Digital affordances and teacher agency in the context of teaching Chinese as a second language during COVID-19

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ABSTRACT

The outbreak of COVID-19 brought about novel digital affordances for second language (L2) teaching by moving all the universities in mainland China abruptly to emergency online schools in early 2020. This unprecedented educational situation prompted teachers to exert more teacher agency on classroom teaching, leading to more discussion on the ecology of L2 teaching in an exploratory online environment. To know more about the relationships between digital affordances and teacher agency during the pandemic, the present study tracked two teachers' reflection on their Chinese language instruction over the 2020 spring semester to investigate how they utilized the special affordances via their teacher agency in L2 remote teaching. Reflective interviews showed their implementation of teacher agency through the use of technologies in relation to their teaching beliefs and social contexts. Framing digital affordances and teacher agency in an ecological view strengthened the links between classroom dynamics and social environment, which also implied adaptable instructional practices and resilient professional trends for future L2 online education.

1. Introduction

Teachers play important roles in distance language education; they take primary responsibility for online curriculum development, technology-enhanced instruction, and remote assessment of students' learning outcomes (Meskill & Anthony, 2015). Their capabilities to accomplish these tasks, defined as teacher agency, are thus essential to execute their duties online. Another critical factor in realizing the roles of remote teachers is digital affordances, that is, action possibilities derived from teachers' interaction with digital instructional conditions (Vongalis-Macrow, 2007). Investigating teacher agency with respect to the digital affordances for language teaching is important; it can further the understanding of how teachers situate their language instruction in the digital environment to promote students' remote learning (Lamy & Hampel, 2007). Lessons gained therein also enable teachers to reflectively engage in virtual classes and handle uncertainty against new educational situations.

The exigencies of teaching second language (L2) online during COVID-19 brought out the ecology of L2 instruction by highlighting the dynamics between digital affordances and teacher agency. In the context of the classroom, the abrupt conversion to remote courses hindered the digital environment from providing sufficient technical support; for example, the unexpanded capacity of online platforms limited the speed and space for teachers to conduct classroom activities in livestreaming. Correspondingly, teacher agency was more weighted in conducting online classes through adaptive pedagogy instead of prepared teaching plans (Hodges, Moore, Lockee, Trust, & Bond, 2020). From a broader social perspective, the relationships between digital affordances and teacher agency were

strengthened by the pandemic influence on people's academic and daily life, resulting in more concerns about the interplay between classroom teaching and the society (Levine, 2020). All of these unprecedented circumstances underscored the necessity of investigating the ecology of COVID-19 remote teaching, which may reveal more pertinent features of the relationships between digital affordances and teacher agency under pandemic situations.

Therefore, the present study investigated the characteristics of digital affordances and teacher agency in L2 remote teaching during COVID-19. While a majority of studies probed into these two concepts separately, both affordance and agency are realized by virtue of interactions between humans as agents and the external environment as behavior settings (Heft, 2001; Withagen, Araújo, & de Poel, 2017). Thus, addressing them simultaneously may shed light upon their dynamic relationships, which are principal means to generate situational behaviors. In addition, the sudden switch to totally online instruction compelled teachers to pay more attention to teacher agency, previously a more frequently discussed concept for extracurricular professional development than classroom teaching (Priestley, Biesta, & Robinson, 2015a). Hence, a simultaneous examination of digital affordances and teacher agency may raise the awareness of these two concepts among teachers and inform their joint contributions to L2 classroom instruction during and post COVID-19.

The other objective of this study was to substantiate an ecological L2 pedagogy by empirical data. An ecological approach to classroom teaching signifies the connections of teacher behaviors with both classroom settings and the social environment (Biesta & Tedder, 2007; van Lier, 2004). While this approach is helpful to elucidate the dynamics between digital affordances and teacher agency, the links of what occurs in class to the outside world are not manifest in normal classrooms. COVID-19 remote teaching offered a background for the ecological approach to take effect: the worldwide pandemic drastically altered the digital affordances for teaching while pushing teachers to adapt course designs to those changes by utilizing their teacher agency. Hence, an investigation of digital affordances and teacher agency in emergency remote courses can render the ecological pedagogy more observable and accessible.

2. Literature review

2.1. Affordance and teacher agency in an ecological view

The concept of affordance was first put forward by Gibson (1966) to rebut against the mechanistic view of generating situational behaviors: the environment is not composed of stimuli that force animals to take action but rather a variety of behavioral opportunities for animals to act upon; for example, a pool of water can be used to take a shower as well as drinking (Gibson, 2015). This conception indicates the ecological nature of affordance: it is situated inside an interactive environment with animals as active agents. Nonetheless, affordance does not belong to the environment, nor does it change according to the desires of animals (Gibson, 1982). While it is realized by animals' differential interpretations, not all the affordances are perceivable to them at a certain time.

Agency is a concept that originates from sociology, where it is a subjective element as opposed to society structure to explain social actions, for instance, an intention to speak for the minorities (Archer, 1995; Hollis, 1994). This conception isolates agency from environment, which cannot be used to expound how agency is carried out in specific contexts—the core issue of realizing teacher agency in the classroom (Biesta & Tedder, 2007). The conception of teacher agency identifies agency as the focus of discussion by foregrounding the pragmatic attributes of teacher capabilities rather than the endowed agentic traits of teachers (Priestley, Biesta, & Robinson, 2015b). Accordingly, an investigation of teacher agency is better to be framed in an ecology of contextual agency where the development of teacher agency is incorporated into the evolution of the environment and its relative factors (Philpott & Oates, 2017).

