

## Chapter 2 - Students' Perception of Engagement with Technology during COVID-19 Emergency Remote Learning

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### Chapter Highlights

- Technology was perceived to positively impact students' engagement during ERL by facilitating cognitive, social, and affective engagement.
- Technology can also negatively affect students' engagement by changing established learning strategies and causing distractions.
- Professional development is necessary for instructors in ERL planning to effectively use technology.
- Instructors need to incorporate technology to enhance collaboration and accommodate different student needs.
- Emotional support is needed during the transition from in-person to ERL.

## Introduction

With the unprecedented worldwide outbreak of COVID-19, most higher education institutions in the United States abruptly transitioned from traditional classrooms to emergency remote learning (ERL) classes in the middle of the 2020 spring semester. This was intended to reduce the risk of contracting the deadly virus within academic communities, making online learning a popular choice for allowing university students to continue their studies for the remainder of the academic year. The switch to ERL not only changed the learning setting from an in-person context to a virtual remote context, it also changed how students engaged in the classroom, as students were abruptly required to be in online learning settings with little or no proper preparation or technical support. This quick and somewhat chaotic transition was a substantial deviation from the norm, especially considering that a regular shift to online learning requires multidimensional preparations and adjustments (Redmond et al., 2018). The migration to online learning is ideally well-planned, and occurs prior to the start of the semester and has a well-structured curriculum design, resource support, technical assistance, etc. ERL, on the contrary, happens when online instruction needs to be implemented immediately and emerges in response to unpredictable “crisis circumstances” (Hodges et al., 2020).

Research has shown that students engage differently depending on whether they are in a traditional class, online class, or a blended class (Halverson & Graham, 2019). Factors that can affect student online engagement have been identified in many studies. Researchers have found that social presence (Louwrens & Hartnett, 2015), technology implementation (Chen et al., 2010), collaborative activities (Kim et al., 2015), curriculum design (Blakey & Major, 2019), digital literacy (McGuinness & Fulton, 2019), have played important roles in student online engagement. Among all the identified factors, educational technology, serves as a crucial component to online student engagement as online learning environments have become increasingly common with emerging new educational technologies (Beer et al., 2010). These new technologies facilitate online learning, as they help to create a collaborative online environment, provide teaching and learning resources, and connect instructors and students. Among educational technologies, Learning Management Systems (Beer et al., 2010), social media (Rutherford, 2010), web-based technology (Chen et al., 2010; Nadeem, 2019), mobile technology (Heflin et al., 2017), assessment technology (Han & Finkelstein, 2013; Nadeem, 2019), and collaborative technology (Blasco-Arcas et al., 2013; Heflin et al.,

2017) have caught most of the attention. Many have argued technology integration in online instruction has fostered an interactive, online learning environment and therefore enhanced student engagement. Ultimately, the use of technology in instruction is thought to “trigger more engagement” (Nadeem, 2019, p.73) and have a positive influence on students’ learning outcome, personal competence, and personal and social development (Robinson & Hullinger, 2008; Chen et al., 2010; Stanley & Zhang, 2018).

However, in an emergency remote learning setting, the implementation of the appropriate technology proved to be challenging. Although attempting to make the transition as smoothly as possible, some instructors might have difficulty adopting technology and teaching. At the same time, with a rapid switch to an online setting, students’ readiness to utilize technologies in their ERL was being tested as well. What role was technology playing in student online engagement during ERL? How did students perceive their engagement with technology use during ERL? These questions require further investigation. In this study, the definition of optimal student online engagement is threefold; it involves students’ appropriate use of technology to create and maintain social interaction in the classroom, sustained participation in cognitive learning processes, and positive emotional reactions toward the learning environment during ERL. In light of the aforesaid, in this study we aim to:

- investigate students’ perceptions on their social, cognitive, behavioral, and affective engagement with technology use during ERL of Chinese;
- provide practical implications for technology implementation in future ERL setting.

## Literature Review

### *A Transition to Emergency Remote Learning*

Today’s rapidly changing communication technologies have enabled the possibility to move from traditional face-to-face classes to online classes (Wiesenberg & Stacey, 2008). Traditionally, in order to make a smooth transition from a face-to-face class to an online class successfully, instructors have to make sufficient preparations. These preparations can include learning how to use new technologies, implementing best practices for online teaching, making subject-specific adjustments, and collaborating with a more experienced person (Cochran & Benuto, 2016). Resources and technical support are often provided before the start of the course by institutions in the form of professional development or training sessions

(Zheng et al., 2018; Vilppu et al., 2019). Students, at the same time, are aware of the class structure ahead of time, usually before the course begins, and therefore have enough time to prepare for the upcoming online learning. Under this model, both instructors and students are expected to be ready to engage in an online class at the beginning of the course.

