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Communication Task

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Investigating the Nature of EFL Pair Interactions in a Computer-Mediated Communication Task

Gang ZENG and Shigenobu TAKATSUKA

In this article, we examined the patterns of pair interactions that emerged in a computer-mediated text-reconstruction task where 16 Chinese tertiary EFL learners worked in eight self-selected pairs in the chat rooms. This study drew on Storch's (2002) work on the nature of ESL pair work. Quantitative and qualitative data presented in this study suggested that six pairs fell under one of Storch's four patterns of interaction. The interactions of two pairs were more dynamic and did not match any of the four patterns. We did not find the significant relationship between the pair patterns and the performance of their individualized posttests developed from language-related episodes during interaction. However, we did find that learning is more likely to occur when learners collaborate and jointly work out a successful solution in case of an emerging problem than when they have disagreements and cannot finally resolve them.

1. Introduction

Peer-peer dialogic activities are increasingly becoming a common practice in language education. It is both pedagogically and theoretically motivated. At the pedagogical level, teachers hope to provide learners with more opportunities to use the target language in interaction. At the theoretical level, a wide range of studies have shown that peer-peer dialogue among second or foreign language learners is the site of learning (see Swain et al., 2002).

The advent of the Internet has made it possible to provide learners with opportunities to have dialogic activities in the online environment. Recent years have seen the increasing interest in integrating computer-mediated communication (CMC) into language education. CMC tools can lend themselves well to helping language teachers extend language classrooms to include a virtual learning space, in which learners collaborate with each other in learning and using the target language simultaneously. This is of particular significance in EFL context, where language classes are generally teacher-centered and learners may not have sufficient opportunities to use the target language both in and outside the class.

The present research concerns the application of one mode of CMC, synchronous (or real-time) CMC (SCMC), to language education. To date, research on SCMC and language education has largely focused on negotiation of meaning within the theoretical framework of psycholinguistic approach (e.g., Pellettieri, 2000; Blake, 2000; Smith, 2003, 2005). This line of research is motivated by Long's (1996) interactional hypothesis,

which claims that interactional modifications triggered by communication breakdowns facilitate comprehensible input and thus promote language learning. A negotiation routine is used as the basic unit of analysis consisting of a *trigger*, an *indicator* and a *response*, which are usually treated as three static variables. Social aspects of peer-peer interactions, especially the emergent relationships learners form when approaching learning tasks, have received scant attention. To fill this gap, the present study, underpinned by sociocultural theory, aims to explore how learners relate to each other when engaged in collaborative pair work in the SCMC context and how the emergent relationships they form influence their language learning process.

2. Background

2.1. Sociocultural Perspective on Peer-peer Interaction

Both psycholinguistic approach and sociocultural approach stress the role of interaction in L2 learning. However, these two approaches differ in many crucial respects. Psycholinguistic approach proposes that learning occurs as the result of interactions, in which learners negotiate for meaning in case of miscommunications to achieve mutual comprehension. Under this approach, knowledge is perceived as an individual possession acquired through personal effort when interacting with others. By contrast, sociocultural approach claims that learning takes place in social interactions, where learners co-construct knowledge and scaffold each other within each other's zone of proximal development (ZPD) — the distance between what one can achieve alone and what the same person can do with assistance from others (Vygotsky, 1978). Language is used as a semiotic tool to mediate one's cognitive and social activity. Thus, Sociocultural approach emphasizes the collaborative dimension of interaction, providing a “conceptual framework for description and explanation of collaboration and the learning and development it simultaneously effects” (Donato, 2004, p. 295). Of particular significance is Swain's (2000) notion of collaborative dialogue, in which learners collaboratively engage in problem solving and knowledge building. Research has proved it to be an effective tool for understanding language learners' collaboration and examining the embedded learning process. Language in collaborative dialogue is doubly important because it is not only used as a cognitive tool to reflect on meaningful language use and thus mediate internalization, but also as a social tool to construct and maintain relationships with each other.