Affordance and agency in teaching are mutually dependent. Affordances not only contain manifold behavioral opportunities but also invite certain actions based on the relationships between the environment and agents (Withagen, de Poel, Araújo, & Pepping, 2012); for example, the digital globalization of the 21st century witnesses the flourishing of online learning platforms, but local restrictions on Internet infrastructure and teachers' technological capabilities make some platforms more likely to be employed than others. Conversely, the actionable properties of affordances are activated by teachers' use of their agency to recognize, select, and evaluate possible actions with respect to behavior settings (Withagen et al., 2017). In consequence, instructional behaviors emerge from the interactions between affordances and teacher agency, the processes of which depend on numerous factors such as teaching capabilities, material resources, and sociocultural conditions.

An ecological approach to affordances and teacher agency is derived from the ecological perspective on visual perception in psychology: natural vision relies on eyes connected to brains as well as bodies supported by the environment (Gibson, 1979). Likewise, an ecological view of L2 affordances and teacher agency values the emergence of language behaviors and perceptions out of the interactions between humans and the environment rather than just the results of brain-resident processing (van Lier, 2000; Vygotsky, 1978, 2012). However, van Lier focused more on learning than teaching, the latter of which concerns more about teacher beliefs and the adaptive alignment between classroom settings and social environment (Levine, 2020). Nor did Vygotsky interpret affordances other than action possibilities in a confined learning space, which may generate fake ecological conditions such as simulated role-play in L2 classrooms. Hence, it is necessary to develop an ecological model of affordance and agency with an emphasis on teaching if the investigation is on teacher agency in classroom praxis and its relations with the outside environment.

2.2. An integrated model of reflective teaching

The ecological nature of affordances and teacher agency are realized by teachers' consistent reflection on their teaching (Henderson, 2001). Reflective teaching is a constructivist approach to classroom instruction; it respects the exploration of teaching

performance and its underlying rationale along with the progress of courses (Corrall, 2017). Thus, it can capture the emergent processes of teaching behaviors and perceptions through interactions between teachers and the environment. This sort of experiential teaching is more demanding in L2 classrooms as the complexity of L2 affordances is escalated by the interweaving of language and culture in a global standpoint (Richards & Lockhart, 1994). Therefore, it is important for teachers to carry out instructional practices through daily observation and reflection on their L2 pedagogy.

Reflective teaching has been theorized into different models by its typologies. A bivariate temporal model was first put forward by Schön (1987) to emphasize the importance of both interactive thinking via doing (reflection-in-action) and retrospective reflection on on-site behaviors (reflection-on-action). A third dimension of reflection-for-action was advanced by Van Manen (1995) and Cowan (2006) to specify the intentional anticipation of an action and its impact on subsequent experiences. On the other hand, a relational model of reflective teaching was established either on cognition levels such as knowledge and introspection (Hatton & Smith, 1995; Mezirow, 1991) or on topics such as technology use and social ethics in teaching (Sparks-Langer, Simmons, Pasch, Colton, & Starko, 1990; Tauer & Tate, 1998). However, few studies integrated these two branches of typologies into one model, which could otherwise depict a more comprehensive picture of the content and processes of reflective teaching.

van Manen (1977) proposed a relational model of reflection with three levels of reflective teaching in the classroom: (1) the technical rationality of instruction as the lowest, empirical experiences, (2) practical principles for pedagogical goals as the middle, interpretive framework, and (3) politico-ethical considerations as the highest social wisdom. The model bears an ecological stance of teaching in that it connects classroom instruction with the outside world. These ecological links are much appreciated in globalized educational endeavors such as COVID-19 remote teaching. Another advantage of the model is the specification of technology roles on its lowest level, namely how web-based technologies are used to accomplish instructional tasks. This technical account is also applicable for COVID-19 remote teaching, during which the Internet became the primary medium for classroom instruction. Nonetheless, the model was built on a cognitive hierarchy of reflection rather than its processes, which could not be used to interpret the dynamics between affordances and teacher agency over time.

A few researchers have visualized the processes of reflective teaching, among which Gibbs's (2013) reflective learning cycle as shown in Fig. 1 is the most practical. Inspired by Lewin's (1946) concept of action research and Kolb's (2014) accounts about experiential learning, Gibbs defines reflective teaching as a process of learning by doing, which is in line with the temporal typology of reflective teaching models. The cycle model also offers prompts for the debriefing of classroom activities at each reflective stage; for example, during the phase of description, teachers are encouraged to recount their behaviors and feelings in specific contexts but not to make judgments, whereas in the process of analysis, they should integrate their experiences in and out of the classroom to make sense of the situation. Gibbs's reflective learning cycle offers a good start for reflective teaching in exploratory situations such as COVID-19 remote teaching (Davies et al., 2020). It also supplies van Manen's (1977) model with temporal guidelines for reflective practices. A model of COVID-19 reflective teaching can thus be constructed by integrating these two models to interpret the cognitive levels and processes of reflection on remote teaching during COVID-19.

