



## English Department Students' Ability in Conducting Post-editing of Academic Text for Yandex Translate

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**Abstract:** Yandex translate is a web-based translation service available online, free of charge, accessible for every user, especially EFL students. However, the product is less accurate in delivering the source language (SL) message into target language (TL) due to several problems such as misidentified text type, grammatical structure error, and inappropriate word choice, etc. This issue consequently gives a post-editing task to EFL students to improve its output. It requires EFL students to understand translation techniques, have high language proficiency and strong understanding of SL and TL, etc. This research thus analyzed students' ability in post-editing Yandex-translated academic abstract texts from four domains i.e., tourism, legal, medic, and architecture. It applied descriptive qualitative method and aimed at finding the techniques and accuracy level of students' post-edited texts. The participants were English education department students of the 4<sup>th</sup> semester in 8 classes at University of Mataram, who took Translating and Interpreting subject. The data were gathered through observation, and class assignment as research data collected via google form. The results indicated that students employed several post-editing techniques such as, modulation, borrowing, and literal translation. Students also post-edited the texts by making additions and deletions, shifting parts of speech, changing word choices, re-organizing and creating new sentences. The students produced post-edited texts with different level of accuracy such as, accurate, less accurate, and inaccurate. Mostly the products were less accurate. To infer, students have average ability in post-editing the academic text. To improve it, this is imperative for them to practice it continuously.

**Keywords:** Post-editing, techniques, accuracy

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### INTRODUCTION

A few decades ago, numerous multidisciplinary manuscripts, books, journals, or articles were manually translated by human translators. However, as the technology develops, it has now been invented into more sophisticated and effective form i.e., machine translation (MT). According to Wardana, et. al. (2022), it is computerized systems with certain installed formula affording to automatically translate text(s) from source language (SL) into target language (TL). MT is additionally equipped with online dictionaries, transmissions and receptions of texts, and remote terminology data banks (Hutchin, 1986).

One of the most popular machine translations used in this period is Yandex Translate. It is a web-based translation service available online and accessible for every user. Furthermore, it is free of charge and enables translation process run at a rapid pace. It can be inferred that Yandex Translate can lessen both cost and effort, including save time (Omar, Khafaga, Shaalan, 2020). Due to these advantages, a plenty of its users, particularly from educational setting i.e., EFL students, are very much assisted to finish their translation project given in pre-, during, and post-lecturing. As a result, their job is managed and done more effectively.

Regardless of the positive impacts Yandex Translate caters, it is often disappointing for the translated text is less accurate from its source text. It was found that 44% of its product is dominantly less accurate (Sumasjo and Mahani, 2020). It occurs due to several issues such as the facts that it fails to identify the type of text, to match TL's grammatical structures, and to select the proper choice of words based on TL setting (Sumiati, et.al., 2022). As the matter of fact, Yandex translate is less capable of making adjustment to the following crucial aspects such as, linguistic dimensions (like lexical, phonological, graphological form), tone, cultural perspective, and time between SL and TL (Zanches, 2021; Nida, 2001; Catford, 1965). These cause SL's message either get distorted or sound awkward and unnatural (Adawiyah, et.al, 2023).

Realizing the limitation, it thereafter drives EFL students to assess the accuracy of Yandex translate product, that briefly gives them a new challenging task. They are forced to interfere to its output. This activity is hence-called post-editing (PE), an action to revisit, evaluate, and revise the translated text (Allen, 2003, as cited in Jia et.al., 2019). It is a vital act, aimed at improving the quality of machine-translated text, especially its accuracy, so SL message is well grasped by its target readers. Doing post-editing nevertheless requires EFL students to have a set of translation skills and techniques, high language proficiency, and strong understanding of SL and TL. Moreover, students must have deep comprehension towards text genres, linguistic rules, grammatical aspects, cultural perspective, and broader lexical choice for they will deal with the text(s) from different corpora (Newmark, 1988) so they can produce an accurate text with appropriate techniques.

