WeChat Assisted Differentiated CFL Instruction in Study Abroad: A Pilot Case Study*
(微信辅助海外 CFL 个体化教学案例初步研究)

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Abstract: This pilot case study explores the use of the WeChat recording tool as a promising solution for the challenges of teaching mixed second language (L2) and heritage language (HL) learners in sheltered content courses in study abroad. The tool successfully created opportunities for learners to engage in different oral learning tasks, helped the curriculum to stay on track, and enabled instructors to provide differentiated and timely feedback. Data were collected from an online survey, email questions, learner recordings of topics, and an instructor's recording of feedback, reflections, lesson plans, and class notes. The study determines that the WeChat recording tool can be very helpful in instructing mixed classes in study abroad, despite limited technical difficulties.

摘要：本案初步研究了微信作为录音工具在海外留学项目中的使用，所观察班级均有程度不同的二语及继承语学习者。本研究发现微信使用给不同学习者创造了完成多种口语学习任务的机会，有助于保证课程进度，并给教师提供了个体化、及时性反馈的渠道。研究数据来自线上问卷、电邮采访、 学习者口语练习录音， 教师反馈录音、教学反思及教案笔记。结果显示虽然微信使用偶尔存在技术问题， 但作为录音工具，它益于海外项目中混合水平班级的教学。

Keywords: WeChat, study abroad, differentiated instruction, heritage learners

关键词：微信、海外留学、个体化教学、继承语学习者

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1. Introduction

Learners populating L2 classes in American universities have become increasingly diverse. One of the biggest challenges in teaching a second language is to meet a variety of learners' needs to maximize their individual learning potential. This challenge becomes even more apparent in a mixed second language (L2) and heritage language (HL) learner class, where learners may have different proficiency levels, cultural backgrounds, and personal interests. Differentiated instruction is generally recommended as a "philosophy of teaching and learning" (Theisen, 2002, p. 2) to accommodate such diverse learners (Tomlinson, 2014). Through differentiated curriculum management, that is content, process, or product (output of language learning), instruction can be modified in response to each learner's particular learning needs. Differentiated instruction further promotes equality and engagement of learning (Theisen, 2002).

However, differentiated instruction is not easily implemented in L2 content courses, often referred to as sheltered courses, where the class does not have fully-proficient native learners who are learning an academic subject, such as history or geography, via the target language. This involves learning a subject and the target language at the same time (Crandall, 1994), frequently with additional help from language instructors. The L2 learners get the same course credits as learners who take the subject in their native language (Spring, 2012). Ideally, in sheltered courses, linguistic skills and content knowledge mutually enhance the learning process. As mentioned in Stryker and Leaver's work (1997), "language proficiency is achieved by shifting the focus of instruction from learning language *per se* to learning language through learning content" (p.5). Learning content knowledge helps learners perceive how the target language is used in authentic and specific content areas. However, due to the traditional mode of subject learning, "many subject-area teachers want to maintain strong control over their particular courses and subject matter" (Grabe & Stoller, 1997, p.18), namely, that they lecture and learners listen. This instructor-centered methodology deprives L2 learners of real communication opportunities (Lü, 2014), opportunities imperative for further developing language proficiencies.

Additionally, limited class time is another challenge most content instructors confront when implementing differentiated instruction. The dual-task of learning both language and content in sheltered courses increases the demand for more class time. Yet classes in American universities normally last for only 50 to 60 minutes. This limited class time constrains instructors to deliver "one-size-fits-all" instruction and feedback to learners who have different interests and readiness levels (Reese, 2011; Theisen, 2002; Tomlinson, 2014).

Time becomes even more constrained during intensive summer courses taught abroad, where instructors are pressured with other tasks in addition to teaching. Faster pace demands faster feedback because learners' subsequent tasks generally depend on feedback from previous assignments. Moreover, when learning a second language in the target language environment, learners are exposed to more learning materials and learning contexts where they can employ their content knowledge. Thus, providing timely feedback on learners' practice of content knowledge more precisely guides them in the learning

process. It is in this context of challenges that technological means can come to aid and to enhance fast-paced, differentiated, and personally meaningful instruction and feedback for both L2 and HL learners in sheltered courses.

When studying abroad in different parts of the world, different technological tools may be employed. To note, WeChat, a communication tool for mobile phones, has become a Chinese app for nearly everything—from text and voice messages to "friend circles" social media (similar to Facebook or Twitter), and online mobile payments for individual vendors or shops. WeChat has thus become an important part of modern Chinese culture. Because of the several useful functions embedded within the WeChat app, many language educators have discovered the benefits of employing it in L2 education in China.

This study explores the benefits of the instructional use of the WeChat voice message function in mixed L2, HL learner sheltered content courses taught in Mandarin Chinese in an intensive study abroad program in China. Specifically, this paper first reviews related studies on: (a) meaningful communication in sheltered courses; (b) differentiated instruction; (c) heritage and L2 learners in a mixed class; (d) feedback as formative assessment; (e) mobile-assisted language learning, and; (f) WeChat and its applications in CFL instruction. Then, the paper addresses the research methodology of the case study, research context, participants, data collection and analysis, research findings for the rationale for the instructional use of WeChat, how WeChat is used to facilitate differentiated instruction, and what learners think of the instructional use. At the end, this paper further discusses research findings, implications, limitations, and suggestions for future research.

2. Literature Review

2.1 Meaningful Communication in Sheltered Courses

According to L2 acquisition theories, forms of language (i.e. grammar) are best learned incidentally with occasional reinforcement of explicit instruction. This means that the learners are engaged in processes of communicating meaning, during which they discover incidentally the rules of the language, with instructors calling attention to forms at the moment when learners are ready (Long, 2017). Long further points out that such implicit learning tends to be far more effective and long-lasting than a focus on explicit instruction of forms, as the retrieval of incidentally-learned knowledge is "automatic and fast," as well as from deep memory (p.21). Inseparable from meaningful communication is proficiency-based learning, which tests what learners can do in the actual process of communication.

Sheltered courses are built upon the acknowledgment of the power of incidental learning and proficiency assessment. These courses are organized around meaningful content, where learners are given the opportunity to learn about a topic, a theme, or an academic subject. For HL learners, content-based approaches are even more relevant since the nature of their acquisition has been content-based from the beginning (Lynch, 2003). In recent decades, under the American Council on the Teaching of Foreign Languages

(ACTFL) proficiency guidelines first published in 1986, and the American National Standards in Foreign Language Education of 1996, communicative and content-based approaches have been proven to be the most successful (VanPatten, 2002; Hadley, 2001). Communication encompasses three modes—interpretive, interpersonal, and presentational.

Yet, meaningful communication will not be successful unless learners are highly motived. Defined as the degree of learners' attention and effort directed at learning tasks, motivation plays a key role in the success of communication (Shrum & Glisan 2005). Two main sources of demotivation are anxiety and boredom. On the one hand, if learners are anxious, they cannot focus on the tasks. But anxiety for L2 learners is prevalent, especially oral communication apprehension. Furthermore, anxiety negatively affects language performance, such as L2 learners having "difficulties presenting themselves authentically" (Luo, 2015). Learners who perceive the course more challenging than what they expected experience an even higher level of anxiety. On the other hand, uninteresting, unengaging, or prolonged tasks are likely to cause boredom (Kanevsky & Keighley, 2003; Van Lier 1998). In addition, individual characteristics of learners and their interests can make them perceive certain tasks as tedious. If a learner does not think a task will lead to meaningful results, that learner is likely to feel less engaged (Shrum & Glisan, 2005).

2.2 Heritage Language (HL) Learners

One main factor that differentiates learners is whether or not they are HL or L2 learners. For the purpose of this case study, HL learners are defined as those with a certain level of language competence, and or "to some degree bilingual" in the HL and the predominant language of their locale (Luo, Li, & Li, 2019).