2.2. Social Learning via SCMC

The development of CMC tools have made it possible to bring learners together in the virtual space for collaborative language learning. However, opinions divide over the use of CMC for language learning. Some researchers point out the impersonality of CMC, and argue that it may produce less cohesive discourse (Salaberry, 1996) and learners may feel disconnected with each other due to the lack of social context cues (e.g., eye contact, nodding, facial expressions and use of tones). This seems to show that the reduced “social context cues may hinder the collaborative learning process and the process of knowledge construction” (de Jong et al., 2005). More researchers believe that lack of social contextual cues does not mean CMC is devoid of social presence. On the contrary, social presence is an important concept in CMC (see Rourke et al., 2001). Social presence is defined as “the ability of learners to project their personal characteristics

into the community of inquiry, thereby presenting themselves as 'real people'" (Garrison et al., 2001, p. 89). Actually, learners have been found to use various forms of electronic paralanguage (e.g., emoticon, repeated punctuation, bold, intentional misspelling) to help compensate the missing conversational cues in face-to-face communication, establish their social presence and foster genuine relationship with each other. A number of studies have examined the social presence in the CMC context (e.g., Arnold & Ducate, 2005; Lomicka & Lord, 2007). Warschauer (2005) stressed the value of the concept of social learning for research on CMC and claimed that it can inform us how learners "refine their writing for, and with input from, an authentic audience" (pp. 42-43).

SCMC, which allows for chatting in real time, is a very effective mode of CMC in promoting learners' collaboration. Many researchers have suggested that SCMC is a hybrid that exhibits characters of both oral and written language (e.g., Sotillo, 2000). On the one hand, it very much resembles face-to-face oral communication in terms of its immediacy of response and synchronous interactivity. On the other hand, it bears a resemblance to writing due to its text-based nature. SCMC can slow down communication and enable learners to view their language as they produce it. Thus, it provides an "intersection between interaction and reflection" (Warschauer, 1997, p. 472), making it a useful tool for collaborative language learning.

A number of studies have explored the possibilities of applying SCMC tools to facilitate collaborative language learning from sociocultural perspective (e.g., Lee, 2002, 2004, 2008). Oskoz (2005) stated that "SCMC is a process-oriented and collaboration-oriented medium in which learners interact with one another" (p. 517) and further claimed that "it is possible to observe how students in SCMC assist each other and work collaboratively to construct knowledge by providing either implicit or explicit feedback to each other" (p. 521).

2.3. Nature of Pair Collaboration

How learners collaborate with each other depends on their orientation to the assigned tasks and the relationships they form. While much research has been conducted on peer-peer collaboration and its effect on language learning, it was not until quite recently that the nature of peer-peer exchanges in the dialogue began to receive growing attention. De Guerrero and Villamil (2000) reported in their study on how two learners in a peer editing task used a vast array of scaffolding mechanisms in the interaction to keep a collaborative relationship. Foster and Ohta (2005) showed how learners sustained a supportive and friendly discourse by expressing interest and encouragement while seeking and providing assistance.

Of particular significance are Storch's series of findings (2001, 2002) on the nature of pair interactions and its relationship with language learning in an ESL adult classroom. In a study investigating the efficacy of pair work on an editing task, Storch (2001) found the three pairs approached the task differently ranging from non-collaboratively to collaboratively. She concluded that collaborative learners may achieve a better task performance than non-collaborative learners. Storch (2002) found four distinct patterns of pair interaction: expert/novice, collaborative, dominant/passive and dominant/dominant. They were distinguished in terms of two dimensions of pair interactions: equality (authority over the task) and mutuality (level of engagement with each other's contribution). The two dimensions are reflected by some associated salient features in terms of language (e.g., use of pronouns, phatic utterances), discourse (e.g., requests, confirmations, explanations), decision making (e.g., initiating the task

