

Article

Interactions in Online Versus Face-to-face Classes: Students' and Teachers' Perceptions

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Abstract

The Interaction Hypothesis emphasizes the significance of face-to-face interactions in language proficiency development. However, the global transition to online education prompted by the COVID-19 pandemic has posed significant challenges to education, including the teaching of Chinese as a second/foreign language (CSL/CFL). Anecdotal evidence indicates a decline in both the quality and opportunities for interactions in online classes compared to traditional face-to-face (F2F) classrooms. However, research on the differences in the perspectives of students and teachers regarding this issue is relatively limited. To fill this gap, this study compared the perceptions of students and teachers regarding teacher-student and peer-to-peer interactions in online versus F2F CFL classrooms. Participants were CFL learners and their teachers at a university in Australia. Thematic analysis of the data collected from online surveys and interviews revealed a consensus among students and teachers on the importance of promoting interactions regardless of the delivery mode. However, students expressed a preference for F2F interactions, citing reduced motivation and fewer opportunities for interaction in online classes. Notably, students indicated a preference for interacting with teachers rather than peers during synchronous online sessions. The differences were attributed to multiple factors including a sense of community, interaction opportunities, engagement strategies, individual differences, and technological constraints. The results underscore the pivotal role of building social connections in language learning. The findings provide valuable insights into technology-enhanced language education from the perspectives of both students and teachers. This study contributes to the field of interaction studies in second language education and offers practical implications for addressing the challenges posed by the transition to online learning.

Keywords

Interaction, Perceptions, Online classes, Face-to-face classes, Chinese as a foreign language

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1. Introduction

Classroom interaction plays a pivotal role in second language (L2) education, as emphasised by Long (2018). Over the past four decades, extensive research has been conducted to understand teacher-student (TS) and student-student (SS) interactions within L2 classrooms (e.g., Ellis, 2010; Gass, 2017; Gass & Selinker, 2008; Mackey, 2012). Despite differing theoretical perspectives, the consensus among researchers has been that face-to-face (F2F) interactions between TS (e.g., Lyster & Ranta, 1997; S. Li, 2010) and SS (e.g., Adams, 2007; Adams et al., 2011; Pica et al., 1996) are superior for fostering L2 proficiency. However, the COVID-19 pandemic necessitated a rapid shift to online classes to adhere to social distancing requirements, introducing novel challenges in implementing effective interactional strategies within computer-mediated communicative (CMC) contexts. Anecdotal evidence and student feedback have illuminated the decline in opportunities, quantity, and quality of interactions in live online classes compared to F2F interactions, attributable to technological constraints (e.g., Gao, 2020). The task of promoting interactions and oral proficiency in remote delivery has thus become a formidable challenge.

Moreover, existing research on interactional strategies predominantly focuses on native-speaker and non-native-speaker interactions within the context of English as a second language (e.g., Adams, 2007; Adams et al., 2011) in mainstream classrooms, with the majority of studies relying on surveys (e.g., Tan et al., 2021; Tsai et al., 2021; Vikas & Mathur, 2021). Qualitative studies rooted in teacher and student perspectives remain limited, particularly within the context of learning Chinese as a foreign language (CFL). Consequently, this qualitative study seeks to bridge this gap by delving into both teacher and student perceptions regarding the nature of TS and SS interactions in Zoom and in F2F CFL classes, as well as the factors influencing these perceptions. The insights gained from this study will enrich our comprehension of the mechanisms governing interactions in language classes, ultimately informing pedagogical practices.

2. Literature Review

2.1 Interactions in the CMC context

Interactions in the context of computer-mediated communication (CMC) have garnered increasing attention in second language acquisition (SLA) research since the end of the previous century (Chapelle, 1994, 1998, 2001; Levy, 1997; Salaberry, 1996, 2000; Warschauer, 1997). Research on text-based interactions in the CMC context has generally arrived at a consensus, suggesting that synchronous interactive tasks involving meaningful negotiations are as conducive to L2 development as face-to-face (F2F) interactions. This is primarily due to their ability to boost participation levels and encourage learner output (Blake, 2000; Fuente, 2003; Kitade, 2000; Salaberry, 2000). For instance, Fuente (2003) posits that CMC synchronous text-based interactions appear to be a suitable substitute for F2F interactions, albeit not necessarily the optimal choice for developing productive oral skills. Blaine (2019) also asserts that interaction plays a pivotal role in the success of online and blended learning. Researchers have identified various advantages of interactions in the CMC context, such as stimulating students' interests (Chen et al., 2008), enhancing student engagement (Borup, 2016; Chen et al., 2008; Martin & Bolliger, 2018; Meyer, 2014), and directly influencing student satisfaction (Jung et al., 2002; Martin & Bolliger, 2018; Meyer, 2014) and learning achievements (Andersen et al., 2013; Kang & Im, 2013; Margalina et al., 2017; Walker, 2016). Due to the critical role of interaction in students' learning performance and accomplishments, coupled with the increasing adoption of online teaching, discussions have emerged regarding teacher and student attitudes towards the effects of interaction in online environments.

