DECIPHERING METACOGNITIVE STRATEGIES DURING MACHINE TRANSLATION POST-EDITING PRACTICES: A CASE STUDY OF AN INDONESIAN EFL LEARNER

Fuad Abdullah[1], Agis Andriani[2]
[1,2]University of Siliwangi; [1]Atma Jaya Catholic University of Indonesia
fuad.abdullah182@gmail.com[1]; agisandriani@unsil.ac.id[2]

ABSTRACT

The shift of paradigm from a machine translation (MT)-centred orientation to a human-centred orientation has increased the popularity of Machine Translation Post-editing (MTPE) practices in the last few years. As a result, a growing body of research has accentuated MTPE as a central investigative issue. Unfortunately, probing how an EFL learner employed metacognitive strategies during Machine Translation Post-editing (MTPE) practices remains underdeveloped, particularly in the Indonesian EFL context. Hence, this study aimed to fill the gap. A 24–year–old female learner of the English Education Department of a state university in Tasikmalaya, West Java, Indonesia was recruited as a participant in this scrutiny. To uphold ethical issues, the participant's name was made anonymous, namely Angel (pseudonym). Grounded in a descriptive case study, the present inquiry was intended to decipher how an EFL learner employed metacognitive strategies during MTPE practices. The data were audiovisual recordings of the think-aloud activities, transcript of TAP results and the input event loggings. These data were collected through Zoom-mediated Think Aloud Protocols (TAP). The data were analysed with Arndt's categories of ESL writing strategies encompassing planning, global planning, rehearsing, repeating, re-reading, and questioning (Arndt, 1987; Mu, 2005). The findings reported that there were the predominant patterns represented by Angel's MTPE practices, namely the learner's metacognitive strategies during MTPE practices in English-Indonesian output (rereading, questioning, editing, repeating, and planning). Pedagogically speaking, training learners to understand the underpinning concepts and practical use of MTPE encourages them to value the existence of an MT-centred task to a human-centred one in translating practices. Additionally, guiding learners to possess conceptual and procedural knowledge of how to undertake MTPE practices enables them to apply grammatically, syntactically, semantically and pragmatically correct translations, accurate punctuation, proper key terminology, culturally acceptable contents, added or omitted information, and acceptable formatting styles.

Keywords: An Indonesian EFL learner, Machine Translation Post-Editing (MTPE), metacognitive strategies, process-oriented translation

ABSTRAK

Pergeseran paradigma dari orientasi yang berpusat pada mesin penerjemah (MP) ke orientasi yang berpusat pada manusia telah meningkatkan popularitas praktik Pasca Penyuntingan Mesin Penerjemahan (PPMP) dalam beberapa tahun terakhir. Hasilnya, semakin banyak penelitian yang menekankan PPMP sebagai isu investigasi utama. Sayangnya, penelitian tentang bagaimana mahasiswa yang belajar Bahasa Inggis sebagai bahasa asing dengan menggunakan strategi metakognitif selama praktik PPMP masih belum dikembangkan, khususnya pada konteks Indonesia. Oleh karena itu, penelitian ini bertujuan untuk mengisi kesenjangan tersebut. Seorang mahasiswi berusia 24 tahun dari Program Studi Pendidikan Bahasa Inggris di sebuah universitas negeri di Tasikmalaya, Jawa Barat, Indonesia direkrut sebagai partisipan dalam penelitian ini. Untuk menjunjung tinggi etika, nama partisipan tersebut dibuat anonim yaitu Angel (nama samaran). Berdasarkan studi kasus deskriptif, penelitian ini dimaksudkan untuk menguraikan tentang bagaimana mahasiswi yang belajar Bahasa Inggis sebagai bahasa asing menggunakan strategi metakognitif selama praktik PPMP. Data yang digunakan adalah rekaman audiovisual kegiatan think aloud, transkrip hasil Think Aloud Protocols (TAP), dan input event loggings. Data ini dikumpulkan melalui TAP yang dimediasi Zoom. Data dianalisis dengan kategori strategi penulisan bahasa Inggris sebagai bahasa kedua Arndt yang meliputi perencanaan, perencanaan global, latihan, pengulangan, membaca ulang, dan bertanya (Arndt, 1987; Mu, 2005). Temuan melaporkan bahwa terdapat pola dominan yang diwakili oleh praktik PPMP Angel, yaitu strategi metakognitif Angel selama praktik PPMP pada luaran bahasa Inggris-Indonesia (membaca ulang, bertanya, menyunting, mengulang, dan merencanakan). Secara pedagogi, melatih mahasiswa untuk memahami konsep-konsep yang mendasari dan penggunaan praktis PPMP mendorong mereka untuk menghargai keberadaan aktivitas yang berpusat pada MP menjadi aktivitas yang berpusat pada manusia dalam praktik penerjemahan. Selain itu, membimbing mahasiswa untuk memiliki pengetahuan konseptual dan prosedural tentang bagaimana melakukan praktik PPMP memungkinkan mereka untuk menerapkan terjemahan yang benar secara tata bahasa, sintaksis, semantik dan pragmatis, tanda baca yang akurat, terminologi kunci yang tepat, konten yang berterima secara budaya, informasi yang ditambahkan atau dihilangkan, dan gaya format yang berterima.

