

College Translation Teaching in the Era of Artificial Intelligence: Challenges and Solutions

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AI-powered translation technology has greatly improved machine translation quality, posing three major challenges to college translation teaching: students' perceived anxiety towards translation learning, their dependency on MT technology to complete translation tasks, and traditional teaching assessment methods being rendered ineffective. In response to these challenges, this article proposes that translation instructors pass on to students knowledge concerning MT to reduce their anxiety and turn stress into motivation and help them develop scientifically sound strategies for the use of MT technology to further reduce their anxiety while mitigating their excessive dependency on it. Furthermore, classroom teaching should be reformed by introducing "flipped learning" to ensure that these strategies are implemented under the supervision and guidance of the instructors. The teaching assessment should also be changed to regulate students' use of the strategies outside the classroom, while at the same time eliminating the adverse effects brought about by MT technology on teaching assessment.

Keywords: translation teaching, artificial intelligence, machine translation, challenges, solutions

INTRODUCTION

Neural Machine Translation (NMT) made its debut in 2013 (Li, Feng & Huang, 2020, p. 1), and since 2014, it has been developing rapidly with an obviously better translation quality than Statistical Machine Translation (SMT). This was demonstrated by Junczyś-Dowmunt, Dwojak and Hoang (2016), Bentivogli et al. (2016), Isabelle, Cherry and Foster (2017), Koehn and Knowles (2017), Klubicka, Toral and Sánchez-Cartagena (2017), etc. NMT has already replaced SMT as the core technology of the online machine translation systems, such as those developed by Google, Microsoft, Baidu and Sougou (Liu, 2017).

Neural network is an important AI technology that imitates the human brain to process information and is the foundation of deep learning. The wide use of this technology in MT marks the coming of the era of AI in the translation field. With the support of this technology, MT not only breaks through the bottleneck of its traditional development but also brings challenges to translation teaching in colleges. For example, it

may make students feel anxious, influence their learning motivation, and impede their progress in translation learning; they may count on NMT to finish their translation tasks, especially those demanding independent effort to complete, thus hindering the overall improvement of their translation competence; the traditional teaching assessment measures would become invalid if students finish the translation work with the help of NMT. Such challenges may have significantly barricaded translation teaching in colleges and urgently call for solutions. Taking the translation course offered for the undergraduates majoring in English in most Chinese colleges as an example, this article will first elaborate on the challenges then discuss corresponding solutions, to offer suggestions for the translation teaching reform in the era of AI. What should be noted is that this study is argumentative rather than empirical, aiming to arouse the readers' awareness of the current problems and seek possible solutions whose effectiveness can be tested empirically in the future.

CHALLENGES

Anxiety

In Sep. 2018, a freshman in a Chinese college wrote to the school's President to suggest removing foreign language majors from the school's disciplines and ask for permission to change his current English major to some other major, or he could do nothing but drop out and re-sit for the college entrance exam, because he found that what people need in the future was not translators or interpreters but translation machines and the development of AI-powered translation technology would replace human translators, rendering it worthless to exert much effort in learning foreign languages (<https://tech.ifeng.com/c/7gBcOzSXkiu>). The letter caught wide attention as soon as it was reported. This is an individual case, but does it reflect the anxiety commonly shared by English majors? To answer this question, we conducted a questionnaire-based survey among 326 sophomores and junior students majoring in English in a Chinese college. We got the following results (to be presented in detail in another paper):

1. Though most respondents didn't think MT would completely replace human translation in the future, nearly half of them believed that English majors would have difficulties finding a job thanks to the impact of MT.
2. The vast majority of the respondents didn't think the fast development of MT technology would make it meaningless to learn translation. Still, nearly 1/3 of them claimed that it "makes them at sea in translation learning and have no idea which direction to put their effort in." The vast majority also worried that the use of MT would affect the improvement of their translation competence, make them lazy, and cause the loss of a sense of achievement in translation learning. Nearly half of them said they would feel guilty when using MT to finish the translation task.

The results above show that students majoring in English hold anxiety and other negative emotions of different levels, the source of which is the fast development of MT.

