

# **Crossing the Boundary to Connect CFL and TCFL Learners: The Impact of Instruction of Telecollaboration on Reading and Writing Performance**

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## **Abstract**

Several studies have examined the impact of web conferencing and computer-mediated communication (CMC) on language learning, with a focus on both adult and adolescent learners. However, research specifically on Chinese as a Foreign Language (CFL) learning in these contexts remains limited and underexplored. This study aims to fill these gaps by examining the impact of telecollaborative instruction on adolescent CFL learners' reading and writing performance. A quasi-experimental design was adopted, collecting both quantitative and qualitative data, including reading and writing tests (Test 1 and Test 2), surveys, feedback sheets and interviews. The study involved 44 adolescent CFL learners in the United States and 20 learners from a Teaching Chinese as a Foreign Language (TCFL) program in Taiwan. The US students in the experimental group completed a series of collaborative assignments via web-conferencing with the TCFL learners.

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Statistical analysis, including *t*-tests, likelihood ratio tests, one-way ANOVA, and multi-factor ANOVA, was applied to the quantitative data, while qualitative data from feedback sheets and interviews provided additional insights.

The experimental group demonstrated significantly higher reading and writing scores than the control group. Qualitative data revealed that students' improved learning behaviors were linked to a sense of anxiety. This study highlights the positive impact of structured telecollaboration on CFL learners' reading and writing skills. The intervention not only improved language performance but also induced facilitating anxiety, motivating students to engage more deeply in their studies. The findings reinforce the potential of telecollaboration for both CFL learners and TCFL educators.

**Keywords:** adolescents, anxiety, Chinese as a Foreign Language learners, reading, telecollaboration, writing

## 1. Introduction

In the 21st century, Chinese is the second most widely spoken language, with over 1.1 billion speakers (Ethnologue 2024). As a result, both Chinese as a Foreign Language (CFL) programs and Teaching Chinese as a Foreign Language (TCFL) programs proliferate in both non-Chinese-speaking and Chinese-speaking countries. However, most learners in a CFL setting have limited opportunities to practice Chinese (Pan 2016; Wu and Tsai 2008); they may learn well in class but may not be able to exercise their target knowledge in their daily lives. On the other hand, the TCFL program learners also lack sufficient opportunities to teach international students in native-speaking countries (Tsao 2007). In essence, both CFL and TCFL programs encounter the common challenge of insufficient opportunities for authentic target language practice (Gonzalez-Lloret 2003), a challenge observed across many foreign language learning contexts.

Technology-supported foreign language teaching and learning have been a trend in the past 30 years. However, there has been little research on technology-

supported Chinese teaching and learning at a distance (Kan 2013). In addition, the languages studied seem to be limited to Western languages, especially English, and studies have tended to focus on higher education (Felix 2007; Golonka et al. 2014; Liu and Kleinsasser 2023; Stockwell 2007; Zhao 2013). O'Dowd (2012) defines "telecollaboration" (also known as virtual exchange) as "the application of online communication tools to bring together language learners in geographically distant locations to develop their knowledge and intercultural competence through collaborative tasks and project work" (p. 342). Despite its potential, application of telecollaboration in the context of CFL remains underexplored, particularly in the aspect of reading and writing performance (Lan and Yu 2023).

## **2. Literature Review**

### **2.1 Computer-Mediated Communication (CMC)**

In the past decade, the use of computer-medium communication (CMC) has emerged as a significant approach in the fields of Foreign Language Acquisition (FLA) and Second Language Acquisition (SLA). O'Dowd (2016) regarded web conferencing as an essential tool for online intercultural interaction. A meta-analysis by Grgurović, Chapelle, and Shelley (2013) examined the effectiveness of computer technology-supported language learning, concluding that such pedagogical approaches are at least as effective as traditional methods, with technology-supported groups often outperforming their counterparts. Numerous studies have found that the use of web conferencing is positively correlated with learning outcomes, as well as the convenience it provides (Bower 2009), increased satisfaction (Huang and McConnell 2010; Kuo et al. 2010; Di Sarno-García 2024), enhanced learning motivation and confidence (Wu and Marek 2009; Jauregi 2012; Wang et al. 2013; Luo and Yang 2022), increased willingness to communicate (Tekwa 2023), and interactional competence test (Dai 2024). However, while students appreciated the convenience of online learning, they also faced challenges related to usability, interactivity, and technical limitations (Bower 2009).

As technology advances, CMC tools have become more widely used in various educational fields. For instance, Rokhayani et al. (2022) applied online English grammar instruction to enhance student achievement and perceptions, Wang and

Xin (2024) designed real-time online teaching of Chinese as a Foreign Language based on the CMC network, and Wang and Kabilan (2025) explored how online-based platforms could enhance EFL learners' reading skills and their motivation toward reading activities. Collectively, these studies underscore the potential of CMC technologies in enriching student learning experiences by providing interactive, flexible, and immersive environments.

Lan and Yu (2023) reviewed research literature from 2012 to 2022 on telecollaboration in Chinese language education. Their study identified 13 empirical studies on telecollaboration in CFL, none of which examined students' Chinese reading performance. Only one study investigated Chinese writing skills, focusing on six students' ability to type Chinese characters, rather than handwriting them, through telecollaboration with native-speaking partners. These studies primarily explored students' intercultural awareness, perceptions of telecollaboration, and oral communication skills. Furthermore, the majority of participants in these studies were students in higher education settings. Luo, and Yang (2018) conducted an extensive review of 20 years of telecollaborative practice in teaching CFL. Their findings indicated that telecollaboration positively impacted CFL learners' linguistic skills, particularly in speaking and writing, by providing authentic interaction opportunities with native speakers.

Providing a multimodal communication environment, web conferencing has also demonstrated great potential for enhancing learners' oral proficiency and facilitating collaborative learning (Canto et al. 2013; Guo and Möllering 2016; 2017). For instance, Canto, Jauregi, and van den Bergh (2013) investigated the integration of cross-cultural interaction through video communication in foreign language learning. They reported that students who engaged in video-based cross-cultural interactions improved their oral proficiency, increased motivation, and developed intercultural awareness and sensitivity. Nonetheless, they also noted that while the students' experience was generally positive, technical issues (e.g., connectivity problems) and differences in instructional approaches sometimes hindered smooth communication. Similarly, other researchers, such as Jauregi (2015) and Jauregi and Melchor-Couto (2017, 2018), who applied web conferencing in adolescents' foreign language learning, have shown that students'

interaction with native speakers via video conferencing tools had a positive impact on their communicative competence and motivation. In addition to technical difficulties and limited interaction time, the researchers also reported that cultural and linguistic differences between participants occasionally created challenges. These studies have indicated that a stable and reliable communication tool is crucial in telecollaborative learning environments. Yeh, Qi, and Yang (2024) investigated the impact of telecollaboration on enhancing intercultural communicative competence among tertiary EFL learners in Taiwan. They addressed the need for innovative teaching methods to foster a global learning environment. Additionally, few studies have explored topics related to adolescent CFL learners. Wang and Devitt's (2022)-review of CMC in CFL from 2008 to 2022 confirmed a significant gap in research focusing on this demographic. Similarly, Chan et al.'s (2022) scoping review of 289 journal articles published over three decades on CFL learning and teaching also highlighted the need for more targeted studies on adolescent learners.

