larger chunks of texts could be a challenge for it.

2.2. Machine translation and AI in education

One of the areas in which machine translation and AI are developing fast is education. AI can contribute to enhancement of learning processes (Yang et al. 2021) and language learners can benefit from modern technological solutions as they offer them real-time feedback, easy-access assistance (An et al. 2023) that can foster their language proficiency. Among other advantages, AI provides learners with instructions tailored to their needs, which makes the learning process more engaging and stimulating (Chhetri et al. 2024). Such an approach is an immediate answer to the expectations of the current young generation born with technology that is open to innovation and integration of AI with IT technologies (Odacioglu et al. 2024). As it seems, the impact machine translation and AI-assisted tools have on education, language learning and translation cannot be ignored (Ohashi 2024).

The topic of the use of AI in education has gained on popularity (Martin et al. 2023). There is an array of possibilities how AI could be used in teaching environment. In reference to language learning and teaching, comparisons of human vs. machine translations could be used as well as analyses of students' work vs. digital feedback (Chiu et al. 2023) could be applied.

AI has been found useful in practising and improving pronunciation and exercising speaking skill (Liu and Hung 2016). AI assisted students in pitch and intonation patterns, which proved to be helpful in pronouncing sounds more precisely. This is an effective alternative to traditional teaching methods, particularly when dealing with specific pronunciation challenges. Interactive solutions can provide the students assistance in practising pronunciation and speaking skills (Fang 2025, p. 38), which makes an educational process more interesting and motivating. This is one of the reasons why AI could serve as a helping hand for teachers, who could thus offer their students more versatile tools that could be applied in the classroom environment on a daily basis.

Benefits of machine translation tools equipped with AI such as, for example, ChatGPT have been noticed in improving writing, reading and speaking skills. According to Song and Song (2023) prompts and real-time feedback were helpful for students who were using ChatGPT to improve their writing abilities. The enhancement of writing skills with the assistance of AI-guided prompts was also identified in studies by Herbold et al. (2023), Hitsuwari et al. (2023), and Pawlicka et al. (2024). Such AI guidance has the potential to facilitate revision in writing (Sun, Liu, Moratto 2025, p. 101) and in translation practice (Kruk, Kałużna 2024; Fang 2025; Chen 2025).

Real-time feedback was also appreciated by students who used Grammarly to enhance their grammar correctness. According to Dizon and Gayed (2021) students who used Grammarly made fewer grammatical mistakes than those students who did not refer to this tool. The process of learning from our own mistakes is easier with an AI assistant that can correct the students' grammar errors instantly.

Similar benefits were noticed by students who used neural machine translation tools to enrich their vocabulary span. The deployment of more sophisticated vocabulary was witnessed in the assignments of those students who took advantage of neural machine translation tools (Lo 2023). The acquisition of new words seems more accessible with the tool that assists the students with real-time feedback and an array of vocabulary equivalents.

Usefulness of AI has been also witnessed in translation and in teaching translation. AI-assisted translation is faster and more efficient. Neural machine translation tools can be helpful in enhancing fluency and naturalness (Kruk, Kałużna 2024). In terms of translation, AI is witnessed to improve accuracy and consistency (Fang 2025, p. 37). The enhancing role of AI in translation is also noticed in aspects of quality and efficiency of the translation process (Sun, Liu, Moratto 2025, p. 4). Thus, the need to integrate AI-assisted translation exercises into translation education (Chen 2025; Jiang 2025) seems to be justified. Taking into account the positive aspects mentioned above one cannot ignore the fact that there are certain translational traps that can be identified in translations rendered with the assistance of AI. Among disadvantages we can enumerate semantic distortion, loss of context and cultural mistranslation (Doshi 2024, p. 2). Similar view is shared by Barad (2024) who mentions the problem with culture and context in AI-assisted translations. Other translational feature that AI might have problems with in translation, apart from cultural references, is specialised terminology (Boluwatife Oni 2025), particularly at a high advanced level of specialisation. Despite dual nature of AI in translation, i.e. both positive and negative, AI is viewed as an instrument which can enhance the human translators' productivity (Dusmamatovna, Razakova 2025, p. 23), which may suggest that the positive qualities of AI outbalance the negative ones. Though, the threat is that students might get used to the AI-suggested solutions, which may result in over-dependence on AI (Fang 2025, p. 39) and the phenomenon of laziness among students, as there is not a necessity to be creative in finding a translational solution if the machine can do it instead of us.