2.3. Digital affordances for L2 teaching

Digital affordances for teaching refer to the possible means by which web-based technologies are used to enhance the processes and outcomes of digital instruction (John & Sutherland, 2005). While digital globalization in the past decades has greatly altered daily information delivery, face-to-face instruction is still the principal teaching method in school, with Internet technologies as add-on tools for communication and collaboration in class (Goldie, 2016). Teachers who have envisioned the benefits of technologies are also reluctant to try as they are efficient in accomplishing teaching tasks by traditional instructional techniques (Biesta, Priestley, & Robinson, 2015). Nevertheless, the complexity of school education is multiplying due to the fast development of digital technologies. It
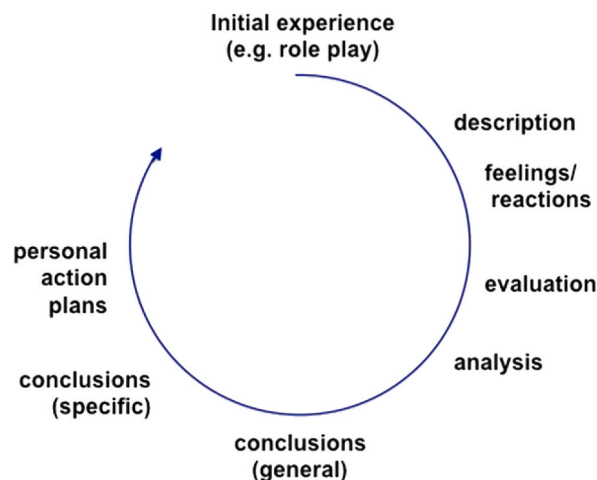

Fig. 1. Reflective learning cycle for structured debriefing in classroom teaching (after Gibbs, 2013, p. 50).

is thus necessary for teachers to keep pace with the changes of digital affordances via experiential methodologies such as reflective teaching for educational values in the long run.

Despite their secondary status in face-to-face instruction, various digital technologies have been exploited in L2 education: online platforms such as wikis and blogs for collaborative writing (Ducate & Lomicka, 2008; Lee, 2010; Sun, 2009; Zorko, 2009), social networking apps such as WeChat and Facebook for learning communities (Blattner & Fiori, 2009; Diao, 2014; Gonulal, 2019; Jin, 2018; Mills, 2011), and video games and fanfictions for situated learning (Black, 2009; Deutschmann, Panichi, & Molka-Danielsen, 2009; Peterson, 2006). However, most studies focused on learner agency rather than teacher agency (Kessler, 2009; Kessler & Bikowski, 2010; Yang, 2009). Students' technological literacy and multilingual identities were also more investigated than the relationships between students and the external environment (Armstrong & Retterer, 2008; Black, 2006; Schreiber, 2015). Unfortunately, the latter dimension comprised the majority of new circumstances teachers and students were confronted with in emergency remote teaching during COVID-19.

COVID-19 remote teaching brought about new digital affordances for L2 teaching. Despite the widespread use of technologies in
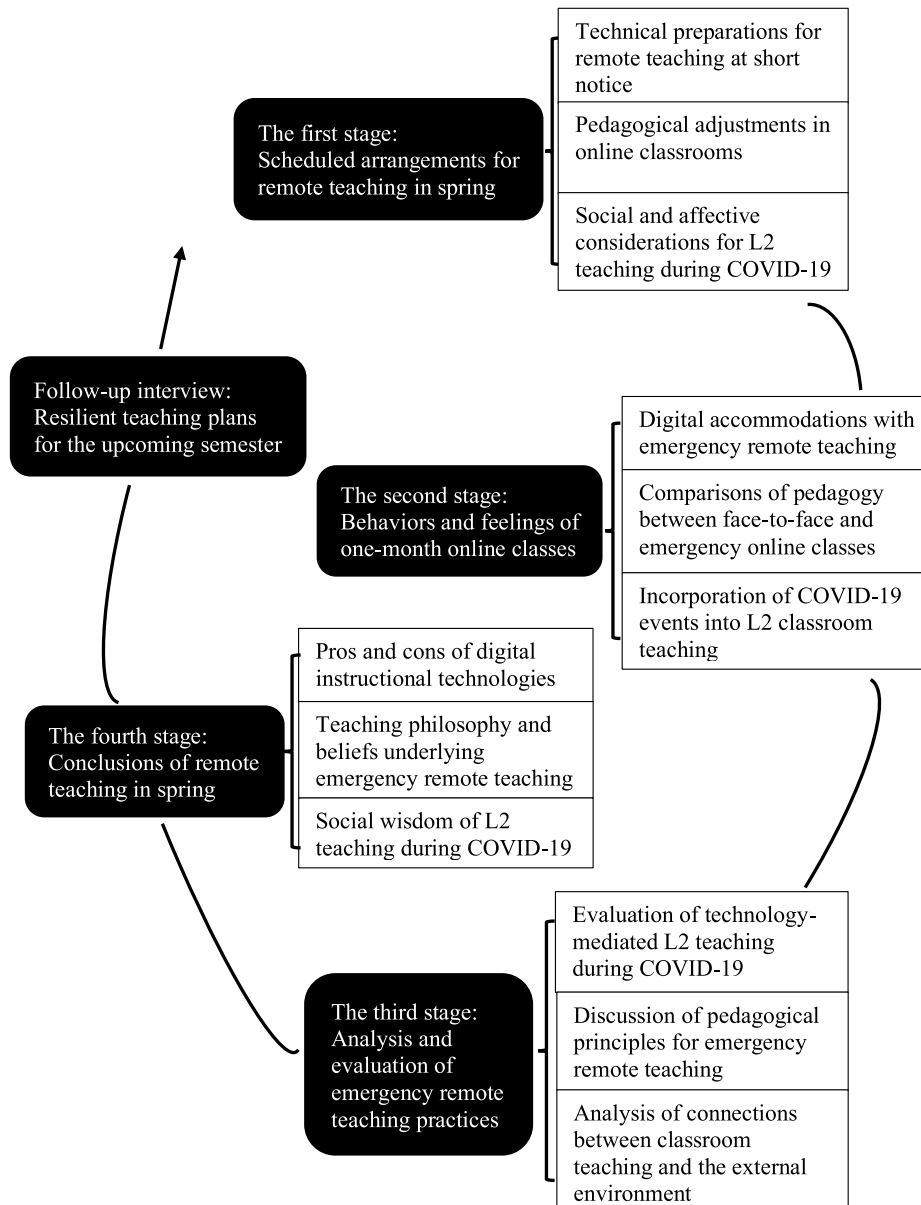