## 2.2 Telecollaboration Connecting Non-Native and Native Speakers

Several studies have explored the use of telecollaboration to connect non-native and native speakers, including those by Jauregi (2012, 2015) and Jauregi and Melchor-Couto (2017, 2018). Jauregi (2012) investigated the use of telecollaboration in foreign language learning, particularly focusing on interactions between 36 non-native Dutch language learners and 35 native speakers. The participants worked in dyads once a week for 10 weeks via through video-web communication. The study highlighted the potential of telecollaboration in fostering foreign language acquisition, improving oral communication skills, and promoting intercultural competence, despite some technical and linguistic challenges. Similarly, Jauregi (2015) and Jauregi and Melchor-Couto (2017, 2018) found that interactions between non-native students and native speakers through video conferencing tools positively impacted communicative competence and motivation. However, these studies primarily analyzed students' questionnaire responses and perceptions without exploring other learning variables, such as academic achievement and learning challenges. Canto et al. (2013) investigated

the integration of cross-cultural interaction through video communication in foreign language learning. The students in the study were randomly assigned to one of three conditions: video-web communication with native peers, interaction in *Second Life* (a virtual space) with native peers, and a control group with no opportunity to interact with native peers. Their study found that students engaged in video-based cross-cultural interactions improved their oral proficiency, increased their motivation, and developed greater intercultural awareness and sensitivity. However, challenges such as connectivity issues and differences in instructional approaches sometimes hindered smooth communication.

Among the few studies on Chinese language learning, Guo and Mollering (2016, 2017) applied a web-conferencing tool in Chinese language classes. They reported that participants perceived improvements in their oral communication competence. However, the studies primarily focused on students' oral exercises and enhancements in oral learning outcomes. When integrated into an FLA program without structured instructional design, web conferencing may lead to adverse learning outcomes, such as lower academic scores, decreased enthusiasm, diminished satisfaction, and higher dropout rates (Nishioka 2016; Terhune 2016). In contrast, Bower (2009) found that well-designed tools, combined with adequate instructional support, significantly impact student engagement and learning outcomes. Terhune (2016) conducted a project in which Japanese students in an English class used Skype to engage in improvised conversations with English teachers in the Philippines. The study found that while students were initially excited and motivated, their interest diminished as the project progressed due to the lack of instructional goals and structured tasks. The researcher suggested that the absence of focus during the improvised conversations may have contributed to this decline in engagement. The author argued that effective pedagogy for synchronous CMC requires a more structured, task-based approach with clear instructional goals.

Utilizing a mixed-methods design, Luo and Yang (2022) examined students' perceptions of a Chinese-American online language exchange involving elementary and intermediate Chinese language learners from a U.S. liberal arts college and English majors from a university in Shanghai, China. The study

reported four key benefits: enhanced cultural understanding, improved language proficiency, increased motivation, and a strengthened sense of community. In addition, it indicated that cultural learning was the most highly valued outcome, followed by a sense of community and motivation, while language proficiency received the lowest scores. Luo and Gui (2021) identified several challenges in the telecollaboration project, including time zone differences, scheduling difficulties, and participants' heavy workload. They also reported that group discussions on the text-based platform lacked depth, limiting meaningful intercultural exchange.

### 2.3 Motivation and Anxiety in Language Learning

For several decades, anxiety and motivation have both been crucial factors in foreign language learning. Deci and Ryan's Self Determination Theory (1985) differentiates motivation into intrinsic and extrinsic motivation. Intrinsic motivation refers to do something because it is inherently interesting or enjoyable, while extrinsic motivation refers to do something because it leads to external goals or outcomes. Scovel (1978) proposed two categories of anxiety: facilitating anxiety and debilitating anxiety. Facilitating anxiety motivates learners to tackle new tasks and improves their performance, whereas debilitating anxiety leads learners to avoid tasks and hinders their performance. An appropriate level of anxiety may trigger facilitating anxiety, but excessive anxiety may result in avoidance and debilitate performance (Scovel 1978, 1991). Although both facilitating and debilitating anxiety have been observed, educational researchers have predominantly focused on the debilitating effects of anxiety rather than its facilitating effects in language-learning settings (Phillips 1992; Aida 1994; Hewitt and Stephenson 2011; Dikmen 2021; Uztosun and Kök 2023).

The study conducted by Yilmaz et al. (2023) on students at Kyrgyz-Turkish Manas University found that while students exhibited high motivation for goal-driven instrumental learning, they also experienced significant anxiety during speaking tasks. The study revealed a negative correlation between motivation and anxiety, indicating that higher motivation is often associated with lower anxiety. Similarly, another study conducted by Samad et al. (2023) suggested that intrinsic motivation can help alleviate anxiety, fostering greater confidence and engagement

in language learning. Luo et al. (2020) found that facilitative anxiety can sometimes enhance motivation, as moderate stress may encourage students to perform better. In addition, several studies have shown that telecollaboration with native speakers enhances foreign language motivation (e.g. Wu and Marek 2009; Jauregi 2012; Jauregi et al. 2015). However, anxiety levels tend to be higher initially, particularly in interactions with native speakers, but gradually decrease over time (Wu and Marek 2009; Jauregi and Melchor-Couto 2017). In short, to motivate non-native students' learning, it is important to reduce their sense of anxiety and communication apprehension, such as the fear of speaking with native speakers or making mistakes in front of peers, particularly in telecollaborative settings. Deliberately designing instructional practices and activities is, therefore, critical to the success of student performance.

As aforementioned, most studies focused on Western languages; less research has examined telecollaboration aimed at teaching CFL (Kan 2013; Luo and Yang 2018). To serve the purpose, the current study devised specific instructions requiring both TCFL learners and adolescent CFL learners to complete a series of designed online tasks. Additionally, previous studies have shown that web conferencing typically has positive impacts on learners' listening and oral performance (Canto et al. 2013; Guo and Mollering 2016, 2017). However, little attention has been given to the impacts of web conferencing on learners' reading and writing skills. Chinese reading and writing are commonly regarded as among the most challenging aspects for language learners, particularly for those from alphabetic language backgrounds, as Chinese has a logographic rather than an alphabetic writing system (Everson 1998; Gao 2020; Ling 2007). This study aimed to investigate the impact of a web-conferencing intervention on learners and identify the instructional activities that were most helpful in studying Chinese reading and writing.

In summary, the research questions of this study are as follows:

- Q1: What is the impact of telecollaborative intervention on adolescent CFL learners' Chinese reading and writing performance?
- Q2: What is the effect of implementing telecollaborative intervention on adolescent CFL learners?



Q3: What role does telecollaboration play in enhancing adolescent CFL learners' motivation and anxiety levels?

### **3. Methodology**

This study utilized a two-group quasi-experimental design. A quasi-experimental design was adopted because participants were already in pre-existing classes, making random assignment infeasible. However, conducting the study in authentic classes may better reflect real-world practices. The participants, research design, course information, and the adopted web-conferencing tool in this study are described as follows.