process), and the nature of assistance (i.e., implicit or explicit corrections and willingness to accept each other's assistance). The most dominant pattern was collaborative, in which learners work in joint problem space, making a joint contribution to the assigned task and "engag[ing] each other's contribution" (p.130). The least dominant pattern was expert/novice, with the more proficient one assuming the role of an "expert", who helps the less proficient one (the novice) to solve emerging problems and learn from interaction. The dominant/dominant pattern is characterized "by a high level of disagreements and inability to reach consensus" (p. 285) while the dominant/passive pattern is marked by one controlling the interaction and the other assuming a "subservient role" (p.129). The findings of her study also suggest that learning tends to occur in pairs with collaborative orientation (i.e., collaborative and expert/novice) rather than in pairs with non-collaborative orientation (i.e., dominant/dominant and dominant/passive). Watanabe and Swain (2007) found a fifth pattern of interaction, expert/passive with "the less proficient passive participant's involvement in the task decrea[sing] over time as he became intimidated and reluctant to say anything in front of his expert partner" (p. 134). They considered it to be non-collaborative in nature.

To date, little research has investigated the nature of peer-peer interactions in computer-mediated pair work. Thus, the present study aimed to explore whether the interaction patterns identified in Storch's (2002) work would transfer to the SCMC context and how they would relate to language learning in the EFL context. The study addresses two specific questions:

1. How does learners' interaction vary in nature across different pairs in the CMC environment?
2. What is the relationship between the nature of peer-peer interaction and language learning?

3. Method

The present study is from a larger project, studying peer-peer dialogue in the computer-mediated communication tasks.

3.1. Participants

The participants of this study were 16 Chinese EFL learners, who were at the time studying in a second-year general English course at an education university in China (13 females, 3 males). All of them had studied English for at least seven years and were at an intermediate level of language proficiency. Just before the study, they had a model test of national College English Test 4 (CET-4), whose passing grade (60) is equivalent to 550 of TOEFL - PBT. The results are shown in Table 1. They were familiar and comfortable with the Internet and all had the experience of chatting online in their native language. They had easy access to the Internet on and off the university campus.

Table 1. participants

Dyad	Name(gender) and score(1)	Name (gender) and score(2)
1	X (F) 74	Y (F) 67
2	S (F) 70	Q (F) 68
3	L (F) 70	A (F) 58
4	W (F) 65	D (M) 62
5	P (M) 73	B (M) 62
6	Y (F) 79	O (F) 67
7	G (F) 72	W (F) 67
8	Z (F) 80	T (F) 64

3. 2. Procedures

In order to carry out this study, we created a website via Moodle, a free online course management system (CMS), in which learners were randomly put into self-selected pairs and worked in eight chat rooms based on the tasks presented on the front page. In the first week, we demonstrated how to use the Moodle tools and assigned a task for practice to familiarize the learners with the online learning environment and the tasks. Altogether, we assigned five tasks based on Swain's (2001) three features of a collaborative task (pair work, joint final product, and focus on form in meaning-oriented communication) to promote collaboration. They were two text reconstructions, one translation, one picture description and one discussion. As a requirement, they had to upload their collective writing onto the website upon completion of each task. The learners worked on one task for about one hour every week for five weeks. Each pair was allowed to fix their own time of meeting online anywhere with access to the Internet. They were encouraged but not required to chat in English in order to carry out the assigned tasks. The online exchanges were automatically saved into an electronic archive in the course site and later downloaded for analysis. This study mainly focused on the third task (text reconstruction) as we thought they had become familiar with this type of task (the practice task is also a text-reconstruction task).

At the end of this project, two individualized posttests were given: immediate posttest (immediately after the project) and delayed posttest (one month after the project). They were based on the language related episodes (LREs), the instances of collaborative dialogue, in which both learners were involved in talking about language use when engaged in the task (Swain, 2001).

4. Data analysis

We include both quantitative and qualitative data in this study in order to provide a more composite picture of the issue being addressed. It is worth noting that the quantitative data are descriptive. Data collection and analysis consisted of two main stages.