Fig. 2. An integrated model of reflective teaching in an ecological stance. Dark rounded rectangle panels represent interview stages for each participant by following Gibbs's (2013) reflective learning cycle. Light square panels at each stage illustrate the interview topics that cover the three levels of reflection in van Manen's (1977) model.

academic and daily life, the web infrastructure around the world had not been used to carry out such an abrupt and exclusive online teaching mode, resulting in limited technical capacity and unstable Internet connections (Hodges et al., 2020). Emergency remote courses were also designed to reproduce face-to-face classes at short notice rather than to promote online education with long-term prospects, which led to more emphasis on interim class management than technology-enhanced pedagogy (Gacs, Goertler, & Spasova, 2020). Since teachers did not have choices but to conduct remote instruction separately, disparities that already existed in L2 education were enlarged due to the digital divide across socio-economic classes and districts (Wang & East, 2020). As a result, teachers' prior experience of normal online instruction did not become that important as adaptable technology-enhanced teaching informed by the dynamics between digital affordances and teacher agency during the pandemic, though the former provided them with more confidence and digital literacy in emergency remote teaching (Moser, Wei, & Brenner, 2021).

The distinctive features of digital affordances during COVID-19 prompted L2 teachers to apply more agency to their remote instruction. The hurried transition to totally online courses pushed them to explore alternative technology-mediated teaching techniques such as Zoom and Quizlet to maintain the pedagogical goals of face-to-face classes (Hazaea, Bin-Hady, & Toujani, 2021; Loo, 2020; Xu, Jin, Deifell, & Angus, 2021). The rapid evolvement of pandemic situations also urged teachers to consider external challenges such as Internet stability and sociocultural stress when conducting online classroom activities (Al Lily, Ismail, Abunasser, & Alqahtani, 2020; Atmojo & Nugroho, 2020; Mardiana, 2020). Nevertheless, most research findings to date were drawn from self-reported surveys or one-time data collection, which could not imply the dynamic relationships between digital affordances and teacher agency (Nugroho, Haghegh, & Triana, 2021). Reflective teaching was also the least adopted accommodation strategy, although the novel digital affordances called for teachers to rethink their teaching methodologies and refine their instructional skills with the advance of COVID-19 remote courses (Akbana, Rathert, & Ağçam, 2021). A majority of conclusions relied on performance and perception other than concept-oriented analysis, which may otherwise align COVID-19 remote pedagogy with digital education in general and inform L2 online teaching in post-pandemic times (Wang & East, 2020).

2.4. The present study

In view of the foregoing literature review, this study adopted an ecological approach to investigating emergency remote teaching in Chinese as an L2 in mainland China, where school education was first affected by COVID-19 in 2020. The term *ecological* targets the dynamic relationships between digital affordances and teacher agency as well as the connections of these two concepts to social contexts. The ecological features of COVID-19 remote teaching were probed by two teachers' reflection on their remote teaching over the 2020 spring semester.

The research focus was the two teachers' implementation of teacher agency in response to the evolvement of digital affordances during the pandemic. Digital affordances for L2 teaching were operationalized as technology-mediated opportunities for L2 remote instruction during COVID-19. Teacher agency was defined as teachers' capabilities to conduct classroom instruction with respect to the affordances for teaching situated in both the classroom and the external environment. Emergency remote instructional behaviors were assumed to emerge from interactions between digital affordances and teacher agency under pandemic circumstances.

An integrated model of van Manen's (1977) three levels of reflection and Gibbs's (2013) reflective learning cycle was constructed as shown in Fig. 2 to examine the development of L2 digital affordances and teacher agency during COVID-19. Accordingly, three research questions were formulated to address teachers' reflection on the following three aspects of their emergency remote teaching in an ecological stance:

1. How did teachers use digital tools to conduct online Chinese language instruction during COVID-19?
2. What principles did they hold to underpin their technology-enhanced L2 instruction during the pandemic?
3. How did they link their emergency online courses to the pandemic social contexts?

Table 1
Information about the two participants' emergency remote courses in spring 2020.

