



Promoting pre- and in-service teachers' co-construction of knowledge through an intercultural telecollaboration project

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Cet article présente les résultats d'un projet interculturel de télécollaboration entre quatre enseignants de langue seconde ou étrangère en formation ou en service. L'étude cherchait à analyser comment les savoirs étaient co-construits entre les membres de l'équipe via la négociation sociale en ligne. Les données, constituées de deux transcriptions de conversations ayant eu lieu sur la plateforme de conférence *Skype*, ont été analysées à l'aide d'une taxonomie adaptée du modèle de Gunawardena, Lowe et Anderson (1997). Les résultats ont montré que le plus grand nombre d'énoncés (62%) correspondaient à la Phase I (Partage/comparaison d'information) et que peu d'énoncés correspondaient à des phases avancées (Phases IV et V) de négociation de sens. Ces résultats soulèvent des interrogations quant à la conception de la tâche, à sa structure et à son contenu de sorte à favoriser des échanges de négociation de sens de niveaux supérieurs et à prévenir un potentiel manque d'implication.

Mots clés : Télécollaboration; Négociation du sens; Négociation sociale en ligne; Co-construction des connaissances; Analyse de l'interaction; Outils asynchrones multimodaux.

Introduction

The use of computers, telecommunication tools and communication technologies to hold discussions has evolved throughout the last decade. As communications are facilitated by technologies, so can be interactions between individuals. Most studies on the use of telecollaboration for teacher education and teacher development, which refers to “virtual collaborative activities that are designed for knowledge sharing and enhancement of instructional competences of participating teachers” (Priego & Liaw, 2017, p. 5), have shown that foreign language learners can benefit from this virtual type of exchanges because it presents them with authentic intercultural experiences (Arnold & Ducate, 2006; Keranen & Bayyurt, 2006). Telecollaboration can also be intrinsically motivating leading to more active participation and thus to improving co-construction of knowledge (Lucas and Moreira, 2011; Liu, 2017; Zeng, 2017). However, very few studies have evaluated the nature of the learning experience in this type of environments (Gunawardena, Lowe & Anderson, 1997; Lucas & Moreira, 2011).

This paper follows a talk given at the 2017 CIRTA conference and aims to present a more in-depth analysis of the use of Gunawardena, Lowe and Anderson’s (1997) coding scheme, which conceptualizes the processes of collaborative knowledge construction in virtual environments as a series of successive phases, to investigate how four pre- and in-service language teachers, who were taking graduate-level courses at three universities in Canada and Taiwan, co-constructed knowledge during synchronous online discussions via two platforms that allow users to share and edit text, graphs, audio, and video files among themselves.

While there have been several studies that have investigated co-construction of knowledge during asynchronous written discussions (e.g., Arnold & Ducate, 2006; Garrison, Anderson & Archer, 2001; Hull & Saxon, 2009; Ioannou, Demetriou & Mama, 2014; Wise & Chiu, 2011), there is a lack of studies that investigate the process of knowledge construction in telecollaborative projects using multimodal synchronous Web 2.0 tools. Therefore, the present study draws upon the literature and seeks to analyze if the participation in a telecollaborative project via a videoconferencing multimodal platform enhances pre- and in-service second/foreign language teachers’ co-construction of knowledge when they are encouraged to reflect upon different topics related to second/foreign language acquisition with distant peers. Leaning on Gunawardena et al.’s (1997) interaction analysis model for examining social construction of knowledge in computer conferencing, this study addresses the following questions:

1. Was knowledge co-constructed among team members?
2. If so, how was knowledge co-constructed through videoconferencing?

