外国語教育における機械と AI 翻訳の利用についての考察

Perspectives on machine and AI translation use in foreign language learning

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Abstract

This exploratory study investigates the perceptions of non-Japanese university instructors in Japan on the use of machine translation (MT) and generative AI tools for similar purposes during language learning. Qualitative data was collected with a short survey using Google Forms. The survey investigated how teachers address the use of MT and generative AI in class, if they employ different approaches in consideration of these tools, and their general opinion in relation to these technologies and language learning. A total of 32 instructors responded to the survey. Results showed that most teachers employ a variety of methods in order to restrict or promote limited use of translation aided by technology due to concerns about academic integrity and effective language acquisition. However, others stated that they also endeavour to employ activities intended to promote effective use of these tools. Writing classes were most often cited as in need of differing approaches by the respondents. Overall, most of the instructors believe that it is unrealistic to ignore the inevitable impact that these technologies will continue to have on language learning and classes, and that it is important instructors adapt and innovate in order to harness the benefits of MT and generative AI in order to aid teaching and student learning.

Keywords

machine translation, Google Translate, generative AI, ChatGPT, CALL

Introduction

The near ubiquitous access that we now have to online translation through our personal computers and smartphones has transformed the way in which many of us deal with

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intercultural communication and language learning. Machine translation (MT) tools such as Google Translate or DeepL which translate a string of words (phrases, sentences, or paragraphs) from one language to another, have become speedy and easy tools to assist in language comprehension. Thus, they can be tempting for language learners when faced with difficulties related to comprehension and production. However, due to contrasting views about whether it can be harnessed to complement language learning or alternatively inhibit overall language acquisition and understanding, the use of MT by students has led to varying degrees of acceptance and wariness by instructors in foreign language classrooms. This issue has further been exacerbated by the recent emergence of powerful deep learning generative AI such as ChatGPT which can create unique content based on prompts or requests supplied by the user.

This paper is situated in Japan, a country where many of the inhabitants must study English as a foreign language for at least 5 years in compulsory education, and up to 8 years if they continue to the final three years of secondary education. Furthermore, many students will face English requirements during university entrance exams and English studies during their undergraduate degrees, whether it be their chosen major or not. Therefore, this paper investigates how instructors of English in Japan address the use of MT and generative AI in their classes, and what policies or procedures they implement to support their stance.

Literature Review

Although one of the most pervasive MT tools, Google Translate, has been available since 2006 (Valijärvi & Tarsoly, 2019), it was not until 2016 when the quality of its translations between Japanese and English improved beyond a limited usefulness (Gally, 2019) and thus, became more difficult to identify by instructors when students submitted work created by MT as their own. However, because of the ever-increasing convenience and use of technology such as Google Translate by those in the classroom and out, instructors have sought ways to assist their students in employing this technology in effective and

pedagogically sound ways (Garcia & Pena, 2011; Handayani et al., 2022; Jolley & Maimone, 2022; Lee, 2021; Niño, 2020).

In regards to the employment of MT in language classes by students, instructors seem mostly concerned with its use in writing and reading classes. Whereas, its use may have once been considered unethical, researchers such as Lee (2021) discuss how it can be effectively utilised by students with a lower proficiency in English to complete longer writing assignments. Indeed, Lee (2021) explains that the Korean students in their study felt empowered and gained confidence when guided by the instructor to engage effectively with MT in order to complete tasks.

However, despite a growing body of research into effective methods of engaging with MT in language learning classrooms, major concerns around academic integrity and its effectiveness in assisting language acquisition remain. In Can (2023), results of a mixed-methods study in Turkey involving surveys and semi-structured interviews revealed teachers and students alike possess nuanced opinions about the ethicality and effectiveness of its use. While results showed more favourable opinions about its utilisation in reading classrooms to aid comprehension, it was deemed overwhelmingly unethical when used for productive tasks such as writing. Likewise, it was also reported that the longer the segment of language investigated or produced by MT the less ethical it was deemed.