However, that is not the case for emergency remote learning. The main purpose of ERL is not to recreate a pre-emergency learning environment virtually, but rather to provide quick and reliable instruction to students during the emergency (Hodges et al., 2020; Van der Spoel et al., 2020). With that being said, emergency remote learning should not be easily equated to a regular online class. Hence, spring 2020's transition to ERL should not be seen as a mere transition from a face-to-face class to an online class. The instructors and administrators were unexpectedly and abruptly informed of this transition during spring break of 2020, and therefore they had "little forethought for its practicality or effectiveness and virtually no time for planning" (Schultz & DeMers, 2020, p.143). This rapid transition to ERL "required quickly redesigning what they had prepared in advance for the teaching semester" and adjusting their already-designed face-to-face curriculum for online learning (Green et al., 2020, p.907). Many challenges, such as learning new technologies and software, maintaining a normal laboratory experience, keeping academic integrity, and "Zoom fatigue", have been identified during this transition to ERL (Gares et al., 2020). For example, many instructors had to learn how to use Zoom or other communicational tools to teach online after ERL began. However, with so many technological features on Zoom, it was challenging for some instructors who have "taught in the classroom their entire career and has not employed technological tools and pedagogies conducive to the virtual environment" (Schultz & DeMers, 2020, p.144). Because multiple factors contribute to student online engagement, one can hypothesize that major deviations from the typical online learning format, such as ERL, will introduce new features that need to be considered for a robust understanding of student online engagement.

### ***Student Engagement Framework during ERL***

Classroom engagement as a "multidimensional construct" (p.73) has "distinct, though interrelated" (p.73) aspects (Nadeem, 2019), and many researchers have been trying to identify these possible aspects (Fredricks et al., 2004; Reeve & Tseng, 2011; Redmond et al., 2018; Halverson & Graham, 2019). Fredricks et al. (2004) propose a 3-component model

featuring behavioral engagement, emotional engagement, and cognitive engagement. According to Halverson and Graham's comprehensive literature review (2019) on models of engagement, many researchers have adopted this tripartite model and used it as the foundation of their new frameworks. In order to systematically analyze student engagement in ERL setting, an interdisciplinary conceptual engagement framework (Fredricks et al., 2016) has been adopted in this study. In this framework, four crucial components for effective student engagement have been identified: social engagement, cognitive engagement, behavioral engagement, and affective engagement. This framework was utilized to guide the interview to collect the data in this study and then analysis the interview data.

### *Social Engagement*

Social engagement refers to the development of relationships through social interactions between students and their peers and instructors in both academic and non-academic settings (Pittaway & Moss, 2014; Redmond et al., 2018). Social interactions among students and faculty, in both formal and informal contexts, are of great importance in both face-to-face learning and online learning (Chen et al., 2010). Through social interactions, students can create "purposeful relationships" with their classmates or professors (Redmond et al., 2018, p. 191). They are critical for building student engagement through developing the student's sense of belonging in the classroom community (Lear et al., 2010). Educational technology offers numerous opportunities for social interaction within the online learning community (Lear et al., 2010). Hong and Gardner (2019) argue that technology, such as SNS, has played a big part in socializing and facilitating students' peer learning. Students who utilized technology in their learning have reported higher personal and social development (Chen et al., 2010).

### *Cognitive Engagement*

Cognitive engagement refers to students actively involved in the learning process, working to comprehend complex ideas and then build necessary skills (Fredricks et al., 2004). This process relates to what students do and think to promote learning, which involves intentional or active-intellectual effort and integrating new information into prior knowledge (Greene, 2015; Redmond et al., 2018; Blakey & Major, 2019). Different levels of cognitive engagement manifest in various way. For example, shallow cognitive engagement involves

“rote processing” (Greene, 2015, p.15) such as repeating ideas without clarification and agreeing on arguments without explanation. On the other hand, justifying and integrating ideas with multiple sources (such as exchanging ideas), providing new judgments to support ideas (such as giving constructive feedback) would be considered deep cognitive engagement (Redmond et al., 2018). Studies have shown that technology plays a part in a student’s cognitive processing. Chen et al. (2010) suggest that students who utilize technology in their learning “are more likely to make use of deep approaches of learning like higher order thinking, reflective learning, and integrative learning in their study” (p.1230).

### *Behavioral Engagement*

Behavioral engagement is generally related to students’ class attendance (Mahatmya et al., 2012), adherence to the rules, meeting teachers’ and schools’ expectations, and participation in extra-curricular activities (Fredericks et al., 2004). In order to be behaviorally engaged, students have to be willing to exert the effort to build the engagement (Blakey & Major, 2019). “Showing up”, defined as attending classes and turning in assignments on time, is argued by Blakey & Major (2019) to be a key indicator of behavioral engagement, and is therefore critical for students to be engaged in learning. On the other hand, to keep students behaviorally engaged, instructors should put forward clear expectations, rules, and learning routines for students and allow students to participate in developing the expectations, rules, and routines (Fredericks et al., 2011).