Anxiety is a term used in the field of language acquisition, referring to a unique complex of self-perceptions, beliefs, emotions, and behaviors related to classroom language learning resulting from the uniqueness of the language learning process (Horwitz, Horwitz & Cope, 1986, as quoted in Russell, 2020). It is one of the principal emotional factors influencing language development (Guo & Xu, 2014). Many studies have shown that anxiety would negatively impact the performance of language learners in language classes (Russell, 2020), and is negatively correlated with their grades (Guo & Xu, 2014). Translation classes also belong to language classes, and the anxiety brought about by the MT technology would not only influence students' class performance and grades but also affect their learning motivation. One of the urgent tasks facing translation teachers is to reduce their anxiety about the technology.

Dependency on the Technology

In the same questionnaire-based survey, we also investigated the respondents' use of MT. The results showed that up to 99% of them frequently or occasionally used MT in their major study, 77% of whom would finish their translation assignments with the assistance of MT. The main ways they utilized MT were

post-editing the output and getting inspiration from it before they accomplished the translation tasks on their own. These results indicate that the vast majority of the respondents frequently used MT in their translation study, and many of them have likely become dependent on the technology because nearly half of them reported that they would feel uneasy if they did translation without using MT.

Even though few respondents claimed they would not directly copy the MT output, frequent use of MT would harm the development of some of the students' translation competencies even though they use it just by post-editing or for getting inspiration from its output. Translation competence, according to PACTE (2003), consists of 6 sub-competences: bilingual sub-competence, extra-linguistic sub-competence, knowledge about translation sub-competence, instrumental sub-competence, strategic sub-competence and psycho-physiological components. Suppose a translation beginner frequently depends on machine to tackle translation problems. In that case, her instrumental sub-competence may get well trained, but the other sub-competences, especially bilingual, extra-linguistic and strategic sub-competences, would be negatively influenced. Independent translation is a process of developing the ability of exploration and independent thinking, improving bilingual language sense and laying a solid language foundation, and training bilingual transfer skills. If a learner is aided by translation machine all the way, she will definitely lose many chances to think, make decisions and get trained, resulting in a translator with crippled abilities.

One of the important objective factors accounting for students' anxiety about and dependency on the technology is the translation quality of NMT, which has surpassed that of their own. In another study, we used error scoring to compare the translations of 38 junior English majors and one online NMT system. We found that only four students' total error scores were lower than the machine and the average error scores of all the students were significantly higher than the machine. Given that NMT has already beaten students, on the one hand, they would feel threatened when using NMT, thus producing anxiety in them; on the other hand, they would still use NMT to finish translation tasks consciously or unconsciously, resulting in their dependency on the technology.

Negative Impact on Teaching Assessment

Translation teachers may agree with such a statement: before the sharp increase of machine translation quality (before neural network was largely incorporated into MT), teachers could safely assign various kinds of extracurricular translation tasks and believed most of the students would finish them on their own without worrying they would copy the machine's output because it had little reference value. Today, however, teachers have to rack their brains to prevent students from copying the machine since, in the era of AI, it is difficult for them to distinguish between the translations done by the machine and those done by the students. Therefore, they are faced with the challenges when conducting formative assessment: Do the extracurricular translation tasks students finish reflect the translation level of their own, the level at which they operate the machine (i.e., post-editing or PE), or simply that of the machine? Translation tasks assigned by translation teachers have different natures and objectives: some of them are designed to train specific translation skills, some to help improve bilingual competence, some to develop the competence to apply translation theories, and some others to train translation technology, including MT. Many of these tasks demand that students finish them without the help of a machine, or it would be pretty hard for the teachers to precisely assess the real level of the students, to find out their weaknesses, and to judge whether the teaching objectives are successfully achieved or not.