Settings	Teacher J	Teacher X
Institution	Sino-foreign university	Local Chinese university
Year(s) of teaching	Three years	Almost two years
Prior experiences of online teaching	Yes	No
Co-teaching with other instructors	Yes	No
Course(s)	Intermediate Chinese	(1) Advanced Chinese Writing
		(2) Professional Course of Teaching Chinese as an L2
Weeks of classes	14	18
Online session time	2 * 75min per week	2 * 100min per week
Class size	8 students per section	20-30 students per course
Student population	Non-native speakers of Chinese	(1) Non-native speakers of Chinese
		(2) A mixture of native and non-native speakers of Chinese
Language background(s) of students	Mostly English natives but from different countries	Diverse native languages
Ages of students	18–21	19–22
Majors of students	A mixture of humanities and sciences	A mixture of humanities and sciences

3. Methods

3.1. Participants

The outbreak of COVID-19 in mainland China was officially announced on January 20, right before the Spring Festival and only about 20 days ahead of the 2020 spring semester for most universities (Zanin et al., 2020). Given the short preparation time and difficulties in conducting longitudinal research during COVID-19, a convenience sampling was adopted by reaching out to individual teachers and asking if they would like to participate. Two female teachers who taught Chinese as an L2 in mainland China were recruited as participants. Both of them were native Chinese speakers in their 20s with overseas study experiences of Chinese pedagogy. Teachers from different universities were recruited so as to obtain a range of teaching practices for analysis. Young teachers were chosen because they were used to Internet technologies as digital natives and would be more engaged in the study. More personal and course information of the two participants is illustrated in Table 1.

3.2. Design

Qualitative case studies were conducted to gain an in-depth understanding of participants' emergency reflective teaching. Semi-structured interview was the inquiry method as participants' instructional behaviors could not be directly observed (Merriam & Tisdell, 2016). In other words, while interviews helped participants debrief their COVID-19 reflective teaching, those reflective practices were carried out in their daily instruction rather than during the interview. Fig. 2 illustrates the integrated model used in this study to investigate participants' reflective teaching practices. The sequence of interviews for each participant followed Gibbs's (2013) reflective learning cycle. Questions in each interview covered the three levels of reflection in van Manen's (1977) model.

3.3. Procedures

The major part of the study was carried out in spring. Due to home quarantine policies in mainland China, interviews were conducted remotely via WeChat, a popular social media in mainland China (Jin, 2018). All the interviews were recorded by QuickTime Player in an Apple laptop. There were altogether four interviews—the first one before the beginning of the semester, the second after one-month online instruction, the third approaching the mid-term, and the fourth toward the end of the semester. While the date of each interview was different for each participant according to their academic calendars, their relative course phases were the same. Each interview lasted around 25 min.

A 20min WeChat follow-up interview was conducted three months after the end of spring semester. Each participant reflected on the washback effect of emergency remote teaching on their back-to-school instruction in the fall.

3.4. Data analysis

Analyses of interview data were divided into the following steps. First, interview recordings were transcribed verbatim in participants' original languages—Chinese as their first language and English as their L2—after all the interviews were completed. Member checking about interview content was conducted afterwards by emailing interview transcriptions to each participant and hearing from them one week later. Both of them thought that the transcriptions were accurate and added words that were sought for clarification. The member checking did not arouse frustration among participants as they were reminded beforehand of the verbatim nature of transcribing and the purpose of doing that.

Revised transcriptions were then coded by categorizing examples of reflective teaching into van Manen's (1977) three levels of reflection. Themes of digital affordances and teacher agency in an ecological view were identified therein by analyzing the development of the three levels of reflection in Gibbs's (2013) reflective learning cycle. To increase the reliability of coding, another Chinese language teacher who did not participate in the study coded the transcriptions after being told the purposes of the study. Cohen's kappa coefficient (κ) for interrater reliability was 0.902 (p < .001). Discrepancies were resolved by two coders' further discussion on coded items.

4. Results

The following three themes of reflective teaching were extracted to answer three research questions respectively. Despite their agentic reactions to the abrupt conversion to online courses, the two participants differed in their technology use in class, their understanding of the objectives of emergency remote teaching, and their incorporation of social contexts to L2 teaching. In-text citation of participants' remarks in Chinese were translated into English (see the appendix for original Chinese transcriptions).

4.1. Technical accommodations with novel digital affordances

The inviting features of digital affordances for COVID-19 remote teaching were unprecedented: while exclusive online delivery facilitated technology-enhanced classroom instruction, the abrupt conversion to online courses disabled Internet infrastructure from providing abundant capacity and stable connection for digital education. The format of remote courses also posed more challenges of time and space for L2 classes, where the optimal face-to-face interaction for language practices were missing. Consequently,

participants initiated their teacher agency before the beginning of the semester by planning their use of instructional technologies in anticipation of the digital affordances for emergency remote teaching. These reactions belong to reflection-for-action in technical accommodations without much thinking about their pedagogical assumptions, which can be categorized into the first level of reflection in the integrated model.

Table 2 summarizes participants' instructional accommodations during COVID-19. Despite increased technology use, there was an evident decline of interactions between students or students with the teacher due to the absence of in-person contact in virtual classrooms; for example, group work on traditional Chinese paper-cutting was hard to conduct online, while field trips in authentic L2 contexts were cancelled due to self-quarantine at home. As for classroom management, it was inconvenient for participants to monitor a class through a video camera and give immediate feedback on students' class participation. These technical issues had been anticipated before the class began, as can be inferred from Teacher J's reflection in her first interview:

> I think group cooperation will be cut down, because it is not easy to divide them into groups online. It is also difficult to monitor the interactions within each group. Previously we also did, like asking the whole class to stand up, re-organizing groups, and moving them around in the classroom, but now, um, perhaps we could only ask each student to practice by themselves, which makes it difficult to interact within the whole class. [translated].

