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Exploring undergraduate students' experiences in dealing with post-editing of machine translation

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ABSTRACT

Although post-editing of machine translation (PEMT) has been much discussed and spoken among students in higher education institutions, little empirical evidence has been reported regarding the students' real practices in their academic life. To fill this practical gap, this article explores the students' experiences in dealing with PEMT in a Theoretical Foundation of Translating and Interpreting (TFTI) course. This exploration elaborates practical insights into how the students initially started practicing translation through PEMT in their actual day-to-day practices. Fifty-eight English students studying in an undergraduate program in a prominent public university in Indonesia voluntarily participated in this qualitative case study. Data were collected from students' focused-group discussion (FGD), survey questionnaire, in-depth interviews, and students' documents and the data were analyzed using thematic analysis. Findings showed that post-editing process provides the students with experiences in building their text knowledge to enable them to have high awareness and sensitivity to the academic texts. In addition, in PEMT practices, the students' experiences were explored through the implementation of translation methods and techniques expected to build their awareness in PEMT with regard to language structure and language function. These experiences have given some empirical inputs for the lecturers to design relevant tasks and apply various translating practices for students' more meaningful learning.

Keywords: Post-editing of machine translation; students' experiences; translating

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INTRODUCTION

Translation courses, with their unique names used by higher education institutions both at home and overseas, are commonly offered to undergraduate students for a variety of purposes (Setiadi, 2018) and in the different number of credits. In the context of Indonesian higher education institutions, the translation courses are taught to the students at the language departments throughout Indonesia, i.e. English, to provide the students with basic principles of translation (Dewi, 2019b). Although the undergraduate students at the English departments are generally bilinguals, for instance, they are not automatically considered to be

competent translators (Dewi, 2019a). As novice translators, they are supposed to be introduced to translation competences (Neubert, 2000; Schaffner, 2000) and do sufficient translating practices aimed at engaging them with real experiences in translating.

Translating practices experienced by the students in two or three decades ago are very much different from those in recent times. In the early years, the students, on the one hand, were just directed to learn word processing and simple operating systems (Guerberof-Arenas & Moorkens, 2019) to work on their translation jobs. During this period, in the Indonesian condition, the students

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were helped a lot with printed bilingual dictionaries, i.e. English-Indonesian and Indonesian-English, or monolingual English printed dictionaries to complete their translation works through translating from scratch (TfS). The so-called ‘conventional’ dictionaries were the main resources for them to overcome their problems with vocabularies. In addition, simple and a very limited number of grammar books were used as references to solve their grammatical problems. However, the problems with grammar and vocabularies in doing translation were also identified by a Japanese researcher (Yamada, 2019) in the practices of TfS which were quite similar with those of the Indonesian conditions.

Nowadays, on the other hand, the students have been accustomed to using various translation technologies, including machine translations (MTs), Google Translate (GT) for instance, in their daily translating practices (Chung, 2020; Guerberof-Arenas & Moorkens, 2019). A machine translation (MT) such as GT is considered to be a solution for the translation demands which cannot be actually fulfilled by the practices of TfS (Jia et al., 2019) due to a drastic increase of translation volume in the global market (Cetiner & Isisag, 2019). Translation technology such as MT is even more regularly used in the world of a language industry (Bundgaard & Christensen, 2019).

The above contradictive translating practices experienced by different groups of students, in two different decades, have given direct descriptions on changes and consequences on the teaching practices implemented by lecturers at universities. The teaching practices should also be adapted with situations and conditions of the development of science and technology through modifying syllabus and teaching modules used for the teaching practices (Guerberof-Arenas & Moorkens, 2019). With regard to the practices of teaching in this technological era where the use of computer-assisted translation (CAT) tools and MTs are relatively dominant (Koponen et al., 2019), the implementation of the students’ translating practices will also change. Although students are not totally dependent on MT, they show positive responses to MT (Jia et al., 2019) since the quality of MT is improving significantly (Koponen et al., 2019; Vieira et al., 2019).

Despite the significant improvement in the quality of its outputs, some research on MTs has identified various errors resulting from the machines in which their qualities are different from one language pair to another. Some MT outputs, for instance, showed poor qualities both in the English-Japanese language pair (Yamada, 2019) and in Indonesian-English language pair (Ismail & Hartono, 2016; Napitupulu, 2017), but it showed a better quality in the English-Turkish language pair (Cetiner & Isisag, 2019). The differences of MT

errors have been studied by MT experts to come up with some categories of MT errors. First, MT errors are identified from two perspectives, i.e. “acceptability covering grammar, syntax, lexicon, coherence, style, register, and spelling; and adequacy including deletions, additions, mistranslation, and meaning shift” (Daems et al., 2017, p.5). Second, other error types are classified into three categories, i.e. “grammatical, lexico-semantic, and syntactic errors” (Sycz-Opon & Galuskin, 2017, p.198). Third, the MT errors are classified into six categories, i.e. “linguistic, referential, stylistic, syntactical, terminological, and typological” (Sin-wai, 2017, p.127). In addition, there are two particular research on similar topics in the Indonesian-English language pair. The first one classified the MT errors into six types, i.e. “lexico-semantic, tense, preposition, word order, distribution and use of verb group, and active and passive voice” (Napitupulu, 2017, p.21) and the other one classified the MT errors into 13 categories, i.e. “grammatical, terminology, omission, syntax, mistranslation or misunderstanding, literalness or faithfulness, usage, punctuation, addition, ambiguity, word form, capitalization, and spelling” (Ismail & Hartono, 2016, p.4).