### *Affective Engagement*

According to Fredricks et al. (2004, 2011) and Redmond et al. (2018), affective engagement refers to a student’s wide range of affective reactions towards school, teacher, and learning activities, both positive and negative. Although both negative and positive emotions can contribute to the activation of students’ affective engagement, positive emotions have an advantage in promoting engagement over negative emotions (Sinatra et al., 2015). Moreover, negative emotions, such as boredom, frustration, and anxiety, can be associated with technology-enhanced learning (Halverson & Graham, 2019). For example, technology issues related to hardware or software often cause frustration, which can then cause learners to be unable to keep pace with the course (Bambara, 2009). Heflin et al. (2017) have studied the impact of mobile technology on student engagement, and they suggest technology sometimes

can lead to students' distractions because of a lack of face-to-face interactions.

Researchers argue that these four elements of this multidimensional construct need not merely be explored as isolated processes (Fredricks et al., 2004; Redmond et al., 2018). That is to say, different features of online engagement can correlate with or affect one another other within this conceptual framework. For example, overlapped engagement indicators, such as effort and persistence, have been found within cognitive and behavioral engagement (Halverson & Graham, 2019). Fredricks et al. (2004) have found a correlation between social environment and student's emotional and cognitive engagement. They also mention that lack of behavioral engagement can lead to emotional withdrawal and less sense of belonging in the academic community (Fredricks et al. 2004). In addition, "if students are not emotionally engaged, cognitive, behavioral, and social engagement will also be lacking" (Malan, 2020, p.326).

The literature has shown that there are certain connections between technology use and student engagement. However, Chen et al. (2010) points out that the precise nature of the relationship between technology and student engagement should be further explored. In addition, the abrupt transition to an ERL environment is another important factor which should be taken into consideration when investigating student engagement with technology use during ERL.

## **Methodology**

### ***Participants***

The participants in this study were six college students purposefully sampled to yield the most diverse information (Tashakkori & Teddlie, 2008). Upon the Institutional Review Board (IRB) approval, recruitment letters were sent out to recruit students to participate in this study from five different universities in the U.S. Six students responded to our recruitment letter and agreed to participate in this study. Among the participants, five were male and one was female. In terms of ethnicity, four of the participants were white students, one was an Asian American student and one was an African American student. In regard to student status, there was one second year student, one third year student, two fourth year students and two recently graduated students. Their ages ranged from 20-25. Each student was a major in a different discipline: Physics, Cyber Security, International Studies, Biology, Chinese or

Chemistry. These six participants are from four different types of U.S universities. These universities were either state research-focused (n=2), state teaching-oriented (n=1), private research-focused (n=1), or private liberal arts institutions (n=1). A small size sample approach was adapted for this study and it was focused on Chinese language student's perceptions only. Table 1 shows the overall characteristics of six participants.

Despite their differences in background, all participants participated in online learning during COVID-19 ERL in the spring semester of 2020. Although some of the participants had experience in an online class or a hybrid class before, it was their first time in an ERL environment. All participants had experience in using technological tools or strategies to assist their Chinese learning, and their views toward technology implementation were different. All six participants had the ERL experience, yet from different institutes with different backgrounds. These criteria had enabled this study to yield relatively meaningful results with a small sample size.

Table 1. Characteristics of Participants

	<b>Race</b>	<b>Age</b>	<b>Gender</b>	<b>College Year</b>	<b>Major</b>	<b>Types of university</b>	<b>Years of studying Chinese</b>
A	Asian American	20	Male	Second year	Physics	private research-focused	Two years
B	African American	22	Male	Fourth year	Cyber Security / Chinese	state teaching-oriented	Four years
C	White	21	Female	Third year	International Studies	state research-focused	Five years
D	White	21	Male	Fourth year	Biology / Chinese	private liberal arts	Three years
E	White	22	Male	Recently graduated	Chinese	state research-focused	Five years
F	White	25	Male	Recently graduated	Chemistry	state research-focused	One year and half

### *Date Collection*

The major form of data collection in this study was open-ended, semi-structured interviews.



The interview guide and questions were constructed based on the engagement framework (Fredricks et al., 2016). The interview guide was sent to participants before the interview to familiarize participants with the purpose of this study, as well as general questions they would be asked during the interview. For safety reasons during the COVID-19 pandemic, the interviews were only conducted virtually via a video conference software. Each interview lasted between 60 minutes to 100 minutes and was automatically recorded by this software. The interview consisted of background information questions and open-ended questions about students' perceptions of their four different engagements with technology use; it also asked students to assess their Chinese language learning experience during the ERL setting.

