The Impact of Accessible Translation Tools on L2 Translation Quality: Evidence from Chinese EFL Non-English Major Postgraduate Learners

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Abstract

This article aims at finding out the impact of accessible translation tools on L2 translation quality. The research is carried out in the Chinese EFL non-English major postgraduate learners. Firstly, the questionnaires were sent out to explore the Chinese EFL high-proficiency learners' attitudes toward translation tools and their preference in use. Later, the experiment went on to find out whether significant differences exist in L2 translation quality and translation competence among the three experimental groups. After the statistical analysis, it is found that the group with the translation tools plus post-editing translation learning experience perform better in certain aspect than other two experimental groups. Based on the results of questionnaires and the experiment, tentative conclusions are reached to respond to the impact of translation tools on L2 translation quality.

Keywords: *machine translation, translation tools, postgraduate students, quasi-experiment, multiple comparisons*

I. Introduction

The concept of machine translation originates back to the 1940s in America aiming at completely replacing the manual translation with the translation output texts by computers. The ALPAC report released in 1964 led to the recession of the research in machine translation until the striving of computer and web technology in the 1980s. The turn of the new century witnesses the revival of the research in machine translation and the lunching of the machine translation software, especially the online translation tools. Translation tools refers to the electronic tools [1] or general technical tools [2] that speeds up and broadens the production of translation texts, such as the widely adopted translation tool Google Translate. Even though the translation tools are labeled as being limited in accuracy at the debut time, actually the advances in technology enable the online translation tools be more operable, user-friendly, and less technical. Compared with the professional translation services, translation tools like Google Translate are useful [3] [4] and are capable of producing 'usable' translation [5].

The primary goal of machine translation is to set the translators free. Though the present machine translation products are still on a fair way off the goal, they contribute greatly in assisting the translators in translation output both lexically and syntactically. PACTE (Process in the Acquisition of Translation Competence and Evaluation) research group lists the professional instrumental competence as one of the basic competences of translators [6]. While the machine translation texts have the problems of errors and inaccuracy, the manual intervention of machine translation is preferred, which makes the online translation tools favored by the translators of different levels. And the possibilities of applying MT into translation are confirmed [7] [8] [9]. The translation tools include electronic dictionaries, online dictionaries, online translation tools and translation data banks and terminology banks in the broad sense, and are categorized under the rubrics of machine translation and computer-assisted translation alternatively. Since the producers of many translation tools labeled themselves as statistical machine translation, the authors will discuss translation tools from the perspective of machine translation.

This article revolves around the impact of translation tools on the second language translation quality. Although

the instrumental or tool competence is widely accepted as the essential element of translator competence [6] [10] [11] [12], the research on translation competence is generally associated with the professional translators. Meanwhile, the application of translation tools in language learning is recommended [7] [13] [14] [15] [16]. But it is rare to explore the relation between the use of translation tools and the translation competence of EFL learners revealed by the translation quality. The study initiates with a survey on the using of translation tools among Chinese postgraduate students, and is followed by a quasi-experiment that was complemented by a correlational design, which aims at exploring the relation between translation tools and translation quality of texts produced by the Chinese EFL non-English major postgraduate learners. And a tentative scheme is proposed to improve the EFL learners' translation skills and competence with the appliance of translation tools in language learning.

II. Literary Review

2.1 Translation tools

The development of technology granted the prosperity of machine translation in the past few decades. Whereas the disparities between the output texts of machine translation and the manual translation are detectable, it is revealed that applying machine translation in the translation process is workable [7] [8] [9]. The assistance of machine translation to the human translation manifests its advantages in productivity, time-saving and labor-saving. Actually, the use of machine translation in human translation has diverged the initial goal of machine translation from the replacement of human translators to be assistant tools to human translation. Therefore, the term "translation tools" are adopted in the following narration as is the case of this research.