Foreseeing the difficulty of online classroom interaction, participants started to utilize students' offline study time as a way to compensate for the missed opportunities of synchronous practices. Teacher J asked her students to preview new words and patterns before online sessions, where they could focus on the exercises of those items. This alternation aligned with flipped L2 classroom design in which the teacher saved lecturing time for spoken language practices, though student workload was augmented. Teacher X also deconstructed classroom projects step by step for her students to handle remotely, as she described in her second interview:

> If there is a project assignment in the next class, I will send learning materials to students two days before the class. I will also send out a preview quiz the night before class to get a general idea of how well they are prepared for the project. During the online session, I will demonstrate an example of the problem-solving procedures and spare time for them to brainstorm and ask questions if any. To accommodate with the reduction of synchronous interactions in class, I encourage multiple submissions of the project to give them feedback and opportunities for polishing their work. Those steps were almost finished in one class or two in face-to-face courses, but my students said they preferred the decomposed online arrangements; some students were even motivated to develop a project report into a brochure or a mind map through several turns of revision. [translated].

Extending classroom activities to students' offline study alleviated the stress of conducting synchronous classroom interactions remotely while facilitating students' self-regulated learning at home. However, teachers should be aware of the doubled time students spent in remote courses, since what could have been explained face-to-face now all had to be written out to overcome time and space obstacles online.

4.2. Pedagogical principles for digital instruction

Despite the limitations on digital affordances for COVID-19 remote teaching, the desire to maintain the pedagogical objectives of face-to-face courses compelled participants to make the most of their teacher agency by exploring diverse instructional technologies to engage students online. While both of them valued student-centered teaching approaches, they diverged on how to realize their scaffolding roles in technology-enhanced classroom activities. This reflection-in-action can be categorized into the second level of reflective teaching in the integrated model because of its interpretive features.

As an advocate of communicative language teaching, Teacher J asserted that multimodal instruction was beneficial to L2 learning in the classroom, where language input was not as abundant as that in natural settings. Thus, she incorporated various modalities of digital information to activate multiple cognitive channels for classroom activities. An example of a live assignment platform named

Table 2
Instructional techniques during COVID-19 as compared to those in face-to-face classes.

Changes		Teacher J	Teacher X
Modified	Increased	1. Oral practice	1. Individual presentation
		2. In-class quizzes	2. PowerPoint slide notes
		3. Use of non-target languages	3. Use of web apps
		4. Digital schedule reminders	4. Assignments
	Decreased	1. Group work	1. Group discussion
		2. Hands-on activities	2. Class participation
		3. Character handwriting	3. Teacher's lecturing
		4. Grammar lecturing	
		5. Body movement in class	
		6. Teacher's monitoring over the class	
Added		1. Task decomposition	1. Daily sign-in
		2. Links of lessons to social events	2. Formative tests
			3. Students' peer evaluation
			4. Discussion of social events
Deleted		Field trips	Textbooks

Go Formative was described in her second interview, with some of its working interfaces shown in Fig. 3. She also reflected on her use of the platform when she demonstrated its functions during the interview:

> It provides all kinds of questions. Like a blank sheet, you can add different types of questions to it by clicking the "+" button on the top right. Multiple students can work on it simultaneously, like a Google Doc, and get immediate feedback from me. They can make audio, written, and even emoji responses to questions. Other platforms such as Zoom and Google Docs could also do similar jobs, but none of them have such a comprehensive set of instructional functions, namely designing assignments, facilitating classroom interactions, and assessing student work. It's surprising that I did not even know this platform before the pandemic. But it also has its drawbacks, like, it is not convenient for students to do handwriting on it. Perhaps I need to explore another platform if I want to instruct my students on Chinese character handwriting remotely. [translated].

By contrast, Teacher X held that students should take major responsibility for the progress of remote courses, as she reflected in her

Fig. 3. Exemplars of assignment interfaces in Go Formative.

third interview:

> For most emergency remote courses, form is more important than content. That's not sensible. Teachers should facilitate students' active learning by means of digital technologies rather than exploit platforms and apps to create technology-enhanced classrooms. As for the requirement of opening web cameras in online sessions, I don't think it necessary if students feel it uncomfortable to carry out classroom discussions when the camera is on. We can still communicate via speech and written chat box. If some students experience mind-wandering and do not listen to me carefully in class, that's their loss, not mine. After all, knowledge and skills are more meaningful for students themselves. [translated].

Accordingly, Teacher X did not take part in all classwork but fostered opportunities for students to practice problem-solving skills such as critical thinking and peer collaboration in class. Fig. 4 summarizes her descriptions of a peer evaluation task in the professional course of teaching Chinese as an L2. The task was designed for a debate on L2 classroom management. She merely led three steps throughout the whole task: dividing students into groups, assigning debate roles, and preparing peer evaluation forms. All the other procedures were completed by students themselves through resource searching, offline collaboration, and online class participation. In this manner of active learning, students may gain more insights about L2 classroom management, which is also beneficial to their future teaching careers.

