


Machine translation use in the English as a Foreign Language (EFL) classroom

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Abstract

Machine Translation (MT) increasingly has the potential to facilitate or impede second language learning in the English as a Foreign Language (EFL) classroom. To understand teacher and EFL learner perspectives about its use, two surveys of 20 university professors (10 non-native English teachers and 10 native English teachers) and 139 EFL students were carried out. To measure MT's capacity to promote language awareness, a comparative study with an online dictionary was done, using two translation tasks, a posttest, and a post-questionnaire. The preliminary survey results revealed variations in how learners and teachers perceive text-based machine translation as a valuable tool for language learning and how much they felt its use by students in educational settings should be accepted. Analysis of the posttest also found significant differences in the capacity of DeepL (MT network) to promote language awareness compared to the online dictionary, which aligned with the students' post-questionnaire feedback. These results emphasise the need for additional research and workplace dialogues going forward, regarding the incorporation and supervision of MT in L2 instruction.

Keywords: *machine translation, online dictionary, English as a Foreign Language, task-based learning.*

1. Introduction

Continued advancements in Machine Translation (MT) have likely escalated its impact on second language (L2) education. Rule-based translation systems have given way to neural MT networks like Google Translate and DeepL, which train themselves to produce increasingly accurate output (Jolly & Luiane, 2022). Such translation tools are readily accessible to L2 learners online and can be used for various academic and personal purposes. Previous studies have shown that MT helps reduce the cognitive burden of translations (Baraniello et al., 2016) and encourages self-directed learning (Godwin-Jones, 2015; Wong & Lee, 2016). At the same time, there are still ongoing debates among educators as to whether MT use by learners should constitute cheating (Jolly & Luiane, 2022), or if it turns learners into mere passive recipients of information (Innes, 2019). These are important concerns that need to be addressed. The aim of this study was to compare teacher and EFL learner perspectives on MT use, and to measure the capacity of MT to promote learning in a task-based environment, compared to an online dictionary. The research questions were as follows:

1. To what extent are the perspectives of teachers and EFL students similar or different, regarding MT use for learning?

2. To what extent are text translations produced by EFL students using MT or an online dictionary similar or different?
3. Is language awareness during a translation task promoted more by MT use or by using an online dictionary?

2. Method

For this study, data was collected over the period of one semester. An initial survey (Appendix A) regarding MT use for L2 learning was done first, involving 20 university professors (10 non-native English teachers and 10 native English teachers) and 139 EFL university students. A comparative case study of the MT network DeepL and an online dictionary jisho.org was then carried out to measure the capacity of both online tools to promote language awareness in a task-based learning environment. This study involved 22 EFL students from an academic writing class carrying out two translation tasks, a posttest, and a post-survey (Appendix B). To answer research question 1, the results of the initial survey (including Likert-scale responses and follow-up explanations) for each group (non-native teacher, native teacher, and student) were compared. To answer research question 2, the level of variation of the 22 students' translated texts (carried out in random order) was examined using an AI and plagiarism detector, copyleaks.com. For research question 3, the posttest results (including the number of attempts and correct answers) were analysed using descriptive statistics and t-tests. Finally, the Likert-scale responses and follow-up explanations of the post-survey were analysed and compared to the posttest results.

3. Results

The first survey results (see Tables 1, 2, and 3) showed that the EFL learners were more inclined to strongly agree or agree that MT was an effective learning tool; 78% (109/139) compared to the non-native English teachers at 20% (2/10), or the native English teachers at 40% (4/10). Concerning whether MT was better than a dictionary for learning, 40% (4/10) of the native English teachers strongly agreed or agreed, compared to 20% (2/10) of the non-native English teachers and 20% (28/139) of the EFL learners. As to whether student use of MT was unavoidable, 50% (5/10) of the non-native teachers agreed compared to 80% (8/10) of their native teacher counterparts. Overall, the majority of teachers (native and non-native) felt that MT was more beneficial for higher level learners (see Table 4). However, a large percentage of native teachers (40% (4/10)) also stated that MT could be useful for beginners or learners of all levels.

Judging from the feedback, many of the EFL learners considered MT as an effective learning tool for its capacity to quickly and accurately contextualise words and phrases, and easily facilitate wholistic understanding. Although somewhat apprehensive, the native English teachers' responses showed that they are more willing than their non-native counterparts to embrace the technology. One native teacher hypothesised that "less reliance on comprehension and memorisation" and more focus "on having the students do something with what is being taught" could help promote more acceptance of its use. Another native teacher stated that, "The sooner we embrace the technology in the classroom the sooner we can share ideas and communicate our thoughts." However, some of the non-native teachers' concerns were that "MT is a practical tool, not a learning tool" and over reliance on it may cause students to "abandon trying to think in English."