It seems inevitable with such fast development of technology that education as well as the students' educational needs will evolve. We cannot stop the process of technological progress, the only way to catch up with it is to find ways to use it to our benefits. The changes enter the classroom environment whether we want it or not and, despite visible technical difficulties in education and the insufficient digital literacy among teachers (Jiang 2025), the process has already started and will continue in the years to come. In teaching translation the emphasis should be put, apart from human translation skills, on machine translation and on post-

editing (Sun, Liu, Moratto 2025, p. 9). In light of the above-mentioned aspects there are also ethical concerns (Boluwatife Oni 2025) which need to be regulated by law, and for the time being, are not taken care of.

3. The study

3.1. Research questions

The aim of the study was to investigate the impact of machine translation tools equipped with neural network on students' translation tasks, as well as to compare the applicability in terms of its usefulness or uselessness in teaching students translation. In order to meet the above-mentioned purpose, the following research questions were formed:

RQ1: What is the role of Machine Translation (MT) and Artificial Intelligence (AI) in the process of teaching students the craft of translation?

RQ2: What is the applicability of the MT tools using AI in comparison with such translation tools which are not equipped with neural network?

3.2. Participants

In total 20 Polish undergraduate students majoring in English who studied Applied Linguistics participated in the study. The participants ranged between 20 and 22 years old. The group consisted of nine female students and eleven male students. The students attended the course of translation study (fundamentals of translation – 30h) conducted by the author of this article. The participants' level of English was C1 according to the Common European Framework of Reference for Languages. The students' homogenous level of English ensured their common language ability.

3.3. Data collection and evaluation criteria

Students' task was to translate on their own without any resources a sample of a literary text from Polish into English. The task involved translating a 300-word excerpt from Agatha Christie's (1999) *Poirot prowadzi śledztwo*. Next students were asked to consult two Neural Machine Translation (NMT) tools (ChatGPT, DeepL) and two MT tools (online dictionaries) for prompts how their human translation could be improved. Then in a scale from 1 (the lowest) to 7 (the highest) they were asked to mark the level of *context, grammatical correctness, fluency* and *naturalness* enhanced by NMT tools and MT tools respectively. Eventually, they were encouraged to share their opinions if and to what extent NMT tools and MT tools allowed them to improve their human translations. Finally, students answered seven open questions included in a questionnaire.

Before performing the translation task, the students were instructed how to approach the exercise and they were also provided with translation theoretical and

practical background regarding the difference between the traditional MT tools and AI-based NMT tools. Hence the students were theoretically prepared to do the translation assignment. The purpose of the theoretical translation introduction was to eliminate the students doubts and to give the students opportunities to ask questions and elicit answers that could make them more confident when dealing with the translation task.

The idea of the students' task was to examine if and to what extent the students' human translation could be potentially enhanced by the AI-based translation tools. The scope of the examination comprised the selected parameters such as *context, grammatical correctness, fluency* and *naturalness.* The scale (from 1 to 7) was meant to encourage the students to share their observations regarding the AI prompts in order to gauge the AI-based translation solutions and improvements as useful or useless. In terms of the assigned criteria, context was understood as unique factors of the translated text, for example cultural or historical, that form the setting of the whole idea of the translated situation that contribute to understanding of the entire text. The criterion of grammatical correctness referred to the use of the English grammar, syntax, lexis in a way it is free from the grammatical errors. Fluency regarded smooth flow of the translated text guaranteed by cohesive devices and coherence. The criterion of naturalness was achieved if the translated text did not read like a translation but like a piece of an authentic source text. Using the scale from 1 to 7, students marked each criterion indicating how they viewed the AI-based translation tool enhancement of their own human translation.

