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Undergraduate Level Translation Students' Attitudes towards Machine Translation Post-Editing Training

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ABSTRACT

The need for translation has increased substantially at a global scale. To meet this ever increasing volume of translation, Machine Translation, which was once seen as a way to automate the translation process has again come to forefront with new methods. However, the expectations regarding the translation quality of Machine Translation is rather low for now. Thus, this paves the way for pre-editing and post-editing works. For this purpose, the professional translation market has undertaken some initiatives regarding training and use of Post-Editing among professional translators. Nevertheless, as it was the case for other tools of translation technology like Computer-Aided Translation or Terminology Management Systems, translation academia has fallen behind in adapting to new trends in translation market. In other words, there are not enough studies that take the issue of Machine Translation Post-Editing into consideration from a translation training perspective. For this reason, this study aims to investigate the attitudes of undergraduate level translation students towards Machine Translation Post-Editing with one-group pre-test and post-test research design. Upon the analysis of the data, a statistically significant difference was reported between pre-test and post-test scores. This shows that students' attitudes towards MT PE have become more positive after the training.

Key Words: Translation technology, machine translation post-editing, translator training, computer-aided translation.

1. Introduction

The translation market has seen a drastic increase and change in the volume of translation at a global level in the last three decades. This increase may be linked to internationalization initiatives of companies and circulation of materials and documents globally. As regard this increase, Gambier (2014) warns that "the balance between supply and demand is changing" (p.2). However, the volume is not the only thing that has been changing. According to Floran (2010) the way that translations are done has also changed in recent years. She further expands on her view by adding that "in a period of less than thirty years, technology in general has radically transformed the content and procedures by which professional translators translate" (p.429). This view puts forward another important

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consideration that translators should be equipped with new skill sets in order to survive in the professional translation market. Thus, teaching and learning the necessary skills before graduation become even more essential in view of the current situation which was named as "changing landscape in translation" by Gambier (2014, p. 2) in his guiding paper within the field of translation studies. Thus, the attitudes and perceptions of students become significant as an essential factor for the integration of a course on Post-Editing into the curriculum of translation training programmes. Hence, the aim of this paper is to identify the attitudes of undergraduate level translation students towards Machine Translation Post-Editing. To this end, the following research question is formulated:

> Do students' attitudes towards Machine Translation change in a statistically significant way after they take a course on Machine Translation Post-Editing?

In section 2, a review of the literature regarding the Machine Translation is reported focusing especially on the experimental studies. In section 3, the experimental design and set-up of the study are explained including the participants and data collection tools used in the study. In section 4, the results obtained from the questionnaires are presented and in Section 5, the results are discussed in detail while referring to previous studies in the field, as well. In Section 6, some conclusions are drawn and findings of the study are summarized.

2. Literature Review

The term "Post-Editing" and the work of a "Post-Editor" are new to the field of translation while the concept of Machine Translation dates back to 1960s. Thus, it is of great importance to give a brief outline of the definitions of PE before delving into detail.

Mossop (2014) states that in Post-Editing a human revise the output of MT system. This output is called as "raw output" in the relevant literature (Allen, 2003; Fiederer & O'Brien, 2009; Gaspari, 2001; Koponen, 2015; Temizöz, 2014). So, the work of the post-editor is to edit and polish the raw output so that it can be accepted as the translation of the source text in question. According to Allen (2003), post-editing is the process in which a post-editor edits, modifies and/or corrects a text that is translated by an MT system. However, Wagner (1985) makes a distinction between post-editing and translation proper or more commonly named as "translation from scratch". According to him, in post-editing translator corrects the "pre-translated text" not translates it from scratch as cited in Allen (2003, p.297).

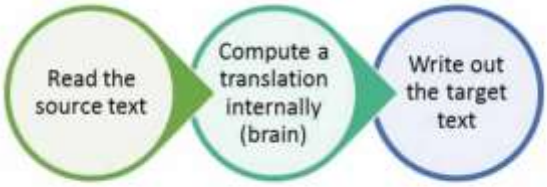
Building upon this view, Allen (2003) expands on the involvement of post-editing in translation process as follows:

> …the primary concern for post-editing is that incorporating MT systems into the translation process results in creating a "raw" output translated text that is considered upfront to be a partially or incompletely finished text (also called "quasi-text" (2003, p. 298)

Hence, it can be said that the roles that a translator and a post-editor play during translation process are different from each other.