Theoretical Framework

Co-construction of knowledge is generally described as being both a personal process of accommodating knowledge into the existing cognitive schema, and a social process of sharing, negotiating and creating new meanings (Scardamalia & Bereiter, 1994; Stahl, 2006). Thus, one builds knowledge by reorganizing pre-existing personal cognitive schema, by reflecting and by interacting with others. It is not only a personal process of interaction with oneself, but also an interaction process with our surroundings, including people, artefacts and environments. Various models have been employed to conceptualize and assess the process of knowledge construction during asynchronous discussions (e.g., Garrison et al., 2001; Marra, Moore & Klimczak, 2004). However, as mentioned earlier, in the present study we leaned on the model developed by Gunawardena, Lowe and Anderson (1997) for the following reasons. First, this model is recognized to place a strong focus on interaction as the vehicle for shared

construction of knowledge and as being appropriate in social constructivist and collaborative learning contexts (Hull & Saxon, 2009). Second, it is both theoretically and empirically grounded (Hull & Saxon, 2009; Ioannou et al., 2014; Wise & Chiu, 2011), and attempts to capture “the complete process of negotiation” (Gunawardena et al., 1997, p. 413). Thirdly, the knowledge construction phases are relatively straightforward to evaluate (Wise & Chiu, 2011).

In their study on interaction analysis of a global online debate, Gunawardena, Lowe and Anderson (1997) sought to find appropriate interaction analysis techniques to examine the negotiation of meaning and co-construction of knowledge in collaborative learning environments facilitated by computer conferencing. A major goal of this online debate with graduate students at the University of New Mexico was to demonstrate and develop effective learning activities which support quality computer-mediated conferencing (CMC) interactions. The methodology adopted by the authors in developing a framework for analyzing the quality of the learning experience of the debate included a critical review of currently available interaction analysis models and the testing of their applicability for the analysis of the proposed debate. The proposed model was built upon a particular definition of CMC interaction developed by the authors and based on a metaphor taken from the world of textile. According to this metaphor, CMC interaction, seen from a constructivist perspective, is compared to a quilt: each piece that makes up a quilt represents all contributions by each person, which are based on their experience and research. That means that in a CMC interaction, those pieces are the ideas and thoughts of each participant.

The authors analyzed the transcript of the debate considering four categories: 1) the type of cognitive activity performed by participants, 2) the type of argument, 3) the type of resources used by participants and 4) the evidence of changes in understanding. Regarding the negotiation exchanges between participants, the authors identified two different types of learning: 1) participants contributed to each other’s learning with additional examples (“learning by accretion”) and 2) participants had to adjust their way of thinking in order to receive new concepts. However, they rapidly noticed that this kind of differentiation was rather artificial. For this reason, they developed an outline of the process of negotiation in five phases of learning occurring at the individual and social level:

1) Sharing/Comparing, 2) Dissonance, 3) Negotiation/Co-construction, 4) Testing Tentative Constructions, and 5) Statement/Application of Newly-constructed Knowledge. Furthermore, every phase is composed of a specific number of operations that describe the nature of the statement or the message. Another type of learning, which can occur at any phase, is the modeling of cognitive or metacognitive strategies used by some participants and that others can adopt. In conclusion, the authors point out that it is possible that not all these phases occur or they may occur at the same time. Figure 1 identifies specific operations which may occur at each stage of the process.

PHASE I: SHARING/COMPARING INFORMATION.
Phase I operations include:
A. A statement of observation or opinion
B. A statement of agreement from one or more other participants
C. Corroborating examples provided by one or more participants
D. Asking and answering questions to clarify details of statements
E. Definition, description, or identification of a problem

PHASE II: THE DISCOVERY AND EXPLORATION OF DISSONANCE OR INCONSISTENCY AMONG IDEAS, CONCEPTS OR STATEMENTS.
Phase II operations include:
A. Identifying and stating areas of disagreement
B. Asking and answering questions to clarify the source and extent of disagreement
C. Restating the participant's position, and possibly advancing arguments or considerations in its support by references to the participant's experience, literature, formal data collected or proposal of relevant metaphor or analogy to illustrate point of view
PHASE III: NEGOTIATION OF MEANING / CO-CONSTRUCTION OF KNOWLEDGE
Phase III operations include:
A. Negotiation or clarification of the meaning of terms
B. Negotiation of the relative weight to be assigned to types of argument
C. Identification of areas of agreement or overlap among conflicting concepts
D. Proposal and negotiation of new statements embodying compromise, co-construction
E. Proposal of integrating or accommodating metaphors or analogies
PHASE IV: TESTING AND MODIFICATION OR PROPOSED SYNTHESIS OR CO-CONSTRUCTION
Phase IV operations include:
A. Testing the proposed synthesis against "received fact" as shared by the participants and/or their culture
B. Testing against existing cognitive schema
C. Testing against personal experience
D. Testing against formal data collected
E. Testing against contradictory testimony in the literature
PHASE V: AGREEMENT STATEMENT(S)/APPLICATIONS OF NEWLY CONSTRUCTED MEANING
Phase V operations include:
A. Summarization of agreement(s)
B. Applications of new knowledge
C. Metacognitive statements by the participants illustrating their understanding that their knowledge or ways of thinking (cognitive schema) have changed as a result of the conference interaction