Importantly, it should be noted that these studies all investigate situations where English is the language under study. In this case, though nowhere near perfect, MT has more recently improved in accuracy due to its pervasive nature and the methods in which MT tools are trained (Gally, 2019). However, in cases where English is not the foreign language under study, MT has also been found helpful under guided practice by an instructor on the one hand, but wanting in other situations due to the lack of progress in its accuracy of translation on the other (Valijärvi & Tarsoly, 2019).

In their study of Finnish and Hungarian learners in London, Valijärvi and Tarsoly (2019) found Google Translate to be useful for learners of all levels in regards to exercises they

described as “dictionary-like” where students identified the base form of words and checked their meaning using Google Translate, awareness raising activities based around error correction and identifying the limitations of translations provided by Google Translate, text-level analysis, and guided essay writing. However, due to the inconsistency of results it was less suitable for helping students understand language rules. Overall, they state that through these activities students were able to build language skills, become more critical language users, remove guilt about using such tools, and build awareness of the shortcomings of using technological translation.

In recent times, the use of MT has expanded to include generative AI technology, such as ChatGPT, which is able to create lengthy works of its own based on a prompt or set of instructions entered by users. This of course has exacerbated fears around overreliance of its use by students and academic integrity (Kasneci et.al., 2023). Though research in this field is still in its early stages, scholars have nonetheless begun to advance understanding in this area. Furthermore, they mention not only how it might aid students, but teachers alike. In particular, they cite how it has the potential to revolutionize the ways in which time demanding tasks such as writing evaluation and feedback are performed (Kasneci et.al., 2023; Mizumoto & Eguchi, 2023; Su, Lin, & Lai, 2023). Though cautiously optimistic about the potential for this technology to positively impact teaching and learning of foreign languages, they all clearly state that it is only effective when utilised as an assistant and in support of the human instructor, and is unable to effectively complement learning without guidance and competent use by skilled and informed users. Furthermore, they stress how important clear policies about generative AI use, thoughtful task planning to ensure that the benefits of these tools are exploited and not misused, and appropriate training for instructors and students will be as this technology becomes ever more prevalent and impactful in language learning.

In the context of this study in Japan, Sakai (2023) investigated just how sensitive ChatGPT is towards language learners that are not fully competent in English and therefore its usefulness as a tool for aiding language learning. Indeed, one of the main criticisms of ChatGPT is its tendency towards bias due to the nature of its training (Kasneci et.al., 2023;

Mizumoto & Eguchi, 2023; Sakai, 2023; Su, Lin, & Lai, 2023). Sakai (2023) found that ChatGPT has capabilities in understanding language created by a non-fluent English speaker, but inept when it came to utterances that required other communicative competencies such as sociolinguistic and strategic skills to accomplish comprehension.

With this quickly evolving background, an exploratory survey was sent to instructors of English at Japanese universities to investigate perspectives on; 1. how they address MT use, including generative AI, 2. what their approaches are in support of their stance, and 3. what their general opinions are of its use. It is hoped that this study will help to inform individual instructors as well as policy makers at the departmental and institutional levels.

Methodology

An exploratory survey to gauge the opinions, approaches, and policies of instructors of English at Japanese universities towards MT, including the use of generative AI tools, was created using Google Forms. A full copy of the survey can be viewed in Appendix 1, however the survey asked three questions;

1. How do you address machine translation (MT) and AI tools in your courses? (e.g., What is your policy on MT and AI tool use? How do you explain the policy to students? Do you monitor student use of MT and AI tools? If so, please briefly explain your approach to this.)
2. Regarding MT and AI tools, do you use different approaches for:

   …different curriculum areas (e.g., reading or writing?)

   …different activities (e.g., homework or in-class coursework?)

   …different modes of the course (e.g., beginner or advanced)?

   …different majors or tracks (e.g., English majors, non-English majors, or English for Special Purpose courses)?

   If so, please briefly explain how you approach these differently and your reason for doing so.

3. MT and AI tool use is an issue that many language teachers tend to have strong opinions about. Could you share your ideas and opinions about MT and AI tool use as they relate to language teaching not mentioned above?

For the purposes of the survey MT was defined as tools such as Google Translate, DeepL and Bing Microsoft Translator that are generally used to translate a string of words (phrases, sentences, or paragraphs) from one language to another. While tools utilising large language model technology such as ChatGPT, Bard, Microsoft Bing AI were given as examples of AI tools to consider when answering the survey (see Appendix 1).