Kata kunci: *Mahasiswi yang belajar Bahasa Inggris sebagai bahasa asing di Indonesia, Pasca Penyuntingan Mesin Penerjemahan (PPMP), strategi metakognitif, penerjemahan berorientasi proses*

INTRODUCTION

With the increasing awareness of conducting effective and efficient translation, investigative attempts have acknowledged the need to involve technologies in translation practices, such as Machine Translation (hereafter, MT) (Fan, et.al, 2021; Lee, 2020; Rivera-Trigueros, 2022; Shin & Chon, 2023; Zahroh, et. al. 2023). Jia et al (2019) maintain that MT (e.g. Google Translate) is viewed as a solution for the problems encountered in translating from scratch (TfS). Al Mahasees (2020) verbalises that MT supports translators and readers to comprehend other languages promptly from the translated source texts. Taşdemir, et. al. (2023) express that MT helps translators increase the results of translation quality in terms of cohesion, coherence, native-like translation output and loyalty to the source texts. With this in mind, the need to apply MT in assorted areas (e.g. education, health, business, legal, journalism, etc.) remains burgeoning (Al Mahasees, 2020).

Google Translate (hereafter, GT) has been one of the most widely employed MTs in the last few years (Al-Maroof, 2020; Harto, et. al. 2022; Jia, et. al. 2019; Shukla, et. al. 2023; Tsai, 2019). Besides, GT functions to overcome linguistic problems and foster people's approachability globally (Turovsky, 2016). Likewise, GT supports learners to translate in enormous languages while finishing their tasks (Alhaisoni & Alhaysony, 2017; Alsalem, 2019; Bin Dahmash, 2020). For this reason, GT is regarded as a useful MT not only in terms of translating a source language to a target language but also cultivating their vocabulary knowledge and pronunciation of a foreign language (van Lieshout & Cardoso, 2022).

Apart from facilitative and effective translation service results provided by GT, Machine Translation Post-Editing (MTPE) is required to control the translation quality results (Jia, et. al. 2019; Vieira, 2019; Zhang & Torres-Hostench, 2022). About such a claim, Niño (2008) argues that MTPE assists learners in diagnosing and amending mistakes produced by MT output. Clifford et al. (2013) add that the MT output should be critically evaluated to minimize inappropriate use of equivalence and its context. At the same time, the process of MTPE also contributes to the student's foreign language vocabulary acquisition. Similarly, MTPE offers indispensable experiences for learners to invigorate their translation competencies (Harto, et. al. 2022). Therefore, training learners to understand the underpinning concepts and practical use of MTPE encourages them to value the existence of an MT-centred task to a human-centred one in translating practices (Zhang & Torres-Hostench, 2022).