Based on the description above, this research is, thus, set at University of Mataram to investigate EFL students' techniques in conducting post-editing of the text produced by Yandex Translate, and to analyze accuracy level of post-editing output. The text used to fulfill those objectives is the abstract of academic text written in English from four fields of study.

## **RESEARCH METHODS**

The aims of this research are to identify the students' post-editing techniques, and to investigate the accuracy level of their post-editing products. The researcher implemented descriptive qualitative method (Ary, Jacobs, and Sorensen, 2010). The research was conducted in 8 classes that took Translating and Interpreting (TI) subject at English education department, University of Mataram. In addition, the data was gathered through observation and class assignment. Observation was carried out to observe students' post-editing product as preliminary information in terms of their understanding. And 4 academic abstract texts written in English from four fields of study i.e., tourism, legal, medic, and architecture, were used as class assignment and source of data.

Students would have to Yandex translate those English texts to Indonesian and post-edit them. The post-editing products would be turned in via google form as a database. They were in subsequent analyzed by the researcher with the application of two theories. The first theory was the post-editing techniques by Peter Fawcett (1997) as displayed in the table 1.

Table 1. Translation techniques by Peter Fawcett (1997)

No	Techniques	Meaning	Example
1	Borrowing	SL words are adopted to TL	Senior (Eng.) – <i>Senior</i> (Indo.)
2	Calque	SL words are borrowed and translated literally or word-for-word	Secretary general (Eng.) – <i>Sekretaris jenderal</i> (Indo.)
3	Literal translation	TL structure is formed based on SL grammatical structure, which also refers to word-for-word translation	I like swimming (Eng.) – <i>Saya suka berenang</i> (Indo.)
4	Transposition	SL's grammatical structure is adjusted to TL's	Ripe apple (Eng.) – <i>Apel yang matang</i> (Indo.)
5	Modulation	SL point of view is shifted, which causes word-class shifting. And, the structure is organized based on TL's	David studies at Michigan University now (Eng.) – <i>Universitas Michigan adalah tempat David menuntut ilmu saat ini</i> (Indo.)
6	Reformulation	SL words are translated by discovering and using their equivalence in TL	Cock-a-doodle-do (Eng.) – <i>kuk-ku-ruyuk</i> (Indo.)
7	Adaptation	SL words are translated by adjusting to TL cultural setting	Dear, sir/madam (Eng.) – <i>Yang terhormat</i> (Indo.)
8	Compensation	SL words are translated by adapting the nuance of formality in TL	You (formal and informal English) – <i>Anda</i> (formal Indo.)

The second theory was the translation quality by Nababan, et.al. (2012), which emphasized on evaluating the accuracy level of post-editing product as shown in the table 2.

Table 2. Accuracy model for qualitative assessment in assessing post-editing quality

No	Accuracy level	Qualitative Indicator
1	Accurate	The meaning of words, phrases, clauses, and sentences must be accurately transferred from SL to TL without exactly reducing the idea or the message of the SL.
2	Less accurate	The meaning of words, phrases, clauses, and sentences have mostly been transferred from SL to TL accurately. Yet, the SL message is slightly reduced for there are a few points vital and necessary that are absent
3	Inaccurate	The meaning of words, phrases, clauses, and sentences are not transferred accurately from SL to TL since the leading points that form the message of SL are eliminated.

To support deciding the accuracy level, there were several criteria used by the researcher as recommended by Tongpoon-Patanasorn and Griffith (2020), Waluya (2011), Rahimi (2004), and Sugono (1999), i.e., the accuracy of message, sentence structure, punctuation, referencing, vocabulary (the choice of words and terms), and either deletion or addition, including the parts of speech shifting as well as substitution.

## FINDINGS AND DISCUSSION

### Finding

During gathering the data, the researcher conducted observation in 8 classes that took Translating and Interpreting (TI) subject at English education department, University of Mataram. Each class was taught by TI lecturer regarding intro to translation consisted of several topics such as, translation theory, steps and techniques in translation, translation quality, post-editing (PE), and machine translation (MT).