Table 1. EFL learner perceptions of MT (N=139)

	Strongly agree	Agree	Not sure	Disagree	Strongly Disagree
1. MT is a good tool for learning	25	84	14	15	0

	Strongly agree	Agree	Not sure	Disagree	Strongly Disagree
2. MT is more effective than a dictionary for learning	5	23	49	52	10

Table 2. Non-native English teachers' perceptions of MT (N=10)

	Strongly agree	Agree	Not sure	Disagree	Strongly Disagree
1. MT is a good tool for learning	1	1	3	4	1
2. MT is more effective than a dictionary for learning	0	2	3	4	1
3. Using MT in the classroom is good	1	2	2	1	4
4. Using MT for assignments (homework) is good	0	3	2	3	2
5. MT is unavoidable, L2 teachers must accept it	1	4	1	2	2

Table 3. Native English teachers' perceptions of MT (N=10)

	Strongly agree	Agree	Not sure	Disagree	Strongly Disagree
1. MT is a good tool for learning	0	4	1	5	0
2. MT is more effective than a dictionary for learning	1	3	2	4	0
3. Using MT in the classroom is good	1	3	2	2	2
4. Using MT for assignments (homework) is good	1	2	2	4	1
5. MT is unavoidable, L2 teachers must accept it	4	4	2	0	0

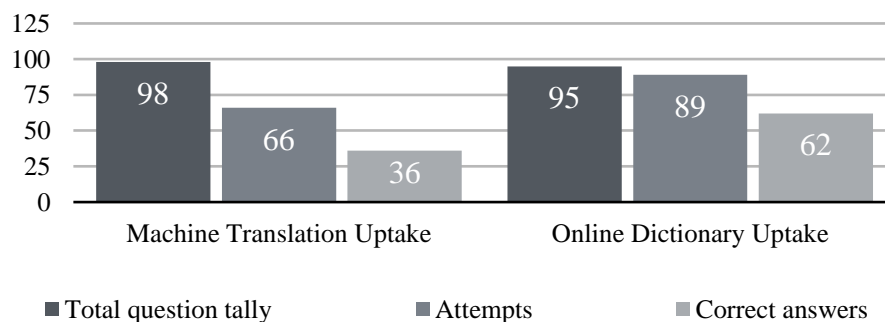
Table 4. MT is an effective learning tool for which students? (N=20)

	Advanced learners	Intermediate learners	Beginners	All learners	No learners
Native English Teachers' Responses	3	3	1	3	0
Non-Native English Teachers' Responses	6	2	2	0	0
Overall Responses	9	5	3	3	0

Analysis of the 44 translated paragraphs using the AI and plagiarism detector (Appendix C) revealed that the DeepL-assisted ones were either deemed to be 100% identical (paragraph one) or 65.5% identical, with the other 34.5% containing only minor variations (paragraph two). For the paragraphs translated with an online dictionary, 100% of paragraph one and 71.7% of paragraph two were identified as paraphrased versions of each other. The remaining 28.3% were found to be more similar but not identical, with only minor differences. The learner-produced online dictionary translations exhibited more language variation than DeepL, suggesting that more individual effort was invested in their construction. Although the original texts were both three sentences long, the average English translation for paragraph one was 65 words, compared to 55 words for paragraph two.

The posttest results showed that a substantially higher number of attempts were made to translate the key words of each paragraph when the students used the online dictionary. DeepL only promoted a 67% attempt rate and a 36% success rate. The online dictionary promoted a 93% attempt rate and a 65% success rate. The *t*-Test analysis revealed that significant differences existed in these results (Attempts - $p < .01$ / Success Rate - $p < .01$). The post-survey results found that a higher percentage of the EFL learners preferred using DeepL to the online dictionary to do the translation tasks (55% vs. 45%). However, in correlation with the posttest data, 100% of them felt that the online dictionary promoted more language awareness and 95% stated it was more effective for language learning.

For the EFL learners, using the online dictionary lead to more hesitation and indecision about the suitability of their grammar. One student commented that it took him “a long time to make three sentences” and that he “was not sure if the meaning [would be] understood.” On the other hand, another student commented that DeepL helped her “know correct sentence structures and expressions,” while another stated it was “so easy and quick...” Essentially, DeepL facilitated fewer opportunities for the learners to reflect on their language output. Due to its ability to generate high-quality translations, most of the learners lacked confidence or motivation to limit their use of it as a reference tool for learning.

