Comparing Paper and Forum Journaling in the Second Language Classroom

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Abstract
This study focused on comparing the effects of paper versus forum journaling on the written production of Chinese as a foreign language (CFL) learners, as well as investigating the learners' perceptions of using forum journaling to learn Chinese. Participants in this study were 17 third-year CFL learners at the collegiate level in the United States. The study findings indicate that there is no significant difference between the lexical variation of participants' journals on paper and in a forum. However, a statistical significance is observed between the syntactic complexity of the two types of journals. The participants' journals in the forum were syntactically less complex than the ones on paper. Despite the lack of difference in lexical variation and less complex syntactic structure found in the forum journals, the majority of the participants responded positively toward using this tool for learning Chinese writing.

Keywords: Chinese as a foreign language, lexical variation, syntactic complexity, journal writing, discussion forums

INTRODUCTION

Technological innovations and advancements in the past few decades have changed humankind's way of living in many respects. People carry out personal and professional business using the newest technological equipment and software via the Internet in their everyday lives (Smolin, Lawless, & Burbules, 2007). For example, instead of handwriting and mailing a letter, which takes days to arrive in the receiver's mailbox, one can send out the message instantly via modern technology (e.g. Internet, smart phone, iPad, or laptop). Technology revolutions not only have offered people easy access to information and connection to the world, but have also changed the communication (CMC) on second language learning in the aspects of language performance, nature and scope of teaching and learning in the classrooms (Sotillo, 2000). The massive amount of money invested in technology integration in schools caused many educators and researchers to start rethinking the teaching and learning paradigm with technology involved. Questions have risen in the foreign language field relating to the effect of the use of computer-mediated class participation, learning motivation, and language attitude. Many studies on the effects of technology use on language teaching and learning yielded desirable outcomes (Fellner & Apple, 2006; Gonzalez-Bueno and Perez, 2000; Kupelian, 2001; Miyazoe & Anderson, 2010; Shang, 2007; Sotillo, 2000; Sun, 2010; Warschauer, 1996) while only a few reported indifferences or drawbacks (Chun, 1994; Kern, 1995; Ko & Rossen, 2004; Rheingold, 2000; Suler, 2004; Wu, 2006). However, all these studies investigated CMC use in particular foreign language learning

contexts, which cannot be generalized to all language classrooms. As updated technologies continue to emerge, continuous research and discussions about CMC use in foreign language learning are essential in developing holistic theories of and approaches to CMC use in foreign language classrooms. Hence, this study of comparing the lexical richness and syntactic complexity of paper to forum journals, and learners' perceptions of forum journaling in the Chinese language classroom seeks to contribute to more understanding to the effect of CMC use on the learning of Chinese writing.

DEFINITION OF TERMS

Asynchronous Communication

There are many approaches to using CMC in facilitating language learning in language classrooms. One form of CMC is asynchronous communication, which allows learners to communicate and collaborate at one's own convenience and schedule. The delay in time to communicate with each other offers language learners sufficient time to utilize the metalinguistic function of output to reflect on the text written by others and to confirm or modify their hypothesis in their written production. Compared to synchronous communication, asynchronous communication reduces language learner's anxiety in having to reply to others in a timely manner in the target language, and may assist learners to improve their writing skills (Shang, 2007).

Lexical Richness

Lexical richness refers to both the quantity and quality of learners' vocabulary production (Mutta, 2006). Researchers measure lexical richness in several ways: (1) number of words, (2) lexical variation (type-token ratio), (3) lexical density – percentage of lexical words out of total number of words, (4) lexical individuality – particular unique words used by the author, and (5) lexical sophistication – level of difficulty of the vocabulary used (Mutta, 2006).

Syntactic Complexity

Syntactic complexity, also known as syntactic maturity or linguistic complexity, refers to "the range of forms that surface in language production and the degree of sophistication of such forms" (Ortega, 2003, p. 492).

LITERATURE REVIEW

Studies have investigated several frequently used asynchronous communication tools (e.g. electronic mail, forums, wikis, and blogs) in foreign language classrooms and their effectiveness in helping the learners acquire the target language writing skills. The following paragraphs give a review of theses studies.