In the first stage, we focused on the nature of learners' interaction. We developed a number of categories of the salient features based on Storch's (2002) research. To

the repertoire of categories, we added electronic paralinguistic as we believe it plays an important role in determining the nature of interaction in CMC environment. It is worth mentioning here that we do not use these categories (see Table 2) as a criterion to determine the patterns, but we do believe they are significant in informing our analysis. The first author and another rater (an EFL researcher) coded the data for the categorized features that emerged from learners' online interactions. We also counted the number of occurrences of these features separately for both participants in each pair so that we could compare their respective degree of contribution and "authority over the task" (Storch, 2002, p. 127). Examples from the current data set are provided in Table 2.

Table 2. Functions features and examples

Function features	Examples
Electronic paralinguistic (e.g., emoticon, punctuation, bold/CAPS)	Z: I LOST IT (CAPS) X: me too^^_^^ (emoticon) X: I have submitted them for twice!!!! (repeated punctuation)
Inclusive pronoun (i.e., <i>we</i> , <i>our</i> and <i>us</i>)	Q: we will base on it to say a little story. right? (bold mine) P: Let's finish our work.
Phatic/ salutation	X: Good evening X: Oh... yeah.
Recognition	Q: good job! (complimenting) X: Take it easy, Ying. (encouraging) S: thank you (appreciation)
Apology	A: ..., i find i do a little, sorry.
Initiating task process	G: let me do the third one.
Request (for confirmation, information, clarification, or opinion)	S: what does "responsibility" mean? (information) T: what about add "these days" behind of it. (opinion) B: why do you use "poor"? (clarification) B: do you agree with my idea? (confirmation)
Correction (self/other)	T: I think "look" should be changed "looked" (other) T: it is "we", sorry. (self)
Confirmation / agreement	Y: ok. you are right. Q: i agree with you
Explanation / Suggestion	Y: "she said that he worried about the koalas getting sick." if we don't use [""], we just say the words others say, we should use "that" to connect the sentence. do you understand? (explanation) T: and then we could say: his stress was so hard that he chose kill himself (suggestion)
Disagreement	Z: I don't agree. I think he was like that all the time

The first author transcribed all the data and the EFL researcher 25% of the data. The agreement rate between the two raters was 92.3%. The second rater also verified the transcription of the other 75% of the data done by the author. Disagreements were resolved by discussion and consensus between them. The results were further validated by the second author. Drawing on Storch's (2002) work, we examined the two dimensions of learner interaction (i.e., mutuality and equality) to determine what patterns of interaction existed in learners' computer-mediated pair work. For mutuality, we looked primarily at the frequency of the categorized features in each pair. The higher frequency of the features (except disagreement and non-response) one pair produced, the higher mutuality the interactions of the pair were. For equality, we focused on comparing the frequencies of these features between the two learners of each pair. We did not expect that the higher frequency of the features produced by one learner meant he/she had a higher degree of control over the task. Rather, we believe that it is the types of function features that really count. For example, while the more competent learner might take the lead by providing more explanations and suggestions, there might be more requests for assistance from the less competent learner. Based on these categories and the repeated reading of the online interactions, we discussed until we reached 100% agreement over the identified patterns of interaction. The findings were further informed by a qualitative analysis of the data.

In the second stage, we aimed to examine how the patterns of interaction relate to their language learning. To this end, we (the first author and the EFL research) coded the chat log data for language related episodes (LREs), which represent language learning in progress (Swain & Lapkin, 2001). We not only focused on the frequencies of LREs but also developed two individualized posttests based on these LREs to see if the language forms over which they deliberated during interaction were finally internalized. Still the results were validated by the second author. Excerpt 1 is an example of an LRE found in learners' interactions and a test item developed from it.

Excerpt 1: An example of an LRE and a corresponding test item

106 S: she said that he was worry about the koala getting sick
107 Q: not "worry" it should be "worried"
108 S: ayeah, you are right

A test item for S: Please correct the following sentence if necessary.

He told his friend that he was worry about not being allowed to serve in the restaurant the next year.