Figure 1. Gunawardena, Lowe and Anderson (1997) Interaction Analysis Model

Literature Review

Telecollaboration for Teacher Education and Teacher Development

An increasing number of studies in the area of telecollaboration have started to report how telecollaborative projects have been used in teacher-education and teacher-development contexts (Antoniadou, 2011; Arnold & Ducate, 2006; Dooly & Sadler, 2013; Guichon & Hauck, 2011; Lewis, 2017; Müller-Hartmann, 2012; O'Dowd, 2015, 2017; Priego & Liaw, 2017). As pointed out by O'Dowd (2017), "much of this research has highlighted the value of an experiential modelling approach which involves offering trainee teachers the opportunity to take part in telecollaborative exchanges themselves in order to experience the tools and processes which they will be expected to use in their own classrooms in the future" (p. 39).

The findings of these studies have revealed several potential benefits of incorporating telecollaboration in language education programs. First, it has been found that in addition to developing digital literacies, that refers to the practices of reading, writing and communication made possible by digital media (Hafner, Chick and Jones, 2015), telecollaboration can help pre-service and in-service language teachers to better understand the potential and limitations of the use of telecollaboration in language teaching practices (Koehler & Mishra, 2009), and thus contribute to the development of their digital-pedagogical competence (Dooly, 2011; Guichon & Hauck, 2006, 2011; Koehler & Mishra, 2009; O'Dowd, 2015, 2017).

Second, as telecollaboration is inherently intercultural, it can also contribute to the development of teachers' intercultural communicative competence (Müller-Hartmann, 2006, 2012). Third, such international telecollaborative exchanges can enable pre-service teachers to better make connections between theory and practice, and enhance in-service teacher development (Dooley, 2011; Dooly & Sadler, 2013). As such, telecollaborative exchanges can afford them the opportunity to reflect and negotiate on their identities as teachers (O'Dowd, 2015). Such reflection can be documented and can enable them to identify and address their own preconception for research purposes, practice and improved strategies for collaboration and mentorship (Dooley & Sadler, 2013). However, there is a dearth in research on the use of telecollaborative international projects in graduate applied linguistics programs involving both pre- and in-service language teachers.

Co-construction of Knowledge

Recent studies on telecollaboration have started to analyze the process of knowledge construction supported by open social web tools in open, learner-distributed and learner-managed learning environments. As mentioned by Lucas and Moreira (2011), it is in those kinds of environments, that the focus is placed on the learner and learning is done through problem solving, mediating learning tools and facilitators who encourage the development of the learners' ability to think, reflect and assume responsibility for their own learning (Von Glasersfeld, 1995; Vygotsky, 1978). A number of researchers have found that online environments and therefore social exchanges require that participants be encouraged to "take their instructional cues from each other within the frame set by the assignment" (Hull & Saxon, 2009, p. 626). It has also been found that when individuals explore different personal interpretations through dialogue, this social interaction does not always lead to cognitive development or growth (Resnick, 1991).

The concept of having two or more people being placed in a controlled environment in order to observe, record and analyse their interactions is not a new one, but the use of online exchange and videoconferencing platforms certainly provide new research opportunities. For instance, Lucas and Moreira (2011) looked at whether the use of open social web tools, as a means to distribute a learning environment, had an impact on the process of knowledge construction or not, and up to what extent students were really co-constructing knowledge. Although this type of communication also has some drawbacks, its numerous advantages make them powerful open tools to prompt constructive verbal exchanges and allow language learners from various countries and social contexts to collaborate together more easily. In fact, many researchers have examined different factors that may influence the quality of collaborative knowledge construction, such as gender, culture and participants' individual characteristics. All these factors and the role of the instructor "have all been identified as variables influencing collaborative knowledge construction in online settings" (Ioannou et al., 2014, p.184).