Shang (2007) examined the effect of using electronic mail on the improvement of 40 adult English as a foreign language learners' writing performance. The study results showed that the

learners made improvements on syntactic complexity and grammatical accuracy, but not on lexical density (Shang, 2007). In addition, the study results showed that most of the learners had a positive attitude toward the use of email in learning English writing. Another study which investigated the effects of the use of electronic mail on the improvement of second language writing is Gonzales-Bueno and Perez's (2000) study on 30 college Spanish as a second language learners. By comparing two groups of learners; one used electronic mail and the other used paper-and-pencil to write journals; the researchers found that the electronic version of journals had a significantly positive effect on the learners' language productivity in terms of the amount of language generated by them; however, a significant difference was not found between electronic and paper versions with regard to lexical and grammatical accuracy. Nevertheless, the researchers found that the learners favored the use of email journaling as a strategy to help improve their Spanish writing.

Fellner and Apple's (2006) study on the use of blogs yielded a similar result in terms of learner's language productivity, in which a 350% increase in the number of words used in the language learners' blog entries was found in a seven day intensive English as a foreign language course. Other effects of the use of blogs were found in Sun's (2010) study, in which the learners' writing performance in terms of mechanics and organization improved significantly. Moreover, writing on the blog promoted positive attitudes among the learners toward foreign language writing. However, Sun's (2010) study showed that the learners' first three blog entries were more complex than the last three in the course of a semester, which Sun (2010) stated could be explained by the informal and casual communication environment a blog represents. In contrast, Miyazoe and Anderson's (2010) study reported positive changes in language complexity of learners in which the lexical density and syntactic complexity of the learners' forum and blog posts increased over the course of a year. Sotillo's (2000) study also found positive effects of the use of asynchronous communication, in which the delayed nature of asynchronous discussions gave the learners more opportunities to write syntactically more complex language compared to the synchronous discussions.

Lin and Yang (2011) investigated whether the use of a wiki in an English as a foreign language writing class in a college in Taiwan would improve students' perceptions of their writing skills. The study results showed that the majority of students felt positive about their ability to use the wiki to writing instruction. In addition, social interaction played a significant role in students' perceived benefits of the wiki writing project. Similar results were found in Woo, Chu, Ho, and Li's (2011) study of exploring benefits of using a wiki in a fifth-grade English language class in Hong Kong. The student participants in the study reported positively with regard to the wiki fostering teamwork and improving writing. Moreover, the teacher participant reported that the tracking function of the wiki made tracking students' edits easier, which helped the teacher to provide feedback to scaffold their editing process.

Class discussion forums, also called class threaded discussion, are one of the most commonly used asynchronous communication tool in online teaching (Dawley, 2007). Class discussion forums are used in several ways. They can be used as a FAQ, for social interaction, or as a discussion area for course content. Often, discussion forums are used for learners to post drafts of their writing and comment on each others' work. According to Dawley (2007), the use of discussion forums in classrooms have varied potential strengths: (1) it gives learners time to

reflect on their writing and edit their work before posting, (2) simultaneous discussions are possible and can be organized by topic, (3) discussions can continue to build over the length of the course, (4) it develops a sense of community by promoting discussion on course topics, and (5) it provides the opportunity for peer feedback. On the other hand, Dawley (2007) pointed out a few potential weaknesses of the use of discussion forums: (1) it does not have the ability for learners to discuss in real-time, which might create frustration for some learners who prefer immediate feedback, (2) shy learners might feel that their thoughts are exposed to the entire class, (3) it might create competition instead of cooperation among learners if the instructor places an emphasis on quantity of posts, and (4) it can be time intensive for instructors to respond to multiple postings. However, Dawley (2007) explained that the potential weaknesses could be minimized or over come with a sensitive instructor who creates a good lesson design and establishes the norm of whole class learning. Though the strengths of the use of discussion forums are apparent, it is important to look into its effects on learners' writing performance and attitudes toward language learning and produce empirical evidence.

Numerous Studies reported the advantages of using forums. For example, Beauvois and Eledge (1996) claimed that the use of forums provides possibilities for interpersonal interactions and communicative engagements. Warschauer (1996) stated that forums offer a less threatening environment for language learners to express opinions and help improve their language outputs. In a more recent study in which English language learners at a Malaysian university were involved, Hussin (2008) found compatible results with that of past findings. In summary, the participants in the study reported the use of forums being meaningful and beneficial when the discussions in the forum were related to class lectures, course assignments, and course assessment. As a result of using forums, the learners believed that they became more active learners.