### *Data Analysis*

A total of six interviews were recorded by a video conference software. About 8.3 hours of recorded interview data were collected. After conducting and recording the interviews, the interviews were transcribed by the interviewer and the transcripts were member checked before the coding process. Students were given pseudonyms in the interview transcripts and their personal information were deleted from the transcripts before the coding process. Three coders participated in the coding process. All coders hold foreign language teaching positions from three different American universities. After each coding round, coders had a meeting to check the accuracy of the coding process to increase the inter-rater reliability.

The transcripts were coded using Saldaña's (2009) first and second coding cycles. Each coding cycle has two rounds of coding. Structural coding process was applied during the first coding cycle. The structure of coding in the first round of coding was based on the theoretical proposition of this study, which was the engagement framework (Fredricks et al., 2016). Based on this framework and the research questions of this study, engagement indicators, technology implementation, and transition to ERL were used as the initial codes within individual interviews for the first round of coding. Analytic memos were also used during the first round of coding to gather thoughts and opinions from the data sets and then to identify different code sub-categories. The second round of coding analyzed the students' perceptions of their engagement with technology implementation, and the transition to ERL within an individual data set. The pattern coding process was applied during the second coding cycle. The third round of coding cross-examined six different data sets to look for repeated and focused themes and topics. At this stage, similarities and differences in students' perceptions

towards the technology use and engagement in an ERL setting were found within six data sets. The final round of coding analyzed the connections between the four engagement elements and themes found in the third coding round, then analyzed interactions among thematic sub-data sets and synthesized them.

## Findings

The data analysis uncovered four major themes in relation to technology use under the four main conceptual constructs of social engagement, cognitive engagement, behavioral engagement, and affective engagement during ERL.

### *Transition to ERL*

The data analysis first presented us with general background information of the six participants regarding their technology use during ERL. In a timely response to the pandemic, their Chinese classes shifted from face-to-face classes to online classes at some point in March 2020. As a result, all six participants' Chinese course structures changed. Everything went online. For instance, dictation, which is very common and important in a foreign language class, was moved from handwritten to type on a computer. Exams, both written and oral, were restructured to be completed online, some of which were made to be open-book. The Learning Management System (LMS) played a critical role in this transition. Instead of handing in their handwritten homework, dictation, and tests, participants had the option to either submit it electronically through LMS or handwrite, scan, and upload it to LMS. They might also email their homework or exams directly to their professors.

Other than LMS, the six participants had all used educational technology to support their Chinese learning during ERL. Mobile phone apps (e.g., Pleco, Quizlet, Tinycards), online translators (e.g., Google translation, WeChat translation), Chinese podcasts and news (e.g., Learning Chinese through Stories), communication tools (e.g., Zoom, Facetime, Facebook Messenger) were the most used technologies. All participants reported their competence with and knowledge of technology were adequate during ERL, especially their ability to quickly learn how to use a new technology required by their Chinese professors, regardless of whether they had an online class before or not.

The data analysis revealed that students tend to be quite technologically savvy when it comes to learning online, perhaps more so than one might think. Participants seemed to react actively and positively to the need to learn new technologies during this rapid transition to ERL. On the contrary, their professors needed assistance in adapting to the use of new technologies. According to the participants, their professors seemed to have a larger “learning curve” when adapting to the new technologies than the students. The unfamiliarity with how to use new technologies by professors, however, was largely tolerated and forgiven by students (Gares et al., 2020). Thus, in future planning for ERL practice, it might be important to give more attention to providing resources and support for instructor rather than for students. This can take the form of professional development workshop sessions so that faculty can fasten their competence with implementing new technologies. Based on the data, this competence is not something that students lack to the degree that professors do.

### *Student Engagement with Technology during ERL*

Based on the engagement framework proposed by Fredricks et al. (2016), our interview questions were associated with four different types of engagement and how technology use interplays with each of them in an ERL environment. The data analysis revealed each engagement as follows.

#### *Social Engagement*

During this ERL setting, various educational technologies were instrumental in building, maintaining, and enhancing relationships established before ERL between the six participants, their classmates, and their professors. In their online classes, participants were utilizing Zoom, Learning Management Systems and other communications tools to keep connecting with their classmates and professors. Outside of class, social media and chatting apps became the common tools to stay in touch with classmates.