Research (Fishman, 2001; Valdes, 2001) has shown that HL and L2 learners differ not only linguistically, but also affectively. According to several scholars (Meskill & Anthony, 2008; Montrul, 2011; Mikhaylova, 2012; Oh & Nash, 2014; Luo, Li, & Li, 2019), HL should ideally have their own language classes; yet due to financial constraints, there is a trend to place HL and L2 learners in the same language class in higher education institutions. In such classes, according to the national survey of college-level HL education done by Luo, Li, & Li (2019), instructors observed HL learners' low motivation due to such factors as "boring class content," or "showing faces of boredom" when they already know the content of the class (p. 110).

If no pedagogical intervention is made, HL learners' further acquisition of language is likely to suffer. Although successful pedagogical interventions in CSL are rarely reported (Luo, Li, & Li, 2019), in other languages encouraging stories have emerged. For instance, in Spanish, Parra (2013) discussed creating similarities between HL and L2 learners of Spanish, both of whom were at high proficiency levels. To begin with, through a written and interview application process, Parra selected a small number of HL and L2 high proficiency learners with similar interests and experience to be enrolled in the class. For this class, she assigned community service where each learner had different work in an organization, bringing back to the classroom a rich discussion of individual stories. She also assigned museum visits, where each learner wrote down the meaning of a work of art

and came back to class for a collective composition of their individual thoughts. In other words, differentiated assignments allowed each student a self-tailored space to study and present individual findings, resulting in a much more interesting and motivating class.

However, in a mixed class of different proficiencies, Meskill and Anthony (2008) found that "the more verbally proficient" HL Russian learners can dominate the conversation, and tune out "when the conversation turns to forms, functions, and pronunciation patterns in which they are already proficient" (p. 1). The authors made a technological intervention to accommodate the HL learners. Instead of attending the language class, HL learners participated in a two hour per week Computer-Mediated Communication (CMC) of "text-based discussion" of historical, ecological, political topics, resulting in increased command of diction and evident improvement in writing. In CSL, as "the third most spoken language at home in the United States," the number of HL Chinese learners will keep growing, making it more important to invest in pedagogical interventions (Luo, Li, & Li, 2019).

2.3 Differentiated Instruction

Tomlinson (2014), the leading educator advocating differentiated instruction, defines differentiated instruction as an educational approach to responding to "learners' differences in readiness, interest, or learning profiles" (p.103). While paying attention to a broad range of differences in learners' backgrounds, differentiated instruction engages learners in the learning process through a supportive learning environment, quality curriculum, and assessment that guides teaching and learning (Tomlinson & Moon, 2013). By differentiating curriculum content, learning process, and products demonstrating the mastery of such content, the learning environment becomes flexible and adaptive to learners' learning needs. The following chart best illustrates the underpinnings of differentiated instruction.

Tomlinson's differentiated instruction principles provide a powerful and practical guideline for instruction. In the L2 classroom, the researchers recognize that learners' characteristics may differ in many aspects; therefore, instructional strategies must be adjusted accordingly (Theisen, 2002; Roiha, 2014). For instance, the higher a learner's level, the relatively more explicit and differentiated instruction is needed to develop lexical precision, syntax complexity, and organized speech (Leaver & Shekhtman, 2002; Ingold, 2002). Thus, providing differentiated instruction is necessary to advance learners' language proficiency.

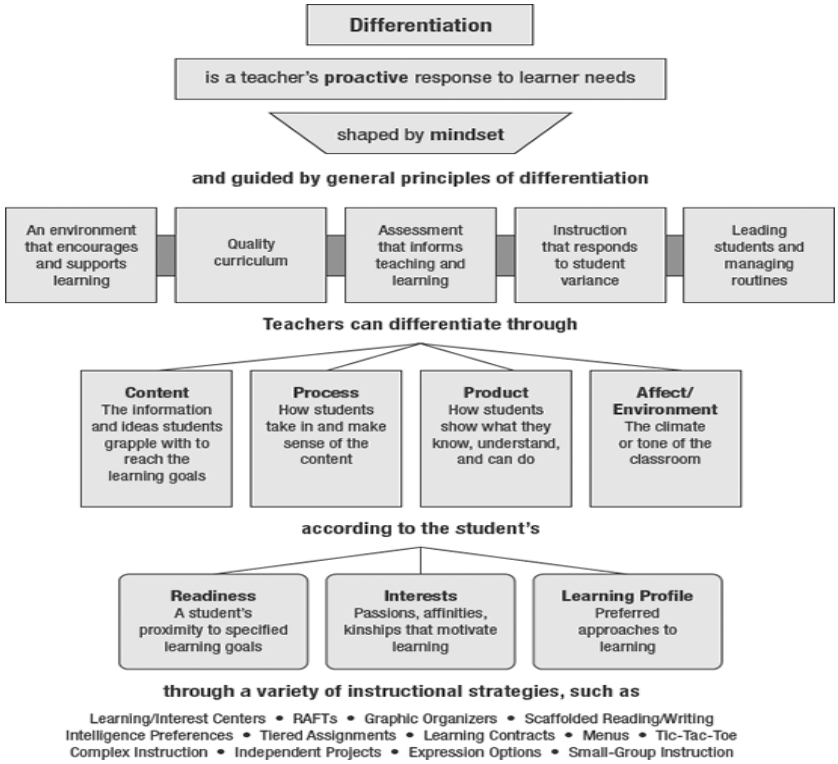

Figure 1 Key elements of effective differentiated instruction (Tomlinson & Moon, 2014)

2.4 Feedback as Formative Assessment

As shown in the chart of differentiated instruction, assessment is at the center. Normally, assessment is divided into two categories: formative and summative. These two types of assessment for learning and instruction serve different purposes in differentiated instruction. As Tomlinson and Moon explained (2014), whereas formative assessments serve to adjust course design in content, procedure, and product, summative assessments measure and evaluate the learning outcomes. "Differentiation places particular emphasis on formative assessment" (Tomlinson & Moon, 2014, p.10).

As an effective strategy for formative assessment, feedback has a tremendous impact on learning. Numerous meta-analysis studies of the effect of feedback in educational research rank feedback highest among hundreds of educational practices (Goodwin & Miller, 2012). Providing specific and timely feedback arms learners with opportunities to identify their strengths and weaknesses, further revise and improve their work, and ultimately advance their proficiency. Particularly, research has found that feedback is most effective when provided immediately. For example, Opitz, Ferdinand, and Mecklinge's 2011 study found that participants who were provided immediate feedback showed a significantly larger gain in performance compared to those who received delayed feedback. All of these empirical studies have made evident the value of timely feedback on effective learning.

2.5 Mobile-Assisted Language Learning (MALL)

Today's advanced technology provides many options for responsive teaching and differentiated instruction (Reese, 2011). Mobile devices, such as smartphones, have become an integral part of learners' lives. The Pew Research Center (2018) reported that 91% of American college learners own a smartphone. College learner smartphone owners almost tripled the total number of smartphone owners in 2011 (35%) when smartphones first became widely available and affordable on the market. With a surge in mobile devices (particularly smartphones), advanced mobile technologies, and wireless network accessibility, mobile-assisted language learning (MALL) is considered an ideal solution to language learning constraints in terms of place and time (Burston, 2015).

Research across disciplines and subjects has found that mobile devices carry the potential to enhance language learning since they can easily connect users with a variety of online multi-level learning resources through a variety of applications. An annotated bibliography reviewing MALL historical background from 1994 to 2012 (Burston, 2015) demonstrates that MALL studies cover a variety of topics, including "technical specifications, mobile device ownership, pedagogical design, learning theory, user attitudes, motivational effects, institutional infrastructure, and teacher training" (p.157). In addition, Burston (2015) studied the result of learning outcomes related to MALL project implementation in the past twenty years through a meta-analysis report, and found that, even though MALL studies focusing on vocabulary did not make a significant difference, those studies investigating reading, listening, and speaking contributed to the development of target language skills in these aspects. The research findings encouraged more language educators to explore good practices and investigate persisting or emerging issues related to MALL. With the advancement of mobile and other emerging technologies, such as augmented or virtual reality, MALL will certainly remain in demand and continue to grow as a field of its own.