With regard to the above categories of MT errors, the MT outputs are believed by experts (Jia et al., 2019) not to meet the quality of end-users. In the translation classroom context, the lecturers are the end-users of the students’ translation assignments. However, when the translation is intended for a journal publication, the end-users of the translation will be journal reviewers, editors, and then the public as the target readers of the journal article. Since MT outputs do not meet these target users, therefore, the MT outputs should be post-edited (Vieira et al., 2019), in which in this particular context, by the students as human translators (HTs) through doing a post-editing of machine translation (PEMT) process. The PEMT process aims to achieve the defined qualities of the target texts through analyzing and correcting a variety of errors found in the MT outputs (Koglin & Cunha, 2019; Screen, 2019). The PEMT process is directed to achieve “accurate, faithful, grammatical, idiomatic, and informative texts” through correcting a number of errors such as “linguistic, referential, stylistic, syntactical, terminological, and typological errors” (Sin-wai, 2017, p.127).

An experience in doing PEMT process involving 59 university students in South Korea has been shared by Chung (2020) reiterating that the students’ second language proficiency significantly affected how they post-edited MT output. Another similar research was applied to 31 university students implemented in the translation of English to Turkish revealing that the students showed positive attitudes towards MT and recommended

that the research was done in the other language pairs (Cetiner & Isisag, 2019). In addition, a surprising result of GT was shown in English-Spanish language pair indicating that GT provided a translation solution reaching up to 91% as good as that of human translation (Killman, 2016).

From the aforementioned descriptions of MT errors and post-editing, research on post-editing is still a new field of translation (Cetiner & Isisag, 2019), as a result, research on this topic in different language pairs in the world is still under-researched (Vieira et al., 2019). In the Indonesian context, little empirical evidence has been reported regarding the undergraduate students' real practices in post-editing of machine translation activities in both English-Indonesian and Indonesian-English language pairs. To fill this gap, this research is exploring the student translators' experiences in dealing with post-editing of machine translation (PEMT) through providing empirical evidence on what had been implemented by the students in their academic life. This exploration elaborates practical aspects of students' actual experiences in post-editing of machine translation.

METHOD

Research Design

This research seeks to explore undergraduate students' experiences in post-editing of machine translation (PEMT). It provides further descriptions of the students' purposes in doing their translation works, describing the translation technologies used in post-editing of machine translation, presenting academic texts in different topics translated by students' in their day to day translation practices, and identifying distinctive problems encountered by students in dealing with post-editing of machine translation. Through the implementation of a qualitative method with a case study design (Creswell, 2009, 2012; Dawson, 2009), 58 undergraduate students majoring in English language education in a prominent public university in Indonesia were voluntarily recruited to be participants of this study. The students attended a Theoretical Foundation of Translating and Interpreting course within a semester in their second year of studying at this university.

Data Collection

The data of this research were collected through focused-group discussion, survey questionnaires, in-depth interviews, and students' translation documents through following the principles of data collection procedures formulated by experts in research methodology (Hancock & Algozzine, 2006; Malik & Hamied, 2016; Yin, 2018). The data collected from the three different resources were systematically coded in order to provide readers with easier references, for instance, focused-group discussion was referred to as 'FGD', survey

questionnaires were coded 'SQs', in-depth interviews were labeled 'Intv' (referring to a singular reference) and 'Intvs' (referring to plural references), and students' translation documents were identified as 'StDocs'. In addition, each student was given a number to identify which of the students provided particular information derived from both students' interviews and students' questionnaires. The numbering process follows alphabetical ordering principles, therefore, the overall 58 students were labeled using the following codes, for instance, Student-1 (S1), Student-15 (S15), Student-30 (S30), and Student-58 (S58). When the data were obtained from the students' interviews, the coding system would be, for instance, an interview with Student-10 (Intv-S10), another interview with Student-20 (Intv-S20), and the other interview with Student-50 (Intv-S50).