Participants’ Chinese professors had taken the initiative to use technological tools and strategies to keep students socially engaged and connected, as suggested by Nadeem (2019). In order to achieve a social and supportive online learning environment, professors had different engagement strategies. The most common strategy was to split a large class into smaller groups by using breakout rooms or breakout sessions feature from Zoom or other

communication tools. Many participants liked because they were able to interact with their classmates more personally. However, participants A claimed the Zoom breakout room was ineffective and was “nothing like the in-class group.” In addition, professors kept students attentive by frequently calling on students and asking them questions, encouraging conversations between themselves and students. Another strategy was requiring students to turn on their cameras and audio in order to hold them accountable for their participation.

Building a sense of belonging within a learning community is another indicator of promoting social engagement (Redmond et al., 2018). Participants had differing reflections on how this ERL environment impacted their sense of belonging in their classes. Those who believed that their sense of belonging was enhanced explained that constant encouragement from professors and the breakout room/sessions played positive roles in bringing students closer to each other. Students realized they were all going through a shared experience, and therefore, they were somehow deeply connected.

Those who claimed a loss or diminished sense of belonging had different perspectives as well. For example, participant A described his experience,

Online learning makes people depersonalized. When you learn online, you start to separate your personal identity from yourself as a student. People...just go online, go on Zoom, they just turn off their camera whenever they are in the class. There's not much sense of belonging because it doesn't really feel the class is real.

Participant B, who double majored in Cyber Security and Chinese, believed their sense of belonging connects with the level of Chinese class the student was taking and their personal study preferences.

When you have reached a higher level of Chinese, you can't say that the sense of belonging comes from, at least in my university, the relationship between you and your classmates. My focus on learning Chinese is how to keep studying with professors and how to use the resources my professor has given to me rather than how to keep a good relationship with my classmates.

Distinct from other participants, this participant was majoring in Chinese. Thus, it was quite different from taking a Chinese course as a general language requirement or an elective. Because the student was likely familiar with the department, the content, and the other

students, his sense of belonging might have been impacted by his discipline. In future research, it will be also helpful to study how students' disciplines affect their engagement.

Furthermore, participants identified several drawbacks of ERL class that kept them from being socially engaged. First of all, the online class was not personal, even described as "antisocial" because "you can't see all the classmates at once and lose connection with them after class." Whereas, in a traditional face-to-face class, "you would learn [about] someone better". Second, it was more difficult to take note of communicative social cues such as body language and expressions in an online class than in a face-to-face class. Lastly, it was hard to keep social interactions natural within the ERL classroom, leading to lower student participation; this is juxtaposed with the traditional classroom where one can interact with classmates and professors naturally by raising hands or asking questions directly. Participant D raised his concern as below:

It was hard to answer questions over online because, you know, when [you are] in a class, you can kind of speak out and everyone can talk to each other, but online you can't, it's not as natural as just say[ing] something, because people get confused and [are] not sure who [said] what. And you feel like you are stopping the class, and then everyone has to wait. And you say something, [and] people talk over each other, like interrupt sometimes, which is difficult.

In this case, video conference platform, as a medium to keep participants connected with classmates and professors during ERL, did not make the connections socially appropriate and brought a social awkwardness to the participant.

### *Cognitive Engagement*

As Fredricks et al. (2004) have identified, cognitive engagement is the most fundamental form of engagement. The data analysis assessed six participants' cognitive engagement in regard to different aspects of their Chinese learning process and analyzed how technology use participated in students' cognitive engagement during ERL.

Cognitive engagement occurs when students are actively involved in their learning process (Reeve & Tseng, 2011; Redmond et al.,2018; Blakey & Major, 2019). Most of the participants stated their Chinese learning process, including planning, previewing, studying,

and reviewing, were not that much different than pre-ERL. Technology had been already integrated into their Chinese learning before ERL, such as Pleco for learning Chinese characters, Google translate for learning Chinese grammar. However, with ERL, new technology and strategies were put in place. Participant D described typical ways to improve his Chinese listening skills during ERL:

My professor gives us recordings of textbooks which she recorded herself. I listen to these over and over to see if I understood without looking at characters. That's very helpful, having recordings of our textbooks.

Besides textbooks, they relied heavily on other electronic learning materials, such as slides, website links, and recordings provided by their Chinese professors on LMS. LMS served as a platform where students could actively acquire new learning materials to start their learning process. LMS was also where students submitted their homework and exams for their professors to grade. Since most Chinese classes require a lot of handwriting, especially Chinese characters, the use of LMS changed participants' writing of Chinese characters from hand-written to typed. According to participant A, this was less "worrisome" but gave students fewer opportunities to practice hand-writing their characters:

[I would prefer to] do the test and quizzes in written format again. And submitting it as a scan rather than online. Because now we don't have to do any character writing, so I never got to practice my character writing. That's just weird because usually, we do write characters.