The great improvement of MT quality also impacts the summative assessment. The traditional measure of such assessment- usually closed-book final exam- would not be affected by MT. However, when the conditions fail to meet the demand of such exams (such as online courses and courses whose exams can't be arranged offline due to factors like pandemic prevention), translation teachers have to use other summative assessment measures such as open-book exams and translation plus commentary writing (that is, students reflect and expound their translation process and results. See also Chen & Zhang, 2011). Under such circumstances, teachers have to consider the possibility that students may use the machine to finish the tasks. As for open-book exams, as long as translation tasks are included, students could turn to MT when supervision is absent. Translation plus commentary writing consists of a translation task and a commentary on it, the former of which would also face the problem that students may refer to MT. If the

main objective of the assessment is to assess the students' competence of using translation technology and PE, there's nothing wrong with them to consult the machine. However, the effectiveness of the assessment would be largely reduced if it is aimed at some other competencies.

Assessment is an indispensable part of teaching, in which formative assessment mainly functions as a diagnosis by which the teacher can find out an individual learner's strong points, weaknesses and learning needs. Summative assessment, on the other hand, mainly serves to check quality, usually out of the administrative needs (Hedge, 2000). Of course, it can also offer diagnostic information for the teachers, helping them reflect upon the whole teaching process and lay a foundation for the improvement of future teaching. If they fail to obtain information reflecting the real quality of students' learning from assessments, they cannot effectively adjust the teaching methods and contents.

SOLUTIONS

Concerning the challenges brought to translation teaching by NMT, scholars in China have provided several "prescriptions". For example, Qin (2018, p.55) proposed three approaches to respond to the challenges: (1) identifying the division of labor between man and machine, i.e., making clear which job should be done by the machine and which by human, to "construct cooperative work environment with high efficiency"; (2) expanding the field of translation by training learners into professional post-editors; and (3) reforming the current curriculum by offering additional courses in translation-related software to develop students' competence of utilizing translation technology. Zhu and Guan (2019, p. 42) held that adjustments should be made in the future to the qualification of translation professionals by adding "technology literacy" in addition to bilingual competence, translation competence, related knowledge, and humanistic literacy, and accordingly, the objective of future translation teaching should be changed into training "translator + language engineer", i.e. to cultivate translation professionals with both humanistic quality and technology literacy by offering translation technology courses. Zhao (2019, pp. 110-111) reported a series of recommendations offered by the scholars attending the high-level forum of "the Challenges of Artificial Intelligence and the Development of Translation Major", including "to vigorously enhance the role of language intelligence technology and corpus technology in the cultivation of MTI (Master of Translation and Interpreting) talents" and "to add contents concerning post-editing to train post-editors" in the undergraduate courses of translation majors. Cai (2019, p. 58) proposed that Translation/Interpreting programs in universities should be transformed from translation training to language service training, whose curriculum should "overturn" that of the traditional program, where four clusters of courses should be offered: courses training basic language and translation competences, courses concerning translation technology, courses imparting "professional knowledge" and ESP courses. Hu and Tian (2020) believed that challenges brought to MTI by language intelligence could be coped with in four ways: reforming the training scheme, offering language intelligence courses, innovating classroom teaching, and developing inter-disciplinary teaching staff.

Measures proposed by these studies can be summarized as: identifying the human-machine division of labor, training the competence of PE, teaching translation technology and transforming translation/interpreting program to language service program. These measures are of great importance in coping with the challenges brought about by AI translation technology. However, they seemingly still fail to respond to the three challenges discussed in the previous section. For one thing, they only targeted at translation/interpreting program rather than English program, of which translation teaching is only a tiny part. Suggestions like offering translation technology courses and transforming the translation/interpreting program to a language service program are not suitable for students majoring in English. In addition, though some of the suggestions can be possibly implemented for English majors, such as identifying the man-machine division of labor, training the competence of PE, and teaching translation technology, they still cannot resolve the three challenges discussed above. First, the identification of the man-machine division of labor and the instruction of translation technology would to some extent, reduce students' fear about NMT, their pessimism towards the future, and anxiety and other negative emotions emerging when they use NMT if they keep thinking their translation competence is lower than that of the machine. Second,

measures like training the competence of PE and teaching translation technology fail to mitigate students' dependency on NMT and even probably make things worse. Of course, this is not to say that students shouldn't depend on technology - on the contrary, translation professionals in the future possibly cannot survive without technology - but to say that excessive dependency does more harm than good in the learning phase, especially at the beginning stage, which has been pointed out above. Third, mainly focusing on the competence of PE and technology literacy, these measures do not help in eliminating the negative effect on the teaching assessment in translation courses of the English program. Therefore, we need to find another way out to effectively respond to the three challenges. In what follows, we will explore the possible solutions, still taking the translation course for English majors as our target.