Beyond the technical application of digital affordances and teacher agency, participants' distinct implementation of student-centered teaching approaches were resulted from their different beliefs on the pedagogical goals of L2 remote teaching: for Teacher J, teachers' multimodal scaffolding in every detail was crucial for positive online learning effect, whereas for Teacher X, fostering students' active learning was the key to success in remote courses. These instructional discrepancies may also be attributed to other factors such as student characteristics, course content, and class size: the Chinese levels of Teacher J's students were not as high as those in Teacher X's classes. Thus, Teacher J's classes had more linguistic practices that could be optimized by multimodal teaching. Teacher X had larger classes of advanced learners who already entered the stages of thinking in their L2. As a result, group projects on thinking instead of linguistic practices would benefit them more.

4.3. Social considerations in emergency remote teaching

The incorporation of social contexts, for instance, citing COVID-19 events as supporting examples of classroom discussion, comprised the highest level of participants' COVID-19 reflective teaching. Most of these reflective practices were reflection-on-action that was conducted retrospectively in areas such as vocabulary practices and learning assessment; for example, the pandemic offered a great opportunity for students to learn L2 from authentic materials rather than prefabricated textbook resources, as Teacher X recalled in her third interview:

> There are many examples of L2 learning during COVID-19: now comes a research area called emergency linguistics with large quantities of language resources, including recently Japanese and South Koreans donated stuff to Wuhan with handwritten Chinese poems attached to the surfaces of donation boxes. We can also pay attention to the reporting format and sequences of daily news. Their wording is fastidiously chosen and skillfully contrived. For lower-level courses, students can learn new vocabularies and develop listening skills by way of recognizing numbers, names of administrative areas in China, percentages of increases and decreases of positive cases in news reports. These are all expanded, authentic materials with multiple contexts. [translated].

Similar with the realization of their scaffolding roles, participants' tackling with the social influence on remote teaching were also informed by their differential pedagogical beliefs and course contexts. Positioning herself as a participatory practitioner, Teacher J saw the pandemic as a critical period to develop technology skills such as animation and typewriting. She also regarded classroom
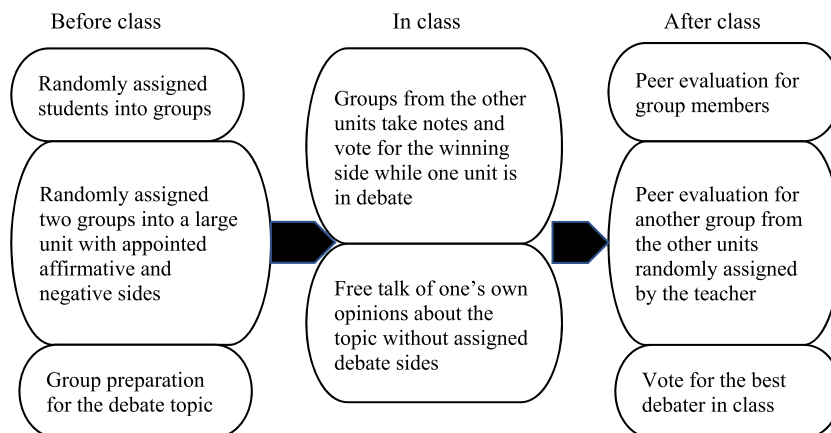

Fig. 4. Peer evaluation procedures for a debate class about whether shuffle grouping facilitates student collaboration in L2 classrooms.

assessment as a way of situational teaching, as she explicated in the fourth interview:

> Grades are more than scores, which indicate students' Chinese proficiency levels, the completion of their assignments, or the life challenges they were confronted with. Accordingly, I distracted my students' attentions from scores by integrating the assessment into the progress of remote courses and social contexts: I sent out weekly schedule reminders every Monday along with a tip on social-distancing in Chinese. I also adapted COVID-19 news into quiz questions to check my students' self-regulated learning during offline school days. Opportunities for earning extra credits were also offered to them to accommodate their academic and life difficulties during the pandemic. Those operations partially compensated for the missing of in-person interactions between students and me, and helped form a sense of online classroom community. [translated].

Conversely, scores were deemed unnecessary for Teacher X's emergency remote teaching. While she designed test questions based on COVID-19 events, for instance, "what are the writing styles you have seen in recent COVID-19 news" and "to compare the use of punctuation in news reports with that in academic writing", she embraced a far-reaching ecological perspective on L2 teaching by emphasizing that the teaching objectives should be grand topics related to life and social ethics during the pandemic instead of the language techniques students were expected to learn in normal L2 classes, as she explained in her follow-up interview:

> Humans were facing such a big ordeal during COVID-19, but we were still struggling with exams, classes, and course schedules. I think we missed a valuable opportunity to learn from the pandemic. Obviously it was a good time to teach students to use their L2 in the discussion of more meaningful, realistic topics such as patriotism, reverence of life, professional ethics, family love, and national development. There were many, like broad, ideology topics, but we ignored them and focused on classroom teaching techniques instead. We seemed small-minded, like penny wise and pound foolish. Everyone had an impressive experience in it, didn't they? It could have become a suitable period to do critical thinking on it with the assistance of language, technology, etc. [translated].