#### **3.1 Participants**

This study included 20 learners (5 male, 15 female) enrolled in a TCFL course at a university in Taiwan, and 44 teenagers (19 male, 25 female) taking an Elementary Chinese III course in a secondary school in the United States. The 44 US teenagers were from two classes: one comprising 20 students as the experimental group and the other consisting of 24 students as the control group. These students had taken at least two Chinese courses prior to enrolling in the current course. Of the US students, 84.1% did not speak Chinese at home. These students were chosen because they had been learning Mandarin Chinese for only 6 months. The language proficiency of the participants was generally at a basic level, equivalent to CEFR A1. Some scholars (e.g. Canto et al. 2013; Jauregi et al. 2012) have suggested that web communication improves language learners' motivation and oral proficiency, especially for beginners and those with lower oral language skills. As for the TCFL learners in Taiwan, all were native Mandarin (Chinese) speakers. Nearly all of the TCFL learners had no prior experience teaching foreign students Chinese before taking the course.

#### **3.2 Course Information**

The Elementary Chinese III course was the third course in the Elementary Chinese series. Students enrolled in the course met for 1 hour per day, five days a week. The instructor, materials, lesson progress, instructional activities, and assessments were the same for both classes. The aim was to ensure that students

in both groups were provided with equal opportunities to learn and participate, regardless of their backgrounds or study settings. The course included a variety of assessments, such as tests, quizzes, exercises, and assignments, which will be addressed below, which will be addressed below.

### 3.3 The Web-Conferencing Tool

Skype was used as the web-conferencing tool in this study, and all participants had free access to it. Skype was chosen because, in an evaluation of web-conferencing systems, it scored the highest in efficiency, satisfaction, learnability and universality compared to Zoom, Microsoft Teams, and WhatsApp (Correia et al. 2020).

### 3.4 Research Design

One class in the Elementary Chinese III course, consisting of 20 students, was assigned as the experimental group, working in dyads with 20 TCFL learners to complete four assignments via web-conferencing. Henceforth, to maintain consistency and clarity, the term “TCFL partners” will be used to refer to these 20 TCFL learners throughout this section and the subsequent ones. The other class served as the control group, collaborating in face-to-face (F2F) pairs with their classmates on the assignments. Each assignment comprised 10 to 14 Chinese-language questions and was structured using a mutual request interaction design. The adolescent CFL learners read the Chinese questions on the assignment sheets to their TCFL partners, listened to their partners’ responses, and handwrote down the answers in Chinese characters on the assignment sheets. Then adolescent CFL learners reciprocated by answering the same set of questions posed by their partners. This bidirectional communicative practice aimed to reinforce both reading comprehension and written production skills.

While the control group worked with their peers, the instructor was present to provide assistance as needed. Both the control and experimental groups were encouraged to discuss the assignments in Chinese whenever possible. The implementation of the research design was divided into nine phases, as shown in Figure 1, and is explained as follows.

#### 3.4.1 Phase One: Interview with the Instructor

Before the course began, one of the researchers interviewed the instructor to collect the contextual information about the course. The information was used to design the background survey and Chinese language Test 1.

#### 3.4.2 Phase Two: Background Survey and Test 1

In this stage, the background survey and the Chinese language Test 1 were administered. The purpose was to assess the students' prior Chinese reading and writing abilities, as well as to collect demographic information and Chinese learning experiences.

#### 3.4.3 Phase Three: The Pre-Training Course

Additionally, the students in the experiment group and their TCFL partners underwent a pre-training session in which they learned how to operate Skype. Meanwhile, the participants in the experimental group also received instruction on the rules and protocols for interacting with their partners.

#### 3.4.4 Phase Four: Ice-breaking Activity

The ice-breaking activity was designed to help participants become acquainted with each other. In dyads, participants interviewed each other to gather basic information, such as names, academic majors, and interests.

#### 3.4.5 Phase Five: Two Assignments with Evaluation Forms

The purpose of the first assignment, as shown in Appendix A, was to help students understand their TCFL partner's family information. The second assignment required students to practice bargaining while shopping. Both assignments were theme-based and derived from textbook topics recently covered in the course. Each assignment contained 10 to 14 questions. To complete the assignments, students asked their TCFL partners the embedded questions, listened to their partner's responses, and transcribed the answers in Chinese characters on the assignment sheets. They then answered the same questions posed by their partners.

Both the US students and their TCFL partners were informed that they would evaluate each other's performance and attitudes by completing a provided

evaluation form, as shown in Appendix B, after the web conferencing. The form for TCFL partners was designed to assess the US students' responsiveness, attitudes during meetings, and proficiency in various aspects of the Chinese language. Additionally, a table with different scales for measuring proficiency levels was provided to TCFL partners to facilitate the assessment task. The evaluation content accounted for 30% of the assignment grade. Additionally, the US students and TCFL partners were strongly encouraged to provide feedback and ask questions during the interaction process. In contrast, the students in the control group practiced the assignment in pairs in the classroom and were also required to complete the evaluation forms.

#### 3.4.6 Phase Six: Cultural Activities

According to the literature, cultural activities can enrich distance learning. The term "shared histories", proposed by Jones and Issroff (2005), was adopted in designing the cultural activities of this study to enhance meaningful learning in a distance learning environment. This approach aligned with the concept of a "learning community" proposed by Vonderwell (2003), which aimed to improve learning motivation and interaction in distance education. The cultural activities in this study included festival celebrations and hands-on activities, allowing learners to physically experience the cultural atmosphere, as suggested by Peck (2012).

On the activity day, an online catwalk show was held, where both the students in the experimental group and their TCFL partners dressed up as different characters related to the Dragon Boat Festival legend. The US students and their TCFL partners in Taiwan watched the show online. This event was also videotaped and uploaded to a website, enabling participants to exchange comments and vote for their favorites. The students in the control group held their own cultural activities and cosplay catwalk, in addition to voting for the most popular character in the classroom.