As is mentioned, instrumental competence (technical competence as defined by Nord, instrumental and research competence as defined by Göpferich and Jääskeläinen [17], and electronic tools and resources competence as defined by Austermühl [18] or Quah [12]) is essential to the translators today. It should be noted that the instrumental competence of professional translators includes the proficiency in the use of the professional technical tools, such as terminology management tools and translation memory tools, besides the general technical tools, namely translation tools [2]. During the assisted translation process, the translation tools function as the knowledge base to transfer the technical and cultural information [10], and are especially helpful in technical or domain specific translation [4]. The translation tools have the problems in qualification, relevance and integration [19] [20], but they perform notably in the production of "usable" translation in the condition of average-quality translation [5]. To the non-professional translators or language learners, translation tools are welcomed especially when the cost is compared to that of professional translation services [3]. As most translation tools are statistical, the accumulation of produced translations allows translation tools to generate improvement in translation quality, and technical developments produce more grammatical and lexical accurate output texts.

Besides the role of information searching served by translation tools, the raw output of translation tools can turn into high-quality texts after the post-editing of translators. Post-editing is a term categorized under the gross of machine translation. According to TAUS (Translation Automation User Society), post-editing is the process of improving the raw machine translation output to achieve quality similar or equal to human translation [21]. It is commonly acknowledged that post-editing greatly assists the processing of achieving high-quality machine translation outcomes [12] [21] [22]. Machine translation plus postediting is proved to be effective in increasing productivity and quality of professional translators [23] [24]. Hereby the significance of postediting of the raw output of translation tools is assumed let alone the accessible trait of translation tools.

2.2 Translation tools and language learning

The information age technically brings inexhaustible resources to everyone, and it is the instructors' responsibilities to recommend the beneficial technological products to the students [25] [26]. PACTE [6] holds the opinion that the development of translation competence follows a dynamic and spiral process. So it is possible to

develop the instrumental competence of the language learners and integrate the use of translation tools into the translation learning.

The introduction of translation tools into classroom dates back to Anderson [13] when it was a time when machine translation was still scolded for its poor performance. He firmly believes the prospect of machine translation as the tool to improve second language learning. As the great improvement of machine translation, further findings prove the effectiveness of translation tools to language tutors and language learners [15] and the easy access of translation tools [7]. Empirical studies are carried in revealing the relation between translation tools and language learning. Niño [15] reports the positive attitude of undergraduate EFL learners towards translation tools and the improvement in language learning after the problem solving experience related to machine translation. Briggs [7] also reports the undergraduate EFL learners' expectation of the usage of translation tools in language classes and similar effect of translation tools on language learning. To be specific, the applying of translation tools in language learning is suggested in second language writing. And the writing quality is believed to increase with the assistance of translation tools [16] [20] [27]. Only a few researchers proceed to employ translation tools in the training of students' translation competence [28].

On the contrary, some researchers express their reservations about the using of translation tools in language learning. They point out that the misuse of idiomatic expressions and lexical and structural ambiguity influence the language learners' acquisition of the language to a certain extent [29]. Meanwhile, they also concern with the alteration of the learning motivation of the second language learners resulted from the applying of translation tools, as illustrated by the low proficiency learners' excessive reliance on translation tools, the compulsive searching behaviors rooted from repetitive consultation on translation tools, and the deterioration of cognitive process during the translation process [30].