2.6 WeChat and Its Applications in CFL instruction

2.6.1 WeChat as a Communication Tool

MALL would have not been possible without the development of hand-held computing and mobile technology devices. However, from pocket dictionaries and other types of personal digital assistants (PDAs) to MP3/MP4 players, tablets, and smartphones, mobile technologies have launched new trends in MALL studies. A remarkable number of language apps have surged in popularity over the years. Among the many widely used smartphone apps, WeChat has become more popular worldwide in the past few years.

WeChat, a free instant message app launched by Chinese company Tencent in 2001, reached nearly 800 million users in July 2017 (TechNew Report, 2017). WeChat is available in multiple platforms, on mobile phones, tablets, or desktop computers. It is a worldwide social networking platform where users can not only post images, text, and share photos and files, but also converse via audio or live video. Additional functions, such as "Moments"(a function similar to a combination of Facebook and Blogger, where users post photos and circulate information) and "Subscription Accounts" (a large group chat of

up to 500 people), enable WeChat users to interact simultaneously with large groups of people. Most importantly, WeChat's mobile payment function via QR code scan or direct link to a user's bank card has made WeChat an inseparable part of modern life for Chinese nationals. It is not an exaggeration to say that WeChat has become a lifestyle in China. As New York Times journalist Li Yuan commented, "I live and work on WeChat" (Tsang, 2019). The following table lists the major developmental stages and features of WeChat and its functions.

Table 1 WeChat's Development Features, Tools, and Functions

Year	Development Features	Tools & Functions
2011	Start of development	
2011	First launch for iPhone	Messages in text and voice to communicate. Video editing to create videos. Searching other WeChat users nearby. Group chat to interact with many users simultaneously. WeChat Moments to visually share information.
2012	Reached 100 million users; WeChat became Wēixìn in Chinese	Added more foreign languages (Thai, Vietnamese, Indonesian, and Portuguese). Voice and video chat to talk live. QR code scan to quickly add people in WeChat or make WeChat payments. Subscriptions or public platform (Gōngzhòng hào). Desktop WeChat to function quickly.
2013	Reached 300 million users; Android and Windows	Voice and video chat with multiple users. Mobile payment (bank card). Game center. Scan function. WeChat pay in Jingdong Store.
2014	WeChat commerce	Didi taxi. Red envelope. WeChat stores.
2015	Reached 500 million users	Huge scale up in advertising.
	Reached 700 million	Optimization of existing features.
2016	users	WeChat Wallet for cash transfer.
2017	Controlling Chinese mobile device market	Plugins (small programs benefit small business owners). Games. News feed.

2.6.2 WeChat as an Instructional Tool in CFL Education

Conventionally online communication and online instruction use separate tools. For instance, educational institutions use Blackboard or Canvas as their main technological platforms. But a tool like FaceTime is probably not used as an instructional tool. WeChat, however, has been used both as a communication and instructional tool. Even though WeChat was not designed for learning foreign languages, many WeChat tools contain

powerful functions and apps to support of language learning. For example, functions like text and voice messages, videos, text translation into the user's interface language, as well as the ability to switch between traditional and simplified Characters, have given WeChat the title of the most favorable mobile app among CFL learners. Liu (2014) reports that 93% of beginner CFL learners already had WeChat accounts.

Chinese language educators have shown an increasing interest in integrating WeChat in the Chinese classroom. Empirical studies related to CFL, though scarce, have found that WeChat is a very effective tool in helping CFL learners learn the Chinese language. For example, Hu (2014) looked into the use of WeChat "Moments" (like a mini-blog to share photos and information publicly with WeChat friends) in Chinese reading and writing instruction. After one-month training in speed reading Téngxùn xīnwén [Tencent News] posted in WeChat Moments, learners' reading speed and motivation in writing greatly increased. Similar results were reported in Wang (2015), whose semi-experimental study found that learners who intensively applied WeChat in their daily learning outperformed in reading, creating sentences, pronunciation, and accuracy.

Studies have also found WeChat tools especially helpful in developing oral proficiency. Yang (2014) designed the Chinese Hànyǔ suìsuì niàn [Chinese Twitter] public platform in WeChat based on current CFL pedagogy as well as other WeChat features. The platform provides intermediate-level oral instructional materials, including voice, video, graphics, and hyperlinks. After field-testing the platform for about 4 months, CFL instructors and learners were asked to take an online survey to share their experience. Eighty-Three percent of users reported that the platform helped to instruct and learn spoken Chinese.

In a mixed-method design study, Luo and Yang (2016) explored using WeChat to instruct lower-level CFL learners. Through five types of WeChat learning activities, including asking/answering questions, mini-writing tasks, mini-oral projects, socializing and information sharing, and non-graded extracurricular input, participants reported five major benefits. They expanded learning time, increased linguistic gains, experienced more cultural learning, developed higher learning motivation, and established a supportive Chinese language learning community. Particularly, mini-oral tasks through WeChat were considered the most useful. Learners commented that these tasks for communicating in Chinese and developing their oral skills were fun to practice.

As a powerful and ubiquitous communication tool in Chinese speaking communities, WeChat can be integrated in Chinese language education in both domestic and study abroad contexts to connect language learners at various levels of proficiency with native speakers of Chinese (Jin, 2018). In addition, since other popular tools, such as SnapChat, Google Chat, and Line are not accessible in mainland China, using WeChat in study abroad in China is on the rise.

Nowadays, many study-abroad programs in China have chosen WeChat as a primary learning and communication tool because almost all Chinese are using it in daily life. Jin's (2018) case study reported what WeChat provided for two CFL learners studying

in Shanghai in an intensive summer program. Based on affordance theory, or "the opportunities for action offered by specific object or environment," Jin found that although the two participants were different in meaningful communication, linguistic resources, multiliteracies, and space for new identity creation, both had reported that WeChat afforded them a fun and casual space to have instant and direct communication with native speakers of Chinese. These affordances helped the participants develop further communicative competencies needed in real-life conversations, and improved their confidence as users of Mandarin Chinese. Obviously, for study abroad in China, WeChat can become a very convenient tool to learn authentic Chinese and to build and maintain connections with native speakers of Chinese.

2.7 Research Gap and Questions

The above comprehensive literature review demonstrates pedagogical needs for differentiated instruction, especially for mixed-learner classes, and the positive results of employing technological tools for instructional needs. The literature also reveals a research gap in the existing studies: No research has been performed on whether WeChat can be used to help provide differentiated instruction in a mixed-learner class within a study abroad context, despite the fact that WeChat was found to be a powerful tool for instructing and learning the Chinese language, particularly helpful in oral proficiency development and authentic social interactions. Even though Luo, Li, & Li's national survey of Chinese HL instruction (2019) briefly mentioned that instructors used WeChat successfully, evidence or elaboration of this success was not included (p. 113).

With this research gap in mind, the researchers intend to study the rationale and the feasibility of the instructional use of WeChat as part of a study abroad program to help mixed-learner content course instructors carry out differentiated instruction. In particular, the research investigates the following questions:

1. Why was WeChat chosen as a tool to facilitate differentiated instruction in the study abroad program in China?
2. How was WeChat actually used for such instruction?
3. What did learners think of the instructional use of WeChat?