5. Findings

5.1. Patterns of Pair Interaction

The first research question concerns the nature of pair work in the CMC environment. To address this question, we examined the different patterns emerging from learners' online interactions. Six out of the eight pairs fell into one of Storch's (2002) four patterns of interaction. They were identified as collaborative (Pairs 2, 6 and 8), expert/novice (Pairs 1 and 3), and dominant/dominant (Pair 5). Dominant/passive pattern of interactions was not identified in the study. Interestingly, the patterns of interaction in Pairs 4 and 7 were more dynamic compared to the other 6 pairs, thus they did not match any of the 4 patterns outlined by Storch (2002). The following are

Table 3. A comparison across the eight dyads in terms of salient features

Function features	Dyad1 (X/Y)	Dyad 2 (S/Q)	Dyad3 (L/A)	Dyad4 (W/D)	Dyad5 (B/P)	Dyad6 (O/Y)	Dyad7 (G/W)	Dyad8 (Z/T)
Paralanguage	11(8/3)	0	0	4 (3/1)	0	0	1 (0/1)	6 (5/1)
Inclusive pronoun	4(4/0)	12(5/7)	12(6/6)	5(3/2)	14(12/2)	14(6/8)	4(2/2)	19(8/11)
Phatic / salutation	19(12/7)	8(6/2)	8(4/4)	15(9/6)	3(2/1)	4(2/2)	4(2/2)	4(2/2)
Recognition	2 (2/0)	2 (1/1)	8 (3/5)	3 (0/3)	0	2(1/1)	0	1 (1/0)
Apology	2(2/0)	4(1/3)	5(0/5)	4(4/0)	0	0	0	4(2/2)
Initiating task process	9 (7/2)	10(5/5)	8(2/6)	8(2/6)	4(1/3)	3(1/2)	7(4/3)	11(6/5)
Request	10(3/7)	14(5/9)	7(2/5)	25 (13/12)	6(5/1)	21(11/10)	9(4/5)	24(11/13)
Confirmation/ agreement	9(5/4)	14(7/7)	10(3/7)	11(4/7)	7(3/4)	12(6/6)	7(0/7)	17(12/5)
Correction	4(3/1)	8(4/4)	8(6/2)	8(4/4)	5(4/1)	4(2/2)	5(5/0)	7(3/4)
Explanation/ suggestion	8(8/0)	7(3/4)	6(6/0)	9(4/5)	4(3/1)	7(4/3)	2(2/0)	16(12/4)
Disagreement	0	0	0	3(1/2)	3(0/3)	0	1(0/1)	4(3/1)
Non responses	0	0	0	0	4(0/4)	0	1(0/1)	0

the characteristics shown in each pattern followed by some excerpts to provide further evidence

Collaborative Pattern (Pairs 2, 6, and 8)

As shown in Table 3, there are many requests, corrections, explanations and confirmations in pairs with this pattern, suggesting high mutuality of interaction. They reciprocally seek and provide assistance, and mutually engage with each other's contributions. The high frequencies of inclusive pronouns demonstrate their mutual orientation to the task. Additionally, these features (including initiating task process) are fairly equally distributed between the two learners, showing their equal degree of control over the task. They also attempt to connect with each other affectively (high frequencies of recognition, apology, paralanguage or phatics). In case of disagreements, they usually negotiate until they finally resolve them. Excerpt 2 is an example of collaborative pattern. In this excerpt, O and Y follow up each other's contributions. They request for each other's assistance (Lines 48, 51, and 54) and provide feedback (Lines 49, 50, and 52), which both of them seem willing to accept.

Excerpt 2: An example of collaborative pattern

47. O: but I think the zoo-keeper is from Japan.

48. Y: so he is a Japanese. but what is his name?

49. O: the sentence doesn't tell us his name. we should call him zoo-keeper

50. O: I think the whole story is about a Japanese man kill himself because of koala's safe

51. O: I should use safety or safe

52. Y: I think it should be "safety".

53. O: thank you

54. Y: so the first sentence is "a zoo-keeper from japan killed himself." Right?

55. O: I think you are right

Expert/Novice Pattern (Pairs 1 and 3)

Like collaborative pattern, the mutuality of interactions of this pattern is high with many requests, corrections, explanations and confirmations (see Table 3). However, these features are not evenly distributed between the two learners. The expert learner usually makes more corrections and provides more explanations and suggestions while the novice learner has more requests for assistance. Despite the low equality of interaction, the expert learner does not impose their opinions on the novice learner but tries to provide explanation and invite contribution. The expert learner also endeavors to create a relaxed atmosphere for the novice learner (Pair 1: many instances of paralanguage and phatics; Pair 3: many instances of recognition and use of inclusive pronouns). Excerpt 3 shows some evidence of this pattern.