The students were enthusiast and interested in studying those topics, particularly PE and MT (i.e., Yandex Translate) as novel topics. The students were further given an opportunity to practice Yandex translating the simple English text to Indonesian, and were required to assess the accuracy of Yandex translate product and to subsequently do post-editing to the output considered necessary. During the practice, they post-edited several elements such as, grammatical structure, word choices, punctuation, referencing, subject/object, making either deletion or addition, re-organizing and creating new sentence. As the matter of fact, the students consulted to dictionary to ascertain whether or not the meaning of particular words was correct and matched the SL so it did not reduce its message.

From the observation of teaching and learning activity, the lecturer gave the abstract of academic text as an assignment which in result they would have to post-edit and submit the post-editing product via google form provided by the researcher. The products of their PE were then used by the researcher as the data analysis. The following table displays the title of each academic abstract text.

Table 3. Title of each academic abstract text

No	Fields of study	Titles
1	Tourism	The Effect of Government Policy and Environmental Sustainability on the Performance of Tourism Competitiveness: Empirical Assessment on the Reports of International Tourism Agencies
2	Legal	Investigating User Behavior in Legal Case Retrieval
3	Medic	Key Consideration on the Development of Biodegradable Biomaterials for Clinical Translation of Medical Devices: With Cartilage Repair Products as an Example
4	Architecture	An Evaluation of the Nature of Public Spaces in the Private Realm over the Examples of Privately-Owned Public Spaces in NYC

### Students' post-editing techniques

The result of analyzing students' post-editing products in regards of the post-editing techniques and their frequency of use is displayed in the following table:

Table 4. Techniques applied in post-editing by the students

No	Techniques designed by Fawcett (1997)	Techniques employed by students in post-editing the texts	Frequency	Percentage (%)
1	Borrowing	Borrowing	5	19%
2	Calque	-	-	-
3	Literal translation	Literal translation	7	27%
4	Transposition	-	-	-

5	Modulation	Modulation	14	54%
6	Reformulation	-	-	-
7	Adaptation	-	-	-
8	Compensation	-	-	-
		Total	26	100%

The table above shows that students apply three of eight techniques suggested by Fawcett (1997) such as, borrowing, literal translation, and modulation. However, of the three, the most dominant technique applied by students is modulation that reaches 54% (14) of use. The less dominant one is literal translation which achieves 27% (7) of use. And, the least dominant is borrowing comprising 19% (5) of use.

### Accuracy level of students' post-edited texts

The students from 8 classes are responsible for 2122 sentences accumulated from four academic abstract sentences having been Yandex-translated from English to Indonesian. Of 2122 sentences, 1417 sentences are found post-edited. Each text has different number of post-editing and level of accuracy as presented in the following table.

Table 5. The accuracy level of post-edited sentences in four academic domains

Accuracy Level	The number of post-edited sentences			
	Tourism	Legal	Medic	Zoning
Accurate	115	101	90	107
Less Accurate	97	237	113	153
Inaccurate	90	65	162	87
Total	302	403	365	347

The table above apparently indicates that the students produce each post-edited text sentences in those four fields of study with different number and level of accuracy in each domain. Majority of students post-edited the texts by making changes such as word choices, word-class shifting, cutting either phrases or sentences, subject/object substitution, making addition, and deletion, and re-organizing and producing new sentences, without excluding the post-editing techniques.

Deletions and word-class shifting of certain words are, for instance, compulsory to undertake as several words are perceived error and can reduce the essence of the source text message, which in result may sound illogical. As the matter of fact, either cutting phrases or re-organizing and producing new sentence seems paramount. Doing this action is done for a reason i.e., to make the text sound natural or readable to the target readers. In brief, by this fact, post-editing done by students have an impact in improving the accuracy of Yandex translate product.

There are however several unnecessary revisions resulted to the distortion of SL meaning. The students who act as the post-editors possibly do not give attentive and comprehensive analysis to the text. Likely, the students additionally do not deeply understand the texts for they are not well familiar with those domains. As a result, they encounter difficulty to adjust SL text to target readers and the setting of SL and TL.

Despite the lack of the students' ability, it can be concluded that the post-edited texts generated by students have an adequate impact to Yandex Translate. The following figure

shows the accuracy level of Yandex translated academic abstract texts after having been post-edited.