In recent years, there has been a growing interest in comparing learner and teacher perspectives on online and F2F teaching and learning. Previous studies have discovered that learners hold mixed

perceptions of online versus F2F teaching and learning (Stodel et al., 2006; Nartiningrum & Nugroho, 2020; Sepulveda-Escobar & Morrison, 2020). For example, Atwa et al. (2022) explored the experiences and preferences of medical students and faculty members regarding online and F2F learning during the COVID-19 pandemic. The results revealed that both students and staff favored F2F or blended learning over online learning, citing the lack of interaction, engagement, and socialization during online learning as significant drawbacks. Similarly, Stodel et al. (2006) reported that students expressed a desire for more F2F contact after participating in an online course, as they missed the F2F interaction with their teachers and the ability to ask questions and receive immediate feedback. Furthermore, the findings suggest that learners perceive online learning as lacking a sense of community and interaction with their peers, which is particularly important for their cognitive and social presence. Other studies have also highlighted challenges faced in online classes, such as a lack of motivation, technology and internet connectivity difficulties, and a shortage of interaction with teachers and peers (Karalis & Raikou, 2020; Nartiningrum & Nugroho, 2020; Sepulveda-Escobar & Morrison, 2020; Stodel et al., 2006).

Several studies have also emphasized the importance of teacher presence in online learning and the need for teachers to be more proactive and engaged with their students, despite the opportunities that online teaching offers, such as flexibility, access, and diversity (Rapanta et al., 2020; Sepulveda-Escobar & Morrison, 2020). Research on teachers' perceptions of online teaching suggests that in addition to traditional classroom interactional competence, teachers must possess new competencies such as technological skills, online environment management skills, and online teacher interactional skills. Furthermore, they should have the ability to create a positive and engaging learning environment for students. The study also suggests that teachers should receive training in strategies for mediating and assisting language learning during synchronous online lessons, such as using visual aids, facilitating group work, and providing individual support (e.g., Moorhouse et al., 2023).

2.2 Teachers' perceptions of online interactions

Understanding teachers' perceptions of online interactions is crucial, as their beliefs and attitudes significantly influence their teaching practices (Borg, 2003). The quantity and nature of interactions within online learning environments are typically shaped by the teacher's role. It is through teacher guidance that meaningful collaborative interactions can flourish, allowing students to gain confidence in their engagement with peers (Borup, 2016). Studies, such as the one conducted by Jensen, et al. (2020), have illuminated how teachers perceive the constantly evolving characteristics of digital teaching contexts, influenced by technological advancements and the actions of both teachers and students. Furthermore, some researchers have emphasized the impact of TS interactions on the TS relationship, recognizing their direct effects on student satisfaction and learning achievement in online courses (Margalina et al., 2017). For example, Penelope (2005) compared preservice teachers' perceptions of TS interactions in F2F and online asynchronous sections of an introductory education course, revealing that the TS relationship was at the core of the teaching and learning process, with TS interaction playing a pivotal role. Her research supported the positive effects of TS interaction on students' engagement and motivation (Frisby & Martin, 2010; Handelsman et al., 2005). Similarly, the TS relationship is often cited as a major factor influencing the negative impact of distance learning, which can be affected by the quality and quantity of teacher-student interaction (Cole et al., 2014).

Exploring teachers' perceptions of SS interactions in online environments has been relatively limited in research. However, Borup (2016) contends that SS interaction plays a crucial role in helping students establish an online social presence. Borup's study delves into how teachers perceive, value, and facilitate SS interactions within a full-time online charter high school. The study's findings indicate that teachers believe students' engagement and learning performance can be positively influenced by their peers' efforts to build friendships, provide motivation, collaborate, and offer instructional support.

Additionally, Tim and Joanne (2007) conducted a literature review, identifying seven common challenges associated with group learning in online settings. These challenges include student reluctance, group-work skills, disparities in student abilities and participation levels, and the assessment of individuals within groups. These issues are also relevant to live online classes and warrant attention from teachers in synchronous settings. To address these challenges, Tim and Joanne (2007) suggest strategies such as using assessment to encourage participation from all group members. For instance, in Zoom classes, teachers can proactively inform students before interactive activities in breakout rooms that they will be randomly selected to share their thoughts in the main session afterwards, with their contributions being graded. This approach can lead to improved results. Moreover, it is essential to consider students' varying abilities when assigning them to breakout rooms for SS interactions.

2.3 Students' perceptions of online interactions

Understanding students' perceptions of online instruction is crucial, as these perceptions significantly shape their learning attitudes, outcomes, and personal development (Tan et al., 2021). Despite the growing interest in online instruction, research on students' experiences in this context remains relatively limited (Butnaru et al., 2021; Tan et al., 2021). Studies have revealed that students' reactions to online instruction vary based on their ability to utilize online tools, access online courses, and the pedagogical approach of their instructors (Butnaru et al., 2021). The quality of online interactions with instructors and peers can profoundly impact students' satisfaction, persistence, and, ultimately, their academic performance and social integration (Croxtton, 2014). For example, Chen (2019) conducted a comparative study of students' perceptions and practices in online teacher-involved learning and peer-interactive learning among college English students in China. The study found that students demonstrated more stable and active engagement in learning when influenced by their teachers, but their performance was less consistent and productive when interacting with peers alone. Similarly, a survey-based study conducted by Martin and Bolliger (2018) unveiled that students placed greater value on TS engagement strategies than on SS and learner-content engagement strategies. These findings suggest that while increasing the frequency of TS interactions alone may not necessarily enhance student satisfaction, the quality of interactions, shaped by teachers' pedagogical beliefs, plays a significant role. These findings align with the argument put forth by de la Varre (2012) that merely increasing the frequency of TS interactions does not guarantee increased student satisfaction. Instead, the quality of interactions, influenced by teachers' pedagogical beliefs, significantly shapes student satisfaction.