The model developed by Gunawardena et al. (1997) has been used by a number of researchers in the area of telecollaboration. For example, Kanuka and Anderson (1998) leaned on this model to analyze online social exchanges and knowledge construction to help understand and assess online learning. Also, Wise and Chiu (2011) used the same model to analyze temporal patterns of knowledge construction in online discussions. These authors concentrated also on the consequences of role assignments on the different phases of knowledge construction. Another study by Hull and Saxon (2009) involving pre-service teachers, sought to verify Gunawardena et al.'s model and to "show that a socio-historical constructivist approach to instruction combined with minimal increase in frequency of instructor involvement and instructional questions" can support co-construction of knowledge and the negotiation of meaning in this learning environment (p. 625). However, to date, there is a lack of studies that investigate the process of knowledge construction in telecollaborative projects using multimodal synchronous Web 2.0 tools.

Methodology

Context and Participants

The data in this article come from a larger study that thrives to gain insights into how second language pre- and in-service teachers utilize multimodal resources for intercultural communication and for representing their co-construction of professional knowledge. In the larger study, fourteen pre- and in-service language teachers who were taking graduate-level courses in two countries were arranged by their instructors (who are also researchers of this study) to form groups to interact and discuss two topics related to language teaching and research, namely the 'Characteristics of 21st century language teachers' and 'Teachers as researchers'. Participants were in their mid-twenties and non-native speakers (NNS) of English with an advanced level of mastery of their common second language. Of the 14 participants, 10 were in-service second or foreign language teachers.

The tasks of this telecollaborative project involved the participants to exchange information, to engage in discussion via Google Docs, and to create a multimodal collage on a Padlet to represent their co-constructed meanings. In addition to Google Docs, they were invited to meet on Skype. Since only one team recorded their Skype conversation, in this article, we focus on the videoconferencing interactions via Skype of four participants. Two participants (P1 and P2) were from different universities in Taiwan and are Chinese native speakers. As for the students at the university located in Quebec, one (P3) is a German speaker exchange student and the other (P4) is a French native speaker that lives in Quebec City.

Description of the Project

The project was designed to provide the participants with opportunities to enhance their professional knowledge and intercultural competence via social constructive meaning-making processes. The telecollaborative project lasted for thirteen weeks and consisted of five tasks (see Table 1). For the first task (Introduction), students were asked to introduce themselves on a Padlet, including their name, study program, research interests and pedagogical experience. They were then asked to use Google Docs and were given the possibility to also use Skype to discuss about the first topic (“Characteristics of 21st century second/foreign language teachers”) and to create a collage summarizing their online discussions (Collage # 1). The participants were then invited to read and comment on the other teams’ collages in order to find differences or similarities among the different collages (Task #3). The same procedure was repeated for the second discussion topic, namely “L2/LE teachers as researchers”.

Table 1. The five telecollaborative tasks

TASK	DEFINITION
Task 1: Introduction	Participants posted on a Padlet a brief introduction of themselves including their name, study program, research interests and pedagogical experience.
Task 2: Collage # 1	After the online discussion via Google Docs and Skype, the international teams created a collage to represent the Characteristics of 21 st century L2/FL teachers.
Task 3: Reflection on collage # 1	Individually, participants read and comment on the other teams’ collages.
Task 4: Collage # 2	After the online discussion via Google Docs and Skype the international teams created a collage to summarize their ideas on “L2/LE teachers as researchers”.
Task 5: Reflection on collage # 2	Individually, participants read and comment on the other teams’ collages

Data Analysis

The taxonomy used to code the transcripts of the Skype video conferences on the two topics of discussion among a group of four students was adapted from the “Interaction analysis model” developed by Gunawardena et al., (1997). For the present study, Gunawardena et al.’ model was adapted because of the following reasons:

1. The tasks described earlier imposed an organizational structure which influenced the interaction among the team members. Since the participants had the possibility to record their Skype conversation, explicit comments were made by the participant who started the recording could inform the rest of the group, as well as when the group decided to stop the recording.
2. Due to the task structure, the group had to decide 1) which question they wanted to answer and 2) when it was time to start answering another question.
3. Participants also referred to the conversation itself, using polite forms to 1) apologize for interrupting another participant, 2) to invite the other members of the team to complete his/her sentence or for 3) greetings or leave-takings.

