

A case study of a learner's use of an online translator as a cognitive tool in a SCMC context

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Abstract. This study explores a language learner's screen while interacting from a desktop videoconferencing device as part of an intercultural telecollaboration exchange that connected teacher-trainees and French learners. Communicative tasks involving opinion exchanges require from language learners simultaneous speaking and listening comprehension skills, which may prompt linguistic difficulties. To compensate for their weaknesses, learners had access to online resources exposing them to various and complex language use. Based on Jonassen's (1992) work on 'cognitive tools' as intelligent resources that contribute to knowledge construction, the author draws on multimodal interaction analysis to question the uses of an automatic online translator in the context of Synchronous Computer Mediated Communication (SCMC). This study illustrates a learner's technical autonomy using Google Translate (GT) to search for vocabulary while interacting with his interlocutors. It reports the learner's emergence of a linguistic need which is followed by a search for vocabulary leading in some cases to the searched translation's integration within the pedagogical interaction. This study raises cognitive challenges that such a practice presents for language learning.

Keywords: learners' technical autonomy, knowledge construction, synchronised computer mediated communication, cognitive tools.

1. Introduction

In Desktop Video-Conferencing (DVC) environments, participants can benefit from technical autonomy which allows them to search on the Internet when looking for specific information. Yet due to time pressure, searching for information while interacting with a distant teacher involves technical complexity. Such a

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practice requires the need to organise and structure one's screen environment to facilitate searches and to reduce processing time (Kirsh, 1995). As synchronous interactions impose a certain urge for communication, the use of online resources as 'cognitive tools' (Jonassen, 1992) was observed in our data. Cognitive tools are "computationally based tools that complement and extend the mind" (Jonassen, 1992, p. 2). Jonassen (1992) shows that they engage generative processing by exposing the learner to new information that (s)he can relate to prior knowledge.

In the case of our doctoral thesis, the use of the online translator GT was used as a cognitive tool to support a learner's need for vocabulary. As GT has been implemented in face-to-face education contexts (Vold, 2018), few studies consider the use of GT in a SCMC. Hence the following question raised in this paper: how is GT used by the language learner as a cognitive tool while interacting with a teacher-trainee?

2. Methodology

In 2014, the Cultura project allowed 24 teacher-trainees of French from the University of Lyon 2 (Lyon, France) and 16 students learning French at MIT (Boston, USA) to interact in order to practise the L2. As part of a hybrid course, the participants were first asked to chat using the Cultura platform. Then, three DVC sessions were organised to allow them to meet. As for the first DVC session, participants were able to introduce themselves freely whereas the other two sessions focused on particular topics.

To understand the use of the automatic translator, the analyses were based on a learner's dynamic screen captures. The analyses are drawn from Jozsef, a learner who used GT during the first two DVC sessions while interacting with a pair of teacher-trainees.

To understand the learner's onscreen use of GT, its time display was calculated on the learner's screen which was then crossed with the number of searched words and expressions. Then, in order to carry out a more fine-grained analysis on the learner's vocabulary searches, 'ELAN'² (Wittenburg et al., 2006) was used to transcribe onscreen actions (e.g. cursor's moves and clicks) and the participant's multimodal interactions (verbal and chat logs). These first annotations allowed to model the steps describing the learner's use of the automatic translator. What was

2. ELAN is an annotation tool "designed for the creation of text annotations for audio and video files" (Wittenburg et al., 2006, p. 1556).

first observed was the emergence of the linguistic need which gave rise to a lexical search on the automatic translator. Then, depending on the interaction context, the translator's suggested translation could be integrated within the learner's spoken utterance.

3. Results

3.1. GT onscreen

Table 1 summarises our results based on the onscreen use of the automatic translator. It shows a difference in the interaction time duration as the first DVC session lasted longer (40 minutes) than the second one (27 minutes). In total, 20 lexical searches were launched during the first session for a time display of 27 minutes (representing 66% of the total DVC time). For the second session, a decrease in the number of searches (n=9) was observed with an equal amount of onscreen display time totalling 27 minutes, which equals 100% of the session. Such results illustrate the cognitive tool's long display duration when it was occasionally used.

Table 1. Onscreen use of the automatic translator

	DVC session 1			DVC session 2		
Google Translate	Time display on the screen		Number of launched searches	Time display on the screen		Number of launched searches
	in minute	in percent		in minute	in percent	
	27.15	66.11%		27.43	100%	
Interaction time duration	00:40:20 (100%)			00:27:43 (100%)		

3.2. The emergence of the linguistic need

Table 2 introduces the key results based on the emergence of a linguistic need. It presents the three main contexts in which it appeared in the interaction. The number below indicates the number of lexical searches.

Most lexical searches (n=18) emerged while Jozsef was interacting with his teacher-trainees (context 1). Our transcriptions showed that such a need was identified by a sudden interruption within the learner's turn. A pause was made in place of the missing word, followed by hesitation markers 'hm' stressing the need for help.

Table 2. Interactional contexts leading to the learner's emergence of his linguistic need

Context 1	Context 2	Context 3
In interaction	In interaction	In case of a temporary interruption within the interaction
during the learner's turn	during the teacher-trainee's turn	at the end of a turn
18	7	4

Some other lexical searches (n=7) were launched while his teacher-trainees were talking. In this second context, or in case of a silence within the interaction (context 3), his searches for vocabulary were silent, and mostly unknown to his teacher-trainees. At last, a minority of lexical searches (n=4) aimed at checking for a new topic of conversation to ensure the interactions' flow.

3.3. The search for lexical items on GT and their integration

Our analyses showed the integration of 23 searched vocabulary words out of 29. One of the main explanations for the non-integration of the searched item is the interaction's quick pace, which raises the question of choosing the appropriate moment to introduce it. In total, three lexical items were directly included within a sentence without any linguistic self-regulation. For the rest (n=20), three types of self-regulation – *linguistic* (e.g. reformulations, repetitions), *technical* (launching another search on GT), or *both* (e.g. use of the chat) – were observed.

4. Discussion

The use of an online translator as a cognitive tool allows to support language learners in need for vocabulary. As the lexical need mostly emerges while interacting, finding a translation appears fundamental to avoid disrupting the conversation flow. When finding a translation, the learner can integrate it directly within the interaction (if the word or expression is unknown for instance) or by processing the new information to prior knowledge. The latter can result in the implementation of self-regulations which may not guarantee the teacher-trainee's understanding of the learner's utterance. Indeed the integration of the new information depends on the grammatical structure in which it was inserted, but it also depends on the conversation topic that is discussed.

Our results furthermore showed a decrease in the number of searches launched. In the second DVC session, the implementation of hetero-regulations addressed to the teacher-trainees such as ‘how do you say...’ was observed. Such result would need further investigation in order to determine whether cognitive tools help learners reduce their anxiety in SCMC contexts.

5. Conclusion

This paper aimed at reporting a language learner's uses of GT as a cognitive tool in a SCMC context. Based on our limited data, our results are aligned with Jolley and Maimone (2015) who showed that machine translation could be used efficiently provided that learners have enough knowledge about the language and the tool. Indeed our results showed the implementation of linguistic and technical individual learning strategies, leading to knowledge construction. Yet such practice also adds complexity to a DVC learning situation. Not only does the online translator cause errors, it can potentially disturb the pedagogical interaction and affect the learner's feeling of social presence.

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