In order to get more insights and gather more information, students were asked to answer seven open questions included in the questionnaire in reference to their translation assignment. The scope of the questions ranged from the role of AI in teaching translation, applicability understood as usefulness or uselessness of AI-based machine tools in translation, how to use NMT tools for the benefit of the human translator, advantages and disadvantages of such tools in the translator's work, and emotions involved when using such tools whether they were more positive or negative. The author of this article obtained the ethical approval of the students who agreed to participate in the project and were informed that their anonymity would be guaranteed.

3.4. Data analysis

The data were analysed qualitatively and quantitatively. Quantitative ratings were produced by student self-assessments. Descriptive statistics, including means and standard deviations were calculated regarding subsequent NMT and MT tools according to four pre-determined criteria. Since the data did not meet the assumptions of equal variances or normal distribution, a test by Kruskal-Wallis (www.ibm.com) was conducted. When the differences were found, the analysis was carried out by the ANOVA test in order to see whether the found differences were statistically significant.

In order to complement the statistical analysis, a qualitative examination of the students' answers provided in the questionnaire was provided. The methodology of the scrutiny involved an inductive approach in which the data were used directly in order to generate themes and sub-themes that represented the answers provided by students most frequently. The themes focused on the role of AI-based tools in the translators' work, advantages and disadvantages of NMT tools, and emotions involved in the translation process when using such tools.

4. Results

4.1. Quantitative results

Descriptive statistics regarding each criterion is presented in Table 1 below.

Table 1. Descriptive statistics regarding each criterion.

No.	Machine translation	Criterion	M (SD)
1.	NMT 1	Context	5.6 (0.8)
		Grammar	6.7 (0.7)
		Fluency	6.3 (0.9)
		Naturalness	5.7 (0.9)
2.	NMT 2	Context	5.6 (0.8)
		Grammar	6.3 (0.4)
		Fluency	6.2 (1.1)
		Naturalness	6.2 (1.2)
3.	MT 3	Context	6.1 (0.7)
		Grammar	5.8 (0.7)
		Fluency	6.0 (0.8)
		Naturalness	6.2 (0.8)
4.	MT 4	Context	6.0 (0.8)
		Grammar	6.0 (0.8)
		Fluency	6.0 (0.8)
		Naturalness	5.8 (0.7)

The mean scores (M) are juxtaposed with their standard deviations (SD) in order to observe the difference between them. In reference to NMT tool 1, the highest mean scores were witnessed in the criterion of grammar (M=6.7, SD=0.7) and the lowest in the criterion of context (M=5.6, SD=0.8). In the case of MT tool 3, the highest mean scores were observed in the criterion of naturalness (M=6.2, SD=0.8), and the lowest in the criterion of grammar (M=5.8, SD=0.7). As far as the MT tool 4 is concerned, the lowest mean scores were achieved in the criterion of naturalness (M=5.8, SD=0.7).

In order to see whether the mentioned differences were statistically significant, a Kruskal-Wallis test and ANOVA test were conducted. The results indicated major differences in the criterion of grammar (6.7 vs. 5.8) regarding the NMT tool 1, which makes them statistically significant. In the case of the remaining criteria, the differences are not statistically significant. Since the sample size is small (only

twenty participants), the statistical results are limited in scope and cannot be generalised to a larger population.

4.2. Qualitative results

4.2.1. The role of AI-based tools in the translator's work

This section provides insights of how students perceive the role of AI-based tools in the translator's work. Additionally, it provides the teacher's perspective by suggesting solutions that may be introduced to the classroom environment. It concentrates on chances and threats of such tools in teaching and learning translation.