A total of 32 instructors responded to the survey. All respondents use English as their first language. Responses were anonymous unless participants were agreeable to a follow-up interview to gain a deeper understanding of their responses. A qualitative analysis was then undertaken to identify pertinent themes for each of the three main questions. The results, themes, and example comments to further illustrate the findings are explored below.

Results

1. How do instructors address the use of MT and generative AI tools in class?

Regarding question one, which sought to investigate how instructors address the use of MT and generative AI in their classes two perspectives emerged, either the technology was viewed as a tool for learning or as a tool detrimental to student learning. However, overall, a majority of respondents addressed it as something that needed to be circumvented, with the main concerns being about academic integrity and the need for students to produce their own work. On the other hand, a small number of respondents stated that MT can aid student learning and mirrors real life and future use. Both groups engaged with different methods to help enforce their stance. Some pertinent themes related to these findings are discussed below.

1.1 As a tool for learning

A few instructors explained that they present electronic translation as a tool to students to help them improve their learning. However, the instructors also stated that they are cautious to highlight the need for one's own critical use of such tools. Respondent 18

stated, “I present it as a tool, not unlike equipment used to improve performance (e.g. track shoes), but emphasize the importance of developing one’s skills.” Respondent 19 also mentioned MT as a learning tool by explaining, “I encourage students to use MT in preparation for extended speaking tasks, I frame it as a “learning tool”.” Furthermore, respondent 25 declared emphatic support of MT due to its convenience and ability to assist students with self-checking of work, “I fully support the use of MT, particularly Google Translate as it is so easy to access/use… I promote the use of the tools for students to check their work before they submit it to me.” Respondent 27 mentioned that translation aided by technology needs to be used thoughtfully to be beneficial and how its use mirrors real life, “I tend to look at MT as a tool that can be extremely useful for anybody if used correctly… Expecting students not to use it seems unrealistic. If they go on to work in a job where they use English, MT will be a very valuable tool.” In regards to how instructors assist students with effective use of these tools only respondent 25 gave one clear example, stating that “I give students some tips on how to use it, such as checking for wayward pronoun usage.”

1.2 As a tool detrimental to learning

A majority of respondents mentioned methods they employ to try and ensure students do not use MT or generative AI tools for task completion or ways in which they try to deter students from overusing them. One way in which instructors endeavour to do this is with task design that eliminates or limits the need to access MT and generative AI tools, as respondent 22 stated, “I try to organize the assignments in a way that these tools are difficult to use or just moot. For example, my in-class fluency writing assignments are not graded on accuracy or content so students have no incentive to use these tools.” Furthermore, to completely remove access to technology for in-class tasks respondent 15 mentioned that “All writing that I grade is written with paper and pencil during class”. Teachers also try to circumvent the possibility of student work created by technology by having grading policies that endeavour to grade areas less likely to be impacted by computer assisted translation such as respondent 25, “I know my students are going to be using MT frequently with their homework… So, with presentations that they used MT to prepare for, I'm not judging the grammar and vocabulary

as much as I am judging their pronunciation, delivery, and whether or not they practiced." Other instructors simply tell their students that they will not receive a grade if MT or generative AI is suspected to have been over employed, with respondent 7 stating, "I tell them if they have used or I even suspect they've used it they'll get a zero for that assignment." Respondent 10 similarly reported, "If the assigned task is to write something in English and a student submits something written using MT or AI, I'll give it a 0."

Another prominent method to dissuade students from overusing MT and generative AI for classes was simply trying to impress upon them the importance of their own autonomous learning and the shortcomings still prevalent in current technology, as respondent 2 stated, "I tell students about the usefulness of them and serious drawbacks and limitations they have in light of my assignments." Respondent 11 similarly explained, "I simply impress upon students that using such tools diminishes their learning opportunities." Instructors also emphasized that they remind students that use of MT and generative AI is also in violation of institutional, departmental, and class policies, such as respondent 2 who stated, "I also share my university's policy and my faculty's policy on academic integrity, so students are informed of the serious consequences of submitting MT and AI generated texts as their own." Respondent 13 also explained, "There is a departmental policy written up in Japanese. I use this as part of my syllabus I introduce at the start of the semester," and respondent 28, "We explain to students that using AI tools to write assignments violates the student academic honesty pledge they agree to at the beginning of the course."