3. Research Methodology, Context, Participants, Data Collection and Analysis

3.1 Research Methodology

This research is designed as a pilot case study. According to Yin (2003), a case study is a research strategy allowing investigators to retain the holistic and meaningful characteristics of real-life events and to understand why a decision or set of decisions were taken, how they were implemented, and with what results. Different from experimental research, which normally seeks information from large and representative samples of individuals, a case study typically observes the characteristics of an individual or a small group (Nunan, 1992). In applied linguistics, the case study is "particularly suited to the types of action-oriented research projects" (Nunan, 1992, p. 89). Due to the fact that WeChat as a tool for differentiated instruction is a new attempt in the CFL and L2 fields,

no case study or large quantitative data is yet available. Granted, this pilot study is based on a small sample; however, the researchers believe that the study can be useful for L2 instructors to look further into the use of technology in differentiated instruction. As Merriam (1998) mentions, purposeful sampling is the most common form of sampling strategy in qualitative research, allowing the investigator to discover, understand, and gain insight into the issue under examination. Specifically, this research examines in-depth the WeChat application in a single mixed-learner study abroad program: why and how WeChat was used as an instructional tool to enhance differentiated instruction and the result of the WeChat application.

3.2 Research Context

This research was conducted in a study abroad program in China held from June 15 to August 15, 2015, during which three sheltered content courses were taught: Speech, Cross-Cultural Communication, and Introduction to Geography. Content courses meant that certain content must be finished for students to get the credits of a same course taught in the students' mother tongue. For the Speech course, learners must do descriptive, narrative, informative, and argumentative speeches, each 7-10 minutes in length. The Cross-Cultural Communication course required learners to keep daily diaries of their experience in China, reflect on the experience, and compare it with that in their home country by theme, such as addressing people. Classes were held 3 hours a day, Monday to Friday, with roughly 2 hours of daily homework. Speech and Cross-Cultural Communication courses were held together as one block session each day instead of daily class time divided evenly between the two courses, as sometimes the presentations of one speech and discussion would take two hours. There was also a 30 minute required tutoring session Monday through Thursday. Each learner stayed with a Chinese host family and spent 1-2 hours commuting via public transportation to and from the classroom.

The program included one geography instructor from a local high school in China, the program director/CFL instructor, who was a Chinese native speaker, a professor from the United States, and seven learners who were enrolled in each of the three content courses. Since the geography instructor did not speak English, the CFL instructor collaborated with her to provide a daily vocabulary list.

WeChat was not used as an instructional tool at the beginning of the program. It was used as a communication tool. After arrival at the program site, all learners having smart phones were asked to activate a WeChat account. The program created a WeChat group including all learners, the program coordinator from the host university, and the program director. Each class also created its own WeChat group, but the purpose of WeChat use was mainly to communicate program activities, homestay announcements, tutoring, and photo sharing. From the second week on, the instructors started integrating WeChat inside and outside of class in order to provide differentiated instruction to accommodate different learner needs, and to increase opportunities for oral and aural practice.

3.3 Research Participants

Participants in the research include the CFL instructor, the geography instructor, and five learners. Even though seven learners were in the program, only five were selected as learner participants. The reason that the instructor did not select the two learners is as follows. One unselected learner, due to health reasons, did not show up in class to a large extent; nor did the learner do any WeChat assignments. This learner participated in the geography class, but chose not to do the recording homework. For the Speech course, the learner only showed up to do all the speeches, and in those class sessions there was no WeChat recording. For the Cross-Cultural Communication course, the learner chose not to do any recordings. The CFL instructor spent many hours outside of class to provide this learner with differentiated instruction. Another unselected learner could not afford to have a smart phone on which the WeChat app would be installed. This learner used a computer to do all recording tasks, (tasks to be explained later), and passed on the recordings to the instructors. This learner would give the instructors an external drive that contained the recording and the instructors used the break between classes or lunch time to give the learner feedback in person. Therefore, this learner obtained the same amount of instructor feedback as the learners who used WeChat. Due to time pressure of listening to the recording and giving feedback, as well as returning the external drive to the learner, however, the instructor did not transfer the learner's recordings to the instructor's computers or make a record of feedback to the learner for later analysis.

The five selected learners differed in cultural and linguistic backgrounds as well as proficiency as determined by the ACTFL Oral Proficiency Interview via Computer (OPIc) and years of language learning and performance. Specifically, there were two Mandarin HL learners of advanced proficiency, each from a different university, and three intermediate learners from the same degree program at the CFL instructor's university. As the literature review points out, ideally the intermediate and advanced learners should be in different classes. Due to financial constraints, however, there was only one class. The learner participants' information is detailed below. Four of the five learners took the pre-program OPIc. The one who did not was possibly at the intermediate low proficiency [IL] level, based on the learner's daily performance over a span of two years. Due to the small number of participants in this case study, gender information is excluded to protect the privacy of the participants. Please see Table 2.

Table 2 Learner Participants

Participants	Pre-Program ACTFL OPIc Level	Years of Chinese learning
S1	Not taken OPIc, [IL]	2
S2	Intermediate-Mid (IM)	2
S3	Intermediate-Mid (IM)	2
S4	Advanced-Low (AL)	HL learner, left China at age 6
S5	Advanced-High (AH)	HL learner, left China at age 10

3.4 Data Collection and Analysis

Data were collected from multiple sources: (a) learner online surveys; (b) instructor email inquiries; (c) CFL instructor reflections; (d) instructors' lesson plans and notes; (e) learners' recorded tasks, and; (f) feedback recordings. Through these six sources, the research aims to gather various information to answer the research questions.

The online survey was sent out after the end of the program to collect learners' opinions of the instructional use of WeChat in the sheltered courses. The survey included 12 questions with 5 Likert scales: Strongly Agree, Mostly Agree, Somewhat Agree, Disagree, Strongly Disagree. In addition, there was one open-ended question to allow learners to write their views on the use of WeChat. Specific questions will be listed in the research finding section.

The instructors' views about the use of WeChat was gathered through instructors' reflections and email inquiry. The email inquiry question for the two instructors was: "WeChat was used in your summer classes. What did you think of the use of WeChat in your class for the content instruction?" Email responses, instructors' reflections, as well as class plans and notes are analyzed into thematic threads related to research questions.

A total of 508 recordings (447 from learners and 61 from the language instructor) were transcribed and analyzed separately as unit of analysis. For each recording, information about the length, speed, and number of syllables was gathered. The total length of the speech in a recording was counted in minutes, and the speed was counted by the number of syllables per minute. Other than the length and speed of recordings, the quality of representative recordings was analyzed for both the learners' speech and the instructor's feedback.

4. Research Findings

4.1 The Rationale for Choosing WeChat as a Tool for Differentiated Instruction in Study Abroad in China

An analysis of instructors' lesson plans and notes reveals that during the first week of the program, while learners were getting to know each other, the CFL instructor painfully witnessed the detrimental effect of the proficiency differences on learner engagement. Sometimes an intermediate learner would have their head down while an advanced learner was speaking. When the instructor solicited responses, none was given from intermediate learners. Other times the advanced learners seemed to have tuned out by looking out of the window when an intermediate learner was speaking.

These observations echoed the lack of motivation of learners of different proficiency levels and cultural backgrounds in the literature review. According to the review, motivation is a key in getting learners involved in communicative activities. But learner differences can result in less engagement; e.g., when learners perceive class elements more challenging than what they anticipate, or when learners already do not have

pronunciation issues as an instructor demonstrates to other learners how to pronounce certain words. Furthermore, meaningful communication is content, not form, driven. Form refers to such linguistic aspects as pronunciation and grammar. Yet many L2 intermediate learners do need feedback to help them improve in formal aspects, whereas higher proficiency learners tend to need improvement in lexical precision.

As Parra (2013) did in her class, the CFL instructor tried differentiated tasks. One was to divide learners into groups according to learner proficiency levels to practice and give their speeches in different rooms, as each speech assignment was different for the intermediate and advanced group. The instructor took turns to join the groups, or the instructor and one group of learners met outside of the regular class time. In other words, to a certain extent, the two learner groups were taught separately. When all learners were in the same classroom, not all of them took turns to speak for some of the tasks. But one intermediate and one advanced learner spoke to the whole class. Neither way, however, provided one-on-one oral or aural feedback for all learners, crucial for differentiated instruction. Since class was content driven, would it be possible to provide needed differentiated feedback outside of class? If so, how? Can technological tools such as the computer help? The instructor was also aware that for learners to progress from their own level, maximizing oral and aural opportunities beyond the conversational level was needed.