Hence, technology might change their already established strategies or habits for learning Chinese. In future planning for ERL Chinese language instruction, instructors should aim to address and accommodate different students' needs to the best of their ability. The instructor could send out a survey or meet with students individually, if possible, to discuss what expectation students have for successful online learning. For example, in this case, the instructor could ask students who would like to practice handwriting Chinese to handwrite their homework and scan to upload to LMS.

During ERL, technologies were also being utilized to exchange opinions, receive and provide feedback, and understand complex learning materials among the six participants. Despite the limitation of the online environment, participants all suggested they were able to share their opinions with others over many communication tools (e.g., Zoom, LMS group chat), which

made them cognitively engaged to different extents. Their Chinese professors were able to provide immediate oral feedback over online meetings and written feedback via LMS or email. Participants did not usually get constructive feedback from their classmates, often just encouragement. Yet participant B, in an advanced level Chinese class, mentioned that they provided constructive written feedback as part of their course requirement:

In class, we have to write a reflection on one student's video presentation. In this reflection, we would first write how we feel about this presentation, and then put forward some questions and we would discuss it with them in next week's online meeting.

By providing, receiving feedback, and initializing the corrective process, participants felt that they are more cognitively engaged. This finding corresponded with what Louwrens and Hartnett (2015) have proposed: "Cognitive engagement was enhanced by feedback processes built into the online activities" (Louwrens & Hartnett, 2015, p.38). Technology, then, also played a relatively positive role in supporting students' cognitive engagement by conveying their opinions or feedback to each other. In future ERL, instructors could incorporate educational technologies in curriculum or lesson plans to help students express, exchange their ideas and provide feedback to their peers. Possible ways are peer reviewing essays through Google Docs, leaving comments on Padlet, and using the Zoom chat box to provide feedback.

Participants' strategies for acquiring new learning materials to supplement their Chinese learning process and understanding relied tremendously on technology. Four participants referred to online search engines such as Google or Baidu to find supplementary learning materials. When they had difficulty understanding the materials that had been provided by their instructors, the strategy they employed first was referring to either a search engine or mobile phone app such as Pleco or Padlet. If they still did not understand, they would go to their Chinese professors or TAs using virtual communication tools (Email, Text, Zoom meeting, WeChat, Skype). As technology became more of a necessary tool for their learning strategies during ERL, all of the participants stated that they plan to continue to integrate technology in future learning. Therefore, the new technology, by actively being implemented in the Chinese learning process during ERL, had an impact on students' learning strategies, such as how they integrate ideas and solve problems, which are some key indicators of cognitive engagement (Redmond et al.,2018; Blakey & Major, 2019; Nadeem, 2019).

### *Behavioral Engagement*

According to the six participants, despite a few students who could not attend the class due to a variety of personal reasons (e.g., different time zone, poor internet connection, etc.), their class attendance rate was relatively high. The reasons are twofold: first, the attendance portion of their grade had been raised by their Chinese professors to account for grades omitted from the previously designed curriculum. Second, some of the participants believed the online learning environment provided more accountability for students than a face-to-face class. Participant D reported,

I would say it's easier to skip class when it's in person because if you don't feel like going, you just don't. When it's online class, it's like, what else are you doing? You are at home!

This comment corresponded with participant C's comment,

If I have a solid excuse, I could be late for the class before ERL. However, one week after we began online class, your excuse like, 'my internet connection is bad', won't work anymore. All you have to do is to leave your couch and walk to your computer to take the online class. You can't really make up any excuses for not attending the class.

Clearly, the convenience and ease of attending online classes made participants realize that it would be irresponsible for them to not attend the classes. Therefore, this special learning environment made participants more behaviorally engaged since the accountability provided by this environment was somewhat more pressing than it was when in face-to-face class.

Besides attending class on time, most of the participants also mentioned they were able to submit all the assignments on time. LMS, which displays all the deadlines in one place and has "straightforward instructions" about the assignments, made it easier for students to submit their assignments on time. Therefore, it will be important for students to have access to a platform that clearly displays deadlines and instructions because their access to professors or other resources is limited.

As important as punctuality, student concentration during ERL also contributed to positive behavioral engagement. Though most of the participants stated they were able to stay focused in the online class, there were distracting factors that inhibited some students from concentrating. Distractions were both internal and external. For example, some participants



reported personal emotions such as anxiety, a lack of accountability, and potential embarrassment from making mistakes could distract them from focusing. Conversely, external factors, such as background noise, family, or pets also led to loss of concentration. Technology, though enhancing other types of engagement, was also a distraction, as most of the participants reported mobile phones and computers were two significant distractions. This finding corresponded well with the idea of mobile technology distracting students from engaging when face-to-face interactions are not available, which has been suggested by Heflin et al. (2017). Poor internet connection on either their part or the professor was reported as the second most significant distraction.