It should also be noted that there were certain nuances to where and when instructors addressed the use of MT and generative AI. In keeping with Can (2023), several respondents mentioned that the use of MT or generative AI was viewed favourably at the word or phrase level, such as respondent 7, "I tell students at the beginning of the course they must not use mt (sic) for assignments. (Words and phrases ok but whole sentences no)." Furthermore, respondents mostly seemed concerned about MT and generative AI use for writing classes, such as respondent 6 who said, "I only address this in a writing course I teach." Respondent 1 reiterated Can's (2023) findings again by stating that use of technology for learning in reading

classes was viewed more positively that in writing classes, “I encourage students to use MT for their reading (e.g., don’t understand a phrase) but not for writing assignments.” For communicative based classes, when mentioned, it was not seen as a concern, as respondent 8 stated, “I haven’t actually addressed it because the vast majority of my classes concern aural and oral communication.”

2. Different approaches

2.1 Class type

Question two of the survey asked respondents to reflect upon whether they employ different approaches with different classes depending on criteria such as class type, class level, and majors or tracks. As stated above, respondents were mostly concerned with writing classes and writing activities, explaining that those classes require special consideration in regards to MT and generative AI use. Respondent 16 mentioned that, “The only area that I have some problem with these tools is in writing classes,” and respondent 6 stated that, “This is only an issue I bring up for the writing course I teach.” However, the way in which these classes are approached differs, with some engaging with activities as a way to assist in the writing process as respondent 5 does, “In my writing courses, I employ Chatgpt (sic) to assist students in pinpointing errors in their writing,” while others like respondent 9 alter tasks in an effort to avoid the use of such tools, “I have gone back to some hand written assignments to discourage straight MT.”

Reading classes or activities were also mentioned by a couple of respondents as something that warranted a different approach, but in these cases the use of translations aided by technology was viewed as advantageous, as respondent 32 stated, “I recommend the use of MT for reading to check their comprehension,” and respondent 28 reported that if it helps with task completion, then it is beneficial for the students to use, stating, “Reading is a means to an end. They have to understand the text in order to respond to it in English.”

2.2 No difference in approach

Many of the respondents mentioned that they did not employ different approaches in classes in consideration of MT and generative AI use, with many comments similar to

respondent 2 who stated, “No differences between the different courses that I teach,” respondent 12, “My approach remains the same throughout,” and respondent 1, “I don’t have any variations in approach in these areas.” Overall, it would appear that whether supportive or sceptical of MT or generative AI use in class or for classwork, instructors often employ similar approaches across all their classes.

3. Perspectives on MT, generative AI and language learning

3.1 Adaptation is key

For question three, respondents were asked to share their thoughts on MT and generative AI tools in relation to language teaching. Responses showed that most instructors feel that it is inevitable that MT and especially generative AI will have a significant impact on language learning. In particular, they feel it is the role of educators to adapt and work to harness the benefits of these tools for their students, with respondent 6 stating, “Rather than treating it as something to be fought, we should view it as a tool to help us prepare students for their futures and enable them to achieve their goals,” respondent 10 declaring, “MT and AI cannot be ignored so we need to encourage sensible usage most importantly proof reading of the translation,” and respondent 17 asserting, “My job as an educator is to adapt to these changes and to try and find ways to help students learn and think critically within this new environment of tools.”

3.2 Negative influence

Though most respondents outlined their belief that MT and generative AI tools are here to stay and should be considered as tools for learning, several respondents mentioned the negative impact it may have on language learning or language teaching. Indeed, respondent 11 wondered whether it will soon make required language classes redundant, “It makes me question the necessity for required foreign language classes. With today’s technology anyone with a smartphone can pretty much get by.” Other responses reflected concerns about how it will impact student learning, with respondent 24 mentioning, “In an English class I think we need to mainly work on getting them to engage directly with English and produce their own

utterances (written and oral)," and respondent 16 stating, "If students use machine translation to do their homework, it tends to reflect in their in-class performance."