Adult L2 acquisition is a long and complex process. All learners have unique differences that are important for instructor consideration. When implementing technology tools in the classroom, it is crucial to ensure that the technology does not surpass pedagogy. In order to help learners study and reach their full potential through technology-mediated Chinese language learning, sound pedagogical principles and learning theories must be considered meticulously. In considering what technological tool to use, the CFL instructor designed WeChat learning activities based on pedagogical principles derived from L2 acquisition theories (including L2 and HL characteristics), ACTFL standards (applying the interpersonal mode of communication), differentiated instruction (focusing on providing specific and timely feedback), and mobile-assisted language learning theory.

Practical problems also formed part of the instructor's concern. Had the courses been taught on the instructor's home campus in the United States, the instructor could have used her office and online tools like Canvas or Blackboard for one-on-one interaction with learners. The class in China, however, was held in a room where the internet was not available, unless one had a smart phone with internet access. Outside of the classroom, there was one office used by both program provider staff and the instructors, not a space for one-on-one instruction. Yet, at the home-stay or the residence of the instructors, the internet normally was available, although at a comparatively slow speed that did not allow the use of Blackboard, Canvas or large email attachments such as an audio file.

Given the above considerations, the instructor thought of expanding WeChat use from communication to facilitating one-on-one feedback inside and outside of the classroom, as well as increasing oral and aural opportunities for the learners. As mentioned in the literature review, WeChat is ubiquitous in China, allowing instant communication through audio, video, and text, thus making it a promising tool for instructional purposes.

4.2 How WeChat Was Actually Used for Differentiated Instruction

Based on the (CFL) instructors' lesson plans and notes, the use of WeChat is categorized in mainly four ways: in-class individual recording, in-class pair recording, homework recording, and instructors' feedback. The first three ways provide learners with opportunities for oral practice, as well as material for feedback, the core of assessment in differentiated instruction according to the literature review. For all in-class WeChat recordings, learners could choose to remain in the classroom or step outside. Whole class gatherings would resume when the instructor received all recordings in her WeChat. Feedback, although delayed, formed interpersonal communication between the instructor and the learners.

4.2.1 In-Class Individual WeChat Recording

In-class spontaneous individual recording was used in Speech and Cross-Cultural Communication courses, similar to the format of the computer version of ACTFL's oral proficiency test, where a question is followed by a recorded answer sent to the instructor's WeChat. The recordings were intended to allow all learners to speak in a similar time frame at their own proficiency level. Warm-up was one instance of in-class recording. For example, on a Monday, the instructor asked each student to record for a minute in WeChat what each did on the weekend, and then had one intermediate and advanced learner share this in class. Sometimes instructors felt that class time was running out, but there was time for all learners to make a recording of their response to a topic, which allowed the instructor to give feedback at a later time. Because the instructor did not realize that she should immediately save all WeChat recordings, the recording data for these two courses was incomplete. An analysis of class plans and notes, however, reveals that 44% of the two course class sessions used WeChat recordings.

Let us examine one set of spontaneous WeChat recordings. As a bridge for a speech introducing a Chinese province, each learner was asked to record what the climate was like in their hometown for a minimum of 1 minute. Immediately after the recording, one L2 learner and one HL learner talked about the climate in their different states in class, followed by a turn discussing the climate of a Chinese province as part of the preparation for learners' own speeches. Please see Table 3 below.

Table 3 Recording Data About Hometown Climate

	Participants	Pre-Program OPIc	Number of Minutes	Number of syllables	Syllables/minute
	S1	[IL]	1.06	89	84
	S2	IM	1.52	155	98
	S3	IM	0.48	74	93* estimate
	S4	AL	1.00	131	131
	S5	AH	2.20	355	161
Total			7.13	803	

According to Table 3, in terms of speech length, 40% of learners spoke for a minute or so, another 40% took the initiative to speak beyond the minimum, whereas 20% of

learners did not meet the minimum time requirement. In terms of speed, the two HL advanced learners not surprisingly spoke a lot faster. One was almost twice as fast as one L2 learner.

In terms of speech quality, the two HL learners provided rich details very smoothly with no syntactic issues. One HL learner (S5) used idioms and precise descriptions that the L2 learners had not come across, such as "sì jì fènmíng" [distinctive seasons], and "wēi fēng" [light breeze], with three errors the entire recording. The learner fell short searching for the word "sunburn," used an erroneous word for "pouring rain," and mispronounced a word. The other HL (S4) learner spoke more colloquially, had perfect pronunciation, and used some words that the L2 learners had not learned, such as "wēnhé" and "qūbié" [mild and differences], despite the fact that the latter word was not recalled immediately, but only after a repetition of "yǒu diǎr, yǒu diǎr" [somewhat, somewhat]. There were two errors in this learner's recording, a wrong word for "dédào" [to obtain] and an unidiomatic expression of a city's name. In addition, this learner said a word in English, apparently not knowing how to say the word in the heritage language.

The L2 learner (S2) who spoke the fastest out of the intermediate cohort used such descriptive words as "qìhòu, shīrùn, gànzào, jiàngshuǐ liàng, bǐjiào, dàfēng" [climate, moist, dry, rainfall, comparatively, and strong wind]. The only word that the learner could not use successfully was "wēndù" [temperature], omitting the first syllable. The learner's pronunciation was nearly perfect, only 2 out of the 155 syllables were mispronounced, and one mispronunciation was self-corrected. In addition, syntax was mostly correct, except for one word order error of "yě" [also], one unidiomatic use of "tā" [it], and one misplacement of the subject of the sentence. Another L2 learner (S3) appeared to be familiar with the names of the seasons and directions, as well as the word "guāfēng" [wind blowing]. In addition, the learner used an idiom to portray the seasons. There was one syntactic error and 3 mispronunciations. The third L2 learner (S1) appeared to be also familiar with the names of the four seasons and directions, as well as descriptive words of "lěng" and "rè" [cold and hot], yet struggled with clarity, pronunciation, and grammar. For instance, there were 13 mispronounced tones and 2 mispronounced syllables.

4.2.2 In-class Pair Recording

The second instructional use of WeChat was pair recording, like a recorded small group discussion by learners of similar proficiency or mixed proficiency—especially later in the program when learners were familiar with each other and had built close relationships. Small group WeChat recording was also intended for the instructor to give individual feedback after class.

According to lesson plans, the 44% of the WeChat use in the Speech and Cross-Cultural Communication classes includes 11% for pair recordings. For instance, in a Cross-Cultural Communication class, for the theme of family members, after listening and reading about a mother figure in China, learners in pairs used WeChat to share and record a mini story of a family member. Two L2 learners (one was without WeChat) were in one pair, and the rest of the pairs consisted of one L2 and one HL learner. The data of one

mixed pair recording shows that neither learner told a story, but described the characteristics of a family member. The L2 learner (S3) spoke for fifty-nine seconds and the HL learner spoke for one minute, almost identical speech length yet at a different pace; the L2 learner spoke 93 syllables and the HL learner (S4) spoke 136 syllables. Both learners seemed to be struggling for the right words and expressions as they spoke. The L2 learner shared how his younger brother liked to express himself orally. Despite some syntactic errors, the main message should not have been missed as the learner gave several examples. The HL learner shared how his host father appeared to be stern when he actually liked to joke. Even though the word "yánsù"[stern] very likely would be at a loss to the L2 learner, other words like "kāi wánxiào" [make jokes], or "xiào" [smile, laugh] in sentences like "appear…; in actually…" should have conveyed the message. Therefore, both learners should have had a basic communicative exchange.