Positive behavioral engagement also occurs when students participate in extra-curricular or non-academic activities (Fredericks et al., 2004). Though Chinese classes were going on during ERL, all Chinese extra-curricular activities, which were designed to keep students engaged out of classroom, such as Chinese corner, Chinese table, and meeting with Chinese friends were all canceled within the six participants' Chinese programs. The cancellation was caused by the rapid switch to ERL; there were not enough resources or support for these Chinese programs to move online immediately. However, for future ERL planning, as suggested by some of the participants, Chinese programs could host extra-curricular activities online to help students to be more behaviorally engaged outside of class. Institutions or programs need to take ERL into their extra-curricular activity's preparation, reserve resource and support for emergency online extra-curricular activities or make backup plans for emergency situations like COVID-19 pandemic.

Canceled extra-curricular activities did not necessarily bring more spare time for participants. In fact, the investigation revealed that the time and effort the six participants had put in Chinese learning during ERL varied. Those who spent more time on their Chinese learning claimed it was due to their fondness of learning Chinese, stating studying at home allowed them more time to study Chinese and advance beyond their classes. However, those who felt they had to put more effort into their Chinese learning to keep up with the class suggested more negative reasons. Some complained that during ERL they had to do more preparation for their classes, and they claimed that the online environment caused them to be less motivated to study. Those who put less effort into their studies also reflected negatively. Two participants mentioned that because of the use of LMS, their effort was less because they did not have to practice and write Chinese characters. For future ERL planning, instructors need

to put a careful eye on how to balance the amount of assignments in order to respond to the rapid switching to ERL. According to the suggestion from the participants, instructors can reduce homework or class preparation to keep students motivated. It is also possible for instructor to set up a channel, such as a survey to collect feedback, to hear individual students' needs and make relevant accommodations for these students.

### *Affective Engagement*

Affective engagement occurs when students positively react to their learning environment on an emotional level (Louwrens & Hartnett, 2015; Blakey & Major, 2019). From this investigation, all participants stated they enjoyed their Chinese class during ERL. When discussing how they felt about their classes, positive emotions like relaxed, happy, excited were identified by the participants. In addition, participants felt satisfied with their final grade in Chinese language class, as they used “very well, good, confident, satisfied, or awesome” to describe their feelings toward their final grade. The data analysis revealed that participants perceived their positive emotions to be associated with the effort their professor put into the class, the classmates they met with everyday online, the opportunities to study during the pandemic, a satisfying final grade, and the convenience integrating technology brought to their ERL.

Despite the presence of positive emotions, negative emotions should be considered in investigations of emotional engagement as well (Mahatmya et al., 2012; Halverson & Graham, 2019). With the abrupt transition to online learning, participants all indicated negatives emotions at the beginning of the transition. The investigation revealed a wide range of negative emotions, including confusion, disappointment, astonishment, sadness, anxiety, stress, and anger. According to the participants, those negative emotions were associated with concerns about the upcoming ERL, the inability to be socially engaged with their peers, and concerns about paying too much tuition for the online classes. Participant A reacted:

I was completely appalled. I couldn't believe that there was a global pandemic that was happening . . . Then I got really, really sad because that meant I could never see my friends, couldn't go to any sort of social gatherings. It almost felt like I was in a nightmare. In terms of Chinese class, I was very confused. I was thinking, how the hell is Chinese class going to work? If there is any class in the world that needs to be in person, it's Chinese class. Literally, any other class could be online except Chinese

class. I was just confused; how could we ever learn language online?

Negative emotions were mostly reported by the participants at the beginning stage of ERL. As ERL continued, participants' emotions improved and stabilized as they gradually adapted to the new class structure and received more support from their Chinese professors and teaching assistants (TAs).

Even though participants all stressed that their technology competence was beyond adequate during ERL, technology had become one of the factors which led to participants' frustration and anxiety. Participants reported that poor or unstable internet connection either from professors or students could lead to low video quality with a blurry image on the screen, intermittent voice, and frozen moments which could delay class. Another participant raised the concern that technology, especially Zoom, did alleviate some stress but it still could not simulate the in-person class environment. All of these resulted in negative emotions on different levels. This result can be supported by the finding from the study of Bambara (2009), in which the technology issues related to hardware or software often caused negative emotions such as frustration.

Negative emotion brought by technology suggested that despite the convenience from technology, it is also important to pay attention to how technology negatively impacts students' mental health during ERL. Findings in this study shows poor internet connection and the inability for the online learning environment to simulate real-life learning situations yielded negative emotions from the participants. Therefore, in order to keep students positively emotionally engaged in class, future planning for ERL needs to consider two questions. First, institutions need to consider how to provide effective and sufficient support in ensuring all students have a stable online connection when they suddenly switch to ERL. Second, instructors need to consider how they can create an online learning environment that closely approximates an in-person learning experience. In other words, are there possible technological tools or strategies that could be implemented during ERL to ensure a less frustrated online learning experience?