Among potential chances regarding NMT tools students mention the possibility of improving their own translations and the opportunity to understand the context better. Students also appreciate in the NMT tools the immediate feedback and speed of generating translations, which contributes to the enhancement of the learning and translating process and boosts productivity of the rendered texts. Thus, the NMT tools allow students to develop more profoundly their language skills with the particular emphasis on polishing such skills as speaking, listening, writing, and reading. Consequently, the process of translating becomes more efficient with the tool that notices the translation errors. Students particularly find useful the assistance of the NMT tools in correcting grammatical mistakes, indicating unnatural phrases, and checking punctuation. Such assistance is invaluable in an attempt to provide a coherent and cohesive translation, which, despite the advanced technological devices, still remains a translator's challenge. Students seem to be aware of the chances the NMT tools offer them in terms of acquiring language and rendering translations, are proud to take part in the technological progress the facilities provide. To support these statements, the selected students' opinions are included below:

> *Using AI and machine translation tools is today's privilege (student 5).*
> *These tools are a large library in which we can find what we need most, if we are able to gather our thoughts and create a question to which we need an answer (student 4).*
> *These tools can be a valuable addition to translation education when combined with traditional methods (student 6).*
> *They could be helpful in a teaching process but the direct relationship between a teacher and student is more important (student 11).*

In the students' comments regarding the role of AI-based tools, they suggest solutions that could be introduced in the translation classroom environment as a part of the university curriculum. One of the solutions refers to the practice of comparing translations generated by the AI-based tools with their human counterparts. Such a solution fosters critical thinking and promotes analytical quality assessment of the translations based on the authentic examples. Another solution that could be introduced as a part of translation classroom experience is the generation of the AI-based translations that are used as a basis to train students in the craft of post-editing.

Thus, the AI-based tools and the translations generated by them can serve as the examples demonstrating the authentic challenges the translators and post-editors need to face.

Students devoted a lot of their attention to threats that NMT tools can bring. Among weaknesses of the NMT tools students pay attention to the fact that the tools do not cope well with naturalness and context, the criteria without which the translated text lacks coherence. Another drawback of the NMT tools is that they struggle with culture and is unable to adequately recognise all the cultural nuances in the translations. Another flaw that students notice in the work of the NMT tools is the fact they seem to occasionally misinterpret the sense of the source text by providing the erroneous references. Simultaneously, students express their concerns regarding the ethical issues when using the AI-based tools. They criticise the fact that AI offers the unlimited access to somebody else's data, knowledge and intellectual property. In their view, this unethical policy should be regulated by law and it is a pity any legal regulations have not been implemented yet. Students also mention that translations rendered by the machine do not have the human quality, human spirit and human touch, which drastically decreases the enjoyment of reading such a translated text. Additionally, the habit of using the tools leads to lack of creativity in people. The AI-based tools are so easy to access that students, instead of putting some effort in finding their own solutions, resort to a machine, which saves time and labour, but leaves them uncreative and unimaginative. Students view such a phenomenon as the threat, as the ready-made, immediately accessible translations generated by the machine make them lazy and, as a result, students take whatever the machine provides for granted and are not able to spot imperfections in such translations. Their concerns also evolve around the uncertain future of the translator's profession. The selected students' opinions in this matter are provided below:

> *These tools can still make some mistakes, for example change the context or the meaning of the sentence (student 13).*
> *AI-generated translations make all the work sound the same; it can influence the translation industry and take jobs away from humans, in a negative way and take people's jobs (student 15).*

4.2.2. Advantages and disadvantages of NMT tools

This part specifies the students' opinions regarding strengths and weakness of AI-based tools in teaching and learning translation.

When referring to advantages, students describe the AI-generated translations as cost-effective reducing the necessity of human translator's intervention, though they notice the necessity to practise post-editing in order to obtain the translation product of the highest possible quality. In quest for such quality, immediate suggestions made by the machine as well as prompts and corrections that constitute the real-time feedback can be invaluable in assisting students in learning

the foreign language and in polishing the already existing human translations. Students view the NMT tools as helpful in improving grammar, syntax and vocabulary if compared with human translations. The tools encourage the independent learning by, for example, personalising a text to the learner's needs and level of proficiency. Thus, learners feel their language skills improve as they can monitor their progress accordingly. The advantage that students particularly appreciate in the NMT tools is their quick and easy accessibility as well as flexibility thanks to which they can enjoy immediate feedback in real time. To illustrate the above-mentioned points of view, the selected students' opinions are provided as follows:

AI-based tools can translate large volumes of texts in a second (student 2);
NMT tools automatically raise the quality of average translations (student 11);
One of the biggest advantages of AI is that the result is done immediately (student 14).