For those reasons, two more phases were added to Gunawardena et al.'s Interaction Analysis Model. These phases were named "Phase 0" and "Phase 00" in order to not overly modify the original model. Phase 0 (Referring to the activity) was created in order to code some comments containing information about the task itself. Moreover, this phase includes three more levels: A, referring to comments on the recording; B, referring to comments containing information about the questions students had to answer to complete the task; and C, which refers to comments expressing greetings and leave-takings. As for Phase 00, it was created to code comments referring to the conversation itself. It contains two levels: A, which refers to interrupted statements and B, which was used to code statements of participants inviting one another to complete their statements.

Following Rourke et al. (2001), we considered the whole utterance as the unit of analysis. We tallied the instances belonging to each phase associating them to the four participants and provided descriptive statistics. Each of the first two authors of this paper coded one of the tasks and then checked reliability of the coding process. In case of discrepancies, that is to say, utterances that were coded differently, the third author of this paper was involved in helping to reach a consensus. The final coding scheme with examples from our database is presented in the appendix.

Results

During the discussion of the first topic (Characteristics of 21st century language teachers), the four participants of this group produced a total of 119 utterances. As shown in Figure 2, more than half of their contributions (57,98%) belonged to Phase I, and eighteen (15,12 %) corresponded to Phase III. The remaining of their utterances were coded as follows: fourteen (11,76%) were coded in Phase 0, eight (6,72%) in Phase II, six (5,04%) in Phase 00, and four (3,36 %) in Phase V. No instances were found to belong to Phase IV. These results seem to indicate that despite that fact that the members of this group were engaged in sharing and comparing information (Phase I) and thus in co-constructing meaning (Phase III), the discussion did not push participants to question their existing cognitive schemas and personal experiences or to apply the newly co-constructed meaning (Phases IV and V).

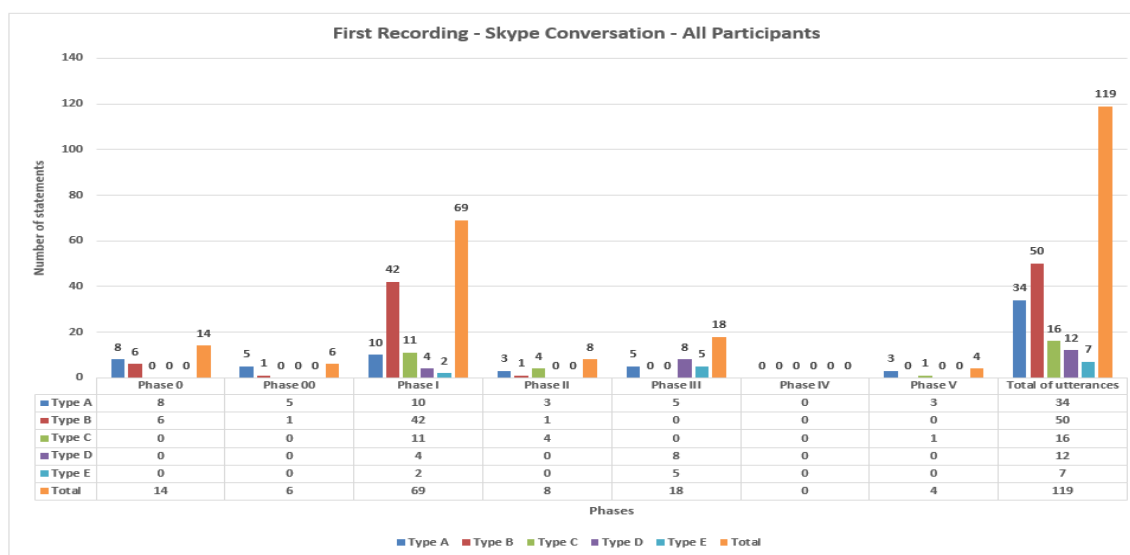


Figure 2- Coding of the Skype Discussion on the Characteristics of 21st century L2/FL teachers