Imparting Knowledge About MT

According to Rossi and Chevrot (2019), the fewer translators learn about MT, the more they would see it as a threat. Therefore, to eliminate the anxiety brought about by MT, the best way may be to let learners adequately learn about the technology. Teachers can spare some class hours to teach students MT knowledge - it would be better to do so at the beginning of students' enrollment so as to eliminate their anxiety as early as possible - to acquaint them with MT's history, operating principles, strong points, weaknesses and future development (See also Hu & Li, 2016; Liu, 2017; Ye, 2017; Li, Xiong & Zhang, 2018; Qin, 2018; Zhu, 2018; Zhu & Guan, 2019; Cai, 2019; Chen, 2020). In conclusion, there are at least three points students need to be informed of:

1. The progress of NMT necessarily demands massive training data - a bilingual parallel corpus (Li, Xiong & Zhang, 2018, p. 2736), the collection of human-translated texts and their corresponding source texts. This means NMT is fed by human translation; without excellent human translation, there would be no excellent NMT output. Therefore, man always plays a dominant role in the "contest" between man and machine. Even though the machine can get stronger and stronger by constant learning, it cannot think like human brains. The applicability in genre, the diversity and creativity of translation, and the fault tolerance and stability in the translation process are beyond the reach of MT (Qin, 2018, pp. 54-55). Besides, it cannot deal with texts that are vague in meaning and difficult to understand (Ye, 2017, p. 91) and would fail to undertake the task of literal translation (Zhu, 2018, p. 102). Therefore, that machine would completely replace human translation is "a self-evident pseudo-proposition" (Zhu, 2018, p. 101).
2. The game between man and machine is not zero-sum but "complementary and interactive" (Hu & Li, 2016, p. 14), and it is possible for both sides to reasonably divide work and "undertake translation tasks of different level and nature" (Hu & Li, 2016, p. 13). For example, for those tasks with low requirements of quality (that is, referential level texts), MT can be in the driving seat; for those with general quality requirements (that is, regular level texts), tasks can be done with the mode of MT + CAT + human pre-editing + human post-editing; and for those with high-quality requirement (that is, publication level texts), tasks should be accomplished mainly by human (Cui & Lei, 2016, p. 52)
3. The mainstream working mode at present and in the future is "MT + PE" (Wang, 2017), which not only offers students new job opportunities but also sets a higher standard for human translation. Students can only harness the machine by surpassing it, or they will end up being replaced. Just think how one could modify and improve the machine translations if her competence is lower than the latter. In other words, the translation tasks in the future can only be shouldered by highly competent translators.

Driving these points (and any other knowledge concerning MT) home to students would help mitigate the anxiety brought to them by the machine and eliminate their worry that they would be replaced in the future. In addition, it would help them plan their future career as early as possible, thus transforming the stress incurred by the machine into the motive of moving forward. What's more, it can make them aware of the disadvantages of excessive dependency on machines at the beginning stage of learning - they would

only be led by the nose if they depend on it when they are incapable of harnessing it, making it difficult to surpass it, let alone operate and master it in the future.

Teaching NMT Utilizing Strategies

To a large extent, students' anxiety and other negative emotions, including disorientation, guilt, and the loss of a sense of achievement, are formed in the process of using NMT, and the use of it also causes their dependency on the technology. Only by teaching them to reasonably and moderately use the technology can we help them further eliminate these negative emotions and reduce the negative effects exerted by excessive dependency on the technology.

The key to guiding students to the proper use of NMT is to generate and train different strategies according to the different developmental stages of students' translation competence.

