

Translation Ability-oriented MT-PE Course Design

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ABSTRACT

With the wide popularization of neural machine translation in the translation industry, the machine translation +post editing (MT-PE) has become one of the main tasks of translation talent training. Based on the development of post-translational editing at home and abroad, this paper focuses on the training of post-editing ability in the translation teaching, exploring a complete set of MT-PE curriculum teaching module system as the reference for translation technology education.

Keywords: Machine translation (MT), Post editing (PE), Course design.

1. INTRODUCTION

In recent years, with the continuous improvement of quality, the machine translation (MT) technology has been increasingly applied in many commercial translation fields. The most common workflow is to modify or edit the text done by machine translation. Large multilingual international organizations such as the European Commission (Bonet, 2013) have been able to provide customers with customized machine translation systems and post editing (PE) services, and language service providers are also developing such work tools and processes[2]. According to a survey of 438 stakeholders in the field of translation and localization (Gaspari, 2015), at present, 30% of people use machine translation, and most machine translation users (70%) have begun to combine machine translation with PE[6]. The increasing use of machine translation and machine translation workflow in the translation industry has also aroused people's interest in how to carry out post-translational editing training. For example, through the investigation and review of various translation industries, Gaspari et al. (2015) found that with the increasing demand for machine translation services, language service providers have higher requirements for professional skills of post editing[6]. "Translation technology" will have a great impact on the professional ability of translators in the future.

On the basis of previous studies, this paper, combing with the teaching curriculum design,

intends to explore the cultivation of "post editing" ability in order to enlighten the teaching and practice of translation technology. The teaching design described in this paper mainly provides a reference for the "post editing" courses offered by translation training units, and aims to extend the technical principles of machine translation to the practice of post editing and enrich the translation technology courses.

2. POST EDITING ABILITY

According to the definition of ISO18587:2017 standard, post translation editing (PE) is "checking and correcting the output of machine translation". The task of PE is to make necessary modifications to the translation produced by MT in order to make the translation reach the expected quality. In the process of post editing, machine translation should be used as much as possible to avoid preference correction. With the increasing use of machine translation (MT) and post editing (PE) workflow, the research and teaching of post editing skills become very necessary. Some skills of post-translational editing have something in common with "traditional" human translation, such as source and target language skills, professional domain knowledge, comprehension skills, cultural and cross-cultural skills, and information searching skills (see O'Connell, 2002; Rico and Torregrossa, 2012; Austermehl, 2013)[12][14][1]. However, PE is obviously different from human translation and the proofreading of human translation, especially in the cognitive process, practical

objectives and training process (Klings, 2001; O'Brien, 2002), which requires special training to improve post-translational editing skills [17][12].

As a new concept, post editing ability has attracted scholars at home and abroad to carry out relevant research from different needs and perspectives. O'Brien (2002) proposed that post translation editing training needs to include a series of specific skills, including general technical knowledge, term management skills, pre-editing, and certain programming and text processing skills [12]. O'Brien also pointed out the importance of maintaining enthusiasm for technology, which was fully recognized by other experts (Rico and Torrejon, 2012; Doherty and Moorkens, 2013; Pym, 2013) [14][4][13]. Rico and Torrejon (2012) believe that post translation editing skills are mainly divided into three aspects: core competencies, linguistic skills and instrumental competence [14]. Core competence refers to "Psycho-physiological competence", including subjective control over post-translational editing norms, customer expectations and uncertainty, as well as "strategic competence" required for editing and revision; Language skills refer to source language and target language skills, communication and text skills, as well as cultural and cross-cultural skills; Instrumental competence refers to a variety of skills such as machine translation technology, term management, corpus and control language, as well as some basic programming skills. Pym (2013) believes that among the general skills required for machine translation, the key is to have the ability to "learn" new things, such as rapid familiarity with new software, iterative updates of specific tools and skills, and evaluation skills of relevant tools in the environment of rapid technological development [13]. Another necessary skill is to learn to scientifically evaluate the availability of machine translation or translation memory and master effective translation modification methods. Pym (2013) also proposed some specific modification techniques, including identifying and correcting redundant errors (punctuation, cohesion) and stylistic modification, and formulated modification standards according to specific translation quality requirements [13]. According to the framework of post editing competence proposed by Koponen (2015), general competence mainly includes language competence, discourse competence, subject knowledge, cultural and cross-cultural competence, literature retrieval and analysis competence [11]. Technical competence