A growing body of research has accentuated MTPE as a central investigative issue. As an example, Jia, et. al. (2019) compared the practices of the post-editing of neural machine translation with from-scratch translation. The results unveiled that post-editing Google neural machine translation (GNMT) was able to translate more quickly than from-scratch translation in certain genres. However, it potentially led learners to experience a cognitive decrease in understanding the source and target texts. Post-editing GNMT could relatively assemble accurate and fluent equivalence of translation results as carried out by human transition. Eventually, learners demonstrated positive attitudes to learning how to post-edit though they initially encountered some challenges. Zhang & Torres-Hostench (2022) explored MTPE training for foreign language learners. They inferred that particular MTPE training practices contributed to detecting and revising the MT output mistakes. Similarly, the training guided learners to generate their critical reading to the employment of MT in foreign language classroom activities. Qing & Huang (2023) assessed the efficacy of learners on MTPE viewed from the psychometric properties of the scale and their associations. The empirical evidence showcased a high reliability of the scale (Cronbach's Alpha = 0.914) and revealed three dominant elements of self-efficacy, namely decision-making of MTPE, Communicative Competence of MTPE, and Strategic Competence of MTPE. Recently, Yang & Wang (2023) predicted student translators' performances during MTPE viewed from their self-regulation, critical thinking, and motivation. They concluded that the employed self-regulation signified an undeviating and positive influence on MTPE performances ($\beta = .48$, $p < .001$). Also, it was influenced statistically by critical thinking ($\beta = .46$, $p < .001$) and motivation ($\beta = .43$, $p < .001$).

Although the abovementioned investigative efforts have provided insightful and indispensable empirical contributions of MTPE to translation studies, probing how an EFL learner employs metacognitive strategies during Machine Translation Post-editing (MTPE) practices remains under-researched, notably in the Indonesian EFL milieu. Given this fact, the present study is intended to fill the gap. More technically, this study seeks to answer the subsequent research question:

How does an EFL learner employ metacognitive strategies during Machine Translation Post-editing (MTPE) practices?

METHODS

This study was conducted in an English Education Department of a state university, in Tasikmalaya, West Java, Indonesia. A 24–year–old female learner of the English Education Department (hereafter, EED) was recruited as the participant of the present scrutiny. There were a number of considerations to recruit her as the participant, such as her experiences to practice her translation competence and MTPE strategies, a multilingual speaker enabling her to utilise her linguistic and semiotic repertoires during the practices of MTPE strategies and willingness to participate in this inquiry by signing a consent form (Teddlie & Yu, 2007). Consequently, she was appropriate to be recruited as a participant in this investigation.

The data were collected through the Think Aloud Protocol (hereafter, TAP). TAP refers to a data collection technique to help participants reveal what they think verbally through their utterances while performing an activity (Jääskeläinen, 2010; Lörscher, 1991). TAP was employed since it allows researchers to obtain credible and dependable data through a systematic and 'methodologically controlled' strategy. Besides, it enables orderliness leading to the construction of translation strategies classification. Furthermore, it stimulates investigative participants to optimise problem-solving strategies during translating practices (Bernardini, 2002). Therefore, TAP was utilised to collect the data.

Grounded in theory-driven analysis, this study adapted Arndt's categories of ESL writing strategies to analyse the participant's (Angel's) metacognitive strategies during Machine Translation Post-editing (MTPE) practices (Arndt, 1987). Some considerations were taken due to the selection of this data analysis, such as a holistic analytical tool, non-native English speakers-based writing analytical tool, and appropriate analytical tool for audiovisual recordings of the think-aloud activities, transcript of TAP results and the input event loggings. More specifically, Arndt's categories of ESL writing strategies encompassed six categories, such as planning, global planning, rehearsing, repeating, re-reading, and questioning (Arndt, 1987; Mu, 2005).

FINDINGS AND DISCUSSION

Learner's MTPE practices in English-Indonesian output through *rereading*

Table 2. denotes that Angel did not make any changes as a response to the Google Translate output. She merely reread the output to ensure that it was appropriately translated as represented in this sentence "*Ketika babi-babi kecil itu sudah cukup besar untuk tinggal sendiri, dia menyuruh mereka keluar untuk mencari peruntungan mereka."* Viewed from the input event loggings, she was detected to move her cursor up and down by clicking the mouse before rereading the output of *Google Translate*. During *rereading*, Angle made four pauses with different lengths as represented in this input event logging ↓[▲][▼]• Ketika• • babi• babi• kecil• itu• sudah• cukup• besar• untuk• tinggal• sendiri• • dia• • mengirim• • • menyuruh• mereka• keluar• untuk• mencari• peruntungan• mereka• • • • (Input event loggings of the sentence #6)The pauses occurred when she uttered the word '*ketika'* (2 seconds), '*sendiri'* (2 seconds), '*dia'* (two seconds), '*mengirim'* (3 seconds) and '*mereka'* (4 seconds). It means that Angel decrease her reading speed while reading these words. It aims at carefully reviewing that the Indonesian equivalence is parallel with the English one. By doing so, the potentials of translation errors can be minimised and translation quality results can be optimized. Additionally, this indicates that Angel is a cautious translator considering the importance of maintaining translation quality results and avoiding misinterpretation during meaning making in MTPE practices.