The studies mentioned above collectively underscore students' preference for TS interaction and the substantial impact of teachers' pedagogical approaches on student learning in CMC environments. A consensus has been reached that students' experiences of online interaction with instructors and peers significantly influence their satisfaction and persistence, ultimately affecting their academic performance and social integration (Chen, 2019; Croxtton, 2014; Martin & Bolliger, 2018). Instructors' instructional design, content organization, and interaction strategies directly affect students' perceptions of course relevance and satisfaction, influencing their decisions to continue or discontinue their online learning (Park & Choi, 2009).

2.4 Comparisons of teacher and student perceptions of online interactions

Researchers have also made efforts to compare the perceptions of online interactions between teachers and students. For instance, Martin and Bolliger (2018) posited that student engagement can enhance their satisfaction, motivation, and performance while reducing feelings of isolation in online courses. Acknowledging the limitation of exclusively exploring student perceptions, Bolliger and Martin (2018) conducted a study to compare teachers' perceptions of engagement strategies used in online environments with their findings of student perceptions in Martin and Bolliger (2018). The study revealed that teacher

perceptions of TS, SS, and learner-content engagement strategies aligned with student perceptions, albeit with teachers rating certain strategies as more significant than students did.

Li and Jia's (2020) research stands as another of the few studies delving into online interactions from both teacher and student perspectives. In their online survey of college-level Chinese courses, they discovered that the frequency of TS interaction in online classes equaled or exceeded that in F2F classes. However, interactions among students decreased, and interactions became more teacher-initiated and teacher-centered. When interviewed, the teacher participant noted that she tended to provide explicit feedback when interacting with individual students and was unable to offer instant feedback due to technology constraints. Concerning the effects of these changes on L2 learning, most participants regarded SS interaction as less effective than in F2F classes. Despite the growing number of studies in this area, there is a scarcity of research comparing teacher and student perceptions of the effectiveness of TS and SS interactions in F2F and online CFL classes. This study seeks to address this research gap by answering the following research questions.

RQ 1: What are students' perceptions of TS and SS interactions in online versus F2F classes?

RQ 2: What are teachers' perceptions of TS and SS interactions in online versus F2F classes?

3. Method

3.1 Context

The current study was conducted at a mid-sized university located in a regional area of Australia and involved three CFL courses designed to enhance students' listening, speaking, reading, writing, and intercultural competencies. The first, second, and third-year CFL courses had weekly contact hours of 5, 4, and 3 hours, respectively. In response to the early 2020 COVID-19 outbreak, these courses transitioned to remote delivery after three weeks of F2F teaching in the first semester. Data collection occurred in the following semester when all CFL courses incorporated a combination of live Zoom classes, video recordings, and online learning platforms. The study utilized the Integrated Chinese book series (Liu, 2016; Liu et al., 2016) as textbooks tailored to the students' proficiency levels, ranging from beginner to intermediate in Chinese.

3.2 Participants

The participants included 35 students enrolled in the CFL courses mentioned earlier and their four teachers. The majority of the students were first-language (L1) speakers of Australian English, with a few L2 English speakers coming from East Asian countries like Vietnam and Japan, all of whom were fluent in English. The students' ages ranged from 17 to 65. Among the 35 students, 13 (comprising 3 first-year, 4 second-year, and 6 third-year students) voluntarily participated in an online survey, while 22 students (2 first-year, 12 second-year, and 8 third-year students) took part in one-on-one interviews with their teachers/researchers at the end of the semester.

The four teacher participants were bilingual in Chinese and English, with three being native Mandarin speakers from mainland China, and one being proficient in both English and Mandarin from Singapore. They had teaching experience in CFL classes ranging from 5 to over 20 years.

3.3 Data collection and analysis

Data for the current study were collected through an online survey (see Appendix 1 for the questionnaire) and one-on-one interviews with students and their teachers. These interviews were conducted via Zoom meetings and took place in either English or Chinese, depending on the participants' preferences. Each

interview lasted approximately 30 minutes and was recorded using Zoom's video recording feature. The study employed semi-structured interview guidelines, which can be found in Appendices 2 and 3, for both student and teacher participants. The authors transcribed and, when necessary, translated the interview data into English. These transcriptions and the coding process underwent thorough review and verification by both authors and the interviewees for accuracy.

Thematic analysis was utilized to analyze all the qualitative data collected from the online survey and interviews. Two researchers, who were also involved in teaching the courses, examined the video recordings of the interviews and identified emerging themes that corresponded to those found in the responses to the online survey. In cases of disagreement, the researchers engaged in discussions and revisions until a consensus was reached. Any data with unresolved discrepancies in coding were excluded from the analysis.

4. Results

4.1 Students' perceptions of interactions in Zoom vs. F2F classes

RQ1 investigated students' perceptions of interactions in Zoom classes versus F2F classes. The results yielded comparisons in the following five aspects: *interaction opportunities*, *motivation for participation*, *preferences for interacting with the teacher or peers*, *interaction experiences*, and *strategies used*.