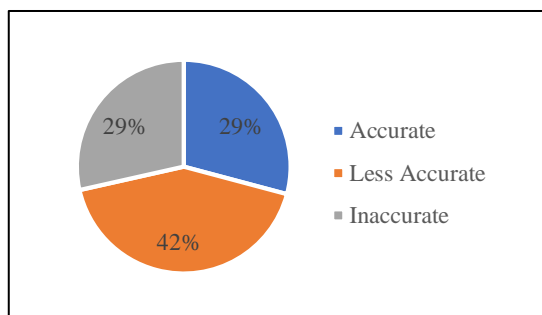


Figure 6. Accuracy level of Yandex-translated academic abstract texts after having been post-edited

## Discussion

This part serves the discussion in regards of the examples of post-editing techniques (borrowing, literal translation, and modulation) and the accuracy level of post-editing products (accurate, less accurate, and inaccurate) to the readers.

## Post-editing techniques

### Borrowing

(1) Data 2

SL : “Legal case retrieval”

YT : “*Pengambilan kasus hukum*”

PE : “*Legal case retrieval*”

In data 2, it obviously displays the application of borrowing technique. It is stated so as the post-editor adopts the term from its source text without providing its Indonesian translation. It seems that the post-editor does such activity for a reason namely, to make an adjustment on who the target audiences are by referring where the term is spoken or originally used so it preserves SL context. As a result, it does not reduce the message of SL, or it can at least be equivalent to it.

### Literal Translation

(2) Data 7

SL : “Key considerations”

YT : “*Pertimbangan utama*”

PE : “*Kunci pertimbangan*”

Data 7 reflects that post-editor employs literal translation. It is clearly seen that YT version i.e., “*pertimbangan utama*”, is changed with “*kunci pertimbangan*”. This change reflects that the post-editor merely edited the phrases word-for-word by directly referring to its source text namely, “*key consideration*”. Yet, the post-editor is slightly careless for the product does not meet the TL word order, including the word choice. “*pertimbangan*” should be put in the first order, then is followed by “*kunci*”. “*kunci*” is nevertheless improper choice since it sounds illogical, which eventually has to be replaced with “*utama*”. The

underlying reason is because the word “*kunci*” is unable to construct the meaning of “*key considerations*”, which constitutes the pivotal prerequisite of things. It is likewise accurately captured within YT version.

### **Modulation**

(3) Data 10 and 14

SL : “There is a very close relationship between tourism growth, government policy, and environment preservation obligations”

YT : “*Terdapat hubungan yang sangat erat antara pertumbuhan pariwisata, dukungan kebijakan pemerintah, dan kewajiban pelestarian lingkungan*”

PE : “*Perkembangan sektor pariwisata berkaitan sangat erat dengan dukungan kebijakan pemerintah dan kewajiban pelestarian lingkungan hidup*”

SL : “With the interdisciplinary convergence of biology, Medic, and material science, both research and clinical translation of biomaterials are progressing at a rapid pace”

YT : “*Dengan konvergensi interdisipliner biologi, kedokteran, dan ilmu material, baik penelitian maupun penerjemahan klinis biomaterial mengalami kemajuan pesat*”

PE : “*Perpaduan antar disiplin ilmu material, kedokteran, dan biologi membuat penerjemahan klinis dan penelitian tentang biomaterial berkembang dengan pesat saat ini*”

Both data above are classified as modulation technique. Compared to YT version which uses transposition technique, the post-editor edits them by redesigning several items such as grammatical structure and word-order, parts of speech shifting, changing of subject/object, including word substitution. It points out that the post-editor apparently alters SL perspectives, intending to make the text sound natural or readable to the target readers. As of the data 10, the inverted version is reorganized into a non-inverted version. This new organization provides a clear and specific message to the readers in terms of tourism growth and other factors that influence its development. While in the data 14, the changing of the subject and object of prep. makes its message and structure organized more simply and conveyed naturally.