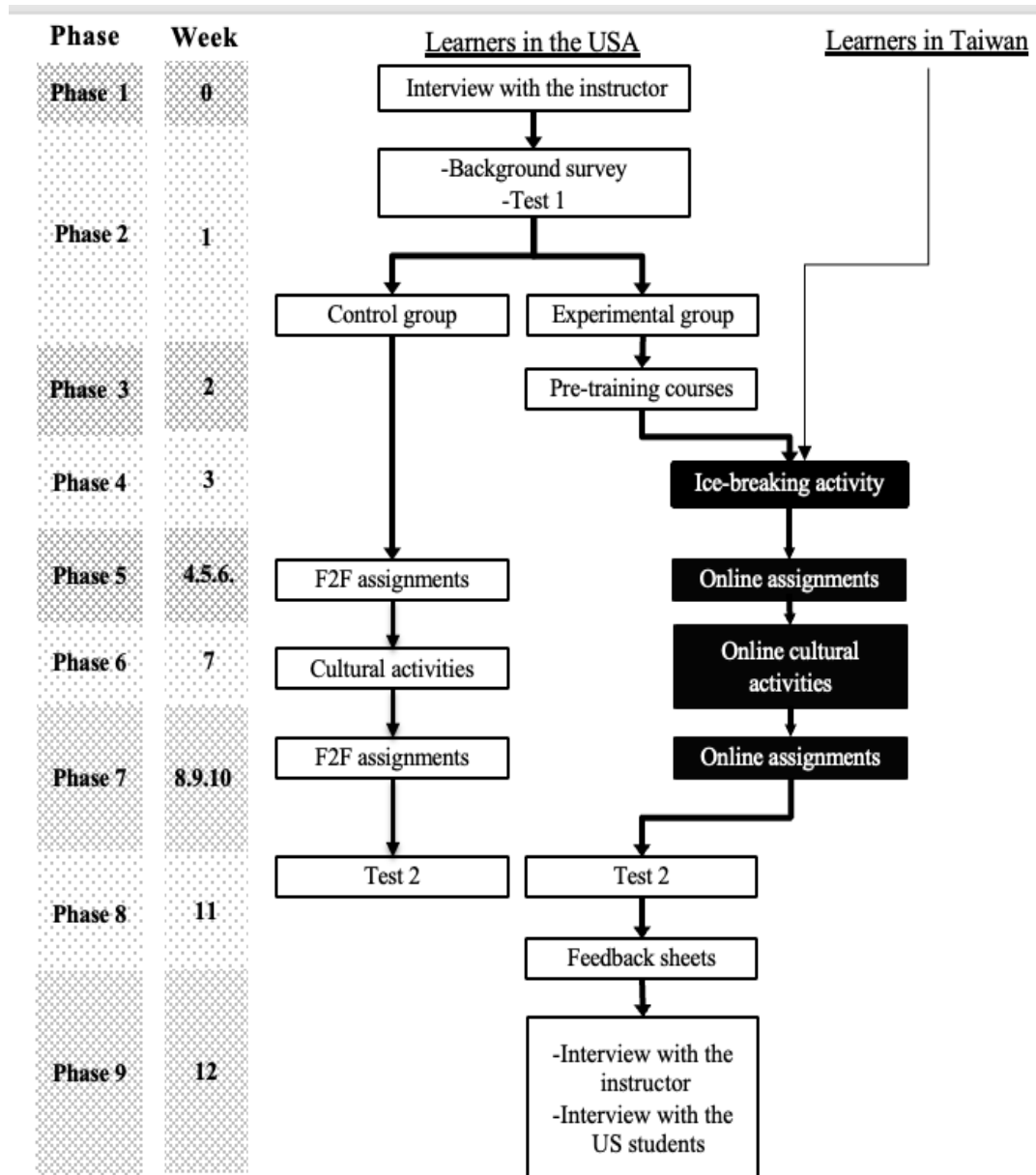


Figure 1: Research Flowchart

#### 3.4.7 Phase Seven: Two Assignments with Evaluation Forms

The purpose of this phase was for the 20 US students in the experimental group to practice commonly used terms, such as telling time and making an appointment over the phone.

#### 3.4.8 Phase Eight: Test 2 and Feedback Sheet

This phase involved administering the Chinese language Test 2 and collecting end-of-course feedback. The feedback sheet asked students in the experimental group about their Chinese learning experience, performance, and opinions on the telecollaborative activities.

#### 3.4.9 Phase Nine: Interviews with Instructor and Students

At the end of this phase, individual interviews were conducted with the instructor and four students from the experimental group. These interviews aimed to further explore the instructor's and students' perspectives on the impact of telecollaborative activities, students' attitude, and their overall learning experiences.

### 3.5 Data Collection

Both quantitative and qualitative data were collected. The quantitative data included test results and the background survey, while the qualitative data consisted of feedback sheets and interviews.

#### 3.5.1 Tests

The content of Test 1 and Test 2, as shown in Appendix C and Appendix D, respectively, was used to assess and compare the reading and writing performance of the experimental and control groups. The tests included four categories of questions: (1) writing the pinyin (Chinese phonetic notation) of the words, (2) reading and choosing correct answers, (3) writing complete sentences, and (4) writing Chinese characters based on the pictures displayed. Both tests were designed by the instructor and aligned with the material covered during the course. To ensure content validity, the expert consensus procedure involved two experts independently evaluating a set of 35 questions using a binary response (0 = Not Suitable, 1 = Suitable), based on each questions' relevance to the textbook content.

The initial agreement rate was 89% (31 out of 35 questions). Questions were included in the tests if both experts deemed them suitable. In cases of disagreement, the questions were revised based on expert feedback and reassessed. If consensus could not be reached after revision, those questions were excluded from the final test set.

The scoring standards for Test 1 and Test 2 comprise two components. First, the multiple-choice questions in Part II and Part III, which assess students' reading abilities, have predetermined answer choices. Correct responses receive full marks, while incorrect answers receive no credit. Second, the open-ended questions in Part I, Part IV, and Part V evaluate students' Chinese character writing skills. These tasks require students to write Pinyin for given Chinese characters, rearrange scrambled sentences, and accurately indicate the time based on visual prompts. Fully correct answers are awarded full marks, whereas minor errors—such as incorrect tone marks or mistakes in writing Chinese characters—result in a deduction of half a point per error.

### 3.5.2 Background Survey

In addition to gender and ethnicity, the background survey included two categories, as shown in Appendix E. The first category comprised Chinese language learning-related questions, including four questions about learning experience and one about motivation, designed based on Deci and Ryan's Determination Theory (1985). The motivation question asked students why they were taking Chinese courses, offering four choices: (a) my parents asked me to; (b) it is a required course; (c) Chinese learning is beneficial for my future; and (d) I am interested in learning Chinese. The first three choices represented extrinsic motivation, whereas the fourth choice indicated intrinsic motivation. The second category covered technology-related questions, including eight items assessing students' experiences with using technology and software.

### 3.5.3 Feedback Sheet

As mentioned, at the end of phase eight, the US students in the experimental group were asked to complete the feedback sheet, as shown in Appendix F. This sheet contained three open-ended questions related to the helpfulness, challenge

and interests associated with the telecollaborative activities. For example, one question asked, “In what way(s) do you think this intervention helped you with learning Mandarin? And why?”

#### 3.5.4 Interviews

The instructor of the course and four students were interviewed individually. The instructor was interviewed twice, once in phase one and again in phase nine. In the first interview, the questions were grouped into five categories: (1) the instructor’s background and teaching experience, (2) the students’ background and language levels, (3) students’ motivation for taking Chinese language courses, (4) regular class activities and assignments, and (5) the students’ learning behaviors. The second interview consisted of three categories of questions: (1) students’ attitudes toward the telecollaborative activities, (2) students’ opinions on the telecollaborative activities, and (3) the observed impacts of telecollaborative activities on students. The first interview lasted 30 minutes, while the second one lasted 45 minutes.

Four interviews with students were conducted at the end of phase nine. Notably, all participants in the telecollaboration program were invited via email to voluntarily take part in an interview to share their learning experiences and study challenges. Four students responded and were scheduled for individual interviews. The interviews included 11 semi-structured questions grouped into three categories: (1) attitudes toward telecollaborative activities, (2) learning experiences acquired from the telecollaborative activities, and (3) feedback regarding telecollaborative activities.