Focused-Group Discussion

Focused-group discussion (FGD) was administered online through Zoom Meetings (ZMs) and the 58 students were managed to work in eight groups in different breakout rooms in which each group consisted of seven to eight students in each room. The FGD was aimed at exploring the students' experiences in dealing with post-editing of machine translation through correcting or editing the errors found in the machine translation outputs including selecting the right word choices, revising grammatical problems, correcting the target language messages that were not relevant with the ones written in the source language texts, checking incorrect spelling and the other mechanical errors. The students were given journal articles to translate with the use of a machine translation, Google Translate (GT). The GT outputs were then post-edited by the students in the group lead by one of the students as the chairperson of the room to lead the discussion session and share the screen on translation texts to be revised together by the members of the group. The screen sharing was presented by the chairperson and the conversation among the members of the room was recorded. The breakout rooms took 45 minutes and after the completion of the breakout room sessions, the students were invited to enter the main room to present the result of their group discussion in front of the other group members in the class.

Survey Questionnaires

Survey questionnaires were administered to 58 students (SQs, S1-S58) to seek some information about students' experiences in dealing with post-editing of machine translation during their attendance in the Theoretical Foundation of Translating and Interpreting (TFTI) within the semester whether or not the MT outputs were found to ease their works as student translators to complete their translation tasks. In addition, the

questionnaires also identified the students' problems found in the process of post-editing. The questionnaires were made online to explore students' opinion and their experiences in translation learning as suggested by Saldanha and O'Brien (2013) written by using a Google Form through following questioning techniques and templates available online which could be easily and freely accessed by the students.

In-Depth Interviews

The in-depth interviews to some selected students were purposively (Creswell, 2009, 2012; Fraenkel et al., 2012; Gay et al., 2006) implemented to reveal some information considered important to provide comprehensive data of this research, but they were not captured from the students' survey questionnaires. The interviews were also aimed at confirming whether the students' answers provided in the survey questionnaires were relevant to the actual conditions of the students with regard to their experiences in translating various documents in their day-to-day tasks. Some particular examples, relevant details, and further information and explanations regarding particular students' experiences in translating different text types were also explored and highlighted here. In addition, identification of information on the use of computer-assisted translation (CAT) tools, machine translations (MTs), the implementation of post-editing of machine translation (PEMT), students' future career orientation, and students' opportunities to grab translation orders from different prospective customers were also made during the interview sessions. Some of the selected results of the interviews relevant to the objectives of this study were quoted in the Indonesian language since the interviews were conducted in the Indonesian language, however, the English translation was made to provide the readers with a clear understanding of the content of the interview results.

Students' Documents

Students' documents (StDocs, S1-S58) consisted of post edited academic texts, i.e. journal articles both Indonesian-English and English-Indonesian, in several topics such as language and culture, education, and social sciences. The MT outputs resulted from the Google Translate (GT, 2020) as the pre-translated texts and they were then post-edited by the students through PEMT process, and students' reflective notes. These documents completed the data obtained from FGD, survey questionnaires, and in-depth interviews as parts of the triangulation process to achieve trustworthy research data ready for the process of data analysis.

Data Analysis

The data were analyzed by using thematic analysis (TA) by Braun and Clarke (2006, 2012, 2014) and

Clarke and Braun (2013, 2018). The TA was applied to different sources of data, i.e. Focused-group Discussion (FGD), survey questionnaires (SQs), in-depth interviews (Intvs), and the students' translation documents (StDocs). The TA was done through six stages suggested by Braun and Clarke (2006, 2012, 2014) and Clarke and Braun (2013, 2018) through referring to the systematic coding principles that had been made during the data collection stage. The results of the data analysis were then presented in the findings section and consecutively followed by the discussion section.

FINDINGS AND DISCUSSION

Based on the implementation of thematic analysis for analyzing the data, there are four main themes found to be the findings of this study. The four finding themes, among others, are the students' post-editing skills and their practical experiences, post-editing academic texts in different topics, distinctive problems encountered by students in PEMT practices, and experiencing PEMT in different subject areas. These findings are presented in the following sections consecutively accompanied by some discussion in each of the sections to confirm the findings with the relevant existing theoretical frameworks.

Students' Post-Editing Skills and Their Practical Experiences

The first finding of this research deals with the students' translating experiences. It describes the students' experiences in exploring the students' practices in translating for the purposes of both personal and business, sharing experiences whether or not the students used computer-assisted translation (CAT) tools in their translating practices.

The practice of PEMT in this class has provided valuable experiences for the students in improving their translation skills. The impact of PEMT practical activities has provided the students with some relevant experiences in using electronic dictionaries effectively, practicing the GT as the source of texts, finding the weaknesses of GT's outputs in terms of linguistic aspects, accuracy in the use of words, and accuracy in structuring sentences in the target language, and identifying ways on how to choose and use translation techniques and methods appropriately. The following is an expression put forward by the students in the practice of PEMT through interviews with Student-24 (Intv-S24) and Student-54 (Intv-S54) presented in Table 1 indicating that GT outputs were found to show some errors and weaknesses and, therefore, PE was needed to produce a higher quality translation. Details of the errors identified by students from the GT outputs are presented in Table 1.