Expert 3: An example of expert/novice pattern

128. A: his wife said he always take his job seriously
129. L: i want to say: when asked, his wife said he was always taking his job too seriously
130. L: when we talk about some one who has died we should use past tense
131. A: i believe it is better.
132. L: thank u
133. A: he he
134. L: she told the police that her husband had a job that he looked after 4 koalas recently
135. A: it is a beautiful sentence
136. L: thanx

In the excerpt above, in response to A's (Novice) error (Line 128), L (Expert) does not give an explicit correction but provides an alternative to it (Line 129), followed by explanation for her choice (Line 130), which seems to be acceptable to A (Line 131). A recognizes L's expertise (Lines 131 and 135) and L expresses appreciation for A's recognition (Lines 132 and 136). This shows their mutual trust and respect. They also have some off-task talk to strengthen this collaborative expert/novice relationship (see Excerpt 4).

Excerpt 4: An example of expert/novice pattern

160. A: thank you, i find i do a little, sorry
161. S: not at all
162. S: it is fun to do these
163. A: the first word is "the"
164. A: ?
165. S: and it is also a good way to improve our English
166. S: thank u
167. S: i think it is fun to do the task
168. S: task
169. A: yes i think so .you help me a lot and i am very happy i have a good partner
170. S: thank u it is my pleasure

A expresses her apology for not contributing too much (Line 160) and she also expresses her appreciation for having L as her partner (Line 169). In response, L expresses her interest in doing the task with A (Lines 162, 165 and 167).

Dominant/Dominant Pattern (Pair 5)

Unlike collaborative and expert/novice pairs, Pair 5 shows very low mutuality of interaction. Evidence indicates that they do not engage with each other's ideas.

Though we find many inclusive pronouns (14) in their interactions, they are produced almost by one participant (12) and in a dominant tone "We should...". There are very few requests and explanations and some requests are even left unanswered. The corrections they make are explicit and seem unacceptable to either of them. There are some disagreements, which the two learners cannot consequently resolve. Additionally, they do not try to connect with each other affectively (no or few instances of paralinguistic, recognition, phatic utterances), thereby making the atmosphere tense.

Excerpt 5 shows some evidence of this pattern.

Excerpt 5: An example of dominant/dominant pattern

85. P: Then, his poor wife said to others that he was always a man who took his own job seriously

86. B: why do you use "poor"?

87. P: poor in my sentence means helpless and painful.

88. B: I think we should use "pity".

89. P: What?! You are wrong and it's turn to you.

In Excerpt 5, B seeks clarification (Line 86) of P's choice of "poor" (Line 85), but is not satisfied with P's explanation (Line 87) and suggests an alternative (Line 88). In response, P shows a strong disagreement and pushes B to proceed with the task without making an effort for further negotiation (Line 89). As a result, they cannot reach a consensus in resolving the emerging language problem.

From Dominant/Dominant Pattern to Collaborative Pattern (Pair 4)

Data shows that the interactions of Pair 4 at the initial stage are of dominant/dominant pattern, with each trying to appropriate the task and their talk is "disputational" in nature (Wegerif & Mercer, 1996). They find great difficulty in achieving intersubjectivity, that is, the shared understanding of the task. One learner wants to go beyond the given passage and be more creative by analyzing what is behind the story and making "a special story". By contrast, the other learner insists complying strictly with the task requirement. He says to the first learner, "you think too detail... I think the story is easy, maybe you think too much", insisting that she is off the track. Despite this, the first learner still tries to find the reason for the fact which is not included in the passage and is again stopped by the second learner. Finally, she makes a concession and follows the second learner's opinion, saying "ok ok, let's make a general story, which just narrate the truth, not according to the detail, for example the reasons of the suicide." Once the intersubjectivity is established, the pattern of their interactions becomes more collaborative and their talk becomes more "explorative" (Wegerif & Mercer, 1996).