## Discussion

Guided by an engagement framework proposed by Fredricks et al. (2016), this qualitative study investigated four categories of student engagement: cognitive engagement, behavioral

engagement, affective engagement, and social engagement during the COVID-19 pandemic emergency remote learning (ERL), and what were students' perceptions on these four engagements with technology use. Participants included six Chinese language students with different demographic backgrounds from five different universities. All participants had a Chinese language learning experience during ERL and used technology to assist their Chinese learning. Participants offered diverse perspectives regarding on their engagement with technology use during ERL.

The first goal of this study was to investigate students' perceptions on their cognitive, behavioral, affective, and social engagement with technology use during ERL of Chinese. Results of this study show that technology was perceived to contribute to students' cognitive engagement by making students acquire new learning materials and convey their opinions or feedback to each other. However, it could also change students' established learning strategies or habits. In terms of social engagement, technology was perceived to facilitate the social interactions within the learning communities and helped students to build a sense of belonging, making them socially engaged during ERL. It also was perceived to assist their collaborations within their learning communities. For affective engagement, technology was perceived to bring positive affective reactions to students during ERL. On the other hand, in terms of students' behavioral and affective engagement, technology sometimes prevented students from focusing in class, which might lead to negative affective reactions. Thus, students' behavioral engagement and effective engagement could be adversely affected by technology. Technology was also perceived to change students' learning strategies and, according to some participants, limited the ways of collaborating within the learning community.

The second goal of this study was to bring implications for future planning for ERL. Results of this study provide reflections on different aspects in terms of how future planning for ERL looks like, on both instructor and institution levels. Implications for future ERL practice and research are discussed as below.

### **Implications for Future Practice**

Results of this study provide reflections on different aspects in terms of how future planning for ERL looks like, on both institution and instructor levels. For institution, in response to

rapid switch to ERL, professional development, such as learning new technology tools and adopting online teaching pedagogy need to be provided in order for instructors to build a “deep learning experience for their students” (Schultz and DeMers, 2020). Findings in this study show that, compared to students, instructors were less tech-savvy when learning new technological tools. They needed to quickly implement appropriate technology to maintain social interactions among the learning community in a completely different learning setting. The present study identified important areas for future ERL planning on the part of instructors. These included incorporating technology to enhance students’ collaboration, idea and feedback exchanging, taking advantage of different features from LMS, and setting up communication channel to learn different students’ needs and then accommodate them. It is also suggested by this study that during the transition from in-person class to ERL, emotional support is needed from institution and instructors to help student get through the abrupt transition.

### **Implications for Future Research**

The findings of this study also suggest directions for future research. First, more research is needed on instructor’s perception about student engagement with technology use during ERL. It would be useful to learn from different perspectives and compare the differences between students and instructors to get a comprehensive understanding of how technology impacts student engagement during ERL. Second, it would be also important for future research to quantitatively address more on how the different engagements correlate with each other within the context of ERL. For example, does low emotional engagement caused by technology issues lead to low cognitive and social engagement? Third, in this study, several suggestions for instructors were proposed in order to better prepare them for future ERL instruction. More research on how to prepare students for ERL would be needed as well.

### **Limitations**

This study has two limitations that must be acknowledged. First, although the participants represented a good mix of demographic characteristics, such as different majors, different college years, different ages and so on, the sample size is limited (n=6). Second, the data collection focuses on Chinese language students’ perceptions of engagement with technology use in an ERL setting. Therefore, caution should be used in generalizing the result to other

populations and disciplines. However, as with many other qualitative studies, these limitations do not render the findings meaningless. This is especially true when a case study is conducted through a strict data collection and analysis process, as was presented in this study. As a qualitative case study, it was intended to probe and understand what students' perception on engagement with technology use during a special learning setting. It helps to inform the use of technology in future ERL planning in language instruction.

## Conclusion

This study aimed to explore students' perceptions about their engagement with technology under a structured engagement framework (Fredricks et al., 2016) during this unusual online learning environment. The result of this study has important implications for technology implementation in future ERL where online learning is not students' first choice but is required by institutions in a response to an abrupt change such as the COVID-19 pandemic. However, the implication must be interpreted within this study itself given the limited number of participants. While the study only focused on the ERL environment and had a small sample size, it has the value of understanding what role technology may play in student engagement in the emerging online classroom environment. Future research is needed to further investigate technology implementation and student engagement across a wider discipline with a larger sample size.

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