Informed by the studies in the literature review, it seems that studies which investigated the improvement of learners' writing skills in terms of linguistic characteristics such as lexical density, syntactic complexity, and grammatical accuracy, etc. focused on either the use of emails or blogs. On the other hand, studies which explored the use of wikis and forums emphasized eliciting teachers' and students' perceptions of possible benefits of the tools. In addition, studies with different contexts such as the kind of asynchronous communication tools used, the backgrounds and language levels the learners had, the types of writing assigned, and the types of research designs employed, contributed to the different study results in terms of the degree of writing improvements. Nevertheless, the majority of these studies reported positive effects of the use of asynchronous communication on second language writing in some of the following aspects: learner attitudes toward the target language, learner perceptions of the use of the asynchronous tool, and language productivity. As there is a general lack of language learning study which investigates the effect of forums on learners' writing, and a lack of literature on the effect of forums in improving learners' writing in the particular target language, Chinese, studies such as this one, which focused on examining the effects of using class discussion forums on the linguistic characteristics of CFL learners' writing with respect to lexical richness and syntactic complexity, are needed. Moreover, this study examined the learners' perceptions of the use of the class discussion forum in learning Chinese writing. As studies on the use of asynchronous communication in the learning context of CFL are scarce, this study is valuable in contributing not only to the field of CMC in second language learning, but also to the field of learning CFL.

RESEARCH QUESTIONS

Motivated by the empirical second language research on the use of asynchronous communication, this study specifically addresses the following research questions:

1. What is the effect of using an asynchronous communication tool - the class discussion forum - versus using paper-and-pencil on the lexical richness of Chinese written language generated by CFL learners?
2. What is the effect of using the asynchronous communication tool - the class discussion forum - versus using paper-and-pencil on the syntactic complexity of Chinese written language generated by CFL learners?
3. What are learners' perceptions of forum journaling in learning Chinese writing?

PARTICIPANTS

The participants in the study were 17 learners enrolled in a third-year Chinese grammar class at a public university in the United States. The language level of the class is expected to be in advanced-low in the ACTFL proficiency guidelines. The background survey results showed that all participants were white, 14 were males and 3 were females. The participants ranged from 20 to 25 years of age, with a mean of 23. With respect to experience using class discussion forums, prior to taking the Chinese grammar class, 12 of the participants had experience using forums to complete their course assignments while five of them had used it to post questions or comments related to the course and three of them had used it to make announcements of school activities. In sum, the majority of the participants had some experience with using class discussion forums prior to the study and believed that their computer skills were sufficient to use the forum to complete their writing tasks in class. Two participants who did not have any experience using a class discussion forum were shown how to post, reply, and delete a message in the forum before the writing project started.

DATA COLLECTION AND PROCEDURES

Before data collection began, the researchers went to the classrooms to explain the research and ask for volunteers to participate. Students who agreed to participate in the study signed the agreement form. All participants were told that their identities would not be revealed.

Background Survey and Post-Forum Journaling Survey

Data were collected for one semester in 2011. At the beginning of the semester, a background questionnaire about the participants' background and experience of using class discussion forums was administered. The background survey results were reported in the Participants section. At the end of the semester, the learners completed a post-forum journaling survey, in which four questions about the learners' perceptions of using the forum for journaling and attitudes toward the Chinese language were asked. The four questions were based on Gonzalez-Bueno and Perez's

(2000) design with modifications to fit the context of this study (See Tables 5-8). The answers the participants chose in the questions were counted and the frequencies calculated.

Journal Writing Productions

In order to compare the lexical richness and syntactic complexity of writing produced in the class discussion forum and on paper, the participants were assigned journal writing homework both on paper and in the forum. Prior to assigning the journal entries, the participants watched two Chinese movies selected by the instructor. The movies were presented in class on two occasions: one in the seventh week and the other in the eleventh week of the semester. One movie was a love story, and the other was about traditional funeral arrangements in China. The length of each of the movies was approximately 90 minutes. Brief oral discussions about the movies took place in class to ensure that the participants understood the plots in the movies. After each discussion in class, the instructor assigned two written journal entries related to the themes in the movies. One was to be posted on the forum for instructor and peer feedback, and the other was written on paper, which was to be used in small group writing reviews in class in which learners spent 30 minutes reviewing each other's writing and wrote down comments about their peers' writings. In addition, the learners were to turn in a hardcopy of their writings to the instructor for feedback. The evaluations for the paper and online writing were the same. They included writing clarity, correct use of grammar, appropriate use of vocabulary, and logical narration of events. For each journal the learners were assigned, prompt questions were given, which asked the learners to describe a certain major incident which occurred in the movie, express their opinions about the incident, with supporting statements. The design of the journal writing assignments offered the learners opportunities to practice writing both narrative and argumentative essays.