includes translators' positive attitude towards technology, software application ability, new tool learning ability, tool evaluation ability, and understanding of machine translation principles. Editing ability includes the ability to judge and correct typical machine translation errors, as well as the strategic ability to evaluate data sources, meet customer requirements and edit translation efficiently.

Cui Qiliang (2014), a Chinese professor of translation technology, believes that creating high-quality post-translational editing requires a variety of skills, including understanding and identifying the translation method of machine translation output translation, being familiar with the involved projects, fields, terms and translation environment, and quickly identifying and modifying major machine translation errors affecting understanding [18]. Feng Quangong and Liu Ming (2018) divide post-translational editing ability into three dimensions: cognition, knowledge and skills, which are the basic level, subject level and realization level of post-translational editing ability [19]. The acquisition and application of skills are inseparable from the regulation of various knowledge by the internal cognitive mechanism of the brain, so the cognitive dimension is the basic level of post-translational editing ability. The relevant knowledge required by post-translational editing is the main level of ability. Without the support of these knowledge, post-translational editing is impossible. The realization level refers to the specific implementation of post-translational editing tasks, that is, to complete the post-translational editing tasks that meet the requirements, which reflects the efficiency advantages of post-translational editing.

PE and MT have gradually become an important part of translation technology teaching (Kliffner, 2005, 2008; Austermeuhl, 2013; Kenny and Doherty, 2014) [9][10][1][7]. The Translation Automation Users Society (TAUS) provides a multilingual business course for post translation editing training. MT and PE are usually an important part of translator training. For example, Shuttleworth (2002) introduced a translator training course involving large-scale translation projects, in which MT and PE, as well as translation memory and terminology tools are used [16]. The training course adopts a complete translation task mode, starting with the pre translation task (customer, text, schedule, translation purpose and style), then pre editing the source text, error analysis of the machine translation translation, and then post

editing according to the PE guide to form the final translation. Doherty et al (2012) introduced a machine translation training course (Doherty and moorkens, 2013), including lectures of the history and concept of machine translation, machine translation evaluation, machine translation and the role of translators in workflow (machine translation preprocessing and post editing) [3][4]. The study also provides students' evaluation of the course and course teaching experience. Kenny and Doherty (2014) pointed out that translators need to clearly understand some specific problems of machine translation, such as what role manual translators should play and how to improve the effect of manual intervention [7]. They incorporate these problems into translator training courses to improve translators' knowledge of translation memory (TM) and machine translation, including basic concepts, practice, tool evaluation, machine translation evaluation, pre-translation editing and post translation editing, as well as translation ethics, fee payment and collaboration. In the research of Flanagan and Christensen (2014), two workshops of machine translation and post editing were held to explain machine translation and post editing to translation students[5]. In the practical session, two different post editing quality standards were selected according to the guiding principles of post editing (TAUS, 2010) to observe how students understand and apply these guiding principles in the process of translation.

It can be seen that scholars across the world generally recognized that MTPE is a necessary professional ability for professional translators, and it is necessary to improve the professional knowledge and skills of post-translational editing through systematic training, including understanding the development history of machine translation, representative machine translation engines and other relevant knowledge, and mastering the source text pre translation editing, machine translation evaluation, translation error identification and post-translational editing standards and other skills, and carry out a lot of special training.

3. POST EDITING COURSE SYSTEM

3.1 Basic Module of PE Training

The teaching objectives of this module include: learning the basic knowledge of post editing; understanding the localization quality standards based on customer needs; mastering the post editing

quality standards; and being familiar with two post editing modes based on customer needs: full post editing and light post editing; be able to identify common error types of machine translation; master post editing principles; be familiar with post editing prices in the translation market; understand post editing production indicators and profit estimation; accumulate practical experience in post editing.