Table 1. Learner's MTPE practices in English-Indonesian output through *rereading*

No.	Source Text (English)	Google Translate Output (Indonesian)	Machine Translation Post-Editing	Input Event Loggings	Think Aloud Protocol (TAP) Results
2	When the little pigs were old enough to be on their own, she sent them out to seek their fortune.	*Ketika babi-babi kecil itu sudah cukup besar untuk hidup mandiri, dia mengirim mereka keluar untuk mencari peruntungan.*	*Ketika babi-babi kecil itu sudah cukup besar untuk tinggal sendiri, dia menyuruh mereka keluar untuk mencari peruntungan mereka.*	↓[▲][▼]• Keti ka• • babi• babi • kecil• itu• sud ah• cukup• besa r• untuk• tingga l• sendiri• • dia• • mengirim• • • menyuruh• m	(clicking mouse) Ketika [2s] babi-babi kecil itu sudah cukup besar untuk tinggal sendiri [2s] dia [2s] mengirim [3s] menyuruh mereka keluar untuk mencari peruntungan

				ereka• keluar• untuk• mencari• peruntungan• mereka• • • •	mereka [4s]

Essentially, rereading affects more fruitful representation than one reading alone since it allows readers to build an unforgettable representation of a text. Besides, it reinforces the mental representation firmly after undertaking the first reading practices (Arndt, 1987; Callender, et. al., 2009; Kuhbandner & Emmerdinger, 2019; Xu, et. al. 2023). Further, Xu, et. al. (2023) argue that rereading is generated from human learning and problem-solving practices that enable readers to evaluate the context, sharpen up comprehension, and amend possible misconceptions. Hence, rereading as a metacognitive strategy contributes significantly to the process of MTPE.

Learner's MTPE practices in English-Indonesian output through *questioning*

Questioning occurred three times (15%) of the total metacognitive strategies adopted by Angel during MTPE practices. As an illustration, Angel addressed a question to herself as a way how she found out the proper Indonesian equivalence for the phrase '*chinny chin'* by verbalising '*what's that*?'

Table 2. learner's MTPE practices in English-Indonesian output through *questioning*

No.	Source Text (English)	Google Translate Output (Indonesian)	Machine Translation Post-Editing	Input Event Loggings	Think Aloud Protocol (TAP) Results
6	To which the Pig answered, "No, not by the hair of my chinny chin chin."	Babi menjawab, "Tidak, tidak dengan rambut di daguku."	Yang mana si babi menjawab, "Tidak, tidak dengan rambut di daguku."	Yang• mana• • • si• babi• menjawab• • "Tidak • • tidak• dengan• • • the• hair • of• my• chinny• chin• chin• what's• that?• [▲][▼]• • • • • • • • • • • • hmmm• • • [▲][▼]coba• chinny• chin• • [▲][▼][▲][▼] • • [Return]• hmm• • • • tidak • dengan• • rambut• apa• bulu? • • rambut• • di • daguku"+."◄ • eitsss• • •	Yang mana [3s] si babi menjawab [2s] "Tidak [2s] tidak dengan [3s] the hair of my chinny chin chin, **what's that?(**clicking Google Translate) [13s] hmmm [3s] (clicking DeepL) coba Chinny chin [2s] (clicking Google Translate) [2s] hmm [4s] tidak dengan [2s] rambut apa bulu? [2s] rambut [2s] di daguku." (deletion) eitsss [3s]

Contextually, she was carrying out MTPE from '*Babi menjawab, "Tidak, tidak dengan rambut di daguku'* as the Google Translate output to be '*Yang mana si babi menjawab, "Tidak, tidak dengan rambut di daguku*.' However, she felt hesitant about the phrase 'chinny chin' in Indonesian equivalence, namely *rambut* or *bulu*. To overcome her hesitation, she looked up the Indonesian equivalence in GT. The input event loggings delineate that she paused 13 times, moving her cursor up and down 8 times, and 1 deletion as manifested subsequently:

Yang• mana• • • si• babi• menjawab• • "Tidak• • tidak• dengan• • • the• hair• of• my• chinny• chin• chin• what's• that?• [▲][▼]• • • • • • • • • • • • • hmmm• • • [▲][▼]coba• chinny• chin• • [▲][▼][▲][▼]• • [Return]• hmm• • • • tidak• dengan• • rambut• apa• bulu?• • rambut• • di• daguku"+."◄• eitsss• • • (Input event loggings of the sentence #6).

