
Exploring undergraduate translation students' perceptions towards machine translation: A qualitative questionnaire survey

Jia Zhang

School of Humanities and Languages

University of New South Wales, Sydney, 2052, Australia

jia.zhang2@unsw.edu.au

Abstract

Machine translation (MT) has been relatively recently introduced in higher education institutions. However, MT courses are often offered to students at the postgraduate level or in the last year of an undergraduate programme (e.g., Arenas & Moorkens, 2019; Doherty et al., 2012), and most of the previous studies have surveyed the perceptions or attitudes of these students towards MT via quantitative questionnaires (e.g., Liu et al., 2022; Yang et al., 2021). The present study investigated undergraduate students' perceptions of MT in the early stages of translator training via qualitative questionnaires. Second-year translation students ($n = 20$) were asked to complete a questionnaire with open-ended questions, the responses to which were analysed manually using NVivo to identify themes and arguments. It was found that MT was used more often as an instrument to learn language and translation rather than as a straightforward translation tool. While the students were willing to experiment with MT as a translation tool, they were doubtful that MT could be introduced in the classroom. They had a neutral attitude towards the quality of MT but agreed that MT increased the speed of their translations and their confidence. It is hoped that the findings will make an evidence-based contribution to the design of MT curricula and teaching pedagogies.

1. Research background

The term 'machine translation' (MT) includes various activities related to translation that are performed by computers. A widely used definition provided by Hutchins and Sommers (1992, p. 3) is that MT systems are 'computerised systems responsible for the production of translations from one natural language into another, with or without human assistance'.

The increasing accuracy and fluency of MT have recently led to MT being included in translation programmes in higher education institutions, with specialised courses for students being provided. However, such courses are often offered at the postgraduate level or towards the last year of an undergraduate programme (e.g., Arenas & Moorkens, 2019; Doherty et al., 2012). One of the concerns is that technologies such as MT might be too difficult for undergraduate translation students to learn. The other concern is that the students' translation performances and their translation competence could be negatively impacted by MT because they might not have the ability to evaluate the output of the technology (Bowker, 2015). Therefore, MT training is not usually available to undergraduate students. In addition, teachers or management may formulate policies that forbid students from using MT in their assignments.

There is a lack of sufficient evidence in academia to conclude that MT has a negative impact on novice translation students. Most of the previous studies have focused on postgraduate students or undergraduate students in the last year of their programmes (e.g., Jia et al.,

2019; Wang et al., 2021; Zaretskaya et al., 2016). Little research has targeted undergraduate translation learners in the early stages of their training.

However, it has been observed that students have been interacting with MT in contravention of official instructions. With MT systems and abundant information about them being freely available on the internet, it is unlikely that students would be unaware of MT or would not be interested in experimenting with it. As the quality of MT increases, students might have strong intentions to use MT when learning to translate. The author thus argued that novice translation students' knowledge about and experience of MT could be of value in the curriculum design and pedagogical development of MT courses.

In previous studies, the participants' perceptions were often solicited via closed-ended questions (e.g., Liu et al., 2022; Yang et al., 2021; Yang & Wang, 2019), the answers to which were later analysed as quantitative data. However, as the participants answered questions on a scale or according to the available choices, their views were limited. For example, Yang and Wang (2019)'s study focused exclusively on students' intentions to use MT; their study was based on a technology acceptance model in which an individual's intention to engage with technology was linked directly to their attitude. A questionnaire using a 5-point scale was developed in accordance with the model and was answered by 109 Chinese student translators. The results supported and verified the technology acceptance model in that the students' perceived ease of use and perceived usefulness of MT were correlated positively with their intentions to use MT.

Based on the above discussion, little is known about how undergraduate students in the early stages of translator training perceive and use MT or what their training needs may be. Therefore, this research intended to survey translation students in the early stages of their translator training to solicit their attitudes towards and perceptions of MT via a qualitative questionnaire survey. This research included open-ended questions, thus allowing the participants to express their opinions freely. Furthermore, unlike interviews, questionnaires with open-ended questions could be self-administered without the researcher's presence, thus avoiding researcher bias.

2. Research questions

This study investigated undergraduate students' perceptions of MT in the early stages of their translator training via a qualitative questionnaire survey. It is hoped that the findings will make an evidence-based contribution to the development of MT curriculum design and teaching pedagogies.

