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Students' sense of community and perspectives of taking synchronous and asynchronous online courses

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Abstract: The Coronavirus (COVID-19) outbreak has forced all universities in China to shut campuses and moved to distance learning in response to epidemic prevention and control. This is the first time that college courses have been completely delivered online across the nation. Therefore, this study examines Chinese college students' sense of community and their perspectives of taking online courses in synchronous and asynchronous teaching formats. A total of 1189 students participated in the study from a northeastern university in China. Results indicate that students have a stronger sense of community towards interacting, discussing, and sharing ideas in asynchronous online courses. Findings additionally highlight the benefits of taking courses in these two distance learning formats. For instance, active interaction is often stimulated through synchronous distance learning, while students can learn on their own pace in asynchronous online learning environments. Challenges are also perceived in both formats, such as being distracted by classmates in synchronous online classes or feeling social isolated in asynchronous online classes. It is expected that this study would enlighten Chinese higher education professionals to develop a tight online community and establish a supportive distance learning environment.

Keywords: synchronous distance learning, asynchronous distance learning, sense of community, Chinese college students, higher education, COVID-19

Introduction

Distance learning has become popular as a means to make educational opportunities accessible to a wide range of audiences, and this learning approach offers flexibility in participating, ease of access, and convenience (Croxtton, 2014; Yamagata-Lynch, 2014). Compared with countries (e.g., United States) where distance education has been widely used in universities for decades, the incorporation of the internet-based technology into teaching and learning is still at its early stage in Chinese higher education (Huang, Teo, & Zhou, 2020).

Distance learning in Chinese universities

With the development of technology and the high internet penetration rate in schools, teachers have attempted to adopt the internet education in China (Zhang & Wang, 2004). In 2012, the Chinese government issued a *Ten-year Development Plan for Education Information (2010-2011)* (cited in Huang, Teo, & Zhou, 2020), which has also greatly encouraged the integration of internet-based technology into teaching and learning from K-12 to higher education institutions. Motivated by both the development of internet-based technology and the policy, college teachers have begun to carry out blended teaching in various degrees. For example, Wang and colleagues (2019) designed a blended college English course for 1604 undergraduate students at a university in China for one academic year. Students were required to learn from the online courses by accessing the various learning resources (e.g., reading passages, videos), then they interacted with the instructor, teaching assistants, and their peers to discuss and share ideas about the learning content in an online discussion board. Students also participated in different interactive learning activities in the flipped learner-centered classroom. They furthermore collaborated to complete group projects out of the classroom and do presentation in the classroom. Finally, students used social networking via smartphones to expand time and space for English language learning. This blended course design has been proved to establish an efficient English language learning environment. Similarly, Tao and colleagues (2020) designed a blended teaching mode for a compulsory English course for 843 undergraduate students at a university in northern China.



This 16-week course was comprised of a weekly 2-hour face-to-face lecture and after class online self-regulated learning in a learning management system. Students were required to review the learning content prior to attend the classes physically and then complete the assigned assignments after the class. Students could also access to resources including reading materials, lecture slides, tutorial recordings, and discussion boards in the learning management system. This blended teaching mode has been reported to greatly enhance students' understanding of English language. The blended courses have also been employed in STEM subjects. For instance, Sun and colleagues (2017) conducted a blended course in the field of information engineering, and 78 Chinese college students enrolled in this course for one academic semester. They first participated in the face-to-face lecture provided by the instructor, then used Moodle as the online learning platform to work on the assigned tasks in groups. Results indicated that a deeper learning was developed in collaboration and interaction through this blended learning format.

However, among the majority of studies, online teaching has mostly been used as a supplement to the face-to-face teaching in China. At the end of year 2019, China was facing the Coronavirus (COVID-19) outbreak. All universities have shut campuses in response to COVID-19, and thus have moved to online teaching and learning since February 2020. To be specific, in order to prevent and control the virus, the Chinese Ministry of Education (MOE) has postponed the back to school day of Spring semester of 2020 for all schools and universities. Meanwhile, in order to keep offering the education of different levels, the MOE put forward the "classes suspended but learning continues" announcement in early February 2020 (MOE, 2020). Thus, all schools and universities have decided to provide online education during the epidemic period.

Prior to the COVID-19 outbreak, fully distance learning had rarely been applied in universities in China. Therefore, this is the first time that courses have been completely delivered online in universities across the nation. It is also the first time that many college students attend an online classroom. When teaching online, instructors can provide their courses in either synchronous or asynchronous instruction, thus students may have different senses of classroom community based on the various teaching formats. Researchers noted that building a sense of community is important in an online learning environment, as the feeling of community positively influences student engagement, performance, and retention (Stubb, Pyhältö, & Lonka, 2011). Therefore, this study explores 1) Chinese college students' classroom community in synchronous and asynchronous online courses; 2) students' perspectives of advantages and challenges toward these two teaching formats.