4.1.1 Interaction opportunities

A majority of the students (19 out of 35, or 54%) reported having more opportunities to interact with the teacher in F2F classes than in Zoom classes. Conversely, 11 students (31%) felt that they had similar opportunities in both types of classes. Only 5 students (14%) believed they had more opportunities to interact with the teacher in Zoom classes. Students identified several influencing factors that affected their participation in interactions, including: 1) learning content and teaching materials, 2) teacher's feedback strategies, 3) classroom arrangement, 4) technology (e.g., Internet, social media), and 5) personal reasons. Among these factors, classroom arrangement (e.g., time constraints, class size) was cited by 40% (14 students) as the most significant, followed by personal reasons, mentioned by 14% (5 students).

4.1.2 Motivation for participation

Regarding their motivation for participating in interactions, 46% (16 students) expressed that they were equally motivated in both F2F and Zoom classes. On the other hand, 40% (14 students) reported being more motivated in F2F classes, while 14% (5 students) indicated a higher level of motivation in Zoom classes. Those who were more motivated in F2F classes provided the following reasons:

1. The ability to read body language and facial expressions in F2F classes made interaction, asking questions, and addressing confusion easier. Teachers could also more readily identify if a student needed extra assistance.
2. A greater sense of connection to the class when physically present in F2F classes. In online classes, establishing connections with classmates and asking questions can be more challenging, especially if everyone needs to unmute and turn on their video cameras.

Interestingly, some students altered their perspective after experiencing Zoom classes throughout the semester. For instance, S1 reported:

At first, I preferred acquiring new skills face-to-face in real time. However, after a semester of online classes, I found that I had adapted well. The small class size in the online classes

provided opportunities for me to speak up and ask questions. Additionally, my teacher was skilled at fostering interactions and delivering engaging course content. I eventually felt that I was able to derive the same benefits from online classes as I would in face-to-face classes.

4.1.3 Preferences for interacting with the teacher or peers

When it came to preferences for interacting with either the teacher or peers, students' responses differed depending on the mode of delivery. In F2F classes, 22 students (63%) expressed a preference for a blend of teacher and peer interactions, each serving distinct purposes. They valued immediate feedback from teachers while enjoying the opportunity to practice with classmates in the F2F setting. Conversely, only 13 students (36%) leaned towards mainly interacting with the teacher, believing they could learn more from the teacher than from their peers.

However, in Zoom classes, the number of students favoring interactions with the teacher increased to 60% (21 students). They found teachers to be helpful, approachable, and knowledgeable, appreciating their ability to provide immediate feedback. Furthermore, they felt that teachers were more adept at actively listening and guiding interactions. On the other hand, 14 students (40%) still preferred interacting with both teachers and peers. They valued the breakout rooms feature in Zoom, which allowed them to collaborate and engage with peers in a more comfortable environment. They also noted that asking the teacher questions privately in breakout rooms was less intimidating compared to addressing the teacher in front of the entire class.

When it came to their motivation for interacting with peers, while 11 students (31%) indicated no difference in their motivation between Zoom and F2F classes, 24 students (69%) reported higher motivation to interact with their peers in F2F classes. They cited several reasons:

In F2F classes, the ease of changing partners and groups provided access to diverse feedback and ideas, in contrast to Zoom classes, where the process of being assigned to breakout rooms could be time-consuming and limit peer interaction opportunities.

1. F2F classes allowed for better observation of body language and more intuitive learning experiences.
2. F2F classes provided a more conducive environment for making connections and forming friendships compared to online classes. As S2 stated, "In person, we were able to get to know each other better, whereas in Zoom classes, we only focused on completing the work."

However, a couple of students reported feeling more motivated to interact with peers in Zoom classes due to the flexibility and convenience they offered compared to F2F classes.

4.1.4 Experiences of TS and SS interactions

In terms of interactions with the teacher, 18 students (51%) reported that there was no significant difference in their experience between F2F and Zoom classes. However, 14 students (40%) reported having a better experience interacting with their teacher in F2F classes. Their reasons for this preference included:

1. The ability to have more personal and direct conversations with the teacher in F2F classes, as students can approach them easily and ask questions without feeling self-conscious. On Zoom, students may feel more nervous or self-conscious when asking questions, especially in the main room in front of all students.
2. In F2F classes, it is easier to read the teacher's emotions and establish a better connection, particularly when learning a second language.

3. F2F classes provide more opportunities for spontaneous interactions and better classroom management for the teacher. Only 3 students (9%) felt that interacting with the teacher was more convenient on Zoom.

Regarding interactions with peers, 11 students (31%) reported no significant difference between F2F and Zoom classes, particularly when working in breakout rooms online or in pairs or groups in F2F classes. However, those who preferred F2F interactions cited the following benefits:

1. Group activities were more productive and collaborative in F2F classes.
2. Reading texts together in F2F classes was easier, as it was harder to hear others clearly on Zoom.
3. Making friends and building trust in the learning process was more prevalent in F2F classes. Some students reported not fully engaging or participating in online interactions. As S5 reported, “In Zoom classes, my peers are a lot shyer and less obligated to answer because they can just mute themselves and turn off their camera, and there weren’t so many people in my class that were confident in their Mandarin. In breakout rooms, it’s sometimes okay, but there’s always someone whose audio isn’t working, so even if they wanted to speak, they can’t.”