A semi-structured interview approach was adopted because it allowed to probe deeper insights from the interviewees. Interviewers could also ask follow-up questions based on participants’ responses, which helped uncover rich qualitative data that might not emerge from a rigid set of structured questions (Bryman 2016; Kvale and Brinkmann 2009; Patton 2002). Each interview lasted between 20 and 60 minutes, depending on how much the students were willing to share. All the interviews were administered by the researchers and were digitally recorded. The interview questions are shown in Appendix G.



### 3.6 Data Analysis

The quantitative data collected from the background survey were analyzed using SPSS statistical tools, including descriptive statistics, *t* tests, ANOVA, and Likelihood Ratio Tests. Independent *t* tests were conducted to compare the control group's and experimental group's Test 1 and Test 2 results. Moreover, factors were regarded as confounders when they met three conditions. First of all, the factor was associated with the test scores. Secondly, the factor was associated with the study's treatment status. Lastly, since no causal relationship between treatment and confounder existed, the associations between treatment and potential confounding factors were tested via Likelihood Ratio Tests. Then the one-way ANOVA was used to examine whether the factors were associated with the test scores. Finally, a multi-factor ANOVA was used to obtain the adjusted effect size of the treatment. All survey and demographic data were summarized using statistics such as percentages, means, and standard deviations.

To analyze the qualitative data, Miles and Huberman's (1994) three types of codes were employed, namely descriptive, interpretive, and pattern codes. The data were firstly coded on a paragraph-by-paragraph basis to provide an overall description. Then, the data were coded interpretively, focusing on individual statements. These initial codes were then further categorized into more specific variables, such as "communicating with partners", "fun experience", "forming relationships", or "technology" related statements. Finally, statements with similar variables were grouped together. To increase the reliability of the coding, two researchers of this present study conducted the coding separately. The two sets of coding were compared and reviewed until agreement was reached. The two coders kept a non-judgmental principle to code and analyze the data.

## 4. Results

### 4.1 The Performance of Chinese Reading and Writing

#### 4.1.1 The Comparison of the Two Groups

Descriptive statistics of the control group and experimental group and the results of the two tests are provided in Table 1. Table 1 shows that the average scores of Test 1 of the two groups were 68.71 (*SD* = 9.59) and 68.06 (*SD* = 10.05),

respectively. The results indicate that the two groups had similar performance on Test 1. However, the experimental group had a significantly higher score ( $M = 91.10$ ,  $SD = 7.78$ ) on Test 2 than that of the control group ( $M = 72.33$ ,  $SD = 21.88$ ),  $t(42) = -3.64$ ,  $p < .001$ . The estimated effect size using Cohen's  $d$  is 0.97, which is regarded as strong effect. This indicates that the telecollaborative intervention had a significant positive impact on students' learning outcomes, leading to substantially better performance in the experimental group compared to the control group.

Table 1: Descriptive statistics of the two tests

| Test   | Test 1  |              | Test 2   |              |
|--|---------|--------------|----------|--------------|
| Group  | Control | Experimental | Control  | Experimental |
| $N$  | 24      | 20           | 24       | 20           |
| Mean   | 68.71   | 68.06        | 72.33    | 91.1         |
| $SD$   | 9.59    | 10.05        | 21.88    | 7.78         |
| $t$ -test score<br>(control vs.<br>experimental) | .22     |              | -3.64*** |              |

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

#### 4.1.2 The Search for Confounding Factors

To further investigate whether other factors might have confounded this finding, the standard approach (Jager et al. 2008) used in the control-experimental group design was adopted here. It was assumed that the factors with differential distributions among the control and experimental groups were likely to be the confounders. Therefore, likelihood ratio tests were performed to compare the distributions of the control and experimental groups based on variables in the background survey. A total of 22 comparisons were carried out, and the result showed that six of them were statistically significant, including (1) hours per week studying, (2) hours per week speaking Chinese, (3) motivation, (4) number of household computers, (5) experiences of using the internet for online games, and (6) experiences using online conference software. Next, we further performed one-

way ANOVA on those six variables against the Test 1 scores. If the variable had a significant difference in both group distributions and was significantly correlated with the Test 1 score, this variable would be regarded as the potential confounding factor. Eventually, only one confounding variable was found; that is motivation, which appeared to be the variable explaining the difference in the performance of the two groups. Therefore, motivation was further included in the later analyses to obtain the true effect size of the study intervention.

#### 4.1.3 The Main Effect Finding

The result of two-way ANOVA, which includes only the main effects from both the study and confounding factor (motivation), is displayed in Table 2. As shown, both main effects were statistically significant, and the whole model had a moderate R squared ( $R^2 = 0.371$ ). We further investigated the signs and sizes of these main effects listed in Table 3. It could be concluded that the study intervention had a strong positive effect on the students' academic performance. The mean difference between the control group and experimental group was 18.77. However, this was the crude difference. The true difference might be masked by the confounding factors. After the researchers included the confounding factor in the multivariate model, the adjusted mean difference between the two groups became 12.785, which remained statistically significantly.

Table 2: Summary of Two-way ANOVA for Students' Test2 Scores (N = 44)

| Source          | Type III SS           | df | Mean Squared | F      | Sig.   |
|-----------------|-----------------------|----|--------------|--------|--------|
| Corrected Model | 5975.231 <sup>a</sup> | 2  | 2987.6       | 12.1   | <0.001 |
| Intercept       | 293653.848            | 1  | 293653.8     | 1190.5 | <0.001 |
| ConVSExp        | 1494.827              | 1  | 1494.827     | 6.060  | 0.018  |
| motivation      | 2092.128              | 1  | 2092.128     | 8.482  | 0.006  |
| Error           | 10112.725             | 41 | 246.7        |        |        |
| Total           | 304124.320            | 44 |              |        |        |
| Corrected Total | 16087.956             | 43 |              |        |        |

<sup>a</sup> R Squared = .371 (Adjusted R Squared = .341)

Table 3: Summary of Parameter Estimates

| Variable        | B      | SE(B) | <i>t</i> | Sig. ( <i>p</i> ) |
|-----------------|--------|-------|----------|-------------------|
| ConVs Exp (Exp) | 12.785 | 5.193 | 2.462    | 0.018             |
| motivation      | 15.204 | 5.221 | 2.912    | 0.006             |

To further explore why the average test score of the experimental group was significantly higher than that of the control group in Test 2, the researchers referred to the instructor's interview. The instructor noted that students' interest in learning Chinese typically decreased by the third Chinese language course, likely due to the increasing difficulty of Chinese characters or insufficient exposure to the language, which failed to sustain their interest. It was not surprising to the instructor that interest waned in the control group, as they had no opportunities to practice Chinese in authentic communication settings.

The interview and survey results indicated that the experimental group's telecollaboration with TCFL partners enhanced their motivation to learn Chinese, which aligns with Luo and Yang's (2022) study on telecollaboration between Chinese and American students. However, alongside increased motivation, the instructor also reported that some students in the experimental group exhibited heightened anxiety during interactions with their TCFL partners in Taiwan. Both the instructor's and students' responses suggested changes in study behaviors, which are discussed below.