Table 1
Errors Identified by Students from GT Outputs

No	Students' Problems in Using Google Translate (GT)	
	Source Language (SL): Indonesian	Target Language (TL): English
1	Saya menemui banyak masalah ketika menerjemahkan dengan Google Translate. Contohnya adalah tidak samanya makna yang dimaksud dalam source language ketika diterjemahkan ke target language. [Intv-S24].	I encountered many problems when translating with Google Translate. One of the examples is that the intended meaning written in the source language is different from that of the target language [Intv-S24].
2	Setiap kata memiliki arti yang banyak dan terkadang Google Translate salah memilih arti dari kata tersebut sehingga arti kalimatnya pun jadi berubah. [Intv-S54].	Every word has several alternative meanings and sometimes Google Translate selects a wrong word to indicate its meaning. Therefore, the meaning of the sentence also changes [Intv-S54].

This experience is valuable for the students since they could discover the weaknesses of the GT, therefore, they had their self-awareness and sensitivity to the translation skills found during the post-editing (PE) process. This experience is important for the students since based on the survey of the students' skills and interest in the field of translation which was started before the TFTI class began. It showed that the students had done a lot of translation practices but they did not show good quality in their translation results and they did not show maximum use of any translation technology. This survey questionnaire (SQ) was aimed at identifying the students' prior knowledge and experiences before attending the TFTI course. In addition, this was also done to identify the objectives of the course that would be achieved within the semester and to get familiar with the students' personal interest in the field of translation.

Data from survey questionnaires (SQs) and documents involving 58 undergraduate students as participants of this study (StDocs, S1-S58) indicated that most of the students (91.4%) confirmed to have translating practices when they started taking Theoretical Foundation of Translating and Interpreting (TFTI) course and the rest of them (8.6%) admitted that they never had any experiences in translating before. Most of the students (86.2%) translated various documents for their own individual needs, such as for fulfilling their own campus assignments, building their own initiatives to translate various documents as part of their own professional development, and providing colleagues with some translation services for the completion of their colleagues' home assignments. Meanwhile, only a few students (13.8%) translated different types of texts for developing their translation business with relatively lower charging fees. Since they were still novice translators, therefore, they did not follow regular fees commonly applied by those of professional translators. As part of their endeavor to update themselves with the development of translation technologies, few students (19%) used computer-assisted translation (CAT) tools to deal with their translation practices. However, most of them (81%) emphasized that they never had any

experience in using CAT tools since the tools were still new for them. In addition, through relevant exposures and understanding of the translation profession, most of the students (72.4%) shared their willingness to become translators for their future career orientation. Only a few of them (27.6%) did not have any passion to become translators, therefore, they did translation works only for their own individual needs.

Based on the above descriptions, although most of the students did not undertake the translation for their business purpose, they shared their willingness to proceed to the profession of translation services through considering translation as their future career orientation. It is very important to facilitate the students to be proficient translators through empowering and facilitating them with relevant technologies as it was usually used by those of professional translators such as CAT tools and machine translations (MTs). Recently, machine translation is believed to improve the quality of translation and in particular sectors, the translators are even required to use an MT (Vieira & Alonso, 2020). In the industrial world, translation technology has been considered to be a significant solution for translators (Jia et al., 2019) which cannot be fulfilled by translation from scratch (TfS) as in normal practices. In the international translation practices, for instance, students have been introduced to some popular CAT tools such as Memsource, MemoQ, and SDL Trados (Guerberof-Arenas & Moorkens, 2019). Ideally, these tools should also be introduced to Indonesian students who are taking translation courses. It aims to catch up with the development of the world translation industry, requiring the students as the future translators to demonstrate their competences and skills in translating. By facilitating them with the up to date translation technologies similar to those regularly used by translators in the industrial world (Bundgaard & Christensen, 2019), the student-translators can sensitize the assistance of the technology in accomplishing their works (Vieira et al., 2019). These can be started by developing the course syllabus and modules through adapting them with the demands of industry (Guerberof-Arenas &

Moorkens, 2019). Nowadays, the provision of CAT tools and MTs among students taking translation courses were undeniably important since only a few students (19%) used CAT tools, where at the same time, most of the students (72.4%) shared willingness to consider translators as their future careers. The availability of translation technology including CAT tools for the undergraduate students as future translations is unavoidable since CAT tools will become primary support for professional translators (Quah, 2006).

Post-Editing Academic Texts in Different Topics

Data from survey questionnaires (SQs) and students' translation documents (StDocs) involving 58 undergraduate students as participants of this study indicated that the undergraduate students were provided with academic texts in different topics, i.e. language and culture, education, social sciences, to practice post-editing of machine translation. Each topic of the texts would provide the students with unique and interesting experiences in different aspects, such as issues of register and style (Catford, 1965), cases in translating tables, figures, and the other descriptive details by using the relevant translation methods to achieve accurate and natural translation, content understanding and cultural differences, and even research experiences in dealing with a variety of translating tasks (Newmark, 1982, 1988).

