

The Impact of Machine Translation on English Vocabulary Acquisition: Target Language Accuracy

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Abstract: *It becomes experience by most of people to encounter and find out the meaning of foreign language in a text. The availability of Machine Translation (MT) since 2000s appearing in some platforms give the users' options in such easy way through clicked and linked. For the Speakers of Other Languages (ESOL), MT contributes to their understanding of a text or submitting related assignments. It assists them who want to read and write in their native language. The use of MT is in line with the study of Second Language (L2) for ESOL as its role to support the vocabulary acquisition of target language. This paper discusses the effect of translation towards new words acquisition when they are given texts taken from the Internet. As the existence of language technologies which have the functions of automatic detection of lexical subject and translation, it eases the students to get the meaning of a word and its translation easily in the target language. The results of this study show that they get the advantage by using this MT as increasing the accuracy on lexical subject. On the other hand, it contributes negatively in long term phase in field of its accuracy as well. This study also presents the understanding of impact on the MT on language learning..*

Keywords: *Impact, vocabulary mastery, mobile translation, ESOL.*

I. INTRODUCTION

It is true that language technologies bring beneficial on language learning. They contribute on some aspects involving; synthesize words in written form and multi-interpretative within the meanings that it can work with. It always becomes a discussion time to time regarding to the usage of MT as a medium of language acquisition. It is often by the students as the assistance to set the new language from the native language. As the preceded mastery, it helps to acquire target language whenever it is needed to explain in details [1][2][3]. Instead of its practicality, it must not put MT to be the priority for the students in learning new language as it can be obstacles for them to

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become fluent [4][5][6]. The perception made by students on how they rely on MT affected to their understanding and its fluency at the target language.

At the end of 19th century where Direct method tend to be usual and avoided in the classroom for the student's First Language (L1) in the Second Language (L2) learning [7]. It is done by a reason of the comparison between L1 and L2 mastery. It was found that L1 has capability to acquire the previous language without any aids. Considering the fact above, it comes to assumption that L2 is possible to go on the typical process. L1 should not be applied in the classroom for the students. There are also some other reasons about to avoid the use of L1 are by seeing the possibility of both teachers and students, some of them, in different L1s [8]. The perspectives proposed above have been turned into different way. Applying L1 actually empowers the learning of L2 by its assistance to set up target language [9][10]. The use of L1 also improves students' self-confidence compared with stand-alone L2 which is very limited for them. In addition, experienced and professional tutors serve them with varied resources for every student in L1 independently. The availability of bilingual dictionaries in any mode, as instance, are easy to access and used to be integrated with language learning by tutors.

Some different opinions come up about seeing the use of L1 in L2 to gain vocabulary acquisition. The new words on the target language or L2 are transferred through L1 which generalized and used to set the idea of L2 [11][12]. The major part of L1 usage in the classroom is believed to decrease the students' fluency of L2 and further fallacy. The most effective ways to teach new words in the target language or L2 as it opens the chances for the students to correlate the concept of them into L2 without any obstacles in their L1 are referring to other sentences in a possible used word, context, and the definition from the library. It shows that those ways or techniques resulted in better learning and showed improvement in fluency compared with the L1 Direct translation. Different research result showed that the higher scores of vocabulary tests were achieved when the translation was given in the use of new words of target language both in short and long term (Grace, 1998). Translation also contributes more advantages for the students to be more proficient on short-term lexical tasks as they could reduce the assistance from L1 easily. Higher achievement within vocabulary acquisition was gained by using exercises through translation and contrastive analysis [13].

The researches described above showing that in spite of the improvements of MT from time to time, it still involves a number of fallacy. On the other hand, it appears that the nature and quality of MT is appropriate in translating the words from L1 to L2 by considering its implications. This article tries to answer some research questions regarding to the use of MT in ESOL of vocabulary acquisition covering;

- a. What is the impact of MT's usage towards vocabulary acquisition?
- b. How the use of translation is affected the accuracy and fluency of vocabulary acquisition?.

II. LITERATURE REVIEW

Machine Translation

Machine (Translation) MT which belongs to one of language technologies and its advanced development for pedagogical studies tends to be irrelevant except as the indicators for previous inadequacies. In example, the

translation of French into English seems to risky business as its multi-interpretative meanings causing worse or mistakes by riddled [14]. Rated by a five-point scale from “incomprehensible” (1) to “flawless” (5) done by two native- Spanish speakers dealing with the fluency of translations for 385 sentences, the use of Google Translate (GT) contributed to the mean fluency score of 3.73 [15]. In addition, a major improvement was needed and also post- editing with the five scales rate on the translations of English to Afrikaans and in turn by applying GT[16]. These studies show that GT had come to a level where the translations may have been beneficial in quality but still far from perfect.