According to a report published by TAUS (as cited in Steurs, 2014), which defines itself as a platform to unite the translation industry and other stakeholders, the process of normal translation (translation from scratch) and the process of post-editing the raw machine translation output are different as seen in the figure below.

Translation process of a translator



Translation process of a post-editor

Figure 1. The Comparison a translator and a post-editor in terms of translation process

(MT Post-editing Guidelines - TAUS, 2010)

Post-Editing is also divided into different approaches in itself. In the last three decades, these approaches have been given different names including "fast PE and conventional PE" (Almeida, 2013) or "light/rapid and full PE" "partial and complete PE" (Allen, 2003). Trying to clarify this abundance of terms, Almeida (2013) concludes that "PE to be chosen would be determined by how the text is intended to be used: for instance, for publication (requiring a higher level of quality), or for gisting (with lower quality requirements)" (p.14).

Furthermore, there have been several experimental studies that investigate the role and place of Machine Translation. Some of them are mentioned in the following lines.

Trying to investigate the relationship between behaviors and scores of translation students, Sukkwan (2014) prepared a five-point rating questionnaire and found that students had positive attitudes towards Google Translation. According to his result, no significant relationship was reported between behaviors and translation scores of students.

Kumar (2013) administered surveys to understand Arabic speaking EFL learners' perceptions of Machine Translation. According to his finding, most of the students saw MT as an assist in learning English. Nevertheless, they stated that the quality of MT could not catch up with human translation. Similarly, Ling et al. (2016) benefited from a questionnaire including 20 questions that aimed to

investigate undergraduate students' perceptions of MT. They reported that students had positive views about using MT.

In a study to investigate the opinions of novice translators about machine translation in general, Şahin (2015) collected data from 106 third-year translation students enrolled in translation technology class. According to the result of his survey, students considered Google MT output "unacceptable". However, they benefited from its services which are provided under the name of Google Translator Toolkit. The researcher concluded that the low quality of Google Translation output was the main reason for students' general negative attitudes towards machine translation.

Another pioneering research on Post-Editing within the academic setting was carried out by Witczak (2016) who introduced a Post-Editing exercise into a computer-assisted translation course. To this end, she organized a set up for her study including the preparation of three documents as vacuum cleaner manual, newspaper article and patient information leaflet as well as a questionnaire to be filled out by students both before and after the exercise. According to her findings, students complained about the "lack of choice that PE introduced" and she concludes that this may refer to scepticism among some students about Machine Translation.

All of these studies are important to create a framework for the study. Building upon these previous studies, the researchers developed the attitude scale and open-ended questionnaire to be employed in the study.

3. Methodology

The aim of this study is to investigate the attitudes of undergraduate level translation students towards post-editing training. Hence, the researchers benefited from an attitude scale and an open-ended questionnaire. The research design of the study is determined as one-group pre-test post-test (before and after) design.

3.1. Participants

The general population of the study consisted of the students studying in the Department of English Translation and Interpreting at Kırıkkale University. In the pilot study first 77, then 85 of these students were recruited in line with the test re-test procedure. But the students who took part in the actual study were fourth-year students enrolled in the course named "Localization". In total, 31 students took part in the study, 18 of whom were female and the remaining 13 were male. Furthermore, students were selected for this study according to the criteria that they had not taken any course on Machine Translation Post-Editing.

3.2. Data Collection Tools

The researchers developed an attitude scale to collect data as to students' attitudes towards Machine Translation Post-Editing. To this end, relevant literature was reviewed, and an item pool was prepared. Items were written in accordance with the parameters of Anderson (1988) like "avoiding statements that refer to past rather than present; avoiding statements that may be interpreted in more than one way" etc. (p.465). The scale is a 5-point Likert type scale which comprises of closed-ended

options including certainly disagree, disagree, uncertain, agree and certainly agree, each of which corresponds to the scores respectively as 1, 2, 3, 4 and 5.