III. Research Design

3.1 Participants

The participants of the research were selected from the postgraduate students who attended the graduate school of the same university in autumn semester of 2020 and took the course of English for Graduate Students. Most of the registered students have the experience of taking Graduate Entrance English Test and all of them have passed College English Test (Band Four or Six), which means that they can be categorized as median or high proficiency English learners rather than low-proficiency. The university has exemptions for the course based on the students' choice, but most high-proficiency postgraduates choose to register for the course, which is confirmed by the pre-survey before the experiment. Three classes instructed by the authors are designated as the participant candidate groups. Each class is formed by the postgraduates of different majors from the same graduate school and their majors are all related to engineering. The participants of the questionnaire are all the students of the chosen classes. And the subjects of the experiment are selected from the three classes. Each group of subjects consists of 20 students from each class selected by systematic sampling and are randomly chosen as Experimental Group 1 (EG 1), Experimental Group 2 (EG 2) and Control Group (CG) at the beginning of the teaching activities. The experimental groups and the control group resemble in their general natural features. The subjects are similar in age which ensures their similarity in the length and experience of English learning and they are all engineering major postgraduates. In order to ensure the scientificity and rationality in the selection of participants, all the participants' English scores in their Graduate Entrance English Test are collected and the scores are put into the software SPSS 26.0 for statistical analysis, and the results of the statistical analysis show that the participants have no statistically significant difference in their scores of Graduate Entrance English Test. Since a few selected subjects entered the graduate school with exemption from Graduate Entrance Tests and the research focuses on the translation quality, a translation competence test was carried out at the beginning of the experiment. The test takes the form of Chinese-English translation. The materials include five sentence translation and one paragraph translation, and the questions of sentence translation are taken from the translation part of CET 4 (College English

Test Band 4) 2006-2008 and the paragraph translation from sample test of CET 4 in 2013 to avoid the possibility of the selected subjects' practice of the questions accidentally beforehand. After the scores of the three participant groups were obtained, the results were put into SPSS 26.0, and analysis of variance was carried out for multiple comparisons. Firstly, the homogeneity of variances was tested, and the results showed that the statistics (as in Table 1) are qualified for multiple comparison. The results of multiple comparisons are shown in Table 2.

Table 1 Test of Homogeneity of Variances of translation competence test

	Levene Statistic	df1	df2	Sig.
Based on Mean	.893	2	57	.415
Based on Median	.961	2	57	.389
Based on Median and with adjusted df	.961	2	49.565	.389
Based on trimmed mean	1.032	2	57	.363

Table 2 Multiple comparisons of translation competence test

I	J	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-1.75000	1.44265	.230	-4.6388	1.1388
	3	.35000	1.44265	.809	-2.5388	3.2388
2	1	1.75000	1.44265	.230	-1.1388	4.6388
	3	2.10000	1.44265	.151	-.7888	4.9888
3	1	-.35000	1.44265	.809	-3.2388	2.5388
	2	-2.10000	1.44265	.151	-4.9888	.7888

The results suggest that there is not any significant difference between any two groups of the selected groups in their translation competence. Therefore, the pre-selected candidates are identified as the subjects of the experiment.

3.2 Methods

Firstly, the questionnaires are conducted at the beginning of the research to find out the accessible translation tools adopted by the Chinese non-English major postgraduate English learners and their attitudes towards translation tools are collected. The participants of the questionnaires are picked out by convenience sampling method, and they are the 135 postgraduate students attending the course of English for Graduate Students instructed by the authors. The questionnaires are divided into three parts. The participants' general information including gender, age, major and length of English learning are collected in the first part of the questionnaire. The second part aims at finding out the participants' preference in the use of translation tools. The frequently used online dictionaries and translation tools in China such as Google Translate, Bing Translator, Baidu Translate, Youdao Translator, Youdao Dictionary, ICIBA and European Dictionary are listed and the participants are required to choose their favorite translation tool according to their using preference and frequency. Others are put in this part as an alternative choice to allow the students to add more possible translation tools they used. 10 statements in Five-point Likert Scale comprises the last part of the questionnaires to explore the participants' attitudes towards their willingness of use, usability, accessibility, efficiency and quality of the translation tools.