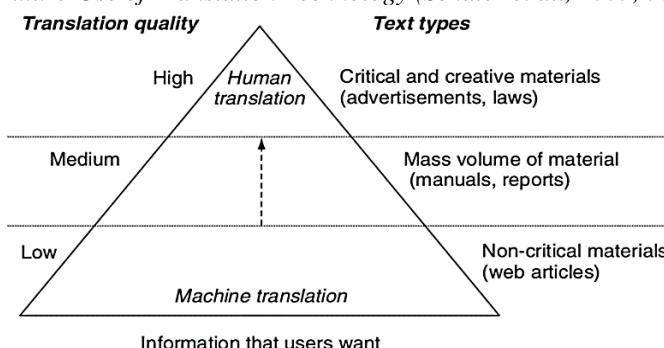
As student translators, they were actually required to learn ways of doing translation through some regular practices directed by their lecturers (Intv-S37 & StDocs-S37). However, some particular students who showed more translating initiatives had tried to find some more possibilities and some other opportunities to work on their translation in smaller business schemes. In such a situation, the students took chances of making a small amount of money through cooperating with their seniors (Intv-S45 & StDocs-S45). These students developed themselves through building translation

competences and sharpening their translation skills through translating a variety of text types. Through intensive translating practices, the students could analyze different generic structures of texts and features of their lexico-grammatical items in order to see differences in the social function of each text type (Sofyan & Tarigan, 2018). Then, day to day translating experiences in various text types had sharpened the students' translating skills leading them to become experienced translators.

The students were faced with various post-editing practices using academic texts in different topics. With regard to the text types resulting from the students' translation documents (StDocs), there were three categories of translation quality, i.e. high, medium, and low (Schäler et al., 2003; in Quah, 2006). Based on the characteristics of the texts, academic texts were selected to provide the students with relevant texts for PEMT practices since academic texts were relevant for practicing PEMT ((Schäler et al., 2003; in Quah, 2006). The other texts, i.e. literary texts, according to Vieira and Alonso (2020), could not be translated by using machine translations since literary texts needed a high level of sensitivity in translating them. A similar example was given by Yuliasri (2017) in the translation of comics from English into Indonesian through reducing inappropriate words, i.e. sarcasm, and carefully selecting appropriate terminologies acceptable for children and teenagers as the biggest segment of readers in Indonesia. In this particular example, the strategy of censorship could not be done by an MT. Moreover, the other text types such as poems and song lyrics, for instance, consisted of poetic languages which needed higher sensitivity level in providing meanings to the selected words (Handayani & Harto, 2015; Harto & Handayani, 2017), therefore, these may not be fully understood by translation machines (Vieira & Alonso, 2020). The text types and their indicators of quality (Schäler et al., 2003; in Quah, 2006) are presented in Figure 1.

Figure 1

Future-Use of Translation Technology (Schäler et al., 2003; in Quah, 2006, p.154)



However, machine translations may work on the other types of texts such as academic texts (Cetiner & Isisag, 2019), including abstracts, academic papers, bachelor theses, books, essays,

and journal articles. In this particular research context, journal articles were categorized into the second level of quality (medium), in which according to Schäler et al. (2003; in Quah, 2006)

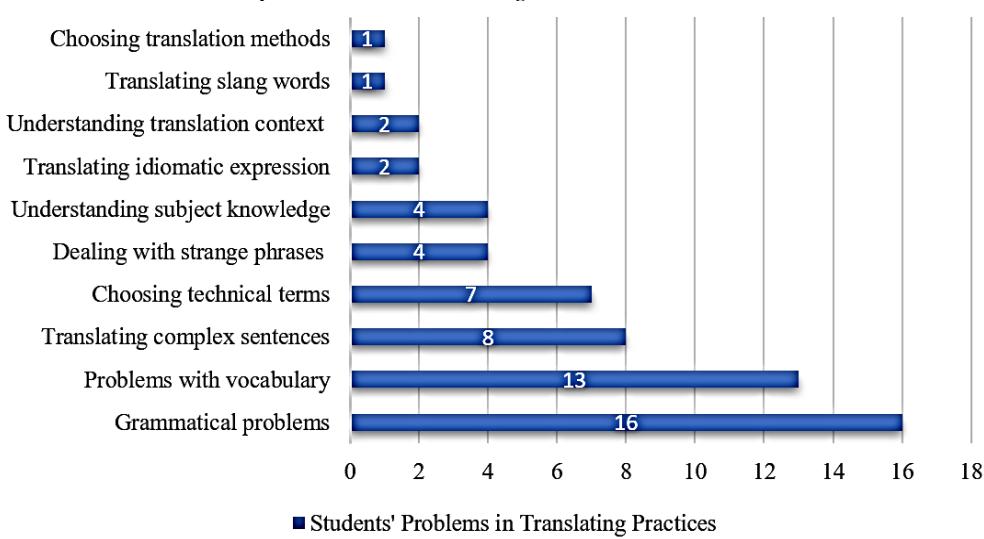
can be translated using machine translation. Due to the rapid development of translation technology, particularly machine translations, therefore, it is important for the student translators to consider whether or not a certain type of text should be translated by human translators. As the alternative, the text could actually be machine translated as its initial draft and post-edited it to meet the required quality, full post-editing (Full PE), in which the text is intended for publication, or light post-editing (Light PE) in which the text is only for gisting (Koglin & Cunha, 2019; Nitzke, 2019; Nitzke et al., 2019; Sin-wai, 2017; Vieira et al., 2019). The importance of understanding translation technology, a future-use of translation technology (Schaler et al., 2003; in Quah, 2006) presented in Figure 1 above aims to provide students and translators with some information and guidelines to decide whether a particular text type was supposed to be translated from scratch. Alternatively, the text may actually be