### **Accuracy level of post-edited texts**

#### **Accurate product**

(4) Data 7

SL : “A city’s success is generally based on the quality of its public spaces and it is a fact that public space is an elementary aspect of urban life”

YT : “*Keberhasilan sebuah kota pada umumnya didasarkan pada kualitas ruang publiknya dan merupakan fakta bahwa ruang publik merupakan aspek mendasar dari kehidupan perkotaan*”

PE : “*Kualitas ruang publik pada umumnya adalah aspek mendasar terhadap keberhasilan kehidupan perkotaan*”

Data 7 is an architectural text, used as an example representing legal, medical, and tourism text. It shows that the post-editor revises the entire contents of YT. The post-editor

is likely to browse important information keys of SL to deliver SL message that discusses the quality of public space as a key to the advancement of the city where people rely on it to live a better life.

These information keys are “*kualitas ruang publik*”, “*ruang publik*”, “*keberhasilan sebuah kota*”, and “*kehidupan perkotaan*”. They are in subsequent organized by employing post-editor’s point of view and make adjustment by eliminating “*ruang publik*”, producing new phrase “*keberhasilan kehidupan perkotaan*” as a result of joint phrases “*keberhasilan sebuah kota*” and “*kehidupan perkotaan*”, and adding conjunction “*terhadap*” to connect object of the verb with object of prep, without excluding the addition of verb “*adalah*” as the basic requirement to form the complete sentence. The product of this post-editing is far more effortless to comprehend compared to YT. It still carries the message of SL. The structure is designed with correct word-order based on TL’s and makes the text sound way more natural. Additionally, there is no error in deletion and addition and the making of new phrase for it is necessary to do so the text can be understood. Thus, data 7 is categorized as accurate level.

### **Less accurate product**

(5) Data 54 and 24

SL : “Although this gap is well-known and often criticized in the biopharmaceutical industry, it is gradually widening”

YT : “*Meskipun kesenjangan ini terkenal dan sering dikritik dalam industri biofarmasi, namun secara bertahap semakin melebar*”

PE : “*Walaupun kesenjangan ini sudah tidak asing dan sering dikritik dalam industri biofarmasi, namun secara perlahan kesenjangan ini semakin melebar*”

SL : “This study used partial least square for statistical analysis. Data collections are conducted through the latest secondary data from TTC and WTTC, which include data and findings regarding government policy, tourism resource, tourism business competitiveness, and the performance of tourism business player”

YT : “*Penelitian ini menggunakan partial least square untuk analisis statistik. Pengumpulan data dilakukan melalui data sekunder terkini dari TTCR dan WTTC, yang meliputi data dan temuan terkait kebijakan pemerintah, sumberdaya pariwisata, daya saing usaha pariwisata, dan kinerja pelaku usaha pariwisata.*”

PE : “*Peneliti mengumpulkan data dan temuan dari TTCR dan WTTC seperti kebijakan pemerintah, daya saing dan sumber daya pariwisata, serta kinerja pelaku pariwisata, kemudian dianalisis dengan partial least square untuk analisis statisik*”

Data 54 (medical text) and data 24 (tourism) are proclaimed less accurate level due to several errors. In data 54, the revision of few words is considered inappropriate, unmatched, inequivalent to SL, and unnatural sound of subject addition although the structure of TL is arranged in grammatically correct word-order as in YT. In fact, there appears a one acceptable word substitution. The accuracy of the message is nevertheless arguably less accurate as the revisions slightly do not meet the meaning of SL words.

An adjective “*terkenal*” substituted with “*sudah tidak asing*” can be asserted acceptable since it makes sense with its source i.e., “*well-known*”. The post-editor in this case gives its



equivalence by using negation to meet the naturalness of TL sound. On another occasion, the change of adverb “*secara bertahap*” with “*secara perlahan*” is a phenomenon that makes SL message slightly reduced. It ends up diminishing the meaning of its source i.e., “*gradually*” that describes either a step or sequence of gap widening in biopharmaceutical industry. By this fact, “*secara perlahan*” has neither equivalence nor similarity to it for that adverb refers to a pace. The post-editor seems loss in analyzing that SL word. Further, the post-editor adds a subject “*kesenjangan ini*” in the second clause. The addition is perceived crucial to tackle down the absence of subject. Nonetheless, the post-editor does not consider the linguistic aspect of the target audience who avoids the repetition. It should be revised with something that can be a reference to it such as “*hal tersebut*” for instance.