The learners had a week to complete their first drafts on the forum and on paper, another week to receive instructor and peer feedback, and another week to revise and complete their second drafts. The purpose of asking the learners to revise the first drafts and turn in a second drafts is so that the learners had the opportunities to use different resources such as instructor and peer feedback, dictionaries, and seeking a tutor for help to improve their writing.

The revised drafts were required to have a range of 300-350 Chinese characters. This study collected 68 revised writings as the data. The underlying assumption of analyzing the second instead of the first drafts is that according to the comprehensive output hypothesis, the quality of learners' language productions is maximized after they read others' feedbacks and have the opportunity to modify hypothesis and internalize their learning.

DATA ANALYSIS

The two linguistic characteristics of learners' writings coded are lexical richness and syntactic complexity. In particular, this study measured the learners' lexical richness in terms of lexical variation, which calculates the type-token ratio (TTR), in which the total number of different words was divided by the total number of words. "Different words" meant words which are not repeated in a sentence. For example the sentence, "Today is the first day of the week" contains eight words total but seven different words as "the" is repeated. Hence, this sentence has a TTR of .875. A higher TTR illustrates greater lexical richness (Warschauer, 1996). In order to

compare the raw TTR scores of each student's paper and online writings, the total number of different words and the total number of words counted in a student's paper and the ones counted in the online writing were computed separately in Excel using the TTR formula described.

The second linguistic characteristic analyzed is syntactic complexity. Types of measurements used to quantify syntactic complexity include length of production unit, amount of embedding, range of structural types, and sophistication of the particular structures used (Ortega, 2003). This study utilized Warschauer's (1996) formula of coordination index (CI), which is the number of independent clause coordinations divided by the total number of combined clauses (both independent coordination and dependent coordination), to quantify syntactic complexity. In other words, CI is the ratio of the number of coordinated clauses to the total number of clauses. For each participant's online and paper writing, the total number of coordinated clauses and combined clauses were counted and their raw CI scores were computed using Warschauer's (1996) formula in Excel. A lower CI indicates greater complexity as more advanced language speakers or writers generally produce more subordination than do beginners (Warchauer, 1996). TTR and CI formulas were adopted in the study because they are widely used in previous studies and provide a general idea of the participants' patterns of writing in paper and online.

Over the course of a semester, each participant uploaded two revised forum journal entries and turned in two on paper, which came to a total of 34 revised forum and 34 revised paper journal entries for analysis. Paired samples t-tests were run to compare the lexical variation and the syntactic complexity between paper and forum writings.

Reliability

The researchers analyzed the participants' journal entries separately and compared their results. Reliability was assessed by comparing the number of coding agreements between the researchers. If the researchers did not agree with each other on the categories for certain instances, they discussed these instances further and came to a conclusion on the category as a team. The inter-rater reliability before discussion was 90%.

RESULTS

Lexical Variation

Our first research question concerns the effect of two types of journal writing assignments (paper versus forum journals) on the lexical variation of learners' written production. The raw data showed that the participants' paper scores range from 0.51 to 0.81; however, most ($n = 11$) of the participants' scores fall between 0.65 and 0.75. On the other hand, the participants' forum scores range from 0.65 to 0.83, which is slightly higher than the paper scores; nevertheless, most ($n = 11$) participants' forum scores range from 0.65 to 0.75, which is similar with the paper score range. As shown in Table 1, The participants' TTR scores were similar in terms of the mean, standard error of mean, median, standard deviation, and range.

Table 1
Participants' TTR Scores

	Paper-and-pencil	Discussion forum
Mean	.710	.720
Std. Error of Mean	.013	.013
Median	.710	.720
Std. Deviation	.054	.055
Range	.220	.180

The result of the paired samples t-test shown in Table 2 suggests that there is no significant difference between the lexical variation of the two types of journals. In other words, the written production of the participants on paper has a similar level of lexical richness in terms of lexical variation, compared to the one in the class discussion forum.

Table 2
Lexical Variation Comparison Between the Paper and Forum Journals

Mode	Mean	SD	*t*-value	*p*
Paper-and-pencil	0.71	0.05	-1.049	.310
Discussion forum	0.72	0.06		

Syntactic Complexity

The second research question addresses the effect of two types of journal writing assignments (paper versus forum journals) on the syntactic complexity of learners' written productions. The participants' raw CI scores show that the participants' paper scores range from 0.55 to 0.8 while the majority ($n = 11$) of these scores are between 0.6 and 0.7. On the other hand, the raw scores of the forum range from 0.61 to 0.81, which is slightly higher than the paper scores; moreover, most ($n = 11$) of the forum scores fall within a higher range, between 0.66 and 0.73. Table 3 illustrates the mean, standard error of mean, median, standard deviation, and range of the participants' CI scores.