A pilot study was conducted with a group of students as a preparation step and some items were deemed to be irrelevant to the objective of the study, thus they were discarded from the scale. For ensuring the reliability of the scale, the internal consistency of the scale was calculated using Cronbach's alpha (Cronbach α =, 805) and the scale was found to be reliable.

In addition to the attitude scale, the researchers formed a questionnaire containing three open-ended questions. These questions were intended to give a more detailed account of the students' thoughts about Machine Translation. In other words, students were given a platform to express their opinions freely on Machine Translation Post-Editing training and Machine Translation in general. Bearing this in mind, these 3 questions were formed in a neutral way so that students would not be influenced and directed. The questions were about the advantages and disadvantages of using Machine Translation system, the effect of Machine Translation on the future career of students and quality of Machine Translation.

3.3. Data Analysis

The data collected through the attitude scale was analysed using the software PASW 18 which was installed on the personal computer of the researchers. A paired samples t-test was conducted to compare the means of pre-test and post-test scores and to determine whether a statistically significant change occurred after the Post-Editing training. Furthermore, a thematic analysis was conducted for the analysis of responses given to open-ended questionnaire.

4. Findings

In this section of the study, findings related to the attitude scale and open-ended questionnaire are presented under two titles. First, attitudes of students before and after the training are compared, then their responses to open-ended questionnaire are presented.

4.1. Comparison of the Students' Attitudes before and after the Training

Pre-test and post-test scores of the students were compared by means of paired-samples t-test as shown in the table below.

Table 1. Comparison of the attitudes before and after the training

Condition	N	M	SD	df	t	p
re-test	31	62.06	6.18			
Post-test	31	66.51	6.23	30	-3.60	.001

As it can be seen in Table 1, the difference between pre-test (M = 62.06, SD = 6.18) and post-test scores (M = 66.51, SD = 6.23); t (30) = -3.60, p=.001 is statistically significant (p<.05). More precisely it is seen that students' attitudes changed after the post-editing training.

Totally there were 20 items in the scale and the items for which a statistically significant difference was reported are given below in Table 2.

Table 2. Items for which statistically significant difference was reported

Pairs	M	SD	t	df	P
Item 1 Pre - Post	-,58065	1,20483	-2,683	30	,012
Item 3 Pre - Post	-,45161	1,02758	-2,447	30	,020
Item 4 Pre - Post	-,64516	,91464	-3,927	30	,000
Item 5 Pre - Post	1,00000	1,18322	4,706	30	,000
Item 12 Pre - Post	,35484	,87744	2,252	30	,032
Item 13 Pre - Post	-,22581	,61696	-2,038	30	,050
Item 14 Pre - Post	,32258	,90874	1,976	30	,057
Item 15 Pre - Post	-,48387	1,06053	-2,540	30	,016

According to the paired-samples t-test result of the items as shown in Table 2, a statistically significant change can be seen for the items 1, 3, 4, 5, 12 and 15. However, for the items 13 and 14, there occurred a slightly significant change.

As seen from the figures, a statistically significant change was reported for item 1 (p = .012). It is related to the accuracy of texts that are translated by MT systems. The difference between pre-test and post-test scores has a positive direction, in other words, mean of post-test scores are greater than that of pre-test (M = 2.58 for pre-test) and (M = 3.16 for post-test). These figures indicate that students' beliefs in the accuracy of MT were consolidated after the Post-Editing training.

Item 3 is related to using MT system a tool for comprehension of texts written in English. As it is seen from the results of the analysis, there is a positive statistically significant change between pre-test and post-test scores (p = .020). It means that students began to see MT as a supporting tool for text comprehension after the training.

Item 4 is about using MT in translation assignments from English to Turkish. As the figures put forward, students' thoughts about using MT from English to Turkish became more positive after post-editing training (p = .000).

Another item for which a statistically significant change was reported is item 5 (p = .000). The scores of the students seem to have decreased after the training (M = 3.61 for pre-test) and (M = 2.61 for post-test). This item deals with the issue of seeing MT as a danger for future career from students' perspectives. It means that after the training concerns of students about their career due to the recent improvements in MT system reduced.

As for the item 12, it is about the syntax of Machine Translation outputs. As it can be understood from the figures, the difference between pre-test and post-test is statistically significant (p = .032). Nevertheless, a decrease in the scores was reported after the training (M = 3.87 for pre-test) and (M = 3.54 for post-test). The item states that "Machine Translation generates wrong word order in the target language". The decrease refers to the fact that students' thoughts about MT system as bringing about wrong word order in the target language changed after the training.