The research questions (RQs) are as follows:

- 1) How do translation students in the early stages of translator training interact and engage with MT?
- 2) What are their attitudes towards MT in translator training and professional work?
- 3) What are the pedagogical implications of students' perceptions of MT?

A questionnaire survey with ten open-ended questions was sent to second-year undergraduate translation students ($n = 20$) who were attending a Chinese university. Their responses were collected and analysed manually with the assistance of NVivo. Major themes and arguments were then identified for further discussion.

3. Methods and data

After ethical clearance was obtained from the university, 20 students from an Applied Translation Studies programme at a university based in China were recruited.

The participants were all in the second year of an undergraduate translation programme; they had similar educational backgrounds and hence comparable language proficiency and

translation competencies. They had taken three translation courses covering fundamental translation theories and practices. No specialised training in MT, post-editing (PE) or translation technology was provided in the classroom.

The survey included ten open-ended questions to solicit the participants' knowledge, experience, perceptions of and attitudes to MT. As few previous studies have used open-ended questions, the design of this questionnaire mainly drew on González Pastor (2021)'s paper, which had a similar design and goal as the current project, and referenced three other relevant papers (Çetiner & İşısağ, 2019; de Faria Pires, 2020; Schmidhofer & Mair, 2018). González Pastor (2021) investigated students' attitudes to and perceptions of translation technology before and after being taught about translation technology. The questions were adapted and narrowed down to MT- and PE-specific questions. Questions regarding the students' understanding of translation concepts, processes and products were added as answers to these questions provide an alternative perspective to understand the impact of MT and PE on students' translation processes and products.

This paper mainly analysed answers to questions regarding the students' knowledge, attitudes to and perceptions of MT. Therefore, only the answers to the following six (out of 10) questions were analysed and presented.

1. Can you tell us briefly about your technical knowledge of MT and PE?
2. Do you have any experience with MT? What do you use it for? Can you explain this in detail?
3. Based on your knowledge and experience, in what way do you think MT is helpful in translation tasks (either for your translation assignments at school or real-life translation tasks in the industry)? In what way do you think it is unhelpful? Why do you think so?
4. Do you think that MT might have an impact on the quality of your translations? Why? If yes, in what way do you think the translation quality is affected?
5. At what stage of translator training should teachers introduce MT and PE to translation students? Do you think there are some prerequisites for learning MT and PE?
6. Do you think there are ethical concerns related to MT, such as legal or moral issues, biases, justice or privacy? Can you explain your thoughts in detail?

The students were told that they could answer the survey in Chinese or English, whichever they felt most comfortable using. The answers in Chinese were translated by the author, a certified translator in China and Australia with over 15 years of professional experience.

All the data were de-identified with students' names being indicated as "s + participant number" and were imported into NVivo 14 for thematic analysis. The author conducted the analysis twice at two different times to ensure the reliability of the results.

4. Analysis and discussion

4.1. Students' knowledge of MT

The students were asked how much they knew about MT (and possibly PE) and what they considered the advantages and disadvantages of MT to be. Even without proper training, the students did know about MT and PE, as all of them provided relevant definitions correctly. The students also mentioned the ways in which MT was helpful or unhelpful, as summarised below.

Students' perceptions of the advantages of MT:

- 1) **MT can be used to evaluate the difficulty of a translation task.** Poorer MT translation quality means that the translation tasks are more complicated.
- 2) **MT can help to improve translation efficiency.**
It can save the translators' effort to understand the source text, for example, some professional or complex texts that are written in a second language (L2), and help translators to express themselves quickly in the target language.
It also increases translators' translation speed, particularly when translating informative texts, such as government documents, or when translating demanding or urgent translation tasks.
- 3) **MT can help to improve translation quality.**
It assists translators to quickly locate idiomatic expressions, fixed combinations, slang and grammatical sentence structures when translating into the L2. It improves translators' understanding of difficult content, such as long and complicated sentences in the L2, thus ensuring correct translations.

Students' perceptions of the disadvantages of MT:

- 1) Although the MT quality appears to be good at present, translation errors still occur, particularly word-for-word translation errors. More effort is sometimes needed in PE when the MT quality is poor.
- 2) MT may fail to convey contextual or emotional meanings in literary and cultural translations.
- 3) Over-reliance on MT may impede translators' critical thinking and creativity.
- 4) MT cannot be generated to meet special requirements, such as desktop publishing issues.