4.2.3 Homework Recording

The third instructional use of WeChat was homework recording, especially in the geography course. It was unrealistic to train a geography instructor as a L2 language instructor in a short period of time. To create a window for learners to have oral interactions in an otherwise traditional lecture course, the geography instructor every Monday, Tuesday, and Wednesday for 4 weeks of the course, assigned written questions to be answered orally in WeChat. L2 and HL learners' questions were different in terms of sophistication and required recording length. The minimum recording time for L2 learners was two minutes; for the HL learners, it was three minutes. For each type of learner, sometimes there was one question, sometimes two questions. Every Friday a weekly test was administrated, and therefore no recording was assigned on Thursdays.

Altogether the geography instructor assigned 35 questions. Most questions pertained to the class content of the day, and thus the recording functioned as an individual review of part of the content. In WeChat, each recording is limited to one minute. Learners altogether made 178 recordings, the higher the proficiency, the higher the number of recordings. For instance, the most number of recordings one L2 (S1) learner made was 34, one HL learner (S4) made 53 recordings, and the other (S5) made 77 recordings. Because each learner made WeChat recordings, which were listened to and given feedback outside of class, the geography instructor only needed to call on two learners to speak about the geography questions in class, give feedback, and move on to new content. The geography instructor commented in response to an email inquiry that if every learner took turns to answer the questions in class, and she took time to provide feedback, it could take approximately 20 minutes of class time. In other words, the recordings helped the geography instructor to stay on track with the content. The one or two learners' in-class mini reports of the WeChat homework also gave the instructor confidence to interject questions in class, thus creating moments of spontaneous oral communication with the learners. Furthermore, the instructor was an experienced educator, who sometimes called on names of learners to answer her questions to prevent one or two learners from dominating the classroom.

4.2.4 WeChat Recording as a Tool for Feedback

The fourth and perhaps most important instructional use of WeChat was recorded one-on-one instructor feedback. For the geography course, the CFL instructor and the geography instructor collaborated to give feedback. The geography instructor gave the CFL instructor standard answers in writing. For answers that did not meet the standard, both instructors listened to the WeChat recordings together the next day, where the geography instructor gave the CFL instructor geographical content comment. The CFL instructor would combine content and language comments into feedback sent as one message to the learner via WeChat. The feedback included a grade for the recording.

Actual feedback analysis demonstrates that on average 53% of the feedback was given the same day, meaning after that day's class but prior to the next day's class. Since other Internet tools or mobile Apps were not available or reliable, without the use of WeChat, such prompt feedback would have been impossible. But in an intensive summer program, such prompt feedback was necessary. Thirty-five percent of the feedback was given the next day. To a large extent, this percentage accounts for the feedback given to learners after the geography instructor listened to the recording the next day. The rest of the very limited delayed feedback was due to learners' late submissions of WeChat recordings.

Table 4 Percentage of feedback time for all three courses

	Learners	Same-Day	Next-Day	2 Days Later	4 Days Later	5 Days later
	S1(L2)	67	17	0	0	16
	S2 (L2)	60	40	0	0	0
	S3 (L2)	33	67	0	0	0
	S4 (HL)	50	33	0	17	0
	S5 (HL)	56	11	33	0	0
Average		53%	35%	7%	3%	3%

In an attempt to see if and to what extent feedback was individualized, the researchers analyzed latitudinally one-day feedback for each learner, as well as longitudinally characteristics of recorded feedback for each learner during the entire program.

On July 2, 2015, the geography instructor asked each learner to choose and record the use of one natural resource. Whereas the L2 learners each did record about one natural resource, the HL advanced learners recorded about several resources and their geographical distribution. As illustrated in Table 5 below, the instructor's feedback varied by the density of content and speed, somewhat faster for the HL advanced learners than for the L2 learners.

Table 5 July 2 Feedback

Participants	Pre-Program OPIc	Recording Content	Feedback Length	Syllables per second/total syllables
S1	L2 [IL]	solar energy	0.29min	3.3/97
S2	L2 IM	land	0.31min	3.6/112
S3	L2 IM	forest	0.29min	3.4/98
S4	HL, AL	resources	0.14 min	3.9 /55
S5	Hl, AH	resources	0. 42min	3.8/160

All feedback was communicative in nature, focusing on helping each learner express him or herself clearly by examples and explanations, rather than by grammatical or other formal aspects per se. Clarity seems to rest on knowing the correct lexicon. For S5, the instructor explained two lexical differences through examples. One was between two words that begin with the same syllable "fēnpèi" [task distribution] and "fēnbù" [resource distribution], and the other pertained to two tones of the same word. For S4, the instructor complimented the learner on clarity, but suggested speed increase and explained the idiomatic yet formal expression of "xībù" [the western part] of a country. For one L2 learner (S3), the instructor helped with finding the right words to say "the forest is a very important resource and it can reduce pollution." For another L2 learner (S2), the instructor also started with a compliment on clarity, explained through examples the difference between two words that have the same beginning syllable "zhōngxīn" [center] and "zhōng bù" [central part]. as well as the difference between two words that seem to mean the same, "wèn" [asking] a question and "qǐng" [asking] someone to do something, a common error for L2 learners of Chinese. For the third L2 learner (S1), the instructor started with a compliment of specificity, and explained the difference between "nuǎn" [warm] and "wēn nuǎn" [warmth], and how to say "néngyuán" [sources of energy].

Longitudinally, the researchers examined all the recorded feedback for each learner. All feedback began with various forms of compliments, from nice detail, clear message, easy to understand, thoroughness, to fluency. Most of the feedback focused on helping learners to express the information correctly, clearly, and thoroughly. The feedback after compliment can be divided into 8 categories: lexicon, content, pronunciation, detail, idiomatic expression, grammar, clarity, and speed.

For each learner, the researchers counted the number of times a feedback comment belongs to a category. For example, for learner S1, there are 10 lexical feedback comments, and so on. Next, the number in each category from all learners was added together to arrive at the total number for that category; e.g., 136 for all lexical feedback comments. Then, the total of all categories was added to arrive at the total number for all categories, in order to obtain the percentage of each feedback category in the study. None of the learners had the same number of feedback comments. Please see Table 6 below.

Table 6 Percentage of Types of Constructive Feedback

	feedback types / participants	Lexicon	Content	Pronunciation	Detail	Idiomatic Expression	Grammar	Clarity	Speed
	S1 (L2, [I])	10	0	40	40	0	10	0	0
	S2 (L2, IM)	5	50	10	25	0	10	0	0
	S3 (L2, IM)	37	10	27	0	0	2	21	2
	S4 (HL, AL)	37	17	10	0	27	0	0	10
	S5 (HL, AH)	47	17	3	0	17	17	0	0
Total Types		136	94	90	65	44	39	21	12
Total %		27%	19%	18%	13%	9%	8%	4%	2%

4.3 Learners' Thoughts on the Instructional Use of WeChat

After the program ended, the researchers did an online survey of the five learner participants. The survey consisted of 12 questions, and provided an opportunity for personal comments. The questions were designed based on the literature review to include the effect of WeChat instructional use on possible anxiety and boredom, individual speaking opportunities, and feedback speed and effect. Although WeChat has been a popular communication tool for Chinese people in daily life, it was not designed for the purposes of learning foreign languages. The researchers have discovered a few limitations of WeChat when used as a language learning tool. To name a few, WeChat's "Hold and Talk" function can create only a one-minute recording per time; one can accidentally let go of the audio message before finishing one recording; sometimes due to web connection problems in China, WeChat messages are not actually sent to the receiving party. Therefore, some survey questions were designed to see if learners found that these limitations got in the way of the instructional use. The 12 questions are:

1. In a class where your classmates were of different Chinese proficiency levels and backgrounds, do you agree that the use of WeChat recording helped reduce intimidation or anxiety because you were only talking to yourself, not to the whole class?
2. In such a class, do you agree that the use of WeChat recording helped reduce boredom in class at all, because you are not each getting feedback in class?
3. Do you agree that the use of WeChat provided more opportunities for you to speak at your own language level?
4. Do you agree that by doing spontaneous recordings in class, WeChat helped you to improve your ability to speak spontaneously?
5. Do you agree that in the geography class without the use of WeChat the opportunities for you to speak in Chinese about geography content would have been significantly less?
6. Do you agree that by using WeChat you got faster feedback?
7. Do you agree that by using WeChat you received more individualized feedback?
8. Do you agree that by using WeChat to hear your teacher's feedback you became more aware of your strengths and weaknesses in your speech?