Item 15 is about the speed of translation that are done with MT systems. As it is evident from the figures, students' attitudes towards this item changed statistically significant after the training (p = .016) and the change is positive (M = 3.74 for pre-test) and (M = 4.22 for post-test). Students began to trust in the speed of MT systems more after the training.

As the figures show respectively, the change in item 13 and 14 can be considered as slightly significant (p = .050) and (p = .057). Of these two items, item 14 is relatively important in that it investigates the style of machine translated texts. The item states that "machine translated texts can be unnatural when idioms, proverbs or culture specific items are considered". However, a slight difference was reported between pre-test and post-test (p = .057). It is a negatively worded item and a modest decrease was reported after the post-editing training (M = 3.87 for pre-test) and (M = 3.54 for post-test). This modest decrease means that students began to trust in translation of non-literary texts by MT system more. However, the fact that the difference was not substantial implies that they are still cautious.

In section 5, these items are further discussed in comparison with the results of previous studies in the relevant literature.

4.2. Responses of the Students to Open-Ended Questionnaire

Students were given a platform to express their thoughts freely with open-ended questionnaire. A thematic analysis was applied to the responses of students given to open-ended questionnaire. During this process, field experts were asked for opinion, as well. According to the result of this analysis, three themes were defined as follows:

1-Translation speed and productivity gains of using MT system

2- Machine translation system as a supporting tool during translation process

3- Quality increase seen in machine translation systems

Some of the responses of students to these themes are given in the following paragraphs. From their responses, it is evident that students make a distinction between technical and non-technical texts. As for technical texts, they acknowledge that Machine Translation increases their translation speed relatively well while stressing the difference of using it in non-technical contexts as follows:

> *"By using a Machine Translation system, you don't have to spend a lot of time poring over dictionaries, especially in technical texts where words are not usually ambiguous. However, that's not the case with novel translations where human creativity is essential. It saves time with technical texts that are not too complex while it may be the opposite with less technical texts."*

Similar to this statement, another student tries to explain difference in using Machine Translation in academic and other text types.

> *"Before Post-Editing training, I was considering Machine Translation inadequate. It still has some deficiencies in some particular fields but especially in academic texts, I spend less time."*

When it comes to second theme, it is clear that students see MT system not a standalone module that can function without human assistance but a supporting tool during translation process. For this reason, their worries about the influence of MT on their future career decreased after the training as uttered by one of the students as follows:

> *"Actually, I was prejudicial against machine translation or the "help" it was getting me before I got used to it because I thought it didn't think like a human when translating. But the more I got into its way of translating and thinking process, I understood how I could polish the translation with the help of it."*

By the same token another student stresses the importance of human translators even though she accepts that MT systems help translators produce more in a shorter time.

> *"…I have never seen it as a danger for my career because without us (translators) it is useless. Every single person can learn how to use the system but only translators can do perfect jobs with it…. So in my opinion, it doesn't matter even if the Machine Translation system is functional, people always need real translators."*

The issue of translation quality of Machine Translation is another significant theme that should be discussed with care in the face of the recent developments seen in MT systems. The responses of students made it clear that they were cautious about this topic and they also made a distinction between translation into L1 and L2 as follows:

> *"It didn't change about translations to English but MT is certainly of better quality in translations to Turkish than before."*

5. Discussion

This study investigated how students' attitudes changed after the machine translation post-editing training by benefiting from a scale and open-ended questionnaire. The analysis of the obtained data revealed valuable results in this regard.

As stated in the previous section, attitudes of students changed in a statistically significant way after the training on Machine Translation Post-Editing. This finding supports what Sukkhwan (2014) and Alotaibi (2014) put forward in their studies which claim that attitudes and behaviors of students change positively after they are taught about the advantages and disadvantages or drawbacks of using Machine Translation. Because, their expectations from Machine Translation systems become more reasonable.

When it comes to the analysis of each item, a statistically significant change is seen for item 1. This shows that students' trust in the accuracy of Machine Translation increased after the training. This result is similar to that of Koponen (2015) who found out that "their perception of MT apparently changed, with most commenting that they saw more potential in MT after the practical experiences of the course") p.10).