When enumerating disadvantages of NMT tools, students point out that delegating all work to AI leaves no space for a human translator. Such a phenomenon, according to students, may discourage the students from developing their own translation skills, and consequently, may inhibit and disturb the process of self-development for translators-to-be and diminish their self-confidence. Among other negative factors students mention that AI-generated translations do all the job for them leaving them little room for their own human input, which discourages them from searching for translation solutions and makes the whole process demotivating. The effect is they become lazy and over-reliant on technology, which can be addictive in a long run. To confirm the statements, some of the students' opinions are provided below:

NMT tools can change the translations in a way that what we get is a completely different text (student 3);
Over-reliance on AI can lead to skill erosion, blind trust in AI can lead to awkward translations (student 7);
Not only might translators have more problems with finding a job but also various texts might lose quality (student 13).

4.2.3. Emotions involved in the translation process

The students' responses regarding emotions that accompanied them when performing the translation tasks involving the NMT tools could be divided into positive, neutral and negative. After close analysis of the students' responses, eight of them were classified as positive, six as neutral and six as negative. The students' answers that expressed scepticism but still appreciated some positive features of AI were categorized as neutral. The selected students' opinions referring to emotions they associate with the NMT tools are presented in Table 2 below.

Table 2. The selected students' opinions reflecting their emotions on the NMT tools.

Student	Positive emotions	Student	Neutral emotions	Student	Negative emotions
3	*I like to use AI. I feel like we can get better translations in the future because it's getting better each day.*	2	*I feel both intrigued and a bit sceptical.*	16	*For me working with AI made me more irritated and angrier.*
11	*For me, that is a very positive phenomenon because this is further evidence that people are very creative and still are able to invent tools to improve their lives.*	8	*I cannot say whether it is a positive or negative phenomenon.*	9	*Loathing, overwhelmingly negative.*
13	*I feel impressed when I compare how AI used to be like and how it works now.*	1	*It has its pros and cons*	12	*Disappointment.*

It is interesting to observe that the students' opinions on emotions they feel when dealing with the NMT tools are not homogenous. Some students admit that although initially the emotions they experienced with AI were positive, later, as the translation task progressed, the negative emotions dominated. Students, though mostly positive about AI, express their concerns about the translators' limitations and diminished possibilities. It is to be noticed that some students feel uncertainty and experience a mixture of both positive and negative emotions at the same time when dealing with the AI-based translation tasks. It seems that AI evokes rather extreme emotions in students, which could be described as binary opposite emotions. It is as if students could not unequivocally decide whether the emotions they experience when dealing with AI are unambiguously positive or negative.

5. Discussion

In reference to RQ1, findings suggest that NMT tools can be supportive in acquiring translation skills and in translation training, particularly in the criterion of grammar and syntax. The assistance of NMT tools consists in real-time feedback, enhancement of writing skills which are crucial in the translator's work by offering the immediate suggestions and prompts, support in providing corrections of the translation rendered

by a human translator, which guides the translator towards the parts of the translations that require improvements. Additionally, students can polish their translator's competences by comparing and analysing their own human translations and the ones rendered by the machine. The NMT tools can be a supplementary assistance for the teacher in the translation classroom environment as well as the tools can complete the teacher by offering the students prompts and suggestions they can use and test outside classroom, which fosters their independent self-development. Thus, as the findings suggest, the role of NMT tools in the students' translation training is versatile and can involve the teacher-based supplementary classroom aid or the student-based independent guided service.

RQ2 is geared towards examining the applicability of the NMT tools in contrast with the MT tools not equipped with the neural network. As the findings suggest, based on the quantitative and qualitative results, the NMT tools outperform the MT tools in the aspect of grammar (see Table 1) also by offering the immediate clues and guidelines and real-time feedback. Thus, students perceive the NMT tools as useful, easily-accessible, convenient and such that offer them a number of translation solutions in an instant. Despite the benefits the NMT tools can offer, students express concerns that the suggestions made by the AI-based tools can be too intrusive and manipulative as to allow the changes to the target text that would result in adaptations or too literal translations. Another concern is related to over-reliance on the NMT tools resulting in making students lazy and leading to lack of creativity and originality.