5. Discussion and conclusions

For L2 teachers who were obliged to teach online during COVID-19, reflective teaching has been substantiated by this study to be a possible approach to applying digital affordances and teacher agency in an ecological stance. In the two cases of Chinese language teachers in mainland China, teacher agency was realized by their consistent reflection on technology use in virtual classrooms, pedagogical principles for digital instruction, and social influence on L2 education throughout a semester of emergency remote teaching. The dynamic relationships between digital affordances and teacher agency during the pandemic can be interpreted by the integrated model of reflective teaching as follows:

When faced with the unprecedented digital affordances for L2 teaching, both participants implemented technical accommodations to adapt to online instruction during COVID-19. They changed the format of assignments to abate the inequity of Internet resources for students from different countries. They deconstructed activities step by step to ease the remote handling of synchronous interaction in online classes. These initial adjustments are classified as the first level of reflective teaching, namely the technical rationality of emergency remote teaching without careful deliberation of its rationale.

The first level of teaching accommodations was underpinned by the second level of reflection on the pedagogical principles for COVID-19 remote teaching: Teacher J valued agentic scaffolding to promote students' multimodal learning, while Teacher X appreciated the opportunities for students themselves to take on active learning and critical thinking. These differential teaching beliefs also affected participants' manipulation of other factors such as student characteristics and course contexts to realize their teacher agency during the pandemic; for example, Teacher J would feel frustrated if the majority of her students did not open their video cameras in a speaking class, whereas Teacher X did not think it as a big problem if students were more comfortable without their cameras on in a classroom debate.

The third level of reflective teaching—the social wisdom of L2 remote teaching—permeated throughout the dynamics between digital affordances and teacher agency on the first two levels; for example, Teacher J utilized the pandemic social contexts in classroom assessment to reduce her students' grade anxieties, and Teacher X appealed for students to focus more on social topics for critical thinking. This kind of social authenticity also strengthened participants' emotional and moral bonds with their students, which were relatively weak in L2 (Costa et al., 2014; Geipel, Hadjichristidis, & Surian, 2015) but could become another useful resource of L2 teaching that fulfilled affective needs for language knowledge and skills once they are activated.

The findings of this study contribute to L2 online education by offering operable teaching techniques for remote courses during and post COVID-19: deconstructing and rehearsing task procedures beforehand help students understand task instructions better. Multiple submissions and schedule reminders also lower the stakes of assignments and tests, which in turn encourages students to manage remote learning by themselves. These technical accommodations create buffer times and extra resources for teachers and students to negotiate and reflect on classroom activities, leading to more readiness for technology use and communication in online teaching and learning (Davies et al., 2020; Jin, Xu, Deifell, & Angus, 2021). Meanwhile, they bring out the issue of technological literacy that already existed in L2 classes before the pandemic (Goertler, Bollen, & Gaff Jr, 2012; Hubbard, 2019; Kessler, 2018; Lai & Morrison, 2013) through the semester-long emergency remote teaching when online and hybrid courses were gradually embraced as the normality of students' school learning and teachers' professional education (Gacs et al., 2020; Paesani, 2020).

Furthermore, tracking the dynamics between digital affordances and teacher agency provides a window to examine the characteristics of L2 online teaching and learning from multiple angles, which otherwise might be overshadowed by one-time data collection;

for example, the decomposition of classroom activities and assignments makes it easier for students to navigate through remote courses while doubling their workload, which might eventually result in their digital burnout (Herman, Reinke, & Eddy, 2020; Pressley, 2021). Consistent exploration and reflection on the affordances for remote instruction also render their values more obvious, which in turn facilitates teachers to cope with digital stress positively and build more confidence on technology-enhanced classroom instruction (Jin et al., 2021; MacIntyre, Gregersen, & Mercer, 2020). This sort of reflective teaching helps reveal the ecology of teacher agency and the environment by assisting teachers in developing an adaptive mind for remote instruction—a crucial component of teacher training after COVID-19 remote teaching signified its importance to the resilience of online educational communities and the handling of unforeseeable affordances in the post-pandemic world (Paesani, 2020; Quintana & DeVaney, 2020).

A third implication has to do with methodologies. Although more formative tests and assignments were created by teachers to guide students' course learning during COVID-19, their validity and reliability have not been testified. Despite the positive feedback from students, they may have triggered more placebo effects than essential learning achievements. For example, Strobl (2013) revealed that the accuracy of online collaborative writing was not significantly better than that of individual writing, but they were more superior in terms of content selection and organization. What learners felt gaining from online collaboration was the exchange of thoughts instead of their L2 writing proficiency. Likewise, it is also reckless to resort totally to quantitative assessment without analysis beyond scores, particularly with digital standardized tests which outcome statistics seem so reasonable to be taken for granted. Hence, mixed methods with both quantitative statistics and qualitative descriptions can be the next pursuable decision for teachers to reconcile methodological biases in remote classroom assessment.

Future research may touch upon the topics of identities and translingualism as other attributes of the relationships between L2 digital affordances and teacher agency (Pennycook, 2018). Teacher agency in an ecological sense can also be expanded to include transformative potentials for rational compassion and social justice (Bloom, 2016), which did not emerge in this study but is a critical issue in L2 education. As for the emotional guidance on L2 remote instruction, teachers' non-academic routine check for students' learning progress, for instance, asking "what is the muddiest point you experienced this week" and "what is your most confident skill for the upcoming exam", may provide opportunities for students to link their emotions with L2 and express them in a socialized manner.

Belonging to the group of Chinese language teachers, the author conducted this study from an emic perspective, in which personal biases might be involuntarily but inevitably blended with data interpretation (Canagarajah, 2011). Hence, future research on reflective teaching may include student feedback on teacher work as well, which can serve as a relatively objective source for the evaluation of reflective teaching practices.

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Appendix A. Supplementary data

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