Table 3
Participants' CI Scores

	Paper-and-pencil	Discussion forum
Mean	.650	.690
Std. Error of Mean	.016	.140
Median	.650	.700
Std. Deviation	.066	.059
Range	.250	.200

The result of the paired samples t-test shown in Table 4 exhibits a significant difference between the syntactic complexity of the paper and forum journals. In other words, the participants tended to use simpler syntactic structure in the forum than on paper.

Table 4
Syntactic Complexity of the Writings on Paper and in the Class Discussion Forum

Mode	Mean	SD	*t*-value	*p*
Paper-and-pencil	0.65	0.07	-2.149	.047
Discussion forum	0.69	0.06		

Learners' Attitudes Toward Forum Journaling

A survey with four questions was administered to elicit the participants' attitudes toward journaling in the class forum. The result of the first survey question in Table 5 shows that the majority (76%) of the participants considered that by using the forum to write journals, they had more communication with peers and the instructor. A few participants stated that they liked to read comments from their peers about the same issues they discussed in their journals and were curious about their opinions and arguments on the issues. In addition, almost half of the participants believed that they had low anxiety (47%) and more knowledge/learning (41%), and learned new vocabulary (41%). A couple of participants pointed out that they liked that there was no short time-limit to read and respond to others as there was in the small writing review sessions in class for the paper journals. Being able to read others' writings in the forum anytime and anywhere within the one week period gave the participants more freedom to allocate their time for learning and lowered their anxiety to complete their writing tasks in a timely-manner. Moreover, a participant commented that she was able to read all of her peers' writings in the forum instead of only a couple in the small group writing review sessions. She said, "By having the opportunity to read all of my peers' writings, I learned many new Chinese words".

Table 5
Interesting Aspects of Journaling in Forum

What aspects of the method of journaling in forum interested you? (multiple-choice)	Frequency of Responses (%)
More practice	5 (29%)
Communication	13 (76%)
Peer correction	5 (29%)
Fun	4 (24%)
More knowledge/learning	7 (41%)
Low anxiety	8 (47%)
New/more vocabulary	7 (41%)
Correct grammar	5 (29%)
Self-monitoring	5 (29%)
Chinese character typing	6 (35%)
Technology/computer skills	4 (24%)
More complex sentences	4 (24%)

In response to the second survey question, the degree of helpfulness of journaling in the class discussion forum, 53% and 29%, respectively, of the participants answered "a little" and "yes" while only 12% of the participants answered "no" (See Table 6). Some participants stated that writing in the forum provided them opportunities for authentic communication with real purposes, which resulted in second language learning. One participant said, "In order for my peers to understand my point of view on certain issues, I tried my best to explain my arguments in Chinese". A couple participants mentioned that since they were already in the forum online, it was convenient for them to use an online dictionary or other online tools to help with their reading and writing in the forum.

Table 6
Helpfulness of Journaling in Forum

Has the method of journaling in forum helped you with your Chinese writing?	Frequency of Responses (%)
No	2 (12%)
A little	9 (53%)
Yes	5 (29%)
Very much	1 (6%)

With respect to the third survey question, learners' attitudes toward Chinese, the majority (71%) of the participants responded "improved" as their answer while 24% of the participants answered, "the same" (See Table 7). One participant explained that his attitude toward Chinese improved because the forum offered him a place to express himself in the language he was learning. On the other hand, one participant felt that her attitude toward Chinese was worsened. She complained about the unequal distribution of peer feedbacks. She said, "I waited for almost a week to receive a feedback, but some of my friends got several feedbacks in a couple days".

Table 7
Attitudes toward Chinese

Has your attitudes toward Chinese improved as a result of using the class discussion forum?	Frequency (%)
Improved	12 (71%)
The same	4 (24%)
Worsened	1 (6%)

With regard to the question about the location of writing assignment, more than half (59%) of the participants wrote their journals on campus while 41% of them wrote at home (See Table 8). One participant noted that it was inconvenient for her to write journals in the forum at home as she did not have Internet access at home.