Conclusion

Through this exploratory survey the perceptions and approaches of instructors towards MT and generative AI tools have been investigated. It was found that teachers employ a variety of approaches in their classes in consideration of such tools, whether it be in support of their employment or to support avoidance. Respondents shared various methods in the ways they try to enforce their stance or the policy of their institution or department, namely through reiteration of policies and honour pledges, task design to either encourage or restrict use, and grading. Overall, regardless of whether a supporter or a sceptic, instructors tend to employ similar approaches across all their classes in regards to the use of MT or generative AI tools. However, writing classes were most often cited as the class type in need of most consideration when planning classes. Finally, a majority of respondents expressed that the use of MT and generative AI tools will inevitably continue to impact language learning and it is the role of educators to adapt and harness their power to ensure students benefit from them.

There are several important limitations to this study that need to be acknowledged. Firstly, this study initially set out to investigate MT, however with the rapid spread of ChatGPT it became an unavoidable part of the discussion. It should be noted that MT and generative AI tools such as ChatGPT have very different and unique features and attributes. Therefore, an investigation that looks at them separately would surely gain valuable insights into the differing, if any, perceptions of instructors towards them both. Furthermore, demographic details were not collected, it would be insightful to learn if perceptions differ between full-time faculty and part-time instructors who may have to confront a variety of institutional and departmental policies in regards to these technologies.

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Appendix 1

Machine Translation and AI Tool Use Questionnaire

Dear English instructor,

We are asking university English instructors in Japan about their approaches to student use of Machine translation (for example: Google Translate, DeepL, Bing Microsoft Translator, etc.) and AI tools (for example: ChatGPT, Bard, Microsoft Bing AI, etc.) in their classes.

We realize that teachers are extremely busy. We would very much appreciate your thoughtful insight. The questionnaire has three open-ended questions and it should take about 10 minutes to complete.

Some respondents will be asked to participate in a brief (about 30-minute), paid follow-up interview via Zoom or Google Meet. Payment will be made via a ¥3,000 bank transfer.

This questionnaire will not collect participants' names, email addresses, or any other identifying information unless it is voluntarily submitted by the participants. All data used in this study will be completely anonymized. No participant names, institution names, or any other identifying information will be included in any forthcoming papers or presentations.

If you have any questions or concerns about this questionnaire, the follow-up interview, or the study, please contact us at the email addresses below.

Thank you very much again!

- Troy Rubesch (Baika Women's University)　t-rubesch@baika.ac.jp
- Kym Jolley (Baika Women's University)　k-jolley@baika.ac.jp

* Indicates required question

1. 1. How do you address machine translation (MT) and AI tools in your courses? (e.g. What is your policy on MT and AI tool use? How do you explain the policy to students? Do you monitor student use of MT and AI tools? If so, please briefly explain your approach to this.) *

2. 2. Regarding machine translation and AI tools, do you use different approaches for: *
…different curriculum areas (e.g. reading or writing?)
…different activities (e.g. homework or in-class coursework)?
…different modes of the course (e.g. face-to-face, online, or on-demand courses)?
…different ability levels (e.g. beginner or advanced)?
…different majors or tracks (e.g. English majors, Non-English majors, or English for Special Purpose courses)?
If so, please briefly explain how you approach these differently and your reasons for doing so.

3. 3. Machine translation and AI tool use is an issue that many language teachers tend to have strong opinions about. Could you share your ideas and opinions about machine translation and AI tool use as they relate to language teaching not mentioned above? *

4. Lastly, we would like to ask some respondents to participate in a brief, paid, follow-up interview via Zoom or Google Meet at a mutually convenient time. Interviewees will be paid by a ¥3,000 bank transfer. All names and data will be kept anonymous. Could we contact you for a brief, paid follow-up interview? *

Mark only one oval.

- ◯ Yes, I can participate in the follow-up interview. *Skip to question 5*
- ◯ No, please do not contact me about the follow-up interview.

5. Thank you for agreeing to participate in the follow-up interview. Please let us know your contact information (**name** and **email address**) below. If you are selected for the interview, we will contact you shortly. *

Please remember to click "Submit" at bottom of the screen.