translated using a machine translation, for instance news item texts (Harto et al., 2021), and followed by a post-editing process to meet the end-users, including the one intended for publication.

Distinctive Problems Encountered by Students in PEMT Practices

Data from the students' survey questionnaires (SQs), students' interviews (Intvs), and students' translation documents (StDocs) indicated that the students taking the TFTI course encountered a variety of problems in their PEMT practices. Based on the implementation of thematic analysis, the students' distinctive problems were classified into 10 topics and the last two problems, problems with grammar (27.59%) and vocabularies (22.41%) were identified to be the two most dominant problems encountered by the students. Details of the students' distinctive problems are presented in Figure 2.

Figure 2
Problems Encountered by Students in Translating Practices



Source: SQs & StDocs (S1-S58); n=58

The data presented in Figure 2 were also supported by the data from students' documents (StDocs) and students' in-depth interviews (Intvs) both from Student-8 (StDocs-S8 & Intv-S8) and from Student-13 (Intv-S13 & StDocs-S13) as the participants of this study. The results of the interview with S8 (Intv-S8) and S13 (Intv-13) are consecutively presented in quotations [1] and [2].

[1] *Dalam praktik penerjemahan, banyak kosa kata yang tidak saya kenal dan saya mengalami kesulitan dalam memilih kata-kata yang tepat untuk mewakili pikiran penulis. Selain itu, untuk menyampaikan satu gagasan dari penulis bahasa sumbernya, saya masih mengalami kendala tata bahasa (grammar) dalam bahasa Inggris.*

In translating practices, I find many

unfamiliar words and I have some difficulties in selecting the most appropriate words to represent the writer's ideas. In addition, in order to convey the content knowledge of the writer, I encounter some grammatical problems in English).

[Intv-S8]

Based on the quotation [1], it is true that S8 found many unfamiliar words and it was not easy to select the most appropriate words to represent the ideas of the text writer. This condition was getting more serious when S8 as a student translator wanted to write the writer's ideas in good English since the student found some grammatical problems in expressing the content of the text in English as the target language text (Intv-S8 & StDocs-S8). Similar

problems were also identified from the S13's translation documents (StDocs-S13) and another interview with S13 (Intv-S13) indicating that problems with vocabularies and grammar were also shown from S13's statement during the interview session as indicated in quotation [2].

- [2] *Pengetahuan saya tentang vocabularies masih rendah sehingga seringkali banyak kata-kata dan kalimat yang tidak saya pahami.*

My knowledge of vocabularies is still very limited, as a consequence, I find many problems in understanding particular words and sentences.

[Intv-S13]

In accordance with the students' problems in understanding subject knowledge, for instance, it was supported by data from an interview with S19 (Intv-S19) emphasizing that problems with translating texts in which the texts were not the fields of their interest. Therefore, S19 tried to search the required information in a Google searching engine to find out more information in the fields (Intv-S19 & StDocs-S19). The result of the interview with S19 is highlighted in quotation [3].

- [3] *Materi terjemahan yang kita terima terkadang tidak sesuai dengan bidang garapan kita. Oleh karena itu, saya harus mencari-cari pengertian di Google.*

We sometimes receive translation materials that are not relevant with our fields of interest. Therefore, I have to look for the information in the Google searching engine.

[Intv-S19]