It can be seen that, even without formal MT training or professional translation experience, all of the students had some basic and correct understanding and perceptions of MT. For example, the students noted MT's usefulness in translating texts in different genres. They were aware that MT could translate informative texts better than it could literary texts and that MT could not convey implied meanings. They also saw the value of MT in improving efficiency and quality.

Such knowledge is reasonable in this digital age. The present generation of university students has grown up with many disruptive technologies, such as personal computers, tablets and mobile phones, and students have extensive experience interacting with numerous software programmes and electronic tools, including MT. Furthermore, they have been exposed to a large amount of information on the internet. As MT often makes headlines and there are many free lectures on MT, it would be difficult for the younger generation to ignore such a development.

This knowledge shows that students' opinions regarding the integration of MT in translator training could be valuable. Trainers and teachers are not encountering groups of students who barely know anything about MT. Due to the students' knowledge of MT, they also have training needs for MT, and they may have intentions to experiment with MT at some point during their training as translators. Simply preventing them from accessing MT online is useless. Instead, their voices should be heard when making decisions regarding the design of MT curricula and pedagogical developments.

4.2. Student's interactions with MT

The students were asked how often they used MT in their translation assignments or actual translation tasks (if any). They mentioned mainly using MT in reading, writing and translation. Some of their responses are presented below.

S14: 我使用MT的次数很多, 几乎每天都会用, 查一些不认识的单词短语之类的。(I use MT many times, almost every day, to look up some unknown vocabulary or phrases.)

S15: I used it for the words I am familiar with and the translation of proper nouns in translation exercises.

S08: When encountering idioms, slang, or so, I also sometimes resort to machine translation. I use machine translation to help understand some complicated sentences.

S03: 可以更加快速地掌握学习内容... 不用逐字斟酌词语的具体意思是什么, 帮助我梳理知识结构 (to master the content I am learning more quickly...I don't have to read every English word to understand the exact meaning of the text. Machine translation helps me easily sort out the structure of the knowledge.)

S11: 今天我的论文中间出现了一些不太懂的生词, 会用到机器翻译来翻译出它的意思, 并且运用到我的论文句子中间去。(Like today, I need to use some vocabulary that I don't really know well in my English essays. I will use machine translation to translate the Chinese words and use the English words in my essay sentences.)

S10: 参考翻译软件是否可以给出不同的句子结构或词组 (I use machine translation as a reference to see if it could provide a different sentence structure or expression.)

S17: 在做翻译作业时, 有时不知道该如何表达更通顺时, 会使用一些翻译软件翻译句子作为参考, 有些翻译的不错的会进行PE。(When doing translation assignments, sometimes I don't know how to express a sentence fluently. I will use machine translation systems to translate the sentences and use the translation as a reference. I will only post-edit when the quality looks good.)

The most frequently mentioned uses of MT were summarised based on the responses.

1) The students used MT as a dictionary to look up vocabulary, phrases, cultural words, terminology, and proper nouns in the L2.

2) The students used MT as a reference to understand the meaning of a complicated sentence or a difficult text in the L2.

3) The students used MT as a reference to look up idiomatic expressions in the L2 at the word, phrase and sentence levels.

4) A few students used an MT of the entire text as a benchmark reference to check the quality of their own translations.

It was found that MT was used more often as an instrument to learn language and translation rather than as a straightforward translation tool. None of the students reported using PEMT at the text level in their translation assignments. Instead, they referenced MT output to understand terms, fixed combinations, complicated sentences and texts and to produce accurate, authentic and varied phrases and sentences.

The reasons that they chose to use MT as a reference tool rather than as a translation tool can be seen in the following quotes.

S09: revise的过程很痛苦! (The process of revision is painful!)

S04: 难度较高的内容的翻译准确度还是欠佳... 这种情况下更浪费时间降低输出质量。(The translation accuracy of some more challenging content

is not good enough ... In this situation, it is a waste of time, and our output quality might also be reduced.)

S03: *有时候我们的翻译会被机翻所局限 (Sometimes our translation might be limited by machine translation.)*

S04: *在看了机翻之后, 脑子里对于原文的翻译会形成一个基础的输出表达方式扰乱和禁锢自己的思路, 可能自己潜在的更好的表达会被抹去或者遗忘 (After reading the translation generated by the machine, a basic expression will be formed in our minds for the translation of the source text. It's likely that a potentially better expression of mine will be erased or forgotten.)*

When the MT quality is low, more effort is required in PE than is needed in from-scratch translations. However, the students did not attribute such increased effort to their insufficient language proficiency or their translation competence but to their lack of MT and PE training. In addition, they were afraid that their creativity might be limited.