Other researches show that in an academic context from English learners, they go with some distance to provide background into the use of GT [17][18]. The first investigation of linguistic accuracy started in 2015 where the texts written by students originally in their L1 (Chinese and Malay) and translated into English using GT. Although the result presented that the rate of grammatical errors relatively high within the translations, it still came to the minimum level of accuracy needed for higher education entrance. Different result was gained on the further research in 2016 where the translation improved in accuracy by using GT. It could be seen from how GT has uplift the writing aspects such as the grammar checkers and spell coming along with the word processing programs. Discourse competence also becomes the matter [19]. At certain English learners, there is a chance that MT meets the competence of grammatical level but it still needs the features to go beyond the sentence level. Another subject needs to be considered related to the ascending of plagiarism issue. A matching text may not be detected as plagiarism by software detection such as Turnitin if they use GT to translate another language to English of a source text. The original ideas coming from the students and converted by any means of MT should be considered as their own work [19].

Apart from the result of GT’s translation seen from its quality, there are some studies revealed that GT can be applied as a tool for language learning [20]. It is based on the data from a questionnaire of 17 Malaysian students asked about their attitudes towards the use of GT as supporting tool for learning. Majority of collective responses stated that it contributed positively to increase their achievement score on the examination in the study by means of GT as a language learning tool. Another research showed that 90% from 46 Swedish students who learn English used GT as an element of their normal practice regarding to English and come along with positive attitudes although many inaccuracies and complaints occurred [21]. The similar results of recent studies were come related to the use of GT for students.

The integration of reading activity by purpose of vocabulary acquisition can give supporting interface where translation tools, dictionaries, and other resources using Computer- Assisted Language Learning (CALL) tutors. It is also very useful media to provide a way for language learning study. The online collaboration tool developed by corpus to assist vocabulary acquisition. Students are able to work together and presenting fixed results, provide the input directed to the database tool in supporting the deep processing of new vocabulary. The experiment done to the Israeli and Hong Kong students performed of vocabulary learning and reading comprehension shown that the post-test result achieved well when multiple options were provided to understand the vocabulary [22].

III. METHOD

It is an experimental study carried out in private vocational high school of Budi Utomo. The first session was done during the first half semester of 2019/2020 academic year and the second one during the second half semester of 2019/ 2020. To simplify, we refer them as First Semester 2019 and Second semester 2020 respectively. The students of SMK Budi Utomo are at the age of 16- 17 years old, typically high school with has no intensive courses of grammar, reading, speaking, writing, and listening at different levels. This experimental studies described here were conducted at the ten grade students.

Participants

The participants involved on the first and second session of experiment were taken from the different classes at the same grade. The initial study at the first half semester 2019 included 30 students. All of them, 30 students, were native speakers of Indonesian and spoke Arabic. The second study of second half semester 2019 included 35 students at the same grade of vocational high school and same academic year. They involved 35 students with native speakers and Arabic speakers. All of the participants took and participated in both semesters.

Procedure

The setting in both studies for the experiment was applied in similar way. The students got a pre- test to identify their prior knowledge of focus words. It consisted of cloze questions and multiple- choice where no target word was omitted from a meaningful sentence. There were 3 distractors and 1 correct answer within the option that the students to choose. The target word as the correct answer is the focus word of “essential” in total of 3 questions and later the pre- test results were not given to them about to see. The forms of questions and reading for the post-test are definitely identical with the pre-test one with different sentences. To keep students’ answers on its origin results without any interference or assistance by external means such as books, internet access, and dictionaries to search for right answers, the teacher were present during the tests.

IV. RESULTS AND DISCUSSIONS

This study was set to figure out the students’ ability to use the focus word properly in the lexical task before continuing on reading activities. The questions for post- reading were set to know their ability to apply the target words soon after being clearly shown and stated in the reading. At last, the post- test was conducted to figure out how they keep on the words to be used in period of time in long term after the readings were done.

Table 1. Focus of target words in the first half semester 2019

Accord	Engage	Straight	Court	Coast
Evident	Obtain	Stock	Essential	Circumstances
Intend	Scarce	Apparent	Appoint	Constitute
Utter	Policy	Fancy	Vain	Affect

Table 2. Focus of target words in the second half semester 2019

Render	Campaign	Insist	Venture	Assert
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Appeal	Confer	Convince	Temper	Chamber
Generate	Dwell	Furnish	Bent	Despair
Range	Yield	Compel	Undertake	Tide

It took about 5 weeks of time to have the first study on the first half semester 2019. The time allotment for each session was an hour per week. There were 4 focus words with the total of 20 for each reading session provided to the students. The second study happened for 4 weeks in the second half semester of 2019. This study covered pre-test, 3 reading sessions and the post-test that underwent after the reading activity coming last. There were 2 readings for each sessions for a total of 6 readings. By the total number of focus words were 20, there were 4 focus words per reading as in second half semester 2019.