#### 4.2 The Changed Learning Behaviors

According to feedback sheets and interview data, the behavioral changes could be related to two main factors: the process of interacting with native speakers and the sense of anxiety. For easy reference, the 20 students who completed the feedback sheet were coded as A1 to A20, while the four interviewed students were coded as B1 to B4.

##### 4.2.1 The Process of Interacting with Native Speakers

Of the 20 students, 13 (65%) expressed a preference for the telecollaborative

activity of “interacting with their partners” via Skype, as it allowed them to collaborate with native speakers from a foreign country. For instance, some students wrote, “the project is fun; it is good to practice Chinese with my partner.” Additionally, there were 11 students who thought this project was helpful to their Chinese proficiency. Student A14 stated, “sometimes I would misread a character and Jane would correct. Then I would re-read it again....” Interviews suggested the helpfulness of the telecollaboration could be attributed to TCFL partners’ immediate correction of the US students’ mistakes, something that the instructor noted rarely occurred in regular classroom activities.

#### 4.2.2 The Various Anxieties

As mentioned earlier, the students were informed that their performance during the online meeting would affect their grades, which seemed to have induced anxiety. When asked to rate their anxiety level on a scale from 0 to 10, Interviewee B1 rated it at 11 while interacting with their TCFL partner. Despite being one of the top five students in the final grade of the course, B1 still expressed intense nervousness when working with their TCFL partner. Both Interviewees B1 and B2 mentioned that several students experienced similar anxiety while preparing for the telecollaboration assignments. According to the instructor and B1, the students rarely previewed the assignments in previous Chinese courses, even though peer evaluation was also implemented in the classroom. B1 stated: “I didn’t feel embarrassed about making mistakes in front of my classmates because they wouldn’t know how to correct and evaluate me.” B1 further explained that they felt anxious about making mistakes while interacting with her TCFL partner because their partner would be aware of the errors, which might affect the evaluation. Interviewee B3 discussed anxiety related to Chinese reading and writing. Similarly, B3 felt anxious about forgetting Chinese characters, leading to errors when reading and filling out the assignment. To mitigate this, they expended extra effort practicing Chinese characters prior to interacting with their TCFL partners. All four students interviewed reported that the telecollaborative activities increased their motivation to study.

The students appeared to experience what is known as “facilitating anxiety,”

which motivated them to actively tackle challenges on their own. As a result, some students devoted more time to studying Chinese, either individually or collaboratively with their U.S. peers. Some even formed a study group where they previewed assignments together and observed how other members completed the tasks with their TCFL partners in Taiwan before their own web meetings.

It appears that the students perceived anxiety as a motivating factor rather than a hindrance. Instead of obstructing their progress, it served as a driving force, encouraging persistence, goal-setting, and increased effort investment. These behavioral changes align with the findings of Luo et al. (2020), which identified a significant positive correlation between facilitating anxiety and motivation in foreign language learning.

## **5. Conclusion**

This study addressed the research gap concerning the limited focus on non-Western language learning and adolescent learners within technology-supported Foreign Language Acquisition (FLA). Previous studies on telecollaboration have indicated that a lack of structured instructional design may lead to negative learning outcomes. Some studies, however, reported that synchronous telecollaboration can enhance listening and speaking skills (e.g., Canto et al. 2013; Guo and Mollering 2016). In response, this study designed a telecollaborative intervention that incorporated multiple instructional phases, each aligned with specific learning objectives. The primary aim was to examine whether telecollaboration could improve students' reading and writing skills. To this end, the researcher developed reading and writing assignments that fostered bidirectional communication with TCFL partners. The findings reveal that students who participated in the telecollaborative activities significantly outperformed those in the control group. This suggests that telecollaboration, when paired with carefully designed reading and writing assignments, can have a positive impact on students' Chinese reading and writing proficiency.

In addition to deliberately designed instruction and instructional goal setting, requiring TCFL partners to evaluate their U.S. counterparts appears to have played a crucial role in positively influencing students' study habits. In other words, the

combination of motivation driven by Self-Determination Theory and the presence of facilitating anxiety created an optimal learning environment for the experimental group. The structured yet interactive nature of telecollaboration encouraged self-driven effort, while the pressure of being evaluated by native speakers pushed students to develop better study habits. These factors together contributed to their superior performance in Chinese reading and writing compared to the control group. The telecollaboration instructional design effectively supported students from alphabetic language backgrounds in managing the difficulties associated with learning Chinese reading and writing proficiency. In summary, these findings underscore the value of integrating telecollaboration into language education to enhance communication skills, cultural understanding and learner motivation.

## **6. Limitations**

It is noted that Test 1 and Test 2 were not standardized tests, and the sample size was relatively small. Therefore, the test results reported in this study should be interpreted conservatively. Future studies are encouraged to include additional personal variables, such as extroversion/introversion, self-perceived active/passive study habits, the level of discomfort when interacting with native speakers as well as test anxiety, when examining factors similar to those in the current study. Additionally, increasing the sample size would enhance the generalizability of the findings.

## **7. Discussion and Recommendations**

Several studies have highlighted the benefits of smaller groups (2–4 students per group) in fostering better communication and enhancing engagement, particularly in language learning and collaborative settings (Storch 2002). However, during the interview in the current study, student B2 suggested pairing U.S. students with native speakers in groups of two or three, rather than the one-to-one interaction used in the course. She explained that this arrangement would allow group members to support one another during web conversations, leading to better language performance. Even though some researchers (e.g., Wu and

Marek 2009; Jauregi and Melchor-Couto 2017) have suggested that anxiety levels are initially high in interactions with native speakers but gradually decrease over time, the students in the current study did not appear to experience this pattern. Therefore, when forming groups, the number of students should be carefully considered.

Although quite a few students seemed to experience an excessive level of anxiety, this anxiety did not appear to hinder their engagement or performance. Instead, most of them made greater efforts to excel and prepared in advance for the upcoming online meetings. This finding is somewhat inconsistent with the studies by Scovel (1978, 1991), which argued that facilitating anxiety encourages learners to engage with new tasks and enhances their performance, while debilitating anxiety causes learners to avoid tasks and negatively impacts their progress. This discrepancy may warrant further investigation into how to balance facilitating and debilitating anxieties to maximize learning benefits, particularly in telecollaborative settings. Specifically, future research should explore the effectiveness of grouping multiple learners with native speakers to assess its broader applicability in reducing anxiety and fostering engagement. Additionally, researchers can experiment with various forms of peer and expert feedback to ensure that facilitative anxiety is effectively leveraged to motivate learners.

Learning a foreign language is a great challenge, especially when it involves cross-cultural and cross-boundary contexts. As many researchers have argued, such as Bower (2009) and Terhune (2016), effective pedagogy, comprising clear learning goals, adequate instructional support, and structured tasks, plays a crucial role in student performance. In addition to clearly defined learning objectives and task-based, interactive learning, assessment and feedback mechanisms, as implemented in the current study, are also recommended to be included in instructional design to enhance student involvement and preparation for class or tasks. In addition, scaffolding is essential when designing learning activities as gradually increasing task complexity helps learners build competence.