After the completion of the survey, the systematic sampling method was applied to select the subjects of the experiment. As is mentioned above, the 60 subjects are selected scientifically to form three groups as Experimental Group 1, Experimental Group 2 and Control Group. The experiment lasted for 10 weeks. The translation teaching is carried out in the three classes without the notification of the subjects of the experiment. The class of

Experimental Group 1 is instructed with the use of online dictionaries in translation teaching and after-class translation practice, the class of Experimental Group 2 stresses the applying of machine translation texts plus post-editing skills in both in-class and after-class translation practice, while the class of Control Group follows the traditional translation teaching without any emphasis on the use of translation tools. After the completion of the teaching process, the three experimental classes were tested for translation in class. The test adopts the form of Chinese-English translation as the pre-experiment test, including one paragraph translation with the length of 141 Chinese characters excluding the punctuation, which is taken from the sample test of CET 6 in 2013. The texts from the selected subjects of the three classes are marked by two teachers independently from two perspectives, one is accuracy, the other is appropriateness. The score of each student is obtained with the average mark from the two teachers. The full score is 100, and 50% goes to each perspective. Then the results were put into SPSS 26.0, and the statistical analysis was conducted.

3.3 Research questions and research model

The study seeks to explore the impact of accessible translation tools on L2 translation quality and carry out the experiment among the median and high proficiency EFL learners, to be specific, the postgraduate English learners. As a tentative study, the following questions are put forward:
Research question one: What are the Chinese EFL postgraduate learners' preferences in the use of translation tools?

Research question two: What are the survey participants' attitudes towards translation tools?
Research question three: What is the impact of translation tools on the experiment participants' translation quality?
Research question four: Is there any difference between the output of the translation tools assisted texts and the output of the translation tools assisted post-editing texts?
Research question five: Have the experimental groups' translation competence changed by the application of translation tools in their translation learning?
In the effort to answer the above research questions, the research model is established, as shown in Figure 1.

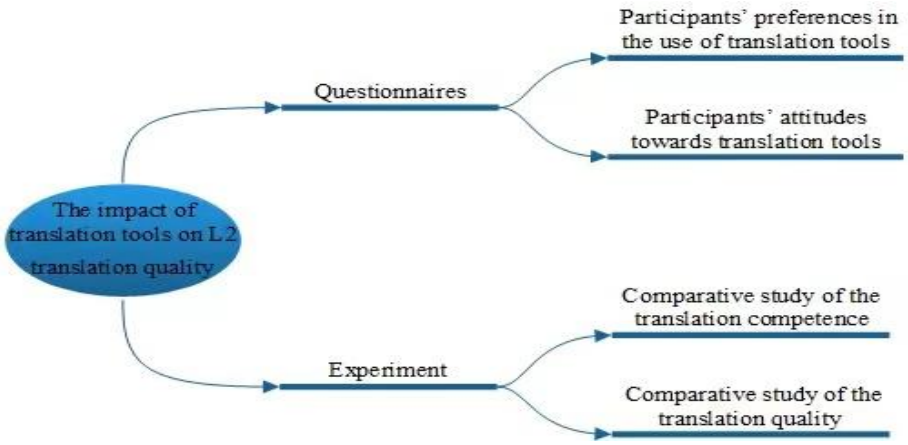

Figure 1: Research model

IV. Results

4.1 Results of questionnaires

135 questionnaires were distributed among the postgraduate students attending the course of English for Graduate Students instructed by the authors, and 132 are valid for the further statistical analysis. The basic information of the survey participants are shown in Table 3.

Table 3 General information of participants

Item	gender		age	length of English learning
	male	female		
number	67	65	24.3	16.7 years

The second part of the questionnaires shows the participants' preference in the use of translation tools, the results of which is listed in Table 4.

Table 4 Number of the participants in their choice of favorite translation tool

Translation tools	Google Translate	Bing Translator	Baidu Translate	Youdao Translator	Youdao Dictionary	ICIBA	European Dictionary	Others	Never used translation tools
number	13	6	32	33	17	26	4	1	0

The questions put forward in the third part of the questionnaires aim at finding out the L2 learners' subjective perception of the prevalence of translation tools. The survey is carried out from five perspectives: willingness, usability, accessibility, efficiency and quality, and are measured in Five-point Likert Scale from the most to the least, the best to the worse or the most preferred to the least preferred. The mean score for each perspective is indicated in Table 5.