The students' ambivalent attitude towards the NMT tools is confirmed in their responses connected with emotions that accompanied them when performing the translation tasks in the AI-based translation project. Eight students admitted to experience the positive emotions, six of them were neutral, and six of them were negative or even strongly negative. AI evokes a mixture of unequivocal emotions in students, hence it is sometimes difficult for them to unambiguously specify their emotional attitude, as they experience both positive and negative emotions at the same time.

6. Conclusions

The purpose of this article was to examine the role and influence of the NMT tools on the students' translation training as well as analysing the applicability of the NMT tools when contrasted with the traditional MT tools. The findings indicate that the NMT tools can play a versatile role providing a teacher-based supplementary classroom assistance by offering AI-generated translation solutions that can be juxtaposed and further analysed against their human renditions, as well as by guiding the students towards their independent self-development outside classroom environment. The results revealed that the greatest variability is observed in the criterion of grammar (see Table 1) with the scores that are statistically significant. The reference to grammatical correctness as an advantage of the NMT tools was also expressed by students in their questionnaires, which suggests that NMT tools may have a positive

influence on students' translation tasks when dealing with grammar correctness and improving their human translations. The qualitative results suggest that NMT tools evoke positive, neutral, and negative emotions; most students perceive AI tools as useful in the translator's work; the results confirm that the lowest applicability of NMT tools was identified in the criterion of context.

Based on the collated results, a number of pedagogical implications can be drawn. The NMT tools can be effectively integrated in the classroom and assist the students in rendering their translation tasks and improving their grammar with the teacher's assistance but also as an independent translation guide fostering the students individual language and translation development outside classroom environment. If teachers decide to integrate the AI-based exercises as a part of their translation programme, there is a need to educate students on AI, its capabilities and consequences due to the fact that students express concerns, wait for explanations, have their doubts and fears. Thus, students need to be guided how they can use the AI translation solutions to their benefit and in a safe way. Such guidance seems particularly valuable since the translator's profession is becoming more interdisciplinary (Sun et al. 2025, p. 5) with more new challenges translators-to-be have to face and more new skills they have to acquire.

Despite the above-mentioned observations, this study witnesses several limitations. One of the limitations is a small sample size resulting in twenty students participating in the translation project. Another limitation of this study is the fact that it focused only on translation tasks without profound analysis of the separate language skills. Additionally, the study only briefly addressed the issue of the students' emotional attitude towards AI-generative translations which should be further explored in order to find solutions that could foster students' translation development and teach them how to understand their positive and negative emotions.

This modest study does not suffice the topic of AI-generated translations and further studies are needed in this regard. It is hoped that more research on AI would contribute to better understanding of the potential strengths and weaknesses of this interesting phenomenon that we all need to learn in order to find ways to use it to our benefit. AI has redefined the role of teachers and translators who need to adapt to constantly changing reality. As we live in a state of flux, our role is to shape it in a way it proves useful for the sake of our students and future translators.

References

An, X., Chai, C. S., Li, Y., Zhou, Y., Yang, B. "Modeling Students Perceptions of Artificial Intelligence Assisted Language Learning". *Computer Assisted Language Learning: 1-22*, 2023.

Bahdanau, Dzmitry., Cho, KyungHyun., Bengio, Yoshua. "Neural Machine Translation by Jointly Learning to Align and Translate". *ArXiv 2014:* 1-15. https://www.researchgate.net/publication/265252627_Neural_Machine_Translation_by_Jointly_Learning_to_Align_and_Translate#fullTextFileContent

Boluwatife Oni, Samuel. "The Impact of AI on the Translation Industry". 2025. https://www.researchgate.net/publication/391050035_The_Impact_of_AI_on_the_Translation_Industry

Barad, Dilip. "Guidelines for Using Generative AI in Translation Studies". *Dilip Barad's Lab:* 1-5. https://www.researchgate.net/publication/387486712_Guidelines_for_Using_Generative_AI_in_Translation_Studies