It is hoped that the findings reported in this study will provide useful insights to those who are interested in exploring learning foreign language in a telecollaborative learning environment.



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## 跨國遠距協作在華語文閱讀與寫作上的學習

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語言中心

### 摘要

現階段已有多項研究透過網路視訊會議與電腦媒介溝通(CMC)方式針對青少年與成人語言學習領域進行探討。然而關於「華語文為外語學習」(CFL)的研究仍然很有限。為了填補此研究空缺，本研究以遠距協作教學(telecollaboration)模式，探討該模式對 CFL 青少年學習華語閱讀與寫作表現的影響。本研究採用準實驗設計，收集量化與質性數據，包括閱讀與寫作測驗成績、問卷調查、回饋單及訪談資料。研究對象包括 44 位美國青少年華語學習者(CFL)及 20 位台灣某大學華語文教學學程(TCFL)大學生。實驗組中的美國學生須透過網路視訊會議與台灣大學生協作，共同完成一系列作業。所有收集的量化數據經統計分析處理，如 t 檢定、概似比檢定及多因子變異數分析等；回饋單與訪談獲得的質性資料則提供更深入的見解。

研究結果顯示，實驗組學生在閱讀與寫作測驗中的表現顯著優於控制組。此外，質性資料分析發現，實驗組學生的學習行為改變可能與他們在與華語母語者協作過程中產生的學習焦慮感有關。本研究證實，經過精心設計的遠距協作學習對華語學習者的閱讀與寫作能力具有正向影響。遠距協作學習設計不僅提升學習者的語言表現，還能引發促進性焦慮，促使學生更深入地學習華語文。本研究顯示，身處國外的華語學習者與本國華語教師可透過遠距協作設計，共同發揮其正向潛力，進而提升華語教學與學習的成效。

**關鍵詞：**青少年 華語文學習者 遠距協作 寫作 閱讀 學習焦慮

## Appendix A

### Assignment 1 中文一

#### Getting to Know Your Partner

Please use the online communication tool, Skype, to contact your partner and interview her/him by asking the following questions. Then you write down your partner's answers to each question. Each question was worth 10 points.

After the interview, based on the information you collect, draw a picture that best describes your partner and her/his family. **Prepare to introduce your partner next week!**

1. Greet your partner in Chinese.

qǐng wènnǐ guìxìng

2. 请问你贵姓？

qǐng wènnǐ jiàoshénme míngzì

3. 请问你叫什么名字？(ask your partner to spell her/his Chinese name)

qǐng wènnǐ jǐ suì

4. 请问你几岁？

nǐ de shēng rì shì jǐ yuè jǐ rì

5. 你的生日是几月几日？

nǐ jiā yǒu jǐ kǒu rén

6. 你家有几口人？

nǐ jiā yǒu shuí

7. 你家有谁(who)？

nǐ bàba jǐ suì

nǐ māmā jǐ suì

8. Base on the answer to question 7, ask “你爸爸几岁？”，“你妈妈几

岁？”

，你哥哥几岁？”

，你姐姐几岁？”

，你弟弟几岁？”

，”你哥哥几岁？”，“你姐姐几岁？”，“你弟弟几岁？”

nǐ mèimèi jǐ suì

and/or “你妹妹几岁？”

9. 谢谢你！

10. 再见！

## Appendix B

### 學生表現評量表 (Evaluation Form)

名字：

合作的美國學生姓名：

你的美國合作夥伴與你共同合作四次線上作業，請你依據他跟你互動表現填

寫下表：

| 表現程度     |  | 很好 | 好 | 普通 | 待加強 | 備註 |
|----------|--|----|---|----|-----|----|
| 相互聯繫     | 回覆效率 (1 天："很好", 2~3 天："好", 4~6 天："普通", 超過 7 天："待加強") |    |   |    |     |    |
| 上網開會態度表現 | 準時   |    |   |    |     |    |
|          | 有禮貌  |    |   |    |     |    |
|          | 專注學習與互動  |    |   |    |     |    |
| 中文表現     | 聽力理解   |    |   |    |     |    |
|          | 發音   |    |   |    |     |    |
|          | 文法   |    |   |    |     |    |
|          | 詞彙   |    |   |    |     |    |
|          | 合作夥伴的中文等級 (請參照下列等級表)                                 |    |   |    |     |    |
| 夥伴整體表現   | 夥伴的整體表現  |    |   |    |     |    |

語言能力等級表

| 等級 | 語 言 能 力                                 |
|----|---|
| 1  | 完全不能夠理解、完全說不出話、完全無互動                    |
| 2  | 幾乎不能理解、只有幾句話而已、只有最簡單、零星的互動              |
| 3  | 幾乎都可理解、使用最簡單的語言、有互動但發音不清楚               |
| 4  | 專注於互動、使用較複雜的語句、不斷的發生錯誤，但不影響流暢度受到母語嚴重的影響 |
| 5  | 幾乎能夠無礙的表達、適當的互動、錯誤不經常發生                 |
| 6  | 能夠熟練的表達、能夠引導互動、僅有零星的錯誤                  |
| 7  | 無任何的侷限、已接近母語使用者                         |

## Appendix C

### TEST 1

xìngmíng  
姓名：

bān jī  
班级：

#### 一、Pronunciation 拼音—Please write the Pin-yin for the boxed words. (24%)

1. 一共十九块钱。( )
2. 请问你要买什么？( )
3. 那个很贵，我们不买。( )( )
4. 现在几点钟？( )
5. 请问你找谁？( )
6. 请问你的电话多少号？( )

#### 二、Complete each sentence by circling the words in the brackets. (14%)

1. 我( 上午 / 下午 )七点半去上学(go to school)。
2. 这个太贵了，我( 要 / 不 )买。
3. 请问你要买( 这个 / 什么 )吗？
4. A: 请问你找( 那 / 哪 )一位？      B: 我找你姐姐。
5. 这个( 很好 / 不好 )，我不要。
6. 我要买那个，请问那个( 几 / 多少 )钱？
7. ( 那 / 哪 )一位是我的爸爸。

三、 Read the dialogues and choose the correct answers. (12%)

1. A: 明天你在不在家? B: \_\_\_\_\_

a. 我明天上午在家。 b. 你明天在不在家。 c. 我今天下午不在家。

2. A: 请问你找谁? B: \_\_\_\_\_

a. 我是小明。 b. 你在不在家? c. 请问小明在家吗?

3. A: 你的电话是几号? B: \_\_\_\_\_

a. 我家电话是 2755767799。 b. 请问你找哪一位?

c. 不是, 我家电话是 6517686775。

4. A: \_\_\_\_\_ B: 对不起, 他不在。

a. 请问小明在家吗? b. 请问你找谁?

c. 请问你是小明的妈妈吗?

5. A: \_\_\_\_\_ B: 星期六我在家, 我等你。

a. 星期六你在家吗? b. 请你等一下。

c. 星期六你哥哥在不在家?