S01: *它有一个基点, 给了一个参考, 愿意相信它的大意会是正确的 (It serves as a starting point, and provides a translation. I would believe that most of the meaning of the machine translation is correct.)*

It could also be said that the students trusted MT output to a certain extent. When they encountered difficulties in a translation assignment, they trusted the translation provided by MT to either help them to understand the source text or to locate idiomatic expressions in the target language. There was very little mention of making more mistakes due to their insufficient language proficiency and their competence in identifying errors in MT translations.

4.3. Students' perceptions of the translation quality

Students were asked if their translation quality would be impacted by MT. Five out of 20 students believed that the quality of their PEMT-assisted translations would be the same as that of their from-scratch translations. Fourteen out of 20 students suggested that the quality of their translations would be improved with the assistance of a machine. The following quotes represent their perceptions of the translation quality.

S12: *我认为不会。因为在机器翻译后, 我会人工进行检查和修改, 把里面没翻译出来的意思或是翻译不好的地方改掉。 (I don't think my translation quality will be negatively impacted. Because after the machine translation is generated, I will manually check the translation and revise it. I can add the meaning that's not translated or revise the poorly translated parts.)*

S18: *Yes. Because using MT and PE can help my vocabulary, grammar, sentence structure and so on, which can improve my translation quality.*

S16: *因为我现阶段已经具备了语言敏感度, 我知道怎么翻是好的, 怎么翻译是奇怪的, 能够形成自己的判断, 所以我觉得我会择优, 而不是一味copy。 (Because at this current stage, I have trained to be sensitive enough to language issues. I know how to translate in a better way and what kind of translation is strange. I can make my own judgement. So I think I can identify a good machine-generated translation instead of only copying the MT.)*

It is worth noting that the students' thoughts about MT were positive, as they thought that referencing MT or engaging in PE would improve the quality of their translations. They were confident about their language proficiency and translation competence and believed that they

could identify MT errors and would not be affected by them. They believed that they could judge the quality of MT and decide whether it was sufficiently good to be used.

S20: 翻译结果变得像流水线生产出来的, 虽然质量都差不多, 但缺少了翻译本身的意义。(The translation output becomes something coming out of the assembly line. Although the quality is almost the same, translation has lost significance.)

Only one participant said that the quality might be negatively influenced by MT. However, what this participant meant was that translations generated by machines and then edited by humans would be homogenised and that the meaning of the translation activity would be lost in this case.

4.4. Students' attitudes towards MT and PE training

The students were asked if they wanted to receive specialised MT and PE training at their current stage of translator training. Curiously, 13 of the 20 respondents said no, even though they believed that MT was beneficial to learning how to translate and had already made extensive use of MT as a reference. The students also expressed a certain degree of trust in the quality of MT. While they were willing to experiment with MT as a translation tool and to perform PE in future tasks, they were doubtful that MT could be introduced into the classroom at their current stage of translator training.

S19: 我觉得可以在学生大三以及大四的时候。因为我觉得这可以当成一个辅助工具, 但绝对不能是被依赖的一个翻译的道具。(I think students in their year three or year four can learn MT and PE. Because I think MT is more an assistive tool. It can never be a translation tool that is relied on for translation.)

S18: I think when students reach grade 4. Before the introduction of MT and PE, students should have basic knowledge about translation.

S12: 这样学生翻译出来的东西再好也好不过机器... (Students' translation can never be better than that of the machine.)

After analysing students' responses, it could be seen that students did not want to receive MT and PE training at this stage because they considered MT to be a good and trusted tool, and they were afraid that they would overly rely on it. They expressed that such over-reliance on MT might limit their creativity and that they would not be able to produce better translations than MT in the future. Therefore, they preferred to learn to produce translations independently and to continue to only use MT as a reference at this stage.

S15: 我认为在学生了解了文化与翻译的关系后可以将这个介绍给学生, 他们需要提前知道机器翻译的一些优缺点, 以及在哪些场合不得使用, 错误使用的一些负面影响。(I believe once students understand the relationship between culture and translation, MT can be introduced to students. They need to know the advantages and disadvantages of MT earlier, situations when MT shouldn't be used, and the negative impact of MT when it's wrongly used.)

The other seven students were more open to integrating MT in the early stages of their studies and said that they would like to interact with MT more effectively.