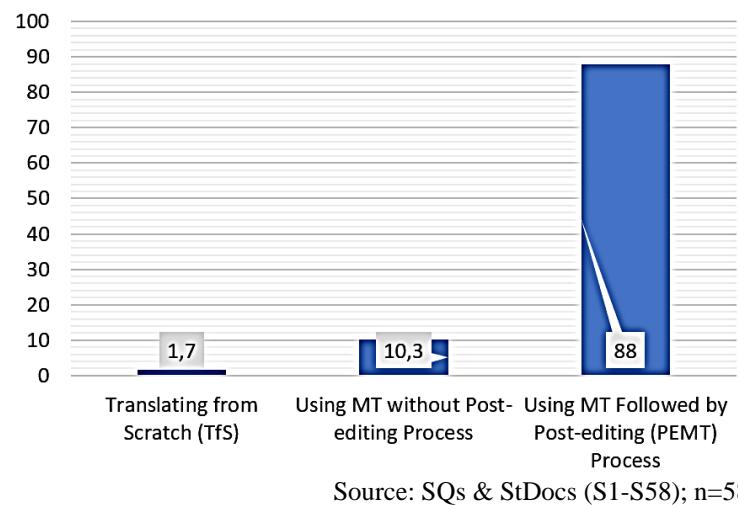
Based on the data from survey questionnaires (SQs) and interviews (Intvs) above, despite the variety of problems found during the process of translating, grammar and vocabularies are two serious problems that should be given more attention by the translation lecturers in translating practices. In addition to grammar and vocabulary, the above findings, as presented in Figure 3, also indicated that undergraduate students were faced with these other particular problems identified by some researchers in the relevant fields, i.e. grammar, vocabularies, and technical terms (Harto et al., 2020a; Yamada, 2019), lexico-grammatical patterns (Martikainen, 2019), complex sentences, strange phrases, slang words, and idioms (Quah, 2006), and lexico-semantic (Sycz-Opon & Galuskina, 2017). The students found problems with English tenses and collocations, for instance, particularly when they translated texts from Indonesian into English. In addition, the students were also challenged to select the most appropriate words representing the actual contexts of the subject knowledge. Inadequate subject knowledge had caused the students to fail to understand the content of the

texts, as the consequence, they chose irrelevant words to represent the writer's ideas they were confused with choosing the most appropriate method to translate the texts. However, these contextual cases were scientifically understood since there were unique items where terminologies found in both source language and target language were asymmetric (Biel, 2017). These distinctive phenomena should be taken into consideration since the translation of very specific terminologies and collocations in any language, including, for instance, English-Indonesian language pair and vice versa, were very much dependent on the contexts (Biel, 2017). Therefore, this is the job for professional translators to share their knowledge and translation experiences in providing the students who are studying translation courses with more relevant solutions for their translation problems (Harto et al., 2020b).

The data taken from 58 completed students' survey questionnaires (SQs, S1-S58) and relevant students' translation documents (StDocs, S1-S58) indicated that the students preferred using a machine translation (MT), i.e. Google Translate (GT), followed by a post-editing (PE) process (88%) to apply the other two translation types, namely TfS (1.7%) and MT (10.3%). When working on their translation tasks using an MT and it is followed by a PE process, in this particular research context, the students' translation type is called a post-editing of machine translation (hereinafter referred to as PEMT). In addition, when the students completed their translation works without any use of machine translation, this type of conventional translation is called a translation from scratch (TfS). Meanwhile, when the students used an MT to work on their translation works without doing any PE process, this type of translation is called an automated translation. The results of the automated translation which is done by a machine translation are called MT outputs. The data of students' preferences in choosing the three different types of translation are presented in Figure 3.

Referring to the data of students' survey questionnaires (SQs) presented in Figure 3, the MT used by students in translating texts from the source language (SL) to the target language (TL) was a Google Translate (GT, 2020). GT was chosen to use in this research with several distinctive considerations, i.e. GT was easily accessed by students for free, the translation process was completed very quickly, and GT was even one of the MTs having the highest number of CAT systems linked to GT (23 CAT tools) compared to those of the other MTs (Sin-wai, 2017). Through the rapid development of the MT system, therefore, MT quality is improving very significantly (Vieira et al., 2019) and it is even believed to improve the quality of translation (Vieira & Alonso, 2020).

Figure 3
Students' Preferences in the Classification of Translation Types



Despite the significant development of MTs, as one of the popular MTs, Google Translate (GT) can also be identified to have some typical errors found in their outputs (Quah, 2006; Sycz-Opon & Galuskina, 2017; Yamada, 2019). Some of the errors are, for example, grammatical errors, such as "syntax, preposition, particle, spelling and punctuation" (Quah, 2006; Yamada, 2019) and lexico-semantic errors, such as the differences of

meaning between source language texts and target language texts (Sycz-Opon & Galuskina, 2017). In addition to the data derived from SQs, the data obtained from students' interviews (Intvs) also indicated that some of the above problems were found by students in translating practices through the use of GT. Two of selected quotations taken from the students' interviews (Intv-S16 and Intv-S30) are presented in Table 2.

Table 2
Problems Encountered by Students in Using Google Translate

No	Students' Problems in Using Google Translate (GT)	
	Source Language (SL): Indonesian	Target Language (TL): English
1	Saya temukan banyak kesalahan grammar pada Google Translate, misalnya pada saat saya menulis kata "dia" biasanya akan muncul "he", padahal maksud saya adalah "she". Selain itu, ada beberapa kata yang rancu dan tenses nya terkadang tidak konsisten. [Intv-S16].	I found many grammatical errors in Google Translate, for example when I write the word "dia" [an Indonesian word referring to a pronoun] it usually appears "he", even though I mean to write "she". In addition, there are some words that are ambiguous and the tenses are sometimes inconsistent [Intv-S16].
2	Terkadang saya masih bingung untuk menentukan verb 1, 2, dan 3. Selain itu saya juga sering kali tidak mengetahui apa terjemahan dari kata tersebut dan harus menggunakan bantuan Google Translate. [Intv-S30].	Sometimes I am still confused in using different kinds of verbs such as present, past and participle. In addition, oftentimes, I do not know the translation of particular words and I have to use a Google Translate [Intv-S30].