From Expert/Novice Pattern to Expert/Passive Pattern (Pair 7)

Initially, the interactions show the features of expert/novice pattern with one learner assuming the role of an expert who makes corrections and provides explanations, and the other learner requesting for assistance and making confirmations. They seem to collaborate well. However, as they proceed with the task, the novice is discouraged by the expert's explicit corrections in an authoritative 'tone' and becomes more passive in the interactions. Accordingly, their later interactions are more of what Watanabe and Swain (2007) called expert/novice pattern. Excerpt 6 shows some evidence of this pattern of interaction.

Excerpt 6: An episode in a dynamic pattern

100. W: She told the police that he recently looked after four koala zoo responsibility that made him very anxious
 101. G: you have to learn the words better
 102. G: the responsibility in chinese is duty. do you understand?
 103. W: I will. Yes.
 104. G: ok let's do the next, ok?
 105. W: hou do you think mine
 106. G: your sentence is not right
 107. G: you should put the "but" in the middle the word "zoo" and "responsibility"
 108. W: responsibility is 'adv' not 'n'
 109. W: why
 110. W: I think they should put together
 111. G: in other word you don not get the meaning of the word "responsibility" so you will easily get wrong
 112. G: responsibity is n please remember next time

In response to the contribution made by W (Line 100), G comments negatively in a very authoritative tone (Lines 101 and 102). W makes confirmation (Line 103) and then requests for G's opinion on her sentence (Line 105), only to receive an explicit correction (Lines 106 and 107). W shows her doubt and seeks clarification (Lines 108, 109, 110). Again W is given a harsh mini lesson (Lines 111 and 112), to which W seems to be unwilling to accept and does not give any response. After this episode, W is silent for almost five minutes and then they hastily bring the task to a halt without further negotiation.

5. 2. The Relationship between the Patterns of Interaction and Language Learning

The second research question addresses the relationship between the nature of pair work and language learning. To answer this question, we mainly focused on the results of the two individualized posttests. As indicated from Table 4, on the whole the test results were positive, especially for the test items developed from the successfully resolved language problems. It is safe to say when learners made a collaborative effort in deliberating over the emerging language problems and agreed on the successful solutions, their interactions were internalized and learning occurred. By contrast, when learners came up with wrong solutions or could not reach consensus over some language issues, the test results were very negative.

Table 4. Patterns of interaction, LREs and two posttest results

Dyad	Pattern of interaction	LRE (N)	Immediate posttest (%)			Delayed posttest (%)		
			Total	S	U	Total	S	U
1	E/N	6	66.6	80	0	66.6	80	0
2	C	8	75	83.3	50	66.6	85.7	0
3	E/N	6	50	100	0	50	100	0
4	D/D → C	7	100	100	-	100	100	-
5	D/D	4	60	100	50	60	100	50
6	C	7	75	100	25	57.1	100	25
7	E/N → E/P	5	100	100	-	100	100	-
8	C	8	75	75	-	50	50	-

Note: E/N = expert/novice; C = collaborative; D/D = dominant/dominant; E/P = expert/passive S = results for successfully resolved LREs; U= results for unsuccessfully resolved LREs

We cannot find significant relationship between pair patterns and language learning. However, we did find that Pair 5 (dominant/dominant pattern) produced the fewest LREs (4) due to the non-collaborative nature of interaction. Furthermore, as for the language problems on whose solutions they could not reach an agreement, either of them did not successfully answer the test items developed from these problems. In other words, their interactions did not lead to “a transfer of knowledge” (Storch, 2002). As for Pair 7, despite the positive results of the two posttests, the two learners did lose opportunities of negotiating with each other for the language issues (only 5 LREs) most probably due to the change in their pattern of interaction from expert/novice to expert/passive. Thus, they missed some opportunities of learning from each other and from doing the task. In contrast, the change in pattern of interaction in Pair 4 from dominant/dominant pattern to collaborative pattern proved a better effect (more LREs and positive test results).