6. A: 请问小明在不在? B: \_\_\_\_\_

a. 不在, 请你等一下。 b. 在, 请等一下。

c. 请你等一等, 小明不在家。

四、 Rearrange the words to write a complete sentence. (28%)

1. 十 还有 分钟 八点。 → \_\_\_\_\_。

2. 一点儿 不好? 便宜 好 → \_\_\_\_\_?

3. 什么? 买 要 你 → \_\_\_\_\_?



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4. 多少 这个 请问 钱? → \_\_\_\_\_ ?

5. 打电话 是谁 找 我? → \_\_\_\_\_ ?

6. 现在 他 家。 不在 → \_\_\_\_\_ 。

7. 哥哥。有人 找 打电话 → \_\_\_\_\_ 。

五、 Write down the times in Chinese characters. (22%)

|  |  |   |
|--|--|---|
| 1.   | 2.   | 3.  |
| 4.  | 5.  |   |

## Appendix D

### TEST 2

xìngmíng

姓名: \_\_\_\_\_

bān jí zhōngwén yī

班级: 中文一

#### 一、Pronunciation 拼音—Please write the Pin-yin for the boxed words. (24%)

1. 请问你找谁? ( )
2. 一共十九块钱。( )
3. 请问你要买什么? ( )
4. 那个很贵, 我们不买。( ) ( )
5. 现在是差十分四点钟。( )
6. 请问你的电话多少号? ( )

#### 二、Complete each sentence by circling the words in the brackets. (14%)

1. 这个 ( 很好 / 不好 ), 我不要。
2. 这个太贵了, 我 ( 要 / 不 ) 买。
3. 请问你要买 ( 这个 / 什么 ) 吗?
4. ( 那 / 哪 ) 一位是我的爸爸。
5. 我 ( 上午 / 下午 ) 七点半去上学(go to school)。
6. 我要买那个, 请问那个( 几 / 多少 ) 钱?
7. A: 请问你找 ( 那 / 哪 ) 一位?      B: 我找你姐姐。

#### 三、Read the dialogues and choose the correct answers. (12%)

TELECOLLABORATION INSTRUCTION ON READING AND WRITING

1. A: 明天你在不在家?      B: \_\_\_\_\_  
a. 你明天在不在家。      b. 我明天上午在家。  
c. 我今天下午不在家。
2. A: 请问你找谁?      B: \_\_\_\_\_  
a. 我是小明。      b. 请问小明在家吗?  
c. 你在不在家?
3. A: 你的电话是几号?      B: \_\_\_\_\_  
a. 不是, 我家电话是 6517686775。      b. 请问你找哪一位?  
c. 我家电话是 2755767799。
4. A: \_\_\_\_\_      B: 对不起, 他不在。  
a. 请问你找谁?      b. 请问小明在家吗?  
c. 请问你是小明的妈妈吗?
5. A: \_\_\_\_\_      B: 星期六我在家, 我等你。  
a. 星期六你在家吗?      b. 星期六你哥哥在不在家?  
c. 请你等一下。
6. A: 请问小明在不在?      B: \_\_\_\_\_  
a. 请你等一等, 小明不在家。      b. 在, 请等一下。  
c. 不在, 请你等一下。

四、Rearrange the words to write a complete sentence. (28%)

1. 你    什么?    买    要      →      \_\_\_\_\_ ?

2. 八点。十 还有 分钟 → \_\_\_\_\_。

3. 好 一点儿 不好? 便宜 → \_\_\_\_\_?






4. 不在 现在 他 家。 → \_\_\_\_\_。

5. 钱? 多少 这个 请问 → \_\_\_\_\_?

6. 打电话 我? 是谁 找 → \_\_\_\_\_?

7. 打电话 哥哥。有人 找 → \_\_\_\_\_。

五、 Write down the times in Chinese characters. (22%)

|  |  |  |
|--|--|--|
| 1.  | 2.  | 3.  |
| 4.  | 5.  |  |

## **Appendix E**

### **Background Survey**

Gender: Male\Female

Ethnicity: African American\ Asian\ Caucasian\ Others

#### **I. Chinese language learning related questions**

1. Do you come from Chinese (including Chinese dialect) speaking family? No\  
Yes
2. Did you have Chinese partnering before? 1) No 2) Yes \_hours /week
3. How many hours do you usually study Chinese per week? 1) less than 1  
hour 2) 1-2 hours 3) 3-4 hours 4) over 5 hours
4. How many hours do you usually speak Chinese after school per week? 1) less  
than 1 hour 2) 1-2 hours 3) 3-4 hours 4) over 5 hours
5. Why do you take Chinese courses? 1) my parents ask me 2) it is a required  
course 3) Chinese learning is beneficial for my future 4) I am interested in  
Chinese learning (pick the main reason)

#### **II. Technological related questions**

1. How many computers (including laptops, and tablets) are there in your  
household? 1) one 2) two 3) three-four 4) over 5
2. Do you have your own computer (including laptops, and tablets?) 1) No 2) Yes
3. What do you usually do while being online? (you can have more than one  
choice)  
1) Email 2) google information 3) Read the news 4) Use Messenger 5) Join  
Chat room  
6) Play online Games 7) Join Forum 8) Play Facebook

4. How often do you usually get online? 1) everyday 2) three times a week 3) once a week  
4) less than once a week
5. How many hours do you usually spend online? 1) less than 3 hours/week 2) 3-6 hours/week 3) 7-14 hours (1-2 hours/day) 4) over 15 hours/week (over 3 hours/day)
6. Before this project, have you ever used any online conference software (ex. Skype, Line and so on)  
1) Never 2) I used\_\_ \_ but I am not very good at it. 3) I used and I'm very good at it
7. Before this project, have you ever used Skype? 1)Never 2) Yes but I am not very good at it. 3) Yes and I'm very good at it
8. Before this project, have you ever used Skype for online video conferences? 1) Never  
2) Yes but I am not very good at it. 3) Yes and I'm very good at it

## **Appendix F**

### **Feedback sheet**

1. In what way(s) do you think this intervention helped you with learning Mandarin?  
and why?
  
2. Which part(s) do you think is/are challenging in this intervention? And why?
  
3. Which part(s) in this intervention do you like is/are interesting? And why?

## **Appendix G**

### **Interview Questions**

#### **A. Learning Experiences in the Telecollaboration**

1. Can you describe your overall experience in the telecollaborative course?
2. What aspects of the telecollaborative course did you find most challenging?
3. Besides these challenges, what aspects of the telecollaborative course did you enjoy the most?
4. In what ways do you think the telecollaborative course helped your Chinese learning?
5. Did you change the way you learn Chinese because of this telecollaboration?
6. How did you typically work on telecollaborative assignments?
7. How was your experience in the telecollaborative learning setting different from traditional classroom learning?

#### **B. Attitudes toward Telecollaborative Activities**

1. Think about your Chinese classes, how did you feel when practicing Chinese with your classmates?
2. How did you feel when working online with your Taiwanese partner?



## TELECOLLABORATION INSTRUCTION ON READING AND WRITING

3. Has this telecollaborative course helped increase your motivation to learn Chinese?

### C. Feedback

1. Please provide your suggestions for improving the overall telecollaborative activities, as well as for helping other learners improve their Chinese reading and writing in the future.