The abovementioned input loggings confirm the results of TAP activities of Angel while performing MTPE practices. In particular, she paused 3 seconds after typing the phrase '*yang mana'*, 2 seconds after mentioning the word '*tidak'*, 3 seconds after uttering the phrase '*tidak dengan'*, 13 seconds while seeking the Indonesian equivalence for the phrase '*chinny chin'* in GT, 3 seconds when searching it in DeepL, 2 seconds while rechecking it in GT, 4 seconds when producing filler (hmmm), 2 seconds when uttering '*tidak dengan.'* 2 seconds when making a self-question ('*rambut' apa bulu*?'), 2 seconds when determining the word '*bulu'* as the equivalence and 3 seconds for a deletion. Given these facts, Angel's self-questioning while executing MTPE practices designate that she had limited knowledge of the word '*chinny'* and it led her to discover the Indonesian meaning of it not only in GT but also in DeepL. This reflects that she was perplexed to decide which word is suitable to select for the Indonesian equivalence of '*chinny'* either '*rambut'* or '*bulu'* in which in English both of them can be framed in the word 'hair'. Conversely, she probably rethought that the context of hair in the MTPE practices was addressed to pigs instead of humans. In other words, she was confused about how to choose such a word based on the acceptable context. Salmon and Barrera (2021) contend that *questioning* contributes to increasing cognitive practices, stimulating curiosity, and cultivating thinking processes. In addition, *self-questioning* is assumed to be able to encourage learners to evaluate and self-regulate their learning practices and attainment (Nourazar, et. al. 2022).

Learner's MTPE practices in English-Indonesian output through *editing*

The input event loggings of Angel's MTPE practices demonstrate that ↑↓Pada• suatu• ketika• dikasih• koma• hiduplah• seekor• induk• babi• yang• tinggal• dis• seb◄di• se buah• • gudang• tua• lumbung• tua• bersama• ketiga• • • babi• kecilnya• titik• • (Input event loggings of the sentence #1)These loggings provide similar evidence with the TAP results in which Angel attempted to put some punctuation and performed a deletion in the sentence # 1to construct a more cohesive and coherent sentence.

Table 3. learner's MTPE practices in English-Indonesian output through *editing*

No.	Source Text (English	Google Translate Output (Indonesian)	Machine Translation Post-Editing	Input Event Loggings	Think Aloud Protocol (TAP) Results
1	Once upon a time, there was a mother Sow who lived in an old barn with her three little Pigs.	Pada suatu ketika hiduplah seorang ibu Penabur yang tinggal di sebuah gudang tua bersama ketiga Babi kecilnya.	Pada suatu ketika, hiduplah seekor induk babi yang tinggal di sebuah lumbung tua bersama ketiga babi kecilnya.	↑↓Pada• suatu• ketika• dikasih • koma• hiduplah• seeko r• induk• babi• yang• tinggal• dis• seb◄di• se buah• • gudang • tua• lumbung • tua• bersama • ketiga• • • ba bi• kecilnya• tit ik• •	Pada suatu ketika, dikasih koma, hiduplah seekor induk babi yang tinggal di seb(deletion)uah [2s] gudang tua, lumbung tua bersama ketiga [2s] babi kecilnya, titik [2s]

Kliffer (2008) maintained that MTPE provides learners with vast obstacles in terms of equivocal syntactic and lexical choices of a language, non-literal language and conclusion drawing. As a result, equipping them with sufficient theoretical and practical knowledge on how to execute proper MTPE remains crucial (e.g. revision of mistranslations, lexical omission, lexical addition, and adherence to domain-specific terminology glossary, use of correct spelling, and terminological consistency) (Harto, et. al. 2022; Koponen, 2016; Zhang & Torres-Hostench, 2022).