4.1.5 Strategies used for TS and SS interactions in Zoom classes

In terms of strategies used for interacting with the teacher, 14 students (40%) reported that they did not have any specific strategies in place. However, the remaining students employed a variety of methods, including:

1. Unmuting themselves and asking the teacher when there was a pause in the conversation.
2. Typing in the chat without disrupting the class.
3. Attempting to use as much of the language learned both inside and outside of class when interacting with the teacher.
4. Preparing questions to ask the peers/teacher, mostly after completing all assigned work.

As for strategies used to interact with their peers, 11 students (31%) stated that they did not have any strategies in place. The remaining students utilized a range of methods, including:

1. Attempting to initiate speaking, even though most peers did not respond.
2. Building connections to make talking and interacting more comfortable and relaxed.
3. Talking to peers in breakout rooms since opportunities for conversation were limited.
4. Using screen-sharing to quickly go through slides, which helped them complete tasks within the given time.
5. Using the chat and email, although it was challenging to establish language learning relationships with other students.
6. Offering answers and help, participating in chat, and assisting if a peer’s question was not understood by the teacher due to audio issues.
7. Speaking in English first to clarify what was supposed to be done, then in Mandarin.

4.2 Teachers’ perceptions of interactions in Zoom classes vs. F2F classes

RQ2 delved into teachers’ perceptions of interactions in Zoom classes compared to F2F classes. All teachers recognized the significance of fostering interactions in the classroom, regardless of the delivery

mode, owing to its essential role in facilitating two-way communication in teaching. They believed that classroom interactions were instrumental in honing students' language skills through interactive practice, meaning negotiation, and the provision of corrective feedback in a less intimidating environment that fosters mutual understanding.

Furthermore, some teachers pointed out that interactions contribute to building rapport, trust, and understanding among the diverse members of the class. They emphasized how interactions promote intercultural understanding and empathy, encouraging students to engage in class activities by sharing their thoughts or seeking clarification when they face challenges in comprehending the content. Consequently, they viewed the teacher's role as creating a conducive and friendly environment that stimulates active interactions. They also concurred that live interactions allowed them to informally assess students' performance, identify their strengths and weaknesses, and adapt lesson plans and teaching strategies accordingly.

When comparing interactions in F2F and Zoom classes, the teachers underscored the challenges of teaching in online environments and the strategies they employed to surmount these obstacles. They observed that generating interactions in Zoom classes consumed more time due to technological constraints, including troubleshooting technical issues and managing breakout rooms for group exercises. Additionally, they noted that Zoom classes were more mentally taxing than F2F classes, as students were less inclined to participate verbally and activate their cameras, making it challenging for teachers to gauge their comprehension and engagement through nonverbal cues.

To address these challenges, teachers organized more pair and group work within breakout rooms and made an effort to enter as many rooms as possible to provide corrective feedback and cultivate a more comfortable environment for interaction. Nevertheless, they acknowledged that the absence of free-choice partner selection in Zoom classes was a limitation compared to F2F classes.

4.3 Advantages of Zoom Classes

Despite a general preference for F2F classes over Zoom classes, 32 students (91%) and all the teachers acknowledged two advantages of Zoom classes over F2F classes. The first advantage is the Zoom breakout room function. As mentioned earlier, students were more active when collaborating with their peers in breakout rooms. They assisted each other in correcting pronunciation, translating vocabulary, and explaining concepts like grammar, which some might not have fully grasped during the main session. Furthermore, the teacher could easily reassign students to different breakout rooms to facilitate interaction partner swaps.

Another advantage is the chat pad. Students favored using the chat pad the most, with writing on the whiteboard in F2F classes coming in second and writing on the Zoom whiteboard ranking last. According to the students, typing in the chat pad is quicker and more convenient, affording them more time to contemplate their responses. They could all respond simultaneously, and the teacher could offer corrections and responses more promptly. Typing in the chat pad proved much easier than using the annotation tool on the Zoom whiteboard, which was often challenging to locate and utilize. Moreover, drawings on the whiteboard tended to appear messy. Consequently, students preferred practicing handwriting characters using printed character sheets rather than drawing on the annotating whiteboard.

The teachers also recognized several advantages of the chat pad. For instance, students could pose questions using the chat pad without disrupting the entire class. Teachers sometimes responded both verbally and by typing (including characters and pinyin with tone marks) in the chat pad. Additionally, some students answered their peers' questions posted in the chat pad when the teacher failed to notice or respond promptly. Lastly, the chat pad posts could be saved for later review and revision after the class.

5. Discussion

5.1 Factors influencing students' perceptions of interactions in F2F and Zoom classes

The findings reveal that students exhibit a preference for interacting in F2F classes over Zoom classes due to the greater opportunities for interaction and increased motivation to engage in these interactions. These differences in social connections between the two teaching modes were found to be influenced by various factors, including personal variables, teacher feedback strategies, classroom arrangement, and limitations of technology on Zoom. For instance, students reported feeling more involved and connected to their peers in F2F classes, which subsequently resulted in higher motivation to participate. These findings are consistent with previous studies on learner preferences for F2F classes (e.g., [Atwa et al., 2022](#); [Gao, 2020](#); [Nartiningrum & Nugroho, 2020](#); [Sepulveda-Escobar & Morrison, 2020](#); [Stodel et al., 2006](#)).