The analysis of the second discussion topic, namely “Teachers as researchers”, showed that participants were again highly engaged in sharing and comparing information. Indeed, 56 out of the 85 utterances they produced (64,3%) belonged to Phase I. As in the first videoconference, the participants also took the time to talk about the task itself. Fifteen utterances (17,2%) were found to belong to Phase 0. During this discussion, participants also identified areas of disagreement, and asked their partners to justify or clarify their ideas; ten of their utterances (11,4%) corresponded to Phase II. However, in only two instances (2,2%), participants negotiated the meaning or co-constructed knowledge (Phase III). In addition, the discussion of this topic did not help students to achieve higher levels of co-construction of knowledge (Phases IV or V). These findings are summarized in Figure 3.

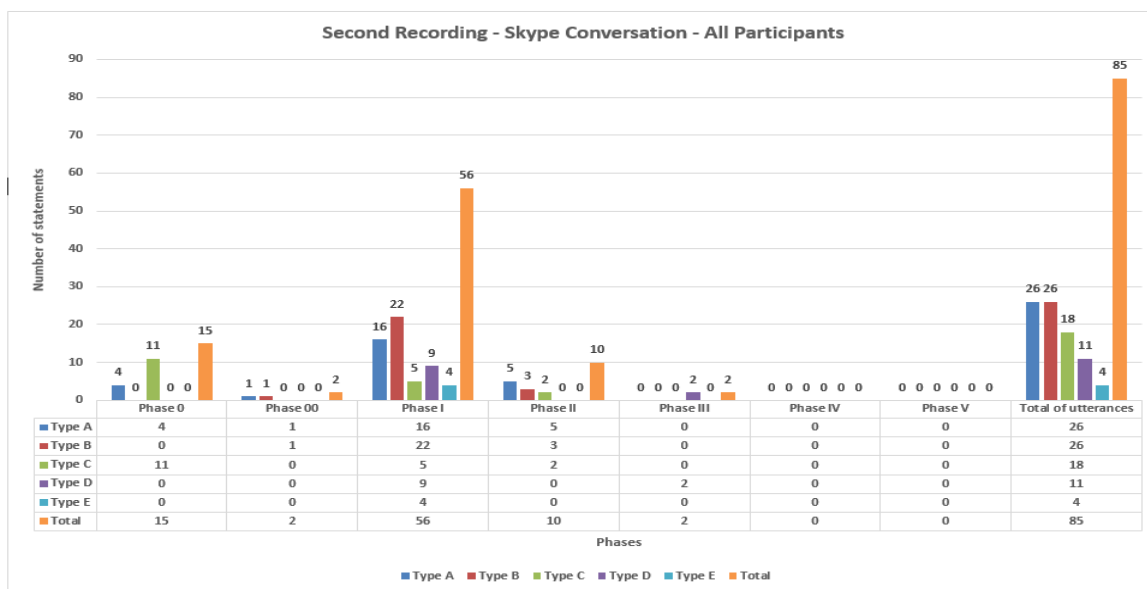


Figure 3- Coding of the Skype Discussion on Teachers as Researchers

Individual results for each of the four participants showed that participants 3 and 4 were the most active during the two Skype meetings. In the first discussion, out of a total of 119 utterances, they respectively produced 29 (24,36%) and 46 (38,65%). The majority of the utterances produced by these two participants were coded in Phases 0 and I. The dominant role taken by participants 3 and 4 was also present during the discussion of the second topic. Since both Taiwanese participants were less participative than their two international teammates, it could be inferred that there might be a cultural reason behind their lack of negotiation. However, the sample is too little to generalize this conclusion, yet should be kept in mind if further studies are based on similar tasks and/or coding methods.