Learner's MTPE practices in English-Indonesian output through *repeating*

Repeating is another metacognitive strategy undertaken by Angel when MTPE practices. To illustrate, this metacognitive strategy was identified while she was post-editing sentence #7. The GT output offers her "*Kalau begitu aku akan **terengah-engah**, dan aku akan **meledakkan** rumahmu!" kata Serigala.* Then, she post-edited it to be *Kalau begitu, aku akan **mendengus** dan aku akan **meniup**, dan aku akan **menerbangkan** rumahmu*!" *kata si serigala*. Lexically, she substituted the words *terengah-engah* (huff)

with '*mendengus'*, '*meledakkan'* (puff and blow) with '*meniup'* and '*menerbangkan'*. During these repeating practices, she looked up the Indonesian equivalences (e.g. *mendengus*, *meniup* and *menerbangkan*) from Google Translate. Specifically, she obtained such words from the dictionary feature of GT providing the thesaurus as outlined in the table d. subsequently:

Table 4. learner's MTPE practices in English-Indonesian output through repeating

No.	Source Text (English	Google Translate Output (Indonesian)	Machine Translation Post-Editing	Input Event Loggings	Think Aloud Protocol (TAP) Results
7	Then I'll huff and I'll puff, and I'll blow your house in!" said the Wolf.	"Kalau begitu aku akan terengah-engah, dan aku akan meledakkan rumahmu!" kata Serigala.	Kalau begitu, aku akan mendengus dan aku akan meniup, dan aku akan menerbangkan rumahmu!" kata si serigala.	"Kalau• begitu • aku• akan• w hat• is• huff?• [▲][▼]Let's• m ake• sure• • • • • • • hmm• • marah• • lebih • ke• mendengu s• sih• • [Retur n]• akan• mend engus• • dan• a ku• akan• puff • what• is• puff ?• [▲][▼]• • • • Tiupan• ber arti• lebih• ke• meniup• • meni up[Return]• • a ku• akan• meni up• • dan• aku • akan• blow• d i• sini• blow• it u• let's• see• [▲][▼]• • • • • • • • • • • • l ebih• ke• berart i• karena• dia• meniup• [Retur n]• akan• • • • • • • • menerba ngkan• • rumah mu!"• • • • • k ata• si• serigala • • •	Kalau begitu, aku akan what is huff? (clicking Google Translate) Let's make sure [7s] hmm [2s] marah [2s] lebih ke mendengus sih [2s] Akan mendengus [2s] dan aku akan puff.. What is puff? (clicking Google Translate) [4s] Tiupan berarti lebih ke meniup [2s] meniup [2s] Aku akan meniup [2s] dan aku akan blow. Di sini blow itu, let's see (clicking Google Translate) [12s] lebih ke berarti karena dia meniup, akan [8s] menerbangkan [2s] rumahmu!" [4s] kata si serigala [3s]

This finding is harmonious with the empirical evidence reiterated by Ali and Ahmed (2006) scrutinizing word repetition in the Qur'an. He inferred that repeated words in the Holy Qur'an provide particular communicative purposes and messages. Another study was conducted by Uchihara, et.al. (2019) poring over the effects of repetition on incidental vocabulary learning. The results demonstrated that there was a medium influence of repetition (r = .34) on incidental vocabulary learning. Subsequent moderator analyses indicated that variability in the influences of repetition size was manifested in learner variables, treatment variables, and diverse methodological uses (Uchihara, et. al., 2019).

Learner's MTPE practices in English-Indonesian output through *planning*

The last and the least metacognitive strategy applied by Angel while undertaking MTPE practices is planning. Planning is a type of metacognitive strategy focusing on seeking a point of departure and decision before composing (Arndt, 1987). Table e signifies that Angel was *planning* by remarking 'yang

mana [3s] si babi menjawab [2s] “Tidak [2s] tidak dengan [3s] the hair of my chinny chin chin, what’s that? (clicking Google Translate) [13s] (TAP result of sentence #6). The TAP result of sentence #6 illustrates that Angel thinking and rethinking before starting to write. Besides, she made 5 pauses to conceptualise her ideas while executing MTPE practices, notably when she was trying to discover the Indonesian equivalence of the words 'chinny chin.' In addition, she also confirmed her understanding of the Indonesian equivalence of 'chinny chin' to GT and DeepL as manifested by clicking the GT and DeepL viewed from the input event loggings.