In F2F classes, students found it easier to utilize and interpret body language, contributing to a sense of cooperation and comfort in their communication with others. They also benefited from the ability to quickly form different groups and make friends, as well as readily access the teacher for assistance and receive immediate feedback without disrupting the class. Both the teacher and peers served as valuable resources for providing linguistic assistance. In contrast, students reported a lack of social connection in Zoom classes, which led to their reluctance to engage in interactions. Technical issues, such as difficulty hearing others and turning off cameras in breakout rooms, hindered their ability to build trust and establish friendships, resulting in feelings of isolation and frustration, as reported by [Weiner \(2003\)](#). These findings align with previous research demonstrating the negative impact of online classes on the TS relationship and its effects on student engagement and motivation ([Frisby & Martin 2010](#); [Handelsman et al., 2005](#)), satisfaction, and course achievement ([Margalina et al., 2017](#); [Penelope, 2005](#)).

Due to reduced motivation and technological limitations, students believed that opportunities for both TS and SS interactions decreased in Zoom classes compared to in-person classes. Unlike in-person classes, students had to speak up during the main session to ask the teacher questions, which made many students feel nervous, despite knowing that their peers would not judge them. Furthermore, the overall chance of receiving responses to questions decreased, even with the use of the chat pad. Additionally, the assignment of students to breakout rooms for SS interactions proved to be time-consuming, and the teacher encountered challenges in providing instant feedback to each group as they had to enter and exit different breakout rooms. Consequently, students in breakout rooms were discouraged from seeking the teacher's help by sending text messages on the chat pad. According to [Martin, et al. \(2018\)](#), students highly value teachers' timely responses to questions as one of the most effective facilitation strategies. The issue of offering instant support to students was also identified in [Li and Jia's \(2020\)](#) study.

Despite the use of the chat pad and breakout room functions, student community building was negatively affected in the online teaching mode, particularly for first-year students who began learning Chinese in 2020. This decrease in interaction opportunities supports [Tan et al. \(2021\)](#) but contradicts [Li and Jia \(2020\)](#), who argue that the frequency of TS interactions was the same or higher than in in-person classes. Although increasing the frequency of TS interactions alone cannot guarantee an increase in student satisfaction ([de la Varre, 2012](#)), interacting with peers can foster engagement ([Dumford & Miller, 2018](#)), leading to increased satisfaction and motivation ([Martin & Bolliger, 2018](#)) and more favorable learning outcomes ([Tsai et al., 2021](#)). Encouraging participation and learner output, synchronous interactive tasks are just as beneficial for second language development as F2F conversations ([Blake, 2000](#); [Fuente, 2003](#); [Kitade, 2000](#); [Salaberry, 2000](#)). To overcome technological constraints and promote interaction opportunities for students, reducing class size was suggested as a possible solution. Furthermore, it is crucial for teachers to adapt to new strategies that can more effectively increase the quantity and quality of interactions in online classes.

The preference for TS interactions in online classes and a combination of TS and SS interactions in F2F classes can likely be attributed to the sense of lack of social connection in online classes. Prior research (Atwa et al., 2022; Nartiningrum & Nugroho, 2020; Sepulveda-Escobar & Morrison, 2020; Stodel et al., 2006) has shown that both students and educators tend to favor F2F learning due to the limited interaction, engagement, and socialization in online settings. In the context of online classes, students perceived that teachers were better positioned to offer advanced assistance compared to their peers. Peers often hesitated to provide explicit corrections for mistakes in expressions, possibly due to their limited knowledge, confidence, or a desire to maintain harmonious social relationships. Consequently, students generally leaned towards interacting with their teachers to receive accurate feedback and knowledgeable metalinguistic explanations. This inclination was particularly pronounced in Zoom classes, aligning with earlier research (e.g., Martin & Bolliger, 2018).

Nevertheless, even though students exhibited a preference for TS interactions, a mere 10% of them expressed a preference for TS interactions in online classes, in stark contrast to the 40% who favored TS interactions in a traditional F2F classroom setting. This finding aligns with Penelope's (2005) argument that online students express concerns about the availability, care, and quality of TS interactions. They seek a direct human connection with their teachers, as TS interactions in online environments are perceived as inferior to those in F2F settings (Penelope, 2005). Students' concerns about TS interactions on Zoom also echo the arguments of other researchers (Cole et al., 2014) regarding the substantial negative impact of distance learning on TS relationships, which are closely tied to the quality and quantity of TS interactions. In summary, the preference for TS interactions in online classes may be rooted in students' desire for a stronger sense of social connection, highlighting the importance of addressing this aspect in online teaching strategies.

Individual differences among students may have played a role in their performance in online classes. Factors such as personality, L2 competence, and motivation for learning Chinese can directly influence students' engagement in interactions. For instance, some students may be highly motivated to participate in interactions due to their genuine interest in learning the language and their eagerness to help others understand, making them enthusiastic about engaging with their peers. As expressed by Lily (a pseudonym), "Online learning sometimes makes our interactions more challenging, but I am compelled to interact with others because I enjoy learning Mandarin, enjoy assisting others in comprehension, and am always eager to engage with my peers." Conversely, some students mentioned that they felt compelled to interact and, therefore, preferred to keep their camera or microphone off, which allowed them to learn from others more passively. As demonstrated by Butnaru et al. (2021), students react differently to online instruction based on their teachers' pedagogical approaches when conducting learning activities through interactions. This underscores the significance of teachers' pedagogical strategies in achieving student satisfaction and fostering positive interaction experiences during online classes.