Bouras, Sana. "AI and Language Translation: Is AI the Future of Translation Profession?". *EL-Tarf:* 1-16. https://www.researchgate.net/publication/381635237_AI_and_Language_Translation_Is_AI_the_Future_of_Translation_Profession#fullTextFileContent

Britannica. "Artificial intelligence". 2025. https://www.britannica.com/technology/artificial-intelligence

Chen, Pingqing. « The Impact of Generative AI on the Role of Translators and Its Implications for Translation Education". *Education Insights 1 (2): 31-40, 2024.* https://doi.org/10.70088/kc9vk395 https://www.researchgate.net/publication/386118309_The_Impact_of_Generative_AI-on_the_Role_of_Translators_and_Its_Implications_for_Translation_Education

Chhetri, Sejal., Prasad, Dheeraj Kumar., Shah, Rahul., Prasad, Dhiraj Jaiswal. "A Review on Language Learning and Translation Support with Artificial Intelligence (AI)". *AEFICS:* 1-12. https://www.researchgate.net/publication/389949944_A_Review_on_Language_learning_and_translation_support_with_Artificial_Intelligence_AI#fullTextFileContent

Chiu, Thomas K. F., Xia, Qi., Xia, Qi., Zhou, Xinyan., Chai, Ching Sing., Cheng, Miaoting. "Systemic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education". *Computers and Education: Artificial intelligence 4 (2023) 100118.* https://doi.org/10.1016/j.caeai.2022.100118

Chiu, Thomas K. F., Sun, Jerry Chih-Yuan., Ismailov, Murod. "Investigating the relationship of technology learning support to digit literacy from the perspective of self-determination theory". *Educational Psychology*, 2022. https://doi.org/10.1080/01443410.2022.2074966

Dizon, G., Gayed, J. M. "Examining the Impact of Grammarly on the Quality of Mobile L2 Writing". *JALT CALL Journal 17, no. 2:* 74-92, 2021. https://doi.org/10.29140/jaltcall.v17n2.336

Doshi, Arham. "The Loss in AI Translation". *Research Archive of Rising Scholars*, 2024. https://doi.org/10.58445/rars.1453

Dusmamatovna, Shahnoza., Razakova, Shaxnoza. "The Impact of AI on Human Translation: Complement or Competition". *The American Journal of Philology 2 (2): 22-32, 2025.* https://www.researchgate.net/publication/396426715_The_Impact_of_AI_on_Human_Translation_Complement_or_Competiton

Fang, Liwei. "AI-Powered Translation and the Reframing of Cultural Concepts in Language Education". *Academic Journal of Sociology and Management, Vol. 3, No. 3, 2025.* https://doi.org/10.70393/616a736d.323937 https://www.researchgate.net/publication/391806147_AI-Powered_Translation_and_the_Reframing_of_Cultural_Concepts_in_Language_Education

Giralt, M., Benini, S., Murray, L., et al. "Towards the Integration of Digital Citizenship in Foreign Language Education Concepts, Practices, and Training". *Alsic 26, no 1*, 2023. https://doi.org/10.4000/alsic.6904

Herbold, Steffen., Hautli-Janisz Annette., Heuer, Ute., Kikteva, Zlata., Trautsch, Alexander. "AI, write an essay for me: A large-scale comparison of human-written versus ChatGPT-generated essays". *Computer Science, Computation and Language, 2023.* https://www.arxiv.org/abs/2304.14276

Hitsuwari, Jimpei., Ueda, Yoshiyuki., Yun, Woojin., Nomura, Michio. "Does human-AI collaboration lead to more creative art? Aesthetic evaluation of human-made and AI-generated haiku poetry". *Computers in Human Behavior, Volume 139, February 2023, 107502.* https://www.sciencedirectcom/science/article/abs/pii/S0747563222003223 https://doi.org/10.1016/j.chb.2022.107502

Hutchins, J. "Machine Translation: History", in *Encyclopedia of Language & Linguistics,* ed. Brown Keith (Elsevier Science, 2006). https://doi.org/10.1016/B0-08-044854-2/00937-8

Ibm. "Artificial intelligence". 2025. https://www.ibm.com/think/topics/artificial-intelligence