Table 5. learner’s MTPE practices in English-Indonesian output through *planning*

No.	Source Text (English	Google Translate Output (Indonesian)	Machine Translation Post-Editing	Input Event Loggings	Think Aloud Protocol (TAP) Results
6	To which the Pig answered, "No, not by the hair of my chinny chin chin."	Babi menjawab, "Tidak, tidak dengan rambut di daguku."	Yang mana si babi menjawab, “Tidak, tidak dengan rambut di daguku.”	Yang• mana• • • si• babi• menjawab• • “Tidak • • tidak• dengan• • • the• hair • of• my• chinny• chin• chin• what’s• that?• [▲][▼]• • • • • • • • • • • • hmmm• • • [▲][▼]coba• chinny• chin• • [▲][▼][▲][▼] • • [Return]• hmm• • • • tidak • dengan• • ram but• apa• bulu? • • rambut• • di • daguku”+.”◀ • eitsss• • •	Yang mana [3s] si babi menjawab [2s] “Tidak [2s] tidak dengan [3s] the hair of my chinny chin chin, what’s that?(clicking Google Translate) [13s] hmmm [3s] (clicking DeepL) coba Chinny chin [2s] (clicking Google Translate) [2s] hmm [4s] tidak dengan [2s] rambut apa bulu? [2s] rambut [2s] di daguku.” (deletion) eitsss [3s]

Furthermore, she also addressed a question for herself as a medium of reflection by mentioning ‘chinny chin chin, what’s that? (clicking Google Translate) [13s]. Self-questioning is commonly employed when someone requires certain information as a reference before making a decision. Also, it functions to recall her memory of such words (chinny chin) so that the existing vocabulary knowledge stored in her mind can be disclosed. Zhao & Liao (2021) argue that *planning*, *task interpretation*, *translating*, *evaluating*, *monitoring* and *revising* help learners compose their texts effectively. This supports the notion that planning is a type of metacognitive strategy intended to focus on seeking ideas and rhetorical structures before starting to write (Arndt, 1987; Mu, 2005).

CONCLUSION

This inquiry is intended to decipher how an EFL learner employs metacognitive strategies during Machine Translation Post-editing (MTPE) practices. The findings outlined that the predominant pattern represented by Angel's MTPE practices, viz. the learner’s metacognitive strategies during MTPE practices in English-Indonesian output (*rereading*, *questioning*, *editing*, *repeating*, and *planning*). This can be affected by some factors, such as the learner's knowledge in diagnosing linguistic, referential, stylistic, syntactical, terminological, and typological errors while performing MTPE practices. Another factor can be different cultural backgrounds influencing how the learners make meaning in the source and target languages. Therefore, providing learners with sufficient conceptual, practical and evaluative experiences to conduct MTPE allows them to enhance their translation competencies and performances.

The present scrutiny offers insightful contributions in terms of theoretical, practical and empirical perspectives. Theoretically, since a majority of theoretical underpinnings in translation studies tend to focus on how translation quality results can be attained through better-translating practices, such as *translating from scratc*h (TfS), this study provides a theoretical contribution to how MTPE has shifted the paradigm of the human-centred orientation of translation to the machine-centred orientation of translation as a result of technological advancement. Practically, this study offers a new insight to translators and student translators that the proliferation of machine translation (MT) uses is unavoidable in this digital era. Hence, performing MTPE can be a breakthrough to balance the roles of human-centred translating and machine-centered translating practices. Empirically, this study contributes to the development of investigative attempts accentuating the significance of MTPE practices on MT output to ensure that productivity and quality can be maintained.

The present study has some limitations, such as non-triangulated data collection (e.g. Think Aloud Protocols), small number of participants and corpus. As a result, further studies should employ triangulated data collection (Think Aloud Protocols and stimulated recalls) to confirm and obtain more credible and dependable data. Additionally, engaging more participants and adding more corpora can enhance the representativeness of the investigative participants.

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CURRICULUM VITAE

Complete Name	Institution	Education	Research Interests
Fuad Abdullah	- University of Siliwangi - Atma Jaya Catholic University of Indonesia	- University of Siliwangi (UNSIL) (S.Pd.) - State University of Jakarta (UNJ) (M.Pd.) - Atma Jaya Catholic University of Indonesia (Ongoing)	Multimodality, Critical Discourse Analysis, Pronunciation and TESOL
Agis Andriani	University of Siliwangi	- University of Siliwangi (UNSIL) (S.Pd.) - Universitas Pendidikan Indonesia (UPI) (M.Hum.) - Universitas Pendidikan Indonesia (UPI) (Dr.)	Interlanguage Pragmatics, Phonetics and Phonology, Critical Discourse Analysis, and Linguistics