Discussion

Analysis showed that the proposed tasks in which participants were asked to reflect upon different topics related to second/foreign language acquisition with distant peers and then summarize the results of this discussion on a Padlet, provided an evident opportunity for sharing and comparing information as well as for exploring ideas, concepts or statements. However, our analyses also showed that most of the utterances produced by these four participants remained at lower levels of meaning making (Phases I and II). Although these results are similar to those found by Lucas and Moreira (2011), findings from the present study seem to indicate that the tasks included in this telecollaborative project brought participants to produce more statements pertaining to negotiation of meaning (Phase III) than the ratio

found by Lucas and Moreira. Pedagogically speaking, this type of exchanges seems to promote co-construction of knowledge and stimulate oral interactions that go beyond simple agreement or disagreement.

However, our findings seem to indicate that this type of tasks does not concretely enhance students' testing and modification of proposed co-construction (Phase IV) and even less to apply newly co-constructed meaning (Phase V). These findings could be explained as follows. First, it could be possible that once negotiation or co-construction was accomplished, the participants did not feel the need to compare their hypotheses with current theories, personal experience or formal data. Second, this may also be due to the fact that the participants' Skype conversation led to the creation of the collaborative Padlet, but that they had used emails or unrecorded Skype videoconferences to discuss about the collages. Unfortunately, the researchers did not have access to these alternative means of communication, if any occurred. Finally, it could also be possible that participants might have discussed tasks in national groups prior to logging online and beginning the task, which could partially explain lack of participation of participants 1 and 2, and domination of the conversation by stronger speakers (participants 3 and 4).

Concerning the domination of the conversation by specific speakers, it is important to acknowledge that several cultural aspects could have influenced this type of telecollaboration. In fact, cultural differences are thus particularly complex and they also vary according to the people and the degree of knowledge of each other (Ogay & Edelmann, 2011). It is interesting to note that both Taiwanese participants (1 and 2) took the floor during the debate less often than their two international teammates. Future studies could investigate cultural differences and similarities pertaining to discussing, debating and turn-taking and how it reflects in L2 interactions.

Conclusions

Social media and open platforms are powerful tools to enhance constructive verbal exchanges and allow language learners from various countries and social contexts to collaborate more easily and tend to be more and more present in L2 classrooms. A careful task design, structure and content should prevent lack of involvement of participants (Ioannou, Demetriou & Mama, 2014; Kanuka & Anderson, 1998). It should try to be at the participants' level of ease with technologies, which could play a role in preventing less involved participants from reaching higher level of negotiation or, at least, participating more during more challenging tasks (Lucas & Moreira, 2011). Findings raised awareness regarding the task design, structure and content in order to foster higher levels of negotiation of meaning and to prevent potential lack of involvement.

When comparing tasks from previous studies (Gunawardena et al., 1997, Lucas and Moreira, 2011) with the ones of the present study, it can be assumed that telecollaborative tasks and online discussion and exchanges aiming at co-constructing knowledge might be a more efficient choice than debate type of activities. While in both cases co-construction of knowledge has occurred, more frequent statements of higher phases (Phase III and above) tend to be present in cross-cultural exchanges about topics that concerns all participants (e.g. Discussing how one's perceive his role as a teacher). Another pedagogical implication resulting from this study is the importance for L2 teachers to structure their tasks in such a way as to appropriately prepare participants for the online discussion, in order to maximize the online exchanges that would help them to reach Phase III and above.

Even though these results are similar to those found by Lucas and Moreira's (2011) and show that there are little to no occurrence of higher phases of negotiation of meaning, results and coding of ambiguous statements into new categories have shed light upon some of the limits of Gunawardena et al.'s Interaction Analysis model, but also provided further interrogations regarding limitations of using audio-recordings as core data for interaction analysis. Through telecollaboration now comes live video recordings which would probably bring additional information. Future studies should consider body language in the analysis of videoconferences in order to see if signs of understanding or negotiation are demonstrated by participants throughout interactions without being verbalized by them due to shyness, low-profile personality traits or to cultural-specific behaviors.