Source: In-depth interviews (Intvs) with students [S16 & S30]

In compliance with the data obtained from students' interviews (Intvs) presented in Table 2, there were at least two categories of problems encountered by the students, i.e. grammatical problems, particularly with regard to the use of English tenses (Intv-S16, Intv-S30) and the other problems related to lexico-semantic issues (Intv-S24 and Intv-S54 indicated in Table 1 above). One of the examples found in the grammatical problems was a translation of a personal pronoun "dia" [a personal pronoun used for both male and female in the Indonesian language]. When it was translated using Google Translate (GT), the result always referred to 'he' [a personal pronoun in English referring to a

male only], whereas what was meant by the student (StDocs-S16) was the word 'she' [which was referred to a personal pronoun for a female]. This type of error was referred to as problems with an incorrect pronoun which is actually a part of grammatical errors (Harto et al., 2021; Sycz-Opon & Galuskina, 2017) (Intv-S16). The other problem in grammar was also found in the result of the students' translation documents (StDocs-S30) and an interview with Student-30 (Intv-S30) identifying that S30 found problems with regard to English tenses. It was difficult for S30 to use various verbs in different tenses whether the verbs should be written in the forms of present, past, or participle

(Intv-S30). The other problems found in the second category were related to lexico-semantic issues, for instance, problems related to word meanings found in the target language (TL) resulted from the MT, were different from those of the source language (SL) (Intv-S24 & StDocs-S24). Likewise, words that had many alternative meanings could not be accurately chosen by GT, as the consequence, the meaning of the sentence also changed (Intv-S54 & StDocs-S54). With regard to these phenomena, according to Sycz-Opon and Galuskina (2017), these problems were classified as lexico-semantic errors.

Experiencing PEMT in Different Subject Areas

With regard to the above problems encountered by the students in using MT (10.3%), few students decided to translate their documents from scratch (1.7%) since they were not satisfied with the MT outputs. However, translating from scratch cannot accommodate the high demands of the translation industry (Jia et al., 2019; Cetiner & Isisag, 2019), as the consequence, the translation users and experts of MT tried to combine the productivity of the MT process and employ translators to revise and edit the errors resulted from the MT through a post-editing of machine translation (PEMT) process. Most of the students (88%) chose this type of translation process since they believed that the translation technology and computer-assisted translation (CAT) tools were only tools and the students as the translators who had to proficiently use the tools for the completion of their translation tasks (Vieira et al., 2019). They believed that the errors produced by the translation machines and CAT tools were normal practices and this is the job of the students as the translators to take the benefits from the translation technologies through doing a post-editing process to the MT outputs. Therefore, student translators are required to identify different types of errors generated from the MT and then make corrections through revising and editing the MT errors so that it can meet the demands of the end-users. If the translation results are intended for publication purposes, then the post-editing is directed to a full post-editing (Full PE) (Vieira et al., 2019; Koglin & Cunha, 2019; Nitzke, 2019; Nitzke et al., 2019; Sin-wai, 2017), which is intended for producing post-edited texts worth publishing. These students (88%) even found lots of benefits in the implementation of PEMT, among others, were the provision of the initial draft of their translation, the availability of technical terms and other difficult vocabularies in the target language provided by the system, and the existence of grammatical alternative corrections and spelling checking alternatives.

When the undergraduate students were exposed to experiences in translating various subject areas, the students would have better knowledge and competences in the subject areas. As the

consequence, their vocabularies in the relevant fields would also be increasing. These exposures provided the students with a better understanding of how to translate the documents in some areas of expertise through the use of machine translation and they would be very familiar with the specific terminologies commonly used in their practices. Through PEMT experiences, the students can build their awareness in the post-editing process.

CONCLUSION

This research has drawn two important conclusions regarding students' experiences in PEMT including its materials related to PEMT process and students' experiences in PEMT practices. The post-editing process in the Theoretical Foundation of Translating and Interpreting (TFTI) course provides the undergraduate students with experiences in the knowledge of texts that are expected to enable students to have awareness and sensitivity to the academic texts in different topics, the accuracy of choosing words with the equivalent meanings, and understanding the context contained in the text due to limited lexical meaning found in the dictionary. Meanwhile, in the PEMT practices, the students' experiences were explored through the implementation of translation methods and techniques, the application of grammar in the right target language, and the use of supporting technology in MT and PEMT. The PEMT experience is expected to build students' awareness in the editing process on how language is structured and how language functions for communicative purposes so that the information and messages that will be conveyed in the source language are achieved in the target language. Since this research is limited to the students' experiences in the process and practice of PEMT, therefore, the results of this research can be used as references for the teaching of PEMT in TFTI courses and other research on PEMT teaching methods among students at the university level.

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