**Figure 1.** Participants' Posttest Result

4. Discussion

For research question 1, the results showed that the EFL learners were more inclined than the teachers to believe that MT is a beneficial tool for language learning. Compared to a conventional dictionary, its capacity to deliver precise translations at the click of a button was seen as a notable advantage. The non-native English teachers held the most reservations about its potential, with only 20% stating that it could facilitate learning or that it was more effective than a dictionary. A common theme in the non-native teachers' feedback was that MT is not conducive to language acquisition as that is not its designed purpose. However, its capacity to generate translations that facilitate discussions about acquired knowledge might benefit learners, depending on the nature of the class. Some native English teachers also held reservations about MT's use for language learning. However, there was generally a stronger belief in this group that student use of MT needed to be accepted or even embraced. Willingness to adopt its use was seen as an important first step in creating dialogue about how to proactively manage its use to benefit learners.

For research question 2, analysis of the translated texts found a greater variation in the EFL students' vocabulary and sentence structures when the online dictionary was used than DeepL. Most of the DeepL translations were found to be identical or almost identical in nature. For paragraph two, the smaller word count likely increased the percentage of online dictionary translations (28.3%) categorised as being more similar than paraphrases. For DeepL, the segments identified as having only minor variations consistently matched two specific points of the text, the use of the word '*but*' or '*however*' and the phrase '*way of learning*' or '*learning method*'. This suggests that these parts were more likely to have been generated randomly by DeepL than by the learners themselves. During the task, it was observed that most students finished their translations more quickly using DeepL, with only two students being observed to have limited their use of it, by only translating words or phrases or by spending time rewording the DeepL-translated version afterwards.

Finally, for research question 3, language awareness during the translation task was promoted more by the online dictionary than DeepL. The efficacy of MT to deliver precise, comprehensive, and context-specific translations resulted in the EFL students spending less time considering particular vocabulary or phrases. It is possible that the majority felt the complexity of the MT-generated sentence structures were more advanced than what they could produce on their own, resulting in an over-reliance on the technology and diminished opportunities for learning to occur. If the learners' proficiency levels had been higher, it is possible that more of them would have attempted to translate the texts in their own words and limited DeepL use for reference purposes. Creating opportunities for the learners to discuss the MT-translated texts may also have helped increase metalinguistic awareness.

5. Conclusions

There is growing evidence that MT is increasingly being used by L2 students to assist their language learning, particularly for writing. As MT technology continues to improve, it will likely become even more prevalent in academic EFL contexts. Using DeepL can offer learners the chance to recognise language patterns, connections between the structure and significance of language, word choices, and patterns of collocation. However, relying too heavily on MT and taking shortcuts may not be helpful for individuals who aim at developing advanced writing skills in foreign languages. Consequently, it is important to investigate the effects its use may have on L2 development. The findings of this study showed that exposure to translated output by DeepL did facilitate language awareness. However, it did not do so to the same extent as the online dictionary. The initial survey results found that most of the EFL learners felt MT was a good learning tool. However, when provided with an opportunity to use DeepL to translate a task in a classroom environment, most of the learners who participated ended up producing little of their own output. To promote autonomy and self-directed learning strategies that can help learners become successful writers, it is vital to put them in situations where they must actively engage in the writing process. It is not possible to prevent MT use outside of the classroom. Therefore, it is important to provide training and opportunities that teach learners how to use MT more appropriately and responsibly.

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Appendix A

- Teacher Survey

1. Online translation software is an effective learning tool students should use to study English.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

2. Please provide a reason for your thinking.

3. It is more effective for students to use online translation software than a dictionary to improve their English.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

4. Please provide a reason for your thinking.

5. I am happy for students to use online translation software in the classroom.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

6. Please provide a reason for your thinking.

7. I am happy for students to use online translation software to complete assignments (homework included) outside of the classroom.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

8. Please provide a reason for your thinking.

9. Which type of learners do you feel online translation software benefits the most?

Advanced learners

Intermediate learners

Beginners

All learners

No learners

10. Please provide a reason for your thinking.

11. I feel online translation software is unavoidable, so it needs to be embraced by L2 teachers.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

12. Please provide a reason for your thinking.

- Student Survey

1. What grade are you in?

1st year

2nd year

3rd grade

4th grade

Other:

2. How would you rate your English level?

Advanced

Upper-Intermediate

Intermediate

Early Intermediate

Elementary

Other:

3. What translation software do you use most frequently?

DeepL

Google Translate

Microsoft Translate

Weblio

Other: 4.