The teaching contents include:

Chapter I: PE-related concepts (including PE definition, post translation editing and proofreading, post translation edito's ability, controlled language and pre translation editing)

Chapter II: Quality (including quality evaluation indicators and tools of machine translation translation and quality standards of post translation editing)

Chapter III: PE Types (including full post editing and rapid post editing)

Chapter IV: PE Principles (including full post editing principles and rapid post editing principles)

Chapter V: Common types of errors in machine translation (including terminology errors, grammar errors, sentence pattern errors, punctuation spelling errors and style errors)

Chapter VI: Input-output relationship of post editing (including time input, cognitive input and technical input)

Chapter VII: Pricing (including payment method and price negotiation)

Chapter VIII: Case Practice (including manual translation of technical texts, comparison of error types between manual translation and different machine translation, training of rules of a controlled language, monolingual post-editing, post-editing with online tools and post-editing with independent tools)

3.2 MT Project Management Module

After completing the basic training course of post editing, students should have acquired the basic knowledge and skills of machine translation and post editing, but these abilities are more based on individual learning experience and practical process, and lack professional and market-oriented project flow training. According to American linguist Kiraly (2005), the improvement of post translation editing ability cannot be limited to a single machine translation modification training[8].

Students need to combine machine translation post editing with the whole translation process and train in the mode of project team according to the different requirements and conditions of translation tasks. Students learn how to deal with the problems in different situations, and accumulate real translation project experience in the process of finding and analyzing problems.

The teaching content of this module consists of two parts: (1) Guidance of translation project management; (2) Practical operation of translation project management.

3.2.1 *Introduction to Translation Project Management*

The guide to translation project management aims to explain to students the basic process and specific tasks of each link of translation project management, mainly including three topics: project start, project implementation and project completion. The teaching contents are as follows:

- Topic 1: project initiation and preparation (about 3 class hours)

(1) Introduce the characteristics of project management and machine translation project: machine translation evaluation, translation efficiency estimation, smoothness and accuracy standards, translation error types;

(2) Compare the translation efficiency (format recognition, collaboration mode, term base, cost, etc.) and translation quality of 2-3 online machine translation engines to determine an online machine translation engine suitable for translation projects;

(3) Preparation before translation: identify the project needs (understand the industry field, translation difficulty, quality requirements and customer requirements of the project; project completion time; formulate project specifications, quality requirements and project plan); establish a team (configure translators, revisers, typesetters, organize trial translation, use of tools, corpus and term preparation, etc.); manuscript analysis (word distribution, confidentiality, typesetting requirements, schedule, etc.)

- Topic 2: project implementation (about 3 class hours)

(1) Text processing and distribution;

(2) Text MTPE;

(3) Project control (progress control, quality control, risk control, etc.)

(4) Review (proofreading review, technical review, post translation typesetting)

- Topic 3: Post-project (about 3 class hours)

(1) Final translation QA (translation QA tools such as apsic xbench can be used)

(2) Expense accounting (expenditure and income);

(3) Project efficiency evaluation;

(4) Project summary (experience and lessons)

In the process of organizing post editing project management teaching, teachers need to pay attention to several aspects of design: first, because post editing has different applicable effects for language types with different characteristics, in the selection of text types of translation projects, popular science and technology texts are more suitable for students to be familiar with the process characteristics of post editing projects; secondly, in the selection of online machine translation. When designing the platform, students are encouraged to compare the characteristics of different types of platforms from various angles, such as domestic and foreign platforms, large and small platforms, etc., so as to avoid choosing only by personal habits and preferences. Teachers can recommend a more mature and user-friendly machine translation platform for students according to their experience. The training video lectures provided by the platform can also improve students' ability of autonomous learning.