5.2 Factors affecting teachers' perceptions of interactions in F2F and Zoom classes

All teachers recognized the imperative need to foster interactions, acknowledged the limitations of engaging through Zoom, and undertook significant efforts to stimulate student participation. They firmly believed in the importance of cultivating interactions, regardless of the mode of teaching. They saw their role as that of creating a conducive and welcoming atmosphere for interactions while providing immediate support when needed. The preference for F2F interactions stemmed primarily from its ability to facilitate active engagement among students and the ease with which harmonious relationships could be nurtured in F2F classes.

This finding aligns with existing research that underscores the sense of community and interpersonal interactions often lacking in online learning, as reported by Stodel et al. (2006), and the preference for increased F2F contact, as noted by Nartiningrum and Nugroho (2020).

In turn, students found themselves more at ease and motivated to participate in interactive activities, which proved beneficial for honing their Chinese communication skills. However, there were notable constraints in conducting interactions via Zoom due to technical limitations. Similar to students, teachers identified the time-consuming nature of creating interactions as a significant technical hindrance with Zoom. They also encountered challenges in overseeing student interactions with their peers, limiting their ability to effectively manage these SS interactions. In their capacity as educators, they felt somewhat restricted in their ability to facilitate interactions, aside from optimizing opportunities for engagement within breakout rooms and their own involvement in these rooms to offer guidance and feedback.

5.3 Comparison between teacher and student perceptions of interactions in F2F and Zoom classes

As discussed above, both student and teacher participants share similar views on TS and SS interactions in F2F and live online classes. Specifically, both teachers and students highly value interactive activities in developing students' L2 communication skills and prefer interactions in F2F classes over online classes. This finding is consistent with previous studies ([Stodel et al., 2006](#); [Nartiningrum & Nugroho, 2020](#); [Sepulveda-Escobar & Morrison, 2020](#)).

According to the students, they feel more comfortable, involved, and motivated to engage freely in both TS and SS interactions because of the more direct social connections with others in F2F classes. In comparison, in Zoom classes, students' desire and opportunities for participating in interactions are reduced mainly due to the lack of social connections and technical constraints. Similarly, the teachers also feel that the quality and quantity of interactive activities are negatively influenced by technical issues and the technological constraints of Zoom. This finding aligns with previous studies that compared teacher and student perceptions of online and F2F classes during the COVID-19 pandemic ([Atwa et al., 2022](#)).

To address technological constraints, both students and teachers exerted more effort when interacting on Zoom compared to interactions in F2F classes. The majority of the students employed various communication strategies by leveraging their technological knowledge of Zoom. For instance, to pose questions to the teacher, they unmuted themselves or utilized the chat pad to send text messages. When engaging with their peers, some students reported using additional methods such as sending emails and screen sharing, in addition to typing in the chat pad. They also took the initiative to speak, establish connections, collaborate in activities, and ask and answer questions. Similarly, the teachers observed a reluctance in student engagement due to the lack of direct social connection and found it more challenging to manage interactive activities. To overcome technical difficulties, the teachers made efforts to create a friendly environment by employing more effective strategies to engage students and support their learning. This involved promoting more interactions and providing more instant feedback. These results are consistent with [Karalis and Raikou's \(2020\)](#) findings, highlighting that the pandemic has underscored the importance of teacher presence in online learning, the necessity for teachers to be more proactive and engaged with their students, and the demand for more effective strategies to support student learning.

6. Conclusion

The present study investigated perceptions of interactions in Zoom classes among teachers and students, comparing them to interactions in traditional F2F classes. The study revealed that both teachers and students recognize the significance of fostering interactions regardless of the mode of instruction. However, it also found that students experienced reduced interaction opportunities in Zoom classes, reported lower motivation, and expressed a preference for more interactions with the teacher than

with their peers. The primary factors identified by both teachers and students as contributing to these challenges were the difficulty in establishing social connections and technological constraints specific to Zoom. Furthermore, students reported the need to employ more technology-related strategies to manage interactions. Teachers also noted putting in more effort to promote interactions and enhance students' interaction experiences in Zoom classes compared to F2F classes. Overall, while both teachers and students acknowledged the benefits of features such as the chat pad and breakout rooms in Zoom, they preferred interactions in F2F classes over those in Zoom classes.

Interaction plays a pivotal role in teacher education, as research indicates its significant impact on teaching effectiveness. With the lasting effects of the COVID-19 pandemic potentially reshaping the landscape of education, it becomes imperative for teachers to adapt their pedagogical approaches to enhance teaching quality and student outcomes. One-size-fits-all generic pedagogical methods are no longer suitable in today's rapidly evolving teaching and learning environment. Research demonstrates that student perceptions of teaching effectiveness are heavily influenced by a teacher's pedagogical performance (Vikas & Mathur, 2021). Consequently, teachers must enrich their technological pedagogical content knowledge (Shi & Jiang, 2022) by integrating new technology insights into their existing pedagogy and subject matter expertise. This will enable them to effectively nurture students' communication skills in online classes.