9. Do you agree that WeChat's limitation of one-minute recording per time was not really a problem since one can make multiple recordings one after another?
10. Do you agree that one may accidently let go of the audio message before one finishes recording is a problem to be aware of, but is not in the way of doing recordings and receiving feedback?
11. Do you agree that sometimes, mainly due to web connection problems, WeChat messages are not actually sent to the receiving party is a problem to be aware of, but is not in the way of doing recordings and receiving feedback?
12. Do you agree that in China, even without the availability of Google and a much slower Internet speed, the use of WeChat is the best technological tool for maximizing learner-instructor contact?

Table 7 presents the learners' survey responses. For each question, the response figures include the percentage for each of the 5 categories, the number of responses, and the types of learners who responded (L2 or HL).

Table 7 Learner Response to Survey Questions: Percentages, Numbers And Types of Students

Q #	Strongly agree	Mostly agree	Somewhat agree	Disagree	Strongly disagree
1	3/5 2 HL, 1 L2	1/5 1 L2	1 /5 1 L2	0/5	0/5
2	0/5	3/5 2HL, 1 L2	1/5 1L2	1/5 1 L2	0/5
3	4/5 1 HL, 3 L2	1/5 1 HL	0/5	0/5	0/5
4	1/5 1 HL	1/5 1 L2	3/5 1 Hl, 2 L2	0/5	0/5
5	1/5 1 HL	3/5 1 Hl, 2 L2	0/5	1/5 1 L2	0/5
6	2/5 2 L2	0/5	3/5 2 HL, 1 L2	0/5	0/5
7	2/5 1 Hl, 1 L2	2/5 1 Hl, 1 L2	0/5	1/5 1 L2	0/5
8	2/5 1 HL, 1 L2	2/5 1 HL, 1 L2	1/5 1 L2	0/5	0/5
9	1/5 1 HL	3/5 1 HL, 2 L2	1/5 1 L2	0/5	0/5
10	2/5 1 L2, 1 HL	3/5 2 L2, 1 HL	0/5	0/5	0/5
11	1/5 1 L2	3/5 2 L2, 1 HL	1/5 1 HL	0/5	0/5
12	2/5 1 L2, 1 HL	2/5 1 L2, 1 HL	1/5 1 L2	0/5	0/5

(Note: Q means questions)

The table shows that for Q #1, all five learners agreed that when they were in class with classmates of different proficiency levels and cultural backgrounds, WeChat recording tasks helped reduce anxiety, indicating that anxiety existed for all learners, just as the literature review above found. Even though Luo's research indicates that Mandarin HL learners are the least anxious about oral communication in class, the two HL learners both chose "Strongly Agree." One HL learner (S4) states that "WeChat felt a little awkward, but compared to speaking in front of the entire class, it's probably a bit easier." The classroom environment was identified as the main source contributing to anxiety. Therefore, fostering a more comfortable environment should help reduce anxiety. For Q #2, 4 learners agreed that a same-topic recording also helped reduce boredom in class instead of each learner taking turns to address the topic and get feedback in class. Three of the 4 learners marked "Mostly Agree," among whom 2 were HL learners. One L2 learner marked "Somewhat Agree" and one L2 learner marked "Disagree." The data seems to suggest that boredom appears to be less of an issue than anxiety, and that boredom applies more to higher proficiency learners than lower proficiency ones, echoing the literature review on HL learners. In the comment area one L2 learner stated that they preferred scenario discussion to WeChat recording. One HL learner (S5) commented: "One of the most fun times I had in class was [people of similar proficiency levels] acting out certain situations and playing roles, not as intimidating and can be fun." These comments serve as a reminder that learners were aware of the challenge of a mixed class. But there are multiple ways of reducing anxiety and boredom. In-person group or class interactions perhaps should continue to be the norm.

For Q #3, all 5 learners chose a degree of "Agree": 4 strongly agree, and 1 mostly agree. In comparison with responses to other questions, Q #3 obtained the most favorable responses, perhaps because the question is an obvious one. For Q #4, 1 learner strongly agreed that spontaneous WeChat recording helped improve spontaneous speech, another 1 mostly agreed, and 3 somewhat agreed. It seems that the learners were not sure whether the in-class recordings helped them with speaking spontaneously. For Q #5, 4 learners felt strongly that opportunities for them to speak in Chinese about geographical content would have been significantly less without the use of WeChat, but 1 learner disagreed. For Q #6, all 5 learners agreed that WeChat helped them receive more timely feedback (2 strongly agreed and 3 somewhat agreed). As one learner (S2) commented, "WeChat is a good tool and allows the teacher to provide almost immediate feedback." For Q #7, 4 learners felt strongly that WeChat use enabled them to receive more individualized feedback, although 1 learner disagreed. For Q #8, all 5 learners agreed that listening to instructor's feedback via WeChat helped them become more aware of their oral strengths and weaknesses. Overall, for Q #9, all 5 learners agreed that WeChat's single recording time limit of one minute was not a problem as there is no limit on the number of recordings. For Q #10, all 5 learners agreed that even if one accidentally let go of a recording before one finished speaking, one can immediately make subsequent recordings to finish the message. For Q #11, all 5 learners generally agreed that internet connection problems did not stand in the way of making recordings or receiving instructors' feedback, as one can just resend the message. Similarly, for Q #12, all 5 learners agreed that in the context of internet use and availability, WeChat was the best tool for maximizing learner-instructor contact.

5. Discussion

The researchers' preliminary analysis points to the fact that in the context of the limitations of other internet tools and the lack of private office space, as well as the fast pace of the intensive summer program, the use of WeChat to facilitate differentiated instruction is warranted. The rationale for the instructional use of WeChat seems to rest on L2 pedagogy as elaborated in the literature review; namely, (a) the learner WeChat recording and the instructor feedback recording allowed the class to stay on communicative activities, while providing a channel for one-on-one instruction after class, and; (b) the instructor took into consideration L2 and HL learner characteristics in the design of the use of WeChat. In the next few sections, the researchers will discuss specifically each of the four instructional uses of WeChat as well as learner responses.

5.1 Individual Spontaneous WeChat Recordings in Class

The in-class spontaneous WeChat individual recording assignments, used moderately, could function as a diversification of activities, or as an extension of class when the instructor obtained frequent opportunities to listen to samples of each learner's spontaneous speech, and each learner had access to outside of class individual feedback despite the short delay. The sample recording reveals that WeChat indeed created a safe space for each learner to express him or herself orally, and put the control of the exact recording time and specific content in the learners' own hands. Although learners all had opportunities to speak in class on different topics or activities, it was not pedagogically effective for the instructor to use class time to give each learner all the feedback in the mixed-learner environment. Class activities focused on keeping the communication going, and on the class as a whole. Giving detailed feedback to each learner in class could have created some embarrassment or irritation when the feedback offered nothing new to some learners, or beyond the comprehension of other learners. But the WeChat recording samples allowed the instructor to give precise and detailed feedback, and the learner to listen to the feedback in a private space.