Based on the above responses, all the students had positive attitudes towards MT, although some students wanted to engage with MT at a later stage after they could produce better translations than machines and would not be limited by them, while others wanted to make the best use of MT to continue to improve their translations.

4.5. Ethical concerns regarding MT

The survey asked the respondents if they thought that there were ethical concerns related to MT. The response was unexpected, as only five of the 20 students believed that there were ethical concerns associated with the use of MT.

The unethical behaviour mentioned by these five respondents included:

S12, S14 and S19: Some private or confidential documents might be leaked.

S16 and S19: Students gained an unfair advantage by referencing MT in translation assignments or competitions, which is regarded as cheating.

S20: The translation quality might be compromised when using MT.

S20: MT can assist scams in international and multilingual settings.

The other 15 respondents answered “no” to this question, as they did not consider ethical concerns to be involved in the use of MT.

S15: 我认为没有一些道德问题，它既没有威胁到集体利益也没有威胁到个人利益，它的出现为我们的翻译工作带来了许多便利。(I don't think there are some ethical problems. MT does not threaten collective benefits, nor does it threaten individual benefits. On the contrary, its advent has brought much convenience to our translation work.)

S13: I don't think they (MT systems) are related to some ethical concerns. Indeed, it (MT) helps people who are not familiar with a foreign language.

S18: No. Because technology is developing. We should take advantage of it and help humans to live more conveniently.

S11: 我总认为这种事情，还是会阻碍社会的发展。(I always believe that such consideration [about ethics] is indeed an obstacle to the development of society.)

Ethical behaviour in accessing MT was not of particular concern for translation students at this stage. The reasons that they gave indicated that they regarded MT as they would any other tool that has been developed throughout human history to aid translation, such as Microsoft Word; thus, it should not entail any unethical behaviour.

With MT systems being freely available online, preventing students from accessing them would be difficult. Given the lack of ethical awareness amongst the students, trainers and teachers should consider discussing the issue of MT ethics or even translation ethics earlier in translator education. Such discussions would benefit students in their interactions with MT.

5. Conclusion

This study solicited students' attitudes to and perceptions of MT via a qualitative questionnaire survey, the results of which were analysed with the assistance of NVivo.

It should be noted that the students did have a basic understanding of MT and even of PE. They were aware of the possible advantages and disadvantages of MT. Such knowledge means that their opinions could be of value in translator training. Trainers could spend time identifying

their students' needs for MT training and involve students in making decisions about the integration of MT in translation classrooms.

In terms of the students' interactions with MT, they used MT more often as a reference than they did as a translation tool due to concerns about its impact on their creativity, their unfamiliarity with MT, and their lack of PE training. None of the respondents reported having post-edited the machine output of an entire text when using MT. As the students mainly only used MT as a reference, knowledge about MT, such as contexts in which MT functions most effectively, the text types for which MT produces the best translations, and the common error types that are often found in MT, might assist students in interacting with MT more effectively.

The students reported that they were generally more confident when translating and were more confident about the quality of their translations when using MT as a reference. They thought that MT would not negatively impact the quality of their translations. The students tended to have positive attitudes towards MT and PE and were not concerned about the negative impact of MT on the quality of their translations; in fact, some of the students believed that MT might have a positive impact on the quality of their translations.

Although the students thought highly of the quality of MT, curiously, they were reluctant to learn MT at their current stage of study. They were concerned about over-reliance on MT, which would affect their creativity. They thought that MT was good to a certain extent; however, they did not want to be limited by machines and wanted to produce better quality translations than those produced by machines.

What concerned the researcher was that students did not mention any potential negative impacts of MT on their language proficiency or translation competency in the survey. Even when they said that specialised PE training should only be provided at a later stage, their concern was not about the impact on translation quality but the impact on their creativity and critical thinking. More empirical studies of the impact of MT and the effect of PE training on the translation performances of undergraduate translation students in the early stages of translator training are needed. As it will become increasingly difficult to prevent students from accessing freely available MT online, it makes more sense to inform students about the positive and negative impacts of MT, which should be based on sound research findings.

Quite a few of the students believed that there were no ethical concerns associated with the use of MT. The students obviously lacked a clear understanding of translation ethics, particularly when including the use of MT and even artificial intelligence (AI). Ethics teaching should be an essential part of translator training in response to the challenges generated by MT.

This qualitative survey only solicited opinions from 20 respondents. In the future, a quantitative survey based on the current research could be developed to generalise the findings and to provide more evidence to inform MT and translator training.

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