Whereas in data 24, the YT text consisted of 2 sentences are redesigned into a one sentence containing 2 independent clauses by adding punctuation coma (,) and conjunction “*kemudian*”. The topics of SL are also repositioned in different order. In addition, the shifting of several words such as “*penelitian*” to “*peneliti*” and “*pengumpulan*” to “*mengumpulkan*” are compulsory in order the text can form the meaning of the first clause regarding the research data collected by the researcher. Regardless of this revision, the post-editor does not realize the sentence structure is unparallel caused by the use of passive verb i.e., “*dianalisis*” Due to this, an actual SL message is slightly misunderstood. The use of passive verb alters a researcher as the one who does analysis to the one who is analyzed. It is totally wrong and hence needs mending by changing passive to active verb, “*dianalisis*” to “*menganalisis*”. As a result, the text may contain its actual message. This revision must also be embedded with pronoun “*-nya*”. The addition of the pronoun helps address the readers to know the data analysis i.e., “*kebijakan pemerintah, daya saing dan sumber daya pariwisata, serta kinerja pelaku pariwisata*”.

Despite those slight errors within both data above, the messages remain acceptable because the changes do not significantly mislead the readers. But it takes the readers’ effort to grasp the text.

### **Inaccurate product**

#### (6) Data 25

SL : “Therefore, we focus on investigating user behavior in the scenario of legal case retrieval”

YT : “*Oleh karena itu, kami fokus pada penyelidikan perilaku pengguna dalam skenario pengambilan kasus hukum*”

PE : “*Oleh karena itu, kami fokus pada menyelediki jejak rekam pengguna dalam skenario pengambilan kembali kasus hukum*”

In the data 25 (legal) above, the post-editor does not re-organize the structure or change word order of the sentence. The PE version can still be understood in such grammatical way as it is established in a correct word-order of TL. Regardless of this fact, the message accuracy is claimed inaccurate due to the sound of word choice awkward and non-sense to the notion the SL intends to convey. A technique applied to transfer SL term also seems flawed.

Substituting noun “*penyelidikan*” with verb “*menyelidiki*” is grammatically wrong. It moreover makes the sound unnatural. Provided that prep. “*pada*” is revised with “*untuk*”,

the verb “*menyelidiki*” will be correct. In another case, “*perilaku pengguna*” replaced with “*jejak rekam*” purely does not catch the SL text that discusses users’ behavior towards legal case retrieval scenario. “*jejak rekam*” in TL refers to a record of any action committed by any personalities. In short, it is accurately translated “*perilaku pengguna*” in TL. Lastly, the addition of “*kembali*” has nothing to contribute. It is likewise pointless. The post-editor seems to insert it with the purpose of forming the meaning of “*legal case retrieval*”, portraying a process of taking or obtaining something back. Nevertheless, with or without addition, YT and PE version remain inaccurate. “*legal case retrieval*” should not be translated in such a way since it does not preserve the setting of SL in TL.

## CONCLUSION

From both of finding and discussion, it is summed up that students post-edit the text by employing three of eight techniques such as, borrowing (19%), literal translation (27%), and modulation (54%). Aside of these techniques, they also post-edit the text by making addition and deletions, shifting parts of speech, changing word choices, cutting phrases or sentences, and reorganizing sentences with a new grammatical structure. The accuracy level of their post-editing product is various. In fact, most are less accurate that achieves 42%. The rest is 29% for both accurate and inaccurate level.

The finding and discussion also present that the employed techniques are occasionally acceptable and unacceptable. This issue is also similar to making addition and deletions, shifting parts of speech, changing word choices, and arranging sentence with a new grammatical structure done by students as the post-editors. Based on this fact, it is highly recommended that students foster their ability to practice post-editing continuously.

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