Table 8
Location of Writing Assignment

Where did you usually write your assignment?	Frequency (%)
On campus	10 (59%)
At home	7 (41%)
At work	0 (0%)

DISCUSSION

This study examined the effects of using a class discussion forum versus paper-and-pencil on the lexical variation and syntactic complexity of Chinese written language generated by CFL learners. It also investigated the learners' perceptions of journaling in forums in learning Chinese. The statistical findings indicate that there is no significant difference between the lexical variation of participants' journals on paper and in a forum. In contrast, a statistical significance is observed between the syntactic complexity of the two types of journals. To be specific, the participants' journals in the forum were syntactically less complex than the ones on paper. This result could be explained by the kind of environment the mode of CMC provides. Compared to a highly structured, teacher-centered formal classroom environment, online discussion tools such as the discussion forums and blogs, where learners exchange information and challenge each other's views, might suggest a casual setting with less complex language use (Sun, 2010). This study result is consistent with those of Sun's (2010), Chun's (1994), and Kern's (1995) studies, which reported that learners' language output showed a higher proportion of simple sentences over complex ones. Another possible reason for such a result may be attributed to the fact that learners can not pay attention to both forms and content at the same time (Salimi, Dadaspour, & Asadollahfam, 2011). When learners are free to allocate attention, their primary concern is the content rather than the form (Salimi, Dadaspour, & Asadollahfam, 2011). According to Sotillo (2000), learners make fewer language errors in more informal exchanges. However, this study did not investigate learners' linguistic accuracy, and cannot conclude whether the learners paid more attention to content with the loss of attention to form. A third possible reason of the study result can be explained by the types of feedback received by the participants. Swain (2000) stated that learners acquire new knowledge about the language when they receive comprehensible input from their interlocutors in the level of i+1, which refers to input which is slightly above their current language level. The linguistic level of the feedback given cannot be too high or too low relative to the current level of the learners; otherwise, the feedback will be rejected, and the learners are less likely to improve (Swain, 2000). Since most of the feedbacks received in the forum were from their peers, who were at the same language level, the language input from them might not have reached the i+1 level, which might have resulted in the non-progress of their forum writing production.

Despite the lack of difference in lexical variation and less syntactically complex structure found between the paper and forum journals, the majority of the participants responded positively toward using this tool for learning Chinese writing. Many participants believed that their anxiety was lowered with more knowledge and new vocabulary gains. Most of them also believed that the use of forum helped them with their Chinese writing and their attitudes toward Chinese either improved or stayed the same after the use of the forum.

CONCLUSION

Considering the results of the statistical analysis for the effect of forum journaling on the linguistic characteristics of the learners' Chinese writing, teachers and researchers need to think of ways to integrate technology more effectively into language teaching and learning. One suggestion is to closely comply with current second language learning theories in implementing lessons plans and assignments when involving the use of CMC. Taking the design of the writing assignments in this study as an example, instead of asking peers to give feedback, the teacher can invite more competent or native speakers to provide feedback to the learners, as according to the comprehensive output hypothesis, the function of noticing will work only if the comprehensive input is at the level of i+1. Another suggestion is to identify the features of each CMC tool and use them for different purposes. For example, class forum discussions promote information exchange while wikis emphasize collaborative information construction. Teachers need to understand the nature of the project in order to choose the most suitable CMC tool for the project. Finally, to ensure learners' participation and positive attitude toward the target language, their perceptions of the CMC tool used in assignments cannot be ignored. Teachers need to investigate their learners' perceptions and adjust the CMC assignment designs accordingly. For example, one participant in the study expressed to the instructor the limited access to a computer and the Internet on the weekends, hence the instructor decided to have writing deadlines on weekdays. Making adjustments and being flexible will help the success of CMC projects and lower learners' anxiety.

This study has several limitations. First, the number of participants and the total number of journals analyzed were limited. Studies on a bigger-scale with the same focus are needed. Second, this study did not analyze the language accuracy of the learners' journals. As the current literature suggests a trend of learners paying attention to content over forms, future studies with the emphasis of examining learners' performance on both forms and content are needed. Finally, studies with a focus on how the use of CMC in language assignments assists the language learning processes described in the comprehensive output hypothesis (noticing, hypothesis-testing, and metalinguistic function of output) are needed. Although many of the current studies with a sociocultural stem claimed the effectiveness of CMC use in developing second language production, there is a lack of empirical evidence in showing the learning process in action. Future studies can use the data collection methods of think-aloud protocol or student self-report to elicit information on how learners acquire a second language in a CMC language project.

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