5.2 Pair Recordings

As to pair recordings, despite the fact that they allowed the same one-on-one feedback later on, pair discussion as a recording, if not designed carefully, might be somewhat unnatural or awkward. In the sample analysis of telling a mini story of a family member, it seems that the two learners in the pair just took turns to speak to WeChat, except that this time the speaker was not alone. This pair-recording was best assigned as an individual recording. If pair or small group recording is used, the instructor should design it as a two-step activity. First, ask the group members to discuss an issue to which all members can contribute. For example, three learners were from the same U.S. state. The instructor can put these learners in a group to discuss the climate first, followed by one speaker doing the recording for the group. If there is no class time, the feedback can be copied and sent to all learners of the group later on. Even though such feedback is no longer one-on-one, learners have other opportunities to obtain individual feedback.

5.3 Homework Recordings

In contrast to in-class recordings, homework recordings were not spontaneous. Learners had questions in hand and were under no pressure to compose and record immediately. They could have first written down answers, and then read them aloud. But the majority of the homework recordings had pauses; some pauses were very long, implying that the learners were searching for what to say as they made the recordings. For some L2 learners, the speed of recordings was consistently slow, and did not seem to be read from a script. Therefore, despite its unspontaneous nature, learners mostly seemed to be composing part of the message as they spoke. In addition, since most of the homework recordings were from the geography course, the recording assignment was not something the learners could immediately fulfill. They would have to review the content of the class that day before making the recording. In other words, it seems more appropriate for the geographical class to have prepared recordings.

5.4 Instructor Feedback

As the literature review summarizes, specific and timely feedback is an important step in differentiated instruction. The use of WeChat recordings enabled instructors to give immediate feedback; 88% feedback was given immediately to be exact. Such timely feedback was also necessary for an intensive summer program. At the time in China, without the use of WeChat instructors could not have been able to give same-day or next day feedback to the recordings. The feedback also constituted additional authentic listening material, a way of maximizing exposure to the target language.

Other than the individualized characteristics of the feedback, some patterns emerge. First, every learner got lexical feedback, which constituted the largest average percentage (27%). Due to specialized content topics, the more detailed recording one made, the more specialized lexicon was called for. This means that lexical feedback constituted part of the process of linguistic growth for the learner. Just as the literature review points out that the higher the proficiency, the more precise the lexicon, the highest proficiency learner got the most lexical feedback, whereas two out of the three L2 learners needed development of details and got minimal lexical feedback.

The next overall highest percentage of feedback was on delivering the correct content information, and the third category was pronunciation, which had a considerable effect on clarity. Again, the higher the proficiency the less error in pronunciation. In fact, 86% of the pronunciation feedback was given to L2 learners. The rest of the categories are not sufficiently significant for comment.

5.5 Learners' Thoughts on WeChat Use

The survey results indicate that on the whole learners viewed the instructional use of WeChat favorably. Responses for nine out of the twelve questions stay with the range of agreement, very often strong agreement. HL learners seem to view the instructional use of WeChat more positively than L2 learners. No disagreement came from HL learners, and most of the time HL learners marked "strongly agree" or "mostly agree," rather than

"somewhat agree." To a large extent, learners confirmed that WeChat use, even with its limitation of each recording time, and the possibility of a slip of the hand to send unfinished sentences, provided them with more opportunities to speak at their own language level, helped reduced anxiety and boredom if any existed, enabled them to receive more timely and differentiated feedback, made them more aware of their strengths and weaknesses, improved spontaneous speech, or offered an opportunity for them to become familiar with geographical content. One HL learner (S5) stated that the geography recordings were less spontaneous, but it nonetheless helped with familiarizing with terms. The same learner stated further: "Overall I think WeChat was a great tool for students and teachers to connect in class and out. It is very reliable and has multiple features. I think WeChat is a great tool and should be utilized more." A L2 learner (S2) commented: "WeChat is a good tool and allows the teacher to provide almost immediate feedback." Yet the learner was worried that "the one-minute limitation…causes a student to stop, which may affect their perceived fluency." In actuality, however, each recording fluency was reviewed within the time limit, no matter if the message was complete or not. Fluency was not reviewed in terms of how it connected with the next recording.

Using WeChat recordings to help deal with possible boredom seems less of an issue. Learners liked other types of class activities. One HL learner (S5) commented: "One of the most fun times I had in class was [people of similar proficiency levels] acting out certain situations and playing roles, not as intimidating and can be fun." One L2 learner (S2) preferred scenario discussion to WeChat recording. These comments serve as a reminder that learners were aware of the challenges of a mixed class. There are multiple ways to reduce anxiety and boredom. WeChat recordings were used effectively to assist differentiated instruction for the mixed sheltered courses, but other traditional group or class interactions should continue to be mainstream.

6. Conclusion

The initial results of the instructional use of WeChat are encouraging, as demonstrated in the collected questionnaires and the instructor feedback. The instructors successfully integrated WeChat as an instructional tool in three different ways: in-class individual recordings, homework recordings, and instructor feedback. The use of WeChat recordings to complete linguistic tasks seemed to have helped provide: (a) a less anxious or uninteresting environment; (b) increased oral and aural practice, and; (c) timely and individualized feedback. It is important to note that WeChat recordings helped turn the geography class from a traditional lecture class with only written homework to an interactive class, where learners got some opportunities to present themselves and answer unprepared questions. Overall, WeChat use maximized teacher-learner target language contact. At the end of the program, 80% of learners took OPIc again. All either maintained their proficiency or made progress. Two or 50% of learners made progress. One IM learner reached IH (intermediate high), and one AL learner reached AH. Perhaps WeChat recordings played a role in helping these learners advance their proficiency.

The findings of this research have practical implications for CFL programs. To begin with, this study provides much needed empirical information on the actual use of WeChat as an instructional tool in mixed-learner courses. The specific ways of using WeChat before, during, and after the class in this research may help other CFL instructors who teach in a similar context to quickly design activities that integrate WeChat into the learning process. In addition, this case study is encouraging for L2 educators as they continue to look for ways of dealing with the tough challenge of having both L2 and HL learners in the same class. Moreover, the success of WeChat use for the geography course opens a door for mediating traditional content courses for L2 education. Furthermore, technologically assisted L2 instruction needs to adapt to the location where instruction is offered. The device that works for the local population should be the one to consider.

The empirical results reported herein should be interpreted with caution in light of some limitations. As with any single-case study, this case study may have some validity and reliability issues caused mainly by research constructs and researchers' subjectivity as well as data collection. First, some survey questions should be designed with more thought. For instance, the question on anxiety should start with: "Do you feel anxious in class because you are conscious that your fellow learners are of different proficiency levels? If so, do you agree that the use of in-class WeChat recording helped reduce anxiety"? Second, all recording data should have been immediately transferred to WeChat storage. This is a necessary step because one can delete a WeChat ID accidentally, and either party can withdraw from WeChat without notification, hence resulting in the loss of some recordings. Third, this case study itself could have included all learners of the program had all learners known beforehand that they were required to subscribe to local Chinese smart phone service that provided internet service. Finally, regarding using WeChat to provide timely feedback, there should have been a way of ensuring that all learners listen to all feedback and take some action to incorporate the feedback in their ongoing learning process. Perhaps they could have been asked to write down notes of feedback and make a revised recording.

The limitation in this case study provides a direction for future studies. The scope of future research on the instructional use of WeChat should be expanded to include more learners and multiple cases. In addition, multiple ways of instructional use of WeChat should be explored and tested. For instance, to surpass the one-minute WeChat recording limit, one probably can first make a recording of several minutes in the smart phone, and then pose the recording as a message in WeChat. Furthermore, studies on learners' intake of instructor's recorded feedback is needed. Do all learners listen to the instructors' feedback? If so, how does the feedback contribute to individual learning? These questions are worthy of future investigation.

Instructional use of WeChat to perform oral tasks is likely to continue in future study abroad programs in China. Even if Google and other web recording devices are available, WeChat will still appear to be the most convenient and fastest communication tool in China. As better technology continues to be developed, more powerful apps or other types of tools maybe available (Chen & Zhan, 2019/2020) to help differentiated instruction to further advance itself. The researchers recognize the ongoing nature of their research

and look forward to other research about instructional use of local devices in other study abroad locations.

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