First, it is necessary to identify the developmental stage of students' translation competence before the translation course begins by taking NMT quality as a frame of reference. The procedure is as follows: having students "play on the same stage" with the machine and testing both sides' translation competence with the same source texts. For those students whose marks are lower than or equal to the machine, we can assume that their translation competence is at the beginning stage; for those with higher marks, we can assume that they are at the advanced stage. (It should be noted that these stages are identified simply to resolve the NMT challenges and take the machine as a frame of reference. They are not necessarily consistent with the concepts of beginning and advanced stage of translation competence in the common sense). By doing so, we can get at most three results: (1) the whole class' marks are generally lower than or equal to the machine, indicating that the translation competence of the class is at the beginning stage; (2) the whole class' marks are generally higher than the machine, meaning the translation competence of the class is at the advanced stage; and (3) part of the student's marks are lower than or equal to the machine while the other part higher, in which case we get a class of students with mixed translation competences. For the first and the third results, teachers should conduct a test again at the end of the course in each semester (we assume that in most universities, the course is offered for at least two consecutive semesters) to observe the change in students' translation competence, to re-identify students' developmental stages.

Second, teachers must inform students of the test results and the stages their translation competence falls into.

Third, teachers generate different strategies for utilizing NMT for students at different stages and train them to use these strategies.

In what follows, we propose the strategies for each stage.

The Beginning Stage

Two strategies may be used at this stage:

Strategy 1: Independent translation + learning from the machine. When students are doing translation tasks, they may finish the translation completely independently. Then, they can modify their translation by referring to the machine translation, a process that can be regarded as "learning from the machine." This strategy can not only help eliminate their negative emotions like disorientation, guilt, and the loss of a sense of achievement but also spare them from excessive dependency on the machine and have them take full advantage of the strong points of the translation technology, i.e., making the machine a teacher for them to study independently when the real teacher is absent.

Before applying this strategy, teachers may recommend one or two high-performance machine translation systems to the students (See also Li, 2021) to ensure that what the students learn from is reliable. When training students to use such a strategy, teachers should instruct them to properly assess the quality of MT output by figuring out its strengths and the types of mistakes it would usually make.

Strategy 2: Using NMT to enhance language learning. According to the survey we conducted (See Section II), The English majors not only used NMT to aid translation but also to tackle other problems in English learning, such as finding out the meaning of a new English word (they thought they would get more accurate meaning from the machine than from a dictionary if the word together with its context was input to the machine), understanding the difficult points in an English text by reading the machine's Chinese

translation, and figuring out an English equivalent for a Chinese term that springs up in their mind while writing an English composition by inputting the Chinese term to the machine. If properly handled, these ways of utilizing NMT can be very effective to language learning. It is up to the teachers to should guide for the students to take full advantage of the technology to improve their linguistic proficiency.

The Advanced Stage

Three strategies may be used at this stage:

Strategy 1: Independent translation + machine translation criticism. Even at the advanced stage, students still need to do some translation tasks independently to get trained; PE is not all they have to learn. At this moment, they may finish the tasks completely independently. Then, they may be trained to develop their competence of translation criticism by criticizing the machine translation. They need to compare their own and the machine's translation, and point out the flaws or strengths of the latter. This strategy can also help reduce their anxiety and excessive dependency on the machine; besides, it can improve their sense of achievement and boost their confidence.

Strategy 2: Using NMT to enhance language learning. At the advanced stage, students still need to improve their language proficiency, as a result of which they could also avail themselves of NMT to overcome difficulties in language learning concerning words, reading, writing, and the like.

Strategy 3: Training PE. PE training can be effective only when students' translation competence surpass that of the machine. Therefore, this strategy is only suitable for students at the advanced stage rather than those at the beginning stage. When applying the strategy, teachers should first train students' basic skills of PE and assign translation tasks for them to practice, they need first extract the machine's translation, and then apply learned translation theories and post-editing skills to modify and improve it.

