Examining the impact of an automated translation chatbot on online collaborative dialog for incidental L2 learning

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Abstract. This study examines the effectiveness of an automated translation chatbot used in online interactions which consequently could enhance second/foreign language (L2) competence. Based on the sociocultural perspectives of learning, such as communication to recognize the difference from others and to be involved in sense-making processes, this study examines the automated translation chatbot to translate L1 statements into L2 automatically during online interactions by hypothesizing that the chatbot provides a variety of L2 comprehensive input and lowers learners' anxiety to write their L2 posts, which will lead to successful L2 learning. To verify our hypothesis, quantitative and qualitative data was collected by the online interaction, essay writing tasks, and open-ended questionnaire before and after the interaction. The findings of this study will suggest that the efficient use of an online translation bot facilitates collaborative dialog and results in more successful L2 learning.

Keywords: collaborative learning, translation chatbot, online learning community, comprehensive input, incidental learning.

1. Introduction

Collaborative activities have been acknowledged as being beneficial for L2 learning. This is because of the perspective that these activities serve as communication to recognize the differences from others and establish shared

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meanings (Sharples, 2005). Additionally, such activities could foster learner autonomy particularly when the tasks were conducted via mobile devices (e.g. Reinders, 2011; Sato, Murase, & Burden, 2015). This stems from their nature, which enables prompt access to resources and feedback outside the classroom and consequently facilitates out-of-class learning, which can supplement in-class activities (Kukulska-Hulme, 2015).

However, some challenges are left for mobile-based L2 collaboration. Stockwell and Hubbard (2013) showed that reading and writing L2 texts on small screens could interfere with learning. Writing L2 texts, in particular, would be bothersome for learners who have not often typed the alphabet with their mobile devices. Learners' anxiety for the accuracy of their L2 output can also be another interference. McCarty, Obari, and Sato (2017) reported that Japanese L2 learners' inactivity in an online collaboration results mainly from their perception that their L2 competence is not sufficient enough for their peers to understand their posts. These might prevent their interaction with others and yield unsuccessful L2 learning.

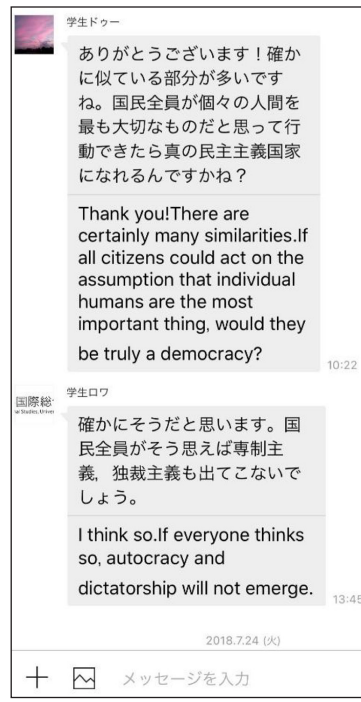
This study aims to tackle these challenges and to facilitate collaborative activities for successful L2 learning. This study utilizes a function in an online communication app: an automated translation chatbot. This bot is offered by LINE, one of the most popular online messenger apps in Japan. It can be used when an online interaction is held using LINE and automatically generates an L2 translation of a statement posted by users. Therefore, the users can see any statement both in L1 and L2 simultaneously on the screen (see Figure 1).

The chatbot can be used during online interactions between peers or among a group, while other machine translation applications like Google Translation cannot be used during the interaction because their L2 output is not provided automatically, interfering the interaction with peers as a result. This is the difference between our study and other studies applying machine translations to L2 learning (e.g. Garcia & Pena, 2011).

The bot offers various types of L2 translation together with the L1 texts, some of which L2 learners could not generate on their own. In that sense, L2 learners are exposed to comprehensive input (Krashen, 1982). Besides, the use of the bot reduces learners' inferiority about their L2 competence. These advantages lead our study to hypothesize that the chatbot will scaffold online interactions, leading to the enhancement of L2 performance and motivation for collaborative learning by the following research questions:

- RQ1: Could L2 learners doing collaborative learning with the translation bot retain the L2 words or expressions found in the automated output?
- RQ2: Could L2 learners produce sophisticated L2 sentences after the collaborative learning with the bot?
- RQ3: Did the experience of the bot change their attitude towards collaborative tasks?