6. Discussion and Conclusion

This paper set out to investigate into the nature of learners’ interactions prompted by a form-focused task in the SCMC context. We focused on how learners relate to each other in this contingent and temporary virtual social space enabled by Moodle when approaching a text-reconstruction task. The results revealed that three patterns identified in Storch’s (2002) study existed in the text-based computer-mediated pair interactions. They were collaborative (three pairs), expert/novice (two pairs) and dominant/dominant (one pair). Dominant/passive pattern was not identified in this study.

Pairs with a collaborative pattern were characterized by high mutuality and high equality. Learners mutually scaffolded each other in a joint effort of achieving the common task goal by “pool[ing] resources whenever uncertainties arose concerning language choices” (p. 147) and “offer[ing] and engag[ing] with each other’s ideas” (p. 129). In pairs adopting an expert-novice pattern, the more competent learner assumed a leading role, monitoring the task process, making corrections and encouraging the less competent learner to invest in the pair work. They did not impose their ideas on the novice learners; instead, they provided explanations and made suggestions, which the novice learners were ready to accept. Although the novice learners made fewer corrections and provided fewer explanations, they did try to seek assistance and confirm the responses from their more competent partners. Furthermore, they even took initiative in the decision-making and task-managing process. Both collaborative and expert/novice pairs actively used electronic paralanguage and phatic utterances at their disposal to compensate for the lack of social context cues, thereby facilitating the emergence of a relaxed social learning environment. By contrast, the dominant/dominant pair did not seem to engage with each other’s contributions. They had disagreements on the emerging language issues and were not able to make a consensus over them. They did not try to affectively involve each other in the joint work and the atmosphere appeared tense and far from pleasant.

An interesting finding of the study is that the interactions of the rest two pairs demonstrated unstable and dynamic features, with one pair changing from initial dominant/dominant to later collaborative, and another pair starting from expert/novice but ending up with expert/passive.

The posttest results did not show significant relationship between the identified patterns of interaction and language learning. However, they did prove that the interactions of collaborative and expert/novice pairs are more likely to result in learning. In contrast, the interactions of dominant/dominant pair do not tend to lead to transfer of knowledge, especially when they fail to agree with each other over the emerging language issues. As for pairs with dynamic pattern of interaction, opportunities of learning depend on whether they collaborate when proceeding with the task. There might be some missed opportunities of learning in the instances of non-collaboration.

The study provides some pedagogical implications for applying CMC to language education. First, the study further proves that SCMC can provide an alternative way of facilitating a virtual language learning environment for learners to do collaborative pair work. Thus, EFL teachers should consider expanding the physical classroom to include CMC as an optional means to enhance language learning. Second, it is important for language teachers to know that pair work in CMC context may vary in nature; therefore, it is crucial to ensure the collaborative nature of pair work for language education. Language teachers should give full consideration to the task design, the pairing of learners and the necessary interventions to make. The main limitation of this non-instructed language learning is that there are some missed learning opportunities due to learners' incompetence in solving some of the language problems. However, the naturally occurring errors in the CMC context can inform language teachers about learners' progress, thereby facilitating more effective teaching in physical classes.

There is no denying that Chinese cultural/educational context has influences on the interaction in English involved in this study. For example, Chinese EFL teachers generally tend to give lessons in English to encourage learners to think in the target language. Chinese EFL learners are enthusiastic in communicating in English as they think a good command of oral English may help them gain a favorable position in the increasingly competitive job market. These might have contributed to learners' motivation of using English for interaction in this study. Thus, caution should be taken to apply this study to the other contexts.

The main limitations of the study include the small scale of the project and the lack of follow-up individualized writing. Additionally, pairs in this study are mostly female-female and this might have affected the results. Further study will consider making a comparison across the different tasks and examining the effects of proficiency and gender differences on the formation of pair patterns and language learning in the CMC context.

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