3.2.2 *MTPE Project Management Practice*

After the training of translation project management guidance, students need to experience the operation characteristics of machine translation post editing in the process of translation project management by simulating real translation projects. According to the characteristics of machine translation projects, the practical task can be designed for a group of 4-5 members with designated different project roles. According to the class hours, teacher selects a complete text with 5000-8000 words for machine translation project. It is better to make a post editing project management list for students' reference, mainly including:

Machine translation analysis: determine a proposed machine translation engine (Google, Baidu, Youdao, etc.); connect the machine translation engine API to a cat platform (Trados, MemoQ or MateCat, etc.) Use machine translation

to preprocess the task text on cat platform; select some segment translations for quality evaluation, and formulate post editing standards according to the error types; formulate the project progress by integrating the quality of machine translation translation and the degree of post editing.

Post editing: input the term base on CAT platform; the translator post edits the assigned tasks on CAT platform; the reviser reviews synchronously.

Post task: translation QA; final review; customer acceptance and feedback; export memory; process evaluation.

During the group task, teacher can timely monitor the task progress, find problems and provide suggestions. The focus is to observe the methods and ideas of students in each group in dealing with different problems in the process of project implementation. For example, students may have great differences in the post editing progress, and the task allocation needs to be readjusted. In terms of the proposed machine translation, if the translation engine translation quality is poor, whether to replace it with alternative or not; if the inputted term quality is not high enough, how to ensure the consistency of terms. Various types of problems may occur in the task. Teachers should first guide students to find solutions through group discussion and improve project management ability from problem analysis; at the same time, teachers also need to constantly remind students of the importance of teamwork. To avoid invalid and poor communication, each member needs to clearly understand his task objectives and quality standards, take the initiative to find and solve problems. Different problems will be encountered in each project. The project team summarizes the implementation and problem handling process of each link by writing diary and project report. The project report of each team can provide valuable experience for students. Although students will expose various deficiencies in the process of project management, the project practice based on personal experience will make students realize that the requirements of machine translation post editing are not lower than those of human translation standards, and any translation project is inseparable from efficient and scientific management.

4. EVALUATION OF POST EDITING TRAINING

The goal of machine translation post editing course is to help students establish a positive attitude towards translation technology, and secondly to improve students' ability to strictly evaluate translation tools and post editing processes, which are also two important aspects of evaluating students' learning (O'Brien, 2002; PYM, 2013; Kenny and Doherty, 2014)[12][13][7]. Teachers can understand the teaching effect by arranging class discussions and reflective articles written by students. The main evaluation indicators include the following aspects:

4.1 Machine Translation Comparison Ability

Students are organized to compare different types of MT translations so as to check whether they have mastered the basic principles of MT and the translation quality differences between MT engines with different principles. On the other hand, by comparing MT translations, students can learn to analyze the error types in each translation version and analyze the errors according to their understanding of relevant MT technology types.

4.2 Pre-editing Capability

By finding out the potential language problems in the translated original text and rewriting the sentences according to the controlled language rules, teachers can test whether the students are competent in target language rules.

4.3 Machine Translation Modification Ability

The machine translation revision ability is mainly reflected in two aspects: the first is the revision proportion of machine translation errors. If students can identify more MT translation errors, it means that they have more translation experience; the second is the percentage of valid revision. Only translators with strong language ability and solid translation skills can finally complete the revision of translation.

Since the core standard of students' post editing ability is judged by the quality of the final translation, the basic task of each teaching link of post editing courses is to improve students' abilities of language usage and translation quality

assessment. Only on the premise of improving the quality of post editing translation, can we provide students with a large number of translation tasks.

5. CONCLUSION

With the rapid development of machine translation technology for three generations, neural machine translation (NMT) has surpassed statistical machine translation (SMT) in translation fluency. The data-driven machine learning method greatly improves the quality of translation, but it also has inherent disadvantages, such as great differences in logical reasoning effects of different language families, inability to effectively deal with non-standard languages, etc. Therefore, machine translation + post editing (MTPE) will be applied to more fields in the translation market and will become one of the necessary professional abilities of future translators. A perfect post translation editing training course can provide students with more systematic professional learning conditions and practice environment. More importantly, it is to cultivate students as the professional talents who meet the needs of future translation development.

AUTHORS' CONTRIBUTIONS

This paper is independently completed by You Zhang.

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