Literature Review

Community refers to the feeling of membership and belonging within a group (Yuan & Kim, 2014). Three dimensions of community has been defined: membership, influence, and immersion (Koh & Kim, 2003). Membership refers to people's feeling of belonging to their virtual community, influence means people's influences on other members of their community, and finally immersion refers to people's state of flow during virtual community navigation. Berry (2017) thus concluded that "in a learning community, students work with peers, instructors, and staff to learn collaboratively and support each other in pursuing academic, social, and emotional goals" (p. 2). Furthermore, students receive both academic and social benefits when they feel a sense of community in distance learning (Lai, 2015). The sense of community will not only increase classroom participation and develop deep learning (Garrison, Anderson, & Archer, 2010), but also enhance students' ability of managing stress and emotional well-being (Stubb, Pyhältö, & Lonka, 2011). Therefore, it is necessary for the instructor to build a sense of community for students in the online learning environment.

Within the context of distance learning, students are usually engaged in either asynchronous, synchronous or a blend of both online courses, and the interaction methods of these online courses are often classified as either synchronous or asynchronous (Shoepe, et al., 2020). Synchronous distance learning refers to a learning activity that students and instructors are engaging in learning at the same time. In such environment, the instructor often uses audio and/or video teleconferencing, virtual classrooms, and instant messaging (Ruiz, Mintzer, & Leipzig, 2006). In contrast, asynchronous learning is online or distance education that does not happens in real time, and the instructor applies email and online discussion boards to conduct interaction (Ruiz, Mintzer, & Leipzig, 2006).

Early studies indicated that students often had a positive experience taking synchronous online courses (McBrien, Jones, & Cheng, 2009; Clark, Strudler, & Grove, 2015). To be specific, students engaged in

synchronous learning usually 1) find a stable means of communication, 2) tend to stay on task, 3) feel a greater sense of participation, and 4) tend to experience better task/course completion rates (Mabrito, 2006; Hrastinski, 2010). Yamagata-Lynch (2014) additionally concluded that synchronous online class can help students develop a stronger feeling of connection to their peers and instructor, as well as staying engaged with course activities. Watts (2016) added that the instant feedback and interaction with peers and the instructor enhances students' engagement in the synchronous online courses. Additionally, the use of real-time lectures and discussions in synchronous learning increases student engagement and learning, which allows students and instructors to interact and respond in real time as well as building a sense of community (Abdelmalak, 2017). Students in synchronous online classes can instantly communicate with others, thus they feel less distance with their peers and the instructor (Francescucci & Rohani, 2019; Patillo, 2007). Moreover, synchronous activities can be effectively used to support strong relationships and participation in group projects within a larger class (Hrastinski, Keller, & Carlsson, 2010).

On the other hand, asynchronous distance learning offers flexibility as students do not have to be online at the same time and they are able to self-pace their studies (Hrastinski, 2008; Pang & Jen, 2018). Therefore, students can also work in their own pace as they can learn anytime and anywhere in an asynchronous online course (Chaeruman & Maudiarti, 2018; Ellis & Romano, 2008). Additionally, students often experience meaningful learning and self-directed learning is usually developed in this learning environment (Cho, Kim, & Choi, 2017; Hrastinski, 2008; Pratt & Palloff, 2011). Communicating asynchronously via online discussion boards offers students the opportunity to fully express their thoughts and discuss topics in greater detail (Brierton, Wilson, Kistler, Flowers, & Jones, 2016; Sun, Tsai, Finger, Chen, & Yeh, 2008). Furthermore, students feel more comfortable and flexible to discuss their viewpoints in an asynchronous online discussion board. They do not feel pressured to respond as soon as questions or comment are made, and they have more time to think about how they would respond (Brierton et al., 2016). Therefore, the asynchronous online environment provides more opportunities for students to develop a deeper learning (Lowenthal, Dunlap, & Snelson, 2017).

Although both synchronous and asynchronous teaching formats benefit students' learning, several challenges are observed. For example, students with inflexible schedule are not able to navigate the time to schedule synchronous session, and students who rely on public-access technology (e.g., computers labs at schools or public libraries) may find it difficult to participate in synchronous online classes (Olson & McCracken, 2015). Students may not have enough time when working in a synchronous environment to reflect deeply on neither the content nor their peers' comments before they were required to make responses (Falloon, 2011). In terms of asynchronous learning, social interaction in such online learning environment is not as immediate, and some students use this delay in responses to reflect before they write, while some students feel impatient while waiting for others to respond (Rosenberg, Akcaoglu, Willet, Greenhalgh, & Koehler, 2017). Students also lack the opportunity to receive immediate feedback and interact with their peers and instructors in real time (Francescucci & Rohani, 2019; Wang, 2008).