Jiang, Kehan. "Challenges and suggestions for the application of artificial intelligence to the evaluation of English translation teaching in colleges". *SHS Web of Conferences 222, 01008 (2025).* https://doi.org/10.1051/shsconf/202522201008

Klimova, Blanka., Pikhart, Marcel., Poláková Petra. "A Systematic Review on the Use of Emerging Technologies in Teaching English as an Applied Language at the University Level". *AI&Learning:* 1-14. https://www.researchgate.net/publication/367051573_A_Systematic_Review_on_the_Use_of_Emerging_Technologies_in_Teaching_English_as_an_Applied_Language_at_the_University_Level#fullTextFileContent

Kruk, Mariusz., Kałużna, Agnieszka. "Investigating the Role of AI Tools in Enhancing Translation Skills, Emotional Experiences, and Motivation in L2 Learning". *European Journal of Education,* 2024. https://doi.org/10.1111/ejed.12859

Liu, S.-C., Hung, P.-Y. "Teaching Pronunciation with Computer-Assisted Pronunciation Instruction in a Technological University". *Universal Journal of Educational Research 4, no. 9:* 1939-1943, 2016. https://doi.org/10.13189/ujer.2016.040902

Lo, S. "Neural Machine Translation in EFL Classroom Learners' Vocabulary Improvement, Immediate Vocabulary Retention and Delayed Vocabulary Retention". *Computer Assisted Language Learning: 1-20*, 2023.

Martin, Florence., Zhuang, Min., Schaefer, Darlene. "Systematic review of research on artificial intelligence in K-12 education (2017-2022)". *Computers and Education: Artificial intelligence 6 (7): 100195*, 2023. https://doi.org/10.1080/09588221.2023.2207603

Moorkens, Joss. "Translators' perceptions of literary post-editing using statistical and neural machine translation". *Translation Spaces 7 (2):* 240-262, 2018. https://doi.org/10.1075/ts.18014.moo

NASA. "Artificial intelligence". 2025. https://www.nasa.gov/what-is-artificial-intelligence/

Odacıoğlu, Mehmet Cem. *Revolutionizing Translation Studies Synthesizing Translation with AI and IT Innovation.* AKTİF YAYINEVİ, 2024.

Ohashi, Louise. "AI in Language Education : The Impact of Machine Translation and ChatGPT". In book: *Artificial Intelligence in Education: The Intersection of Technology and Pedagogy.* Springer, 2024. https://doi.org/10.1007/978-3-031-71232-6_13 https://www.researchgate.net/publication/386328691_AI_in_Language_Education_The_Impact_of_Machine_Translation_and_ChatGPT

Pawlicka, Aleksandra., Pawlicki, Paweł., Kozik, Rafał., Andrychowicz-Trojanowska, Agnieszka., Choraś, Michał. "AI vs linguistic-based human judgement: Bridging the gap in pursuit of truth for fake news detection". *Information Sciences, Volume 679, September 2024, 121097.* https://www.sciencedirectcom/science/article/abs/pii/S0020025524010119 https://doi.org/10.1016/j.ins.2024.121097

Rothwell, Andrew., Moorkens, Joss., Fernández-Parra María., Drugan, Joanna., Austermuehl, Frank. *Translation Tools and Technologies.* Routledge, 2023. https://doi.org/10.4324/9781003160793-1

Song, C., and Song, Y. "Enhancing Academic Writing Skills and Motivation: Assessing the Efficacy of ChatGPT in AI-Assisted Language Learning for EfL Students". *Frontiers in Psychology 14:* 1260843, 2023. https://doi.org/10.3389/fpsyg.2023.1260843

Sun, Sanjun., Liu, Kanglong., Moratto Riccardo. *Translation Studies in the Age of Artificial Intelligence.* Routledge, 2025. https://doi.org/10.4324/9781003482369

Yang, S. J., Ogata, H., Matsui, T., Chen, N. S. "Human-Centered Artificial Intelligence in Education: Seeing the Invisible Through the Visible". *Computers and Education: Artificial Intelligence 2: 100008*, 2021. https://doi.org/10.1016/j.caeai.2021.100008