Table 5 mean score of the participants' attitudes towards translation tools

Item	willingness	usability	accessibility	efficiency	quality
Score	4.44	4.14	4.35	3.47	2.99

4.2 Results of quasi-experiment

One-way ANOVO tests were operated to determine whether there is significant variation between any two of the three experimental groups. To avoid the biased or subjective marking, the analyzed statistics are the average scores from two teachers and both holistic rubric and analytical rubric are adopted to measure the accuracy, appropriateness and quality of the translation texts. Table 6, Table 7 and Table 8 show respectively the multiple comparisons of three experimental groups in the accuracy, appropriateness and total scores of their translation texts.

Table 6 Multiple comparisons of post-experiment scores in accuracy

I	J	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-2.62500	2.37344	.273	-7.3777	2.1277
	3	1.37500	2.37344	.565	-3.3777	6.1277
2	1	2.62500	2.37344	.273	-2.1277	7.3777
	3	4.00000	2.37344	.097	-.7527	8.7527
3	1	-1.37500	2.37344	.565	-6.1277	3.3777
	2	-4.00000	2.37344	.097	-8.7527	.7527

Table 7 Multiple comparisons of post-experiment scores in appropriateness

I	J	Mean Difference	Std. Error	Sig.	95% Confidence Interval

		(I-J)			Lower Bound	Upper Bound
1	2	-2.75000*	1.20693	.026	-5.1668	-.3332
	3	.25000	1.20693	.837	-2.1668	2.6668
2	1	2.75000*	1.20693	.026	.3332	5.1668
	3	3.00000*	1.20693	.016	.5832	5.4168
3	1	-.25000	1.20693	.837	-2.6668	2.1668
	2	-3.00000*	1.20693	.016	-5.4168	-.5832

Table 8 Multiple comparisons of post-experiment total scores

I	J	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-5.37500	2.71388	.052	-10.8094	.0594
	3	1.62500	2.71388	.552	-3.8094	7.0594
2	1	5.37500	2.71388	.052	-.0594	10.8094
	3	7.00000*	2.71388	.013	1.5656	12.4344
3	1	-1.62500	2.71388	.552	-7.0594	3.8094
	2	-7.00000*	2.71388	.013	-12.4344	-1.5656

The results in Table 7 and Table 8 indicate that there are differences between two of the three groups in certain measuring perspectives, which will be discussed further in the following part.

V. Discussion

5.1 EFL postgraduate learners' preferences and attitudes towards translation tools

The results of questionnaires serve as the answers to research question one and two put forward before the experiment. The general information of the participants reports that most of the surveyed Chinese EFL postgraduate learners began their English learning at an early age. The length of their English learning and the results from the test of pre-experiment reinforce the fact that the experiment is carried out among high-proficiency English learners. The participants' choices of their preference in the use of translation tools are significant to reveal the popularity of translation tools in China, which is rarely examined. There is no participant of the survey who never has the experience of using translation tools, which fully proves that the use of translation tools fulfill the function that hardcopy dictionaries used to play for EFL learners [16]. It seems that the popular translation tool out of China, namely Google Translate lost its predominance among Chinese EFL postgraduate learners. It is attributed to the fact that the language pair handling capability of Google Translate relates to the produced translation of the same language pairs [31] and the Chinese students tend to resort to the native translation tools with the possible beliefs in their huge database of either English-Chinese or Chinese-English produced translation. Youdao Translator and Baidu Translate rank the first and the second among all the choices, and are followed by ICIBA and Youdao dictionary. All of the top four choices are Chinese native translation tools. It seems that more participants prefer full text translation tools to online dictionary. There is one student who chose the item others and put down a translation tool beyond the listed item, Power Echo, which is a newborn translation tool in China.