When training all the strategies at the two stages, teachers are well advised to bear in mind:

1. They can be applied simultaneously or selectively according to the teaching objectives. Strategies 1 and 3 at the advanced stage don't necessarily demand simultaneous use.
2. When there are both students at the beginning and advanced stages in a class during the same period of time, teachers have to treat them differently, training different strategies for students with different translation competencies. Though it may put an additional workload on the shoulders of the teachers, it is the price that must be paid in dealing with the challenges AI brings.
3. Even when students have mastered these strategies, they would probably still follow the old practice out of laziness or habits to skip independent translation and directly copy the machine if there is no adequate supervision. In this case, teachers should ensure the successful implementation of the strategies by reforming the classroom teaching and teaching assessment, the two issues to be discussed instantly below.

Reforming Classroom Teaching

The traditional translation classroom teaching in China follows the model of “teachers explaining translation methods and skills in class - assigning homework - reading over students' work - commenting and analyzing on students' work based on reference versions in class” (Wang, 2019, p. 102). The flaws of this model are fully exposed in the era of AI: Since almost all the homework is finished outside class, teachers can't supervise and instruct students during their translation process. Therefore, the traditional translation teaching could do nothing to respond to the three challenges discussed in this study. To overturn this situation, the idea and model of “flipped learning” may be introduced to the translation classroom. A flipped classroom is a new model of teaching in which “students watch or listen to lessons at home and do their 'homework' in class” (Fulton, 2012, p. 13), whose key elements include a “flexible teaching environment”, “a culture of independent learning,” “elaborately designed content” and “a professional teaching staff” (Zhang & Tao, 2017, p. 28). In a flipped translation classroom, the teacher is supposed to provide students with abundant online teaching resources, including courseware, videos of lectures, reading materials, and so forth, to let them learn independently in advance, discuss in class with students the “key and difficult points, and puzzles concerning the teaching content”, assign in-class translation tasks to “help

students internalize what they have learned online before class,” and arrange for students to participate in online simulated translation projects after class to produce group translation for teachers and fellow students alike to discuss and comment (Zhang & Tao, 2017, pp. 28-30).

One of the advantages of the flipped classroom is that part of the after-class translation tasks in the traditional teaching model is moved to the classroom to be completed under the teachers’ guidance and supervision. Therefore, the teachers wouldn’t worry anymore about students using NMT to finish tasks designed to train their independent translation competencies. Neither do they need to worry about the authenticity of the formative assessment. In addition, they can teach students face to face how to practice the strategies of utilizing NMT discussed above to eliminate their anxiety and mitigate their excessive dependency on the technology.

Reforming Teaching Assessment

Flipped classroom teaching model can only resolve some, but not all, of the problems concerning teaching assessments since the time of classroom teaching is limited, and not all the translation tasks can be performed in class, especially for some large-scale tasks which can only be done outside class, such as simulated translation projects mentioned above and other projects demanding longer-term cooperation between group members. In this case, teachers must reform the teaching assessment to constrain students’ use of NMT and help eliminate its negative effects on translation learning.

Formative Assessment

When assigning extracurricular translation tasks to students at the beginning stage based on Strategy 1, teachers may require them to include the following things in their final submission: a. the initial translation finished on their own, b. the translation extracted from the machine, c. the final version revised according to the machine translation, and d. a reflection on the task. Teachers can focus on a. when making assessments if they only want to know whether students finish the tasks independently, the items following which are mainly designed to supervise students’ solitary effort in finishing the first draft before they refer to the MT output. They can focus on c. if they only want to examine the improvement made by students with the help of the machine (i.e., how they have learned from the machine), and the other items also function as means of supervision. Since students have to submit their own translation, the machine’s translation and their revision based on the latter, there would be little possibility that they directly copy the machine, and the authenticity of their work can be guaranteed so that formative assessment can be successfully achieved.

Teachers can adopt similar ways for students at the advanced stage to guarantee the implementation of Strategy 1. This time, students should include the following things in their submission: a. the initial translation finished on their own, b. the translation extracted from the machine, c. a comment on the machine translation based on their own version, and d. a reflection on the task.