Figure 1. An example of an online interaction with the chatbot



2. Method

2.1. Participants and the activity

Three undergraduates at a university in Japan attended the activity; all of them are freshmen but from different departments. They were invited to the research: once

a week, they read a book related to political issues and exchanged their opinions in a classroom and then conducted supplemental discussions of the issues via LINE with their mobile devices until the next class.

2.2. Research procedures

After listening to the description of the research project, the participants were asked to answer an open-ended questionnaire regarding the attitude towards collaborative learning. Then they worked on an essay writing task using Criterion®, an essay writing evaluation system by the Test of English as a Foreign Language (TOEFL®). The essay topic we chose from Criterion was a political issue similar to the book they read. Moreover, a questionnaire was conducted which consists of 34 items to measure learners' belief for collaboration in terms of usefulness of cooperation, individual orientation, and inequity (Nagahama, Yasunaga, Sekita, & Kouhara, 2009).

The group discussion via LINE, which was automatically translated into English, was conducted as a supplementary task related to the in-class activities. The participants could freely post their opinions about the materials they read or answer the questions posted by other participants and an author of the present study. After about one month of online interactions, a vocabulary test and follow-up interviews were administered as well as the same questionnaire and writing task. The words for the test were chosen from the L2 sentences the chatbot generated that the participants might not have known before the activity. The follow-up interviews were conducted to confirm the change of their attitude for this activity.

All the data derived from L2 translations, the vocabulary test, two writing tasks, and two questionnaires was collected and then the improvement between the online discussion with the chatbot was observed. However, no statistical analysis was implemented due to the small number of participants.

3. Findings

As a whole, few positive changes were observed: low score of the vocabulary test (RQ1); no improvement of their essay in terms of the evaluation score, and three items of Criterion® (RQ2), but their motivation toward collaborative learning was enhanced according to the questionnaire (RQ3). The follow-up interviews underlay these findings. For example, Student #3, who got the highest score in the vocabulary test and used the expression generated by the chatbot in his/her

essay, revealed that the student carefully read the translated output ("a couple of Japanese words with different connotations are translated into the same word in English"). The student also noticed that the exposure to the translation potentially triggered him/her to use some of the words. The interview with Student #3 also indicated that the student evaluated the quality of L2 translation and his/her learning process ("The translation had some mistakes, which I thought I should avoid making").

Meanwhile, Student #2 rarely read analytically the translated output. The student also said that he/she did not remember what words he/she encountered in the chat space and stated that these words need to be encountered many times to be learned. We interpret that the difference between these two students is two-fold. First, Student #3 consciously evaluated his learning, which was not the case with Student #2. The second point is that while Student #3 tried using some of the encountered words, Student #2 did not have such an attempt in the essay. However, it was found that both students shared a recognition that collaborative learning using the translation chatbot can work positively.

4. Discussion and conclusion

This study aimed to verify the effectiveness of an automated translation chatbot for L2 learning. McCarty et al. (2017) showed that the L2 sentences written by the participants using the chatbot during one month of collaborative tasks became more elaborate than the sentences before the task. The current study, however, showed little improvement of the learners' L2 performance in terms of word recall (RQ1) and writing (RQ2), although their belief towards collaborative learning was positively changed (RQ3). The findings could not support the theoretical advantages of collaborative L2 learning with the automated chatbot in terms of L2 proficiency. However, the chatbot might help the learners to make their belief of collaborative learning more positive.

It should be noted that any generalized conclusion could not be derived from our current study due to the limited number of participants, with no control group available. However, this study might indicate some pedagogical implications to utilizing the chatbot for L2 learning practices: instructors should choose discussion topics for participants to be more involved in the discussion; some tasks can be implemented to examine whether or not the L2 translations by the chatbot could translate L1 statements correctly. To devise pedagogical use of the chatbot, further studies should be conducted.

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