As to their attitudes towards translation tools, the participants of the survey express their willingness in using translation tools, which is illustrated by the high score 4.44. The statements for usability and accessibility of the translation tools won 4.14 and 4.35 respectively, which show that Chinese EFL postgraduate learners believe that the translation tools are user-friendly and easy to access. Meanwhile, they still hold doubts about the efficiency and quality of the texts produced by translation tools, as suggested by the score of 3.47 and 2.99 for efficiency and quality. The similar results were reported by the previous research, it is revealed by Briggs [7] that most students valued translation tools for its easy access while expressed their limited trust in its accuracy.

5.2 The relationship between the use of translation tools and the L2 translation quality

The translation quality of the texts from the participants of the experiment is measured in two perspectives, the accuracy and appropriateness of the texts. It can be concluded from the results of the accuracy marking that there is not any significant difference between any two of the three experimental groups. As high-proficiency EFL learners, the Chinese EFL postgraduate learners are capable of translating the Chinese texts to English with acceptable accuracy. With or without the assistance of translation tools, they can convey the information of the source language with accurate vocabulary and grammar, and basically maintain the textual meanings. The other possible reason for the similar results of three groups is that the test is carried out in-class and the two experimental groups have no access to the translation tools. It is possible that most of the words used are within the scope of the students' vocabulary and the unfamiliar words are rare to everyone, which leads to the similar results of the scores in accuracy.

In view of the appropriateness of the texts, the results show significant differences in certain group pairs. EG 1 did slightly better than CG in appropriateness of the texts, but Sig. of mean difference is 0.837>0.05 and it can be inferred that the data between EG 1 and CG are not statistically different. EG 2 perform better than both EG 1 and CG when the appropriateness of the texts is measured. The statistical results in Table 7 show Sig. of mean difference between EG 1 and EG 2 is 0.26 <0.05 and Sig. of mean difference between EG 2 and CG is 0.16 < 0.05, indicating that the appropriateness score of EG 2 subjects appear statistical difference when compared with that of EG 1 and CG. The results show that the subjects of EG 2 outperform EG 1 and CG in the production of appropriate translation texts, who were basically similar in their translation competence test before the experiment. In English translation learning process, EG 2 completed large amount of practice in post-editing the texts produced by translation tools. It can be assumed that the textual coherence and culturally appropriateness of EG 2 are greatly improved by the practice of translation tools assisted post-editing, which compensates the widely blamed drawback of lacking cultural, social or historical awareness in the texted produced by translation tools.

The results of overall scores manifest significant difference between EG 2 and CG. According to the statistics of Table 8, Sig. of mean difference between EG 2 and CG is 0.013 < 0.05. The experimental group, which undergoes the learning process of machine translation texts plus post-editing skills, manifests superior characteristics compared with the control group. Meanwhile, no significant difference is detected between EG 1 and CG. It is argued that EG 1 use translation tools during their manual translation process, in which the translation tools function similarly as dictionaries with different format. The less significant difference between EG 1 and EG 2 is due to the reason that the similar performance in the measurement of accuracy undermines the overall impact of the final scores.

VI. Conclusions

The results of the research suggest that the Chinese EFL non-English major postgraduate learners welcome the use of translation tools in their translation learning and prefer the native translation tools. The experiment conducted confirmed the positive impact of accessible translation tools on L2 translation quality, which is in accordance with the proposal of introducing constructivism into translation teaching [32]. Applying translation tools in translation teaching prepares L2 learners the innovation of technology and provides informative resources for their translation learning. The results of the experiment suggest the preliminary conclusions that the use of translation tools plus post-editing skills can enhance the L2 translation quality and are of help to the improvement of Chinese EFL postgraduate learners' translation competence. Also, the results propose that the English instructors should be responsible for the selection of suitable translation teaching methodology and sort out the appropriate resources for the L2 learners, as is the case of translation tools plus post-editing in this research. Even though the present research has some pedagogical implication in L2 classrooms, it is small-scale in nature and the conclusions are drawn tentatively. It is advisable to expand the experimental subjects to research on the further impact of

translation tools upon L2 translation quality.

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