The study showed that using MT system supported students' comprehension of source texts. It means that students' views of MT as a tool that supports them to understand source texts more easily were consolidated after the training. This is somewhat similar to the conclusion of Kumar (2013) who proposed that almost all students depended on MT to understand English concepts in a study that he carried out with 60 undergraduate level students of business.

Post-Editing training changed students' opinions of using MT for translation assignments from English to Turkish. In fact, this is an indirect reflection of the key points that the lecturer stressed during the training in that he focused on the view that MT into L1 was of great importance. For this issue, Scocco (2011) draws the conclusion that "with regard to quality, post-editing of MT output is efficient only for translation into the mother tongue" (p.1).

As for item 5, students were reported to see MT as a danger for their future career. However, the analysis of the scale and responses of students to the questions in the open-ended questionnaire revealed that a substantial decrease was seen in their fear after the training. This is also clear from the comparison of pre-test and post-test scores, which states that concerns of students about the developments seen in MT like fear of losing their jobs in the future reduced since they started see MT as not a standalone system that could function without any human assistance.

For the change in students' perception of MT, Rossi (2017) asserts that negative perceptions regarding the use of MT will "at least partly disappear as students start interacting with MT and understand how it works" (p.52). According to her conclusion, the fears of students of using MT are somewhat similar to the fears of Translation Memory (TM) use seen in early 2000s.

Furthermore, the study revealed that the level of confidence students have for MT increased after the training. Though they were of the opinion that MT generated wrong word order in the target language, their opinions changed significantly after the training. This result complies with the result of the item 1, item 3 and item 4 in that students' trust in MT system increased after the training.

In fact, the discussion about the speed and productivity gains of using MT is similar to that of using Translation Memories in the early 2000s. In a study that tries to investigate the productivity gains, Bowker (2005) draws a conclusion that the speed of translators increase with the help of TMs. When it comes to using MT systems in translation, Plitt & Masselot (2010) similarly confirmed that translators work faster and save time by means of MT. As for academic setting, Şahin (2015) acknowledged that a positive change was reported in students' thoughts about productivity increases using MT in his comprehensive study with undergraduate level translation studies covering the period between 2010 and 2013.

This discussion of using MT system in non-literal texts was taken into consideration by Ling, San, & Foo (2016) in their study that aims to identify perceptions of undergraduate level student users of Machine Translation and it was found that most of the students object to the statement "MT tools can transfer cultural elements". When this item is considered in line with the other items, it can be claimed that students' beliefs in Machine Translation system became stronger and more positive after the training. Nevertheless, this item needs to be elaborated in detail by future studies that would focus on the relation between text type and quality of Machine Translation output.

5. Conclusion

It is an undeniable fact that the developments seen in Machine Translation will change the way that translators maintain their profession. In the face of the frequency with which Machine Translation is employed in the translation industry, translations that are done with Post-Editing are increasing in number constantly. Thus, it is important take Post-Editing into consideration from an academic perspective, as well. This study is a step that is taken to fulfil this need in translation training programmes.

The study initially aimed to reveal undergraduate level translation students' perceptions and attitudes towards Machine Translation Post-Editing. The researchers developed an attitude scale and an open-ended questionnaire to collect data. The research design of the study was determined as one-group pre-test post-test research design in which the researchers applied the attitude scale both before and after the training.

The analysis of the data shows that there occurred a statistically significant change in the attitudes of students after the training. Students have positive attitudes towards using Machine Translation. Speed and productivity gains come to forefront upon the analysis of the data. This is supported by their responses to open-ended questions in the questionnaire, as well. Furthermore, students are aware of the recent developments seen in Machine Translation systems while stressing the limits of Machine Translation especially for literary domains. For this reason, a course on Post-Editing within the curriculum of translation programmes could be an appropriate step not only to dissolve the negative perceptions of students about Machine Translation but also to determine the limits of Machine Translation by focusing on the pre-editing works, as well.

This study is limited to 31 students studying English to Turkish translation and it can be developed with more students and more language pairs by incorporating other important issues like self-efficacy beliefs of students about the use of translation technology.

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