Teaching is a multifaceted and intricate process encompassing diverse forms of social mediation, including interactions among teachers, students, and the learning materials employed. This study underscores the significance of the classroom environment, motivation, and affective factors for both teachers and students in determining the quality of interactions, which, in turn, influences the development of L2 proficiency. To gain deeper insights into how to effectively promote L2 learning outcomes across various teaching contexts, future research should investigate the impact of these affective and contextual factors on the execution of TS and SS interactions in both online and F2F settings.

Appendix 1: Online survey questionnaire for students

1. Have you had more interaction opportunities with the teacher in: A: Zoom classes B: Face-to-face classes C: None of them D: Both of them E: Not sure
2. Have you participated in more interactions with your peers in: A: Zoom classes B: Face-to-face classes C: None of them D: Both of them E: Not sure
3. Could you get the teacher's immediate feedback more easily in A: Zoom classes B: Face-to-face classes C: None of them D: Both of them E: Not sure
4. In which context are you more motivated
 - 1) to ask/answer questions? Why?:
A: In Zoom classes; B: In face-to-face classes; C: Both
 - 2) to interact with your peers? Why?
A: In Zoom classes; B: In face-to-face classes; C: Both
5. What motivates you more:
 - 1) to type your answers in the chat pad (in Zoom). Why?
 - 2) to write your answers on the whiteboard (in Zoom). Why?
 - 3) to write them on the whiteboard in face-to-face classes. Why?
 - 4) The same. Why?
6. What factors have influenced your participation in interactions in Zoom classes?
Learning content, materials, video clips, pictures, text related to course content, examples, teacher's feedback, corrective strategies, feedback timing, classroom arrangement (e.g., time, class size), technology (e.g., Internet, social media such as Facebook and Instagram), personal reasons

7. In face-to-face classes, do you prefer interactions with peers or with the teacher? Why?
8. In Zoom classes, do you prefer interactions with peers or with the teacher? Why?
9. In Zoom breakout rooms, do you prefer interactions in a group or in pairs? Why?

Appendix 2: Interview questions for students

1. What strategies did your teacher use to elicit or correct your productions in class? Did they effectively enhance your oral competence?
2. What strategies did you use to interact with your teacher in class? Why? What factors influenced your decisions to use these strategies?
3. What strategies did you use to interact with peers when working on tasks or pair work? Did they prove effective or ineffective in improving your oral proficiency?
4. Which tasks or strategies were successful in eliciting your use of new words and grammar? What aided your memory retention? Could you please provide an example?
5. What constraints did you encounter when engaging in interactions with teachers in Zoom classes compared to face-to-face classes? How did you overcome these constraints?
6. What was the most challenging aspect of online classes, and how did you address it?
7. Can you describe the differences in interactions you experienced with teachers in face-to-face and online classes?
8. Can you elaborate on the differences you noticed in your interactions with peers in face-to-face and online classes?
9. What factors might influence your participation in interactions in Zoom classes? (e.g., learning content, teacher's feedback, time, personal reasons, etc.)
10. Regarding interactions in Zoom classes, could you briefly explain what aspects you like and dislike?
11. In Zoom breakout rooms, do you prefer interactions in groups or pairs? Why?
12. Do you have any suggestions for improving classroom interactions and teaching quality?

Appendix 3: Interview questions for teachers

1. Do you believe it is necessary to promote interactions in class? If yes, for what purposes?
2. Which research or teaching model forms the basis of your teaching methods? (e.g., focus on forms [explicit explanations of grammar], communicative language teaching, task-based language teaching [focus on form])
3. How do you structure your class time? Specifically, how do you allocate your class time to cover new content (words and grammar) and interactive practices? When do you incorporate teacher-student interactions and learner-learner interactions in your class?
4. Can you please specify the percentage of Mandarin used when delivering a lecture and/or a tutorial, and when interacting with students in Zoom classes, respectively?
5. What differences did you encounter between face-to-face and Zoom classes when implementing interactions?
6. What challenges did you face when interacting with students and when organizing learner-learner interactions in online classes? How did you address these challenges?
7. Could you please describe a successful teacher-student interaction and a successful student-student interaction, respectively?

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师生视角下的线上线下课堂互动对比分析

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摘要

互动假设强调了面对面互动对语言能力发展的重要性。然而, 由 COVID-19 大流行引发的全球在线教育转型对汉语作为第二语言 / 外语的教学带来了极大的挑战。传闻显示, 在线课程与传统实体课堂相比, 互动的质量和机会都有所下降。然而, 就学生和教师对此问题观点差异的研究相对有限。为填补这一空白, 本研究比较了学生和教师在在线及实体汉语二语课堂中师生与生生互动的看法及影响因素。参与者为澳大利亚一所大学的汉语二语学习者及其教师。在线调查及访谈数据的主题分析显示, 师生均认为, 无论授课方式如何, 促进互动都至关重要。然而, 学生表示更喜欢面对面互动, 称在线课程中的动力降低, 互动机会减少。值得注意的是, 在同步在线课程中, 学生表示更喜欢与教师互动而非与同学互动。这些差异归因于多种因素, 包括社群感、互动机会、参与策略、个体差异和技术限制。研究结果强调了社交实践在语言学习中的重要作用, 从学生和教师的角度为科技赋能语言教育提供了有价值的见解。本研究为第二语言教育中的互动研究提供了借鉴, 并为应对在线学习转型带来的挑战提供了启示。

关键词

互动; 师生视角; 在线课堂; 实体课堂; 汉语作为外语教学

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