4. How often do you use translation software?

Every day

Weekly

Every month

Not so much

Never

Other:

5. How did you first learn about translation software?

6. How do you mainly use translation software?

To translate one word at a time

To translate phrases one at a time

To translate one document at a time

To translate one paragraph at a time

To translate a large number of sentences

Other:

7. How often do you use translation software for English assignments (including homework) outside of class?

All the time

Quite a bit

Sometimes

Not so much

Never

Other: 8.

8. Do you think translation software is a good tool for learning English?

Yes, very much

I don't know

Not really

Not at all

Other: 9.

9. Please write your reason

10. Do you think using translation software rather than a dictionary to improve your English is better?

Yes, very much

Yes, very much

I don't know

Not really

Not at all

Other: 11.

Please write your reason.

Appendix B

Translation Task: Paragraph one

第二言語習得とは、人間が母語以外の第二言語を習得するプロセスを科学的に解明する学問のことを指します。そのプロセスには言語学だけではなく脳科学や心理学、社会学など幅広い領域が関わってくる。第二言語の習得プロセスが分かれば、そのプロセスに沿った適切な英語学習トレーニングを積んでいくことで、効率的に英語力を高めることができます。

[Second language acquisition refers to the scientific study of the process by which humans acquire a second language other than their native language. The process involves not only linguistics, but also brain science, psychology, sociology, and a wide range of other fields. Once the process of second language acquisition is understood, English language skills can be efficiently improved by building on appropriate English language learning training that follows the process.]

Translation Task: Paragraph two

第二言語習得について一定の知識を持つておくことは、英語学習の効率を高めるうえでとても役立つのです。しかし第二言語習得自体は特定の学習方法ではなく、あくまで言語習得プロセスに関する理

論となります。そのため、英語学習を行う上では、実際にその理論を具体的な学習方法に落とし込む必要があります。

[Having a certain knowledge about second language acquisition is very helpful in increasing the efficiency of English language learning. However, second language acquisition itself is not a specific learning method, but rather a theory of the language acquisition process. Therefore, it is necessary to actually put the theory into concrete learning methods when learning English.]

Post-Test: Translate Japanese to English

- From paragraph one

解明する [study, investigate, enquire, explore, understand, elucidate, clarify]

社会学 [sociology]

脳科学 [brain science, neuroscience]

関わる [engage, involve, relate to]

積む [accumulate, build]

- From paragraph two

特定, [particular, specific, certain]

理論, [theory]

具体的, [specific, concrete, particular]

落とし込む [put into practise, put into action, apply]

Post Survey

1. For this translation task, which did you prefer to use: DeepL or the online dictionary?

DeepL

Online dictionary

2. Please write down your reasons

3. Which one made you think more deeply about language?

DeepL

Online dictionary

4. Please write down your reasons

5. Which one helped you learn more English?

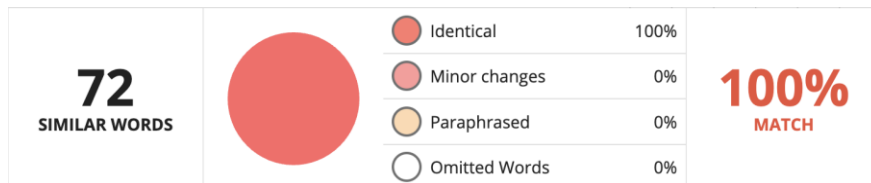
DeepL

Online dictionary

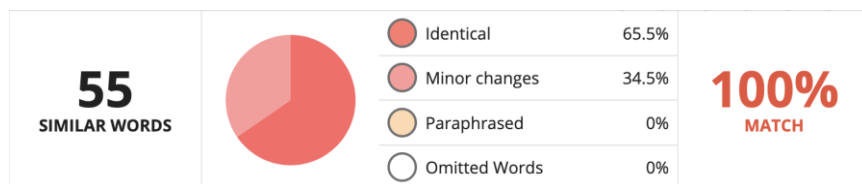
6. Please write down your reasons

Appendix C

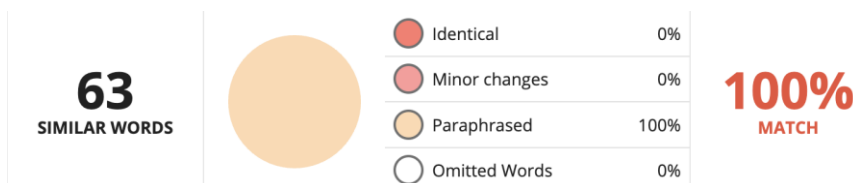
DeepL: Paragraph One



DeepL: Paragraph Two



Online Dictionary: Paragraph One



Online Dictionary: Paragraph Two