Some limitations constrain the extent to which the findings of this study can be generalized. First, this paper focused on only four participants. Second, several variables could not be controlled, such as not having access to the alternative communication means. Third, the analysis of the video recordings, in addition to the analysis of the audio transcripts could have provided additional data in regards to the interpretation and analysis of conscious and unconscious body movements (Zeng, 2017). Finally, participants' conversations could have been influenced by the fact that students knew that their recordings were going to be watched and analysed by the researchers.

Despite these limitations, our findings have allowed us to confirm the usefulness of Gunawardena et al.'s (1997) coding scheme to examine the different stages of co-construction of knowledge and to better understand the experience of learning via computer-mediated conferences. In addition, the adapted taxonomy used in this study can be a starting point of analysis for further research.

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Appendix: Coding sample according to Gunawardena and al.'s (1997) *Interaction Analysis Model* with addition of Phases 0 and 00

PHASE 0: Referring to the activity		Examples
A. Referring to the recording [Ph0/A]		CH_TW: Hello girls! Recording is on.
B. Referring to the questions students have to answer [Ph0/B]		C_TW: Why do you think that teachers need to do research?
C. Greetings or leave-takings [Ph0/C]		L_QC: Bye!
PHASE 00: Referring to the conversation		Examples
A. An interrupted statement [Ph00/A]		L_QC: But I interrupted you, sorry.
B. A Statement inviting one other participant to complete his/her statement [Ph00/B]		C_TW: Now I forgot what to say...go ahead.

PHASE I: Sharing/comparing of information		Examples
A. A statement of observation or opinion [PhI/A]		C_TW: I don't know if it is very practical because teachers have so much to do already.
B. A statement of agreement from one or more other participants [PhI/B]		L_QC: Oh I totally agree
C. Corroborating examples provided by one or more participants [PhI/C]		L_QC: I think also that might be a big problem because...like you say...you have so much to do and to prepare for the course....
D. Asking and answering questions to clarify details of statements [PhI/D]		C_TW: Like...on your students? R_QC: Uh...once on my own and....I think three other times just on...other classes that

	weren't mine.
E. Definition, description, or identification of a problem [PhI/E]	R_QC: And we found out that it really depends like...surprisingly uh...the...pictures they, they well...drawings, because they had to draw, uh...was probably, like the more efficient [sic] but it really depend [sic] on the word.
PHASE II: The discovery and exploration of dissonance or inconsistency among ideas, concepts or statements	
Examples	
A. Identifying and stating areas of disagreement [PhII/A]	C_TW: mmm yeah but the [inaudible] that writing ability is a bit getting lower for all students L_QC: I think both are getting important
B. Asking and answering questions to clarify the source and extent of disagreement [PhII/B]	C_TW: I don't know either...I just copied it from the website.
C. Restating the participant's position, and possibly advancing arguments or considerations in its support by references to the participant's experience, literature, formal data collected, or proposal of relevant metaphor or analogy to illustrate point of view [PhII/C]	R_QC: Uhm...I could finish, because I've just seen uh...what you added Mandy...so like, to be lifelong learners...I think that's really interesting, because that's really true.
PHASE III: Negotiation of meaning/co-construction of knowledge	
Examples	
A. Negotiation or clarification of the meaning of terms [PhIII/A]	C_TW: mmm so it's more teacher based R_QC: yeah C_TW: teacher centered R_QC: yes absolutely C_TW: teacher centered
B. Negotiation of the relative weight to be assigned to types of argument [PhIII/B]	

PHASE V: Agreement statement(s)/applications of newly constructed meaning	Examples
A. Summarization of agreement(s) [PhV/A]	CH_TW: ok so that means that we need to be more open-minded for our students because when we are learning like teacher always make us not making any mistakes but now we are more like able to let students make mistakes because I think they can learn from the mistakes not just not making any mistakes
B. Applications of new Knowledge [PhV/B]	
C. Metacognitive statements by the participants illustrating their understanding that their knowledge or ways of thinking (cognitive schema) have changed as a result of the conference interaction [PhV/C]	R_QC: I think as well just talking right now with people from different country like right now ahm it's quite interesting because you get like another point of view and sometimes it is the same point of view and it's kind of like reassuring that we have kind of like the same challenges even though we are twelve hours apart