Strategy 3 at the advanced stage, which is mainly designed to train students’ competence in PE, has a different submission list: a. the translation extracted from the machine, b. the post-edited translation, and c. a description of the PE process or a reflection on the task.

Summative Assessment

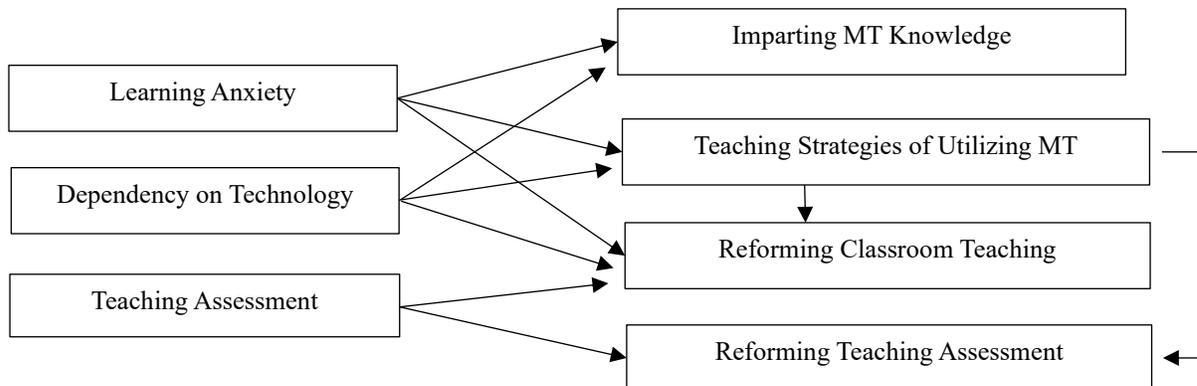
In the era when AI makes “a massive invasion”, the summative assessment should be mainly based on closed-book exams since they are one of the few ways to best reflect students’ real translation competence and are the most equitable means to assess students’ academic achievements. Close-book exams can also be a reasonable choice even when the students’ competence in PE is to be examined: they can be provided with an MT version required to post-edit without consulting any other sources. However, as mentioned, conditions sometimes fail to meet the demand of close-book exams. In such situations, teachers can adopt a way similar to the formative assessment measures discussed above to set questions. For example, questions examining students’ independent translation competence can be designed to require them to submit their independent translation along with the machine’s translation and their modified translation, and questions examining their competence of PE can be designed to require them to submit the post-edited

version together with the machine’s translation on which the post-edited version is based and a description of the post-editing process.

By reforming teaching assessment, we can not only effectively supervise and regulate students’ proper use of the strategies of utilizing NMT but also eliminate its negative effect on teaching assessments.

In conclusion, the correlation between the solutions proposed in this section and the three challenges can be illustrated in Figure 1.

**FIGURE 1
CORRELATION BETWEEN CHALLENGES AND SOLUTIONS**



CONCLUSION

The translation quality of MT has been greatly improved since AI was introduced, making students majoring in English feel threatened and anxious. Many students often resort to the machine when performing translation tasks since they find that its translation quality is higher than their own; as a result of which, they become dependent on the technology, which in turn causes anxiety and other negative emotions in them. Meanwhile, the improvement of MT quality also renders the traditional translation teaching assessment ineffective because translation teachers cannot judge whether the translation work submitted by students reflects their real translation competence. In response to these challenges, we hold that teachers may: (1) acquaint students with the history, current situation, and future of MT, to mitigate their anxiety and change pressure to power; (2) generate suitable strategies for utilizing NMT and adequately train them to use them, which can further reduce their anxiety and the degree of dependency upon the technology; (3) adopt the flipped classroom teaching model to make sure those strategies are implemented under their supervision and guidance; and (4) reform teaching assessment to regulate students’ use of those strategies after class and further eliminate NMT’s negative effect on teaching assessment.

This is just a tentative discussion of the challenges - and their solutions - faced by translation learners and teachers in the era of Artificial Intelligence. More empirical evidence is needed to support the challenges identified in this study and to test the effects of the solutions proposed here.

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