The way how students accessed a translation became the major difference in setting up of both studies. MT gives the students' direct meaning or definition of a word and its translation to the students' L1. Type, copy and paste the word into a box to get the translation at the second half semester 2019. Compared with the first half semester 2019, there was a major difference where they could only access its single meaning or translation without any extra information for definition of the target words. This subject was done to verify manually and see whether it is correct or incorrect and fit in context of provided text.

As an experiment study, it was designed by conducting direct intervention into the classroom where two groups of participants were in certain conditions and separated evaluation. This research design needs to present the students in the same condition. As a matter of fact, there was a big possibility for them not into involved into the classroom's direct contact and manipulated behavior, limited conclusions gained from this class setting.

The impact of MT's usage towards vocabulary acquisition

It was started by studying the independent variables. The number of asked words to consult for its definition and translations by manually by using dictionary and MT were shown for both studies in table 3. It took more effort on the first half semester of 2019 for them to get the translation for new words of target language as they have to consult to dictionary manually and type or copy and paste of desired words as well to the translation with no further explanation or information related. The result showed that the average of 5.21 achieved words properly by using manual dictionary searching compared to MT in average of 2.29. However in second half semester 2019, when the access of translation becoming as easy as MT, there was improvement requests of translations ascended to 7.20 per student and per reading, while consulting to dictionary decreased to 1.70.

Table 3. Independent variables: use of dictionary and MT (4 focus words per reading in first and second half semester 2019).

Means of translations			
Dictionary		MT	
All words	Target words	All words	Target

				words
First half semester 2019	5.21	2.30	2.29	0.62
Second half semester 2019	1.70	0.79	7.20	2.20

Table 4. Dependent variables: fluency and accuracy

	Accuracy		Fluency	
	Scores (Mean and standard deviation)		Median (Time to respond)	
	Pre-test	Post-test	Pre- test	Post-test
First half semester 2019	0.39	0.58	17s	18s
Second half semester 2019	0.51	0.67	15s	21s

Table 5. Dependent variables: normalized changes in fluency and accuracy

	Normalized gain		Response time in normalized gain
	Post-reading	Post-test	Post-test
First half semester 2019	29%	28%	-5%
Second half semester 2019	36%	20%	-27%

The results presents that the easy access for translation and its definition, the more it will be used by the students frequently to use MT as previously the dictionary manual book would be the main source. It also gives information that the students asking this language technology not only because of focusing on the new target words but also for other words in the text. They did not request for any translations or its definitions as they used to be familiar or seen previously in the past.

Related to dependent variables (fluency and accuracy) as shown in table 4 including their normalized changes in table 5, the results in scores of tasks assessment told that the normalized gain of 28% from pre-test to post-test in the first half semester 2019 study and 20% for the second half semester 2019. There was also a significant different between the results of pre-test and post-test in both studies according to paired-*t* test with $p < 0.001$. It gives prove that the significant achievement was gained by the students on vocabulary acquisition of targeted words by using MT. In both studies, it was found that there was no significant differences score between the first half semester

2019 for the pre- test session at each class. Both studies were similar on students' difficulty of new targeted words and previous knowledge.

Affected the accuracy and fluency of vocabulary acquisition

There was changing within the students' behavior captured in those two groups of studies. It could be seen from the number of requested translations by considering to their dictionary and or MT. The first group was the class where the instructional process of English reading activity assisted by dictionary book for them to know the context or content of the reading and its target words as the focus to get its meaning and definition. While the second group, with the same goal, had the difference on the assisted media as to support the learning which was in term of language technology of MT which only provide the meaning without any extra explanation of definition.

Table 6. Accuracy and fluency results

	Accuracy Scores (Mean and standard deviation)		Fluency Response time (Median)	
	Pre-test	Post- test	Pre-test	Post-test
First half semester 2019	0.35±0.16	0.39±0.13	15.5s	16s
	-	+13%	-	+3%
Second half semester 2019	0.46±0.23	0.64±0.11	14s	17s
	-	+12%		+17%

The accuracy and fluency results of translated words for both groups by two means of translating assistance. It showed different results among those two classes or groups for studies. The class which applied dictionary for the reading activity provided slightly different improvement of accuracy as presented in table 6. By respecting to the pre-test, it was obvious that the class or group with MT presenting an increase in accuracy in post-test referring to the response time from pre-test to post-test. It indicates that they transferred the acquired knowledge during the reading and post-test.

V. CONCLUSION

The results presented in this study referred to the impact of language assistance manually in term of dictionary book and MT as the form of language technology for translating purpose in language learning especially in vocabulary acquisition. MT is well- managed way to have vocabulary learning. It will be very challenging studies in the future for further studies by experimenting different kinds of language technologies for translation. It is recommended for the students to use of MT and facilitated by the teachers for learning but with strict control by the purpose not to make them totally rely on this assistance. Teachers may limit the use of translation by considering its needs, student's background, previous level, and text complexity to control the use of MT by students.

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