Among the studies which compared synchronous and asynchronous distance learning, some scholars, however, found that there was no significant difference between these two learning instructions. For example, Johnson (2008) examined students' academic achievement and their perception of which formats they felt to be more effective for their own learning in asynchronous and synchronous courses. Results shown no evidence to prove students preferred one mode over the other. Similarly, Olson and McCracken (2015) examined student achievement, sense of social community, and sense of learning community in one fully synchronous and one blended session taught concurrently by the same instructor. They discovered that no significant differences were found between these two sessions.

In terms of examining Chinese college students' sense of community and/or perspectives in distance learning, most studies research on blended courses with the face-to-face instruction as the predominant approach. However, limited study has been found to explore related research questions in a completely online format. The COVID-19 outbreak has forced all universities to launch courses fully online for the first time. This study therefore examines 1) Chinese college students' classroom community in synchronous and asynchronous online courses, and 2) their perspectives of advantages and challenges toward the different teaching formats. It is expected that this study would provide strategies for higher education professionals to develop a strong online classroom community and establish a supportive environment for distance learning.

Methods

A convenience sampling procedure was used to recruit participants. Students in one northeastern university in China were invited to participate in the study. An invitation email with the link to the survey was sent through the university and lasted for one week. A total of 1367 undergraduate students participated in the survey with 1189 usable responses (usable response rate equals to 87%). This is the first time that these college students took completely formal university-level online courses. Since all of the students have taken both synchronous and asynchronous online college courses for about two months, students were asked to think about one course format (synchronous or asynchronous) they were taking before answering the survey. Data shown that among those who completed the survey, 535 (45%) of them expressed their feelings towards synchronous teaching format and 654 (55%) of them shared their thoughts regarding asynchronous teaching format.

Instrument

The instrument for measuring of students' online classroom community was adopted and revised from the Classroom Community scale (CCS) (Rovai, 2002). The CCS is a 20-item 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This questionnaire assesses students' overall sense of community in two subscales: connectedness and learning, each with 10 items. Connectedness refers to students' sense of the community "regarding their connectedness, cohesion, spirit, trust, and interdependence" (Rovai, 2002, p. 206). Three items were reversed, and a higher score indicates a higher level of connectedness. Sample questions include "I feel that students in this course care about each other," "I feel isolated in this course," and "I feel confident that others will support me".

Learning refers to "the feelings of community members regarding interaction with each other as they pursue the construction of understanding and the degree to which members share values and beliefs concerning the extent to which their educational goals and expectations are being satisfied" (Rovai, 2002, p. 206-207). Seven items were reversed, and a higher score indicates a higher level of interaction with other community members while sharing the understanding of the course content. Sample questions include "I feel that I am encouraged to ask questions," "I feel that it is hard to get help when I have a question," and "I feel that this course does not promote a desire to learn".

A few modifications such as minor wording changes were made to the original items in order to make them fit into the context of the current study. The original internal consistency Cronbach's alpha of connectedness and learning were 0.92 and 0.87, respectively (Rovai, 2002). The Cronbach's alpha for each factor in this study were 0.72 and 0.81, respectively. Additionally, this instrument included two open-ended questions to examine students' perspectives toward 1) advantages of conducting distance learning through this course format, and 2) challenges of conducting distance learning through this course format.

Procedure

Students clicked on the survey link provided in the invitation email. After clicking the link, students were able to read the informed consent and decide if they were willing to participate in the study. The survey was anonymous which took approximately 5 minutes to complete. Students were able to withdraw the survey at any time by closing the website. The original items were in English and needed to be translated into Chinese. To guarantee the validity of the Chinese version of the measure, a standard translation and back-translation procedure was used (Hambleton & Patsula, 1998). This study was approved by the Institutional Review Board (IRB).

Data Analysis

Data was analyzed via SPSS version 23. One-way MANOVA was used to examine the levels of connectedness and learning of students in synchronous and asynchronous online courses. The significant level of Box's M was set as .001 (Mertler & Vannatta, 2002), and the alpha level was set at .05. Harman's single factor score was examined, and the total variance (ranges from 7.9% to 39.4%) for a single factor is less than 50%. Thus, results indicated that common method bias did not affect the data (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Additionally, content analysis was conducted to analyze students' text answers toward the advantages and challenges of synchronous and asynchronous distance learning. Codes were organized, and themes were produced using Clarke and Braun's (2013) thematic analysis. The researchers had read and re-read the transcriptions to familiarize the collected data to employ initial assessment and evaluation with regard to the relevance of the

responses. A chunk of codes was then generated, thus initial coding was employed. The two researchers then compared and revised their codes so that to reach an agreement of the results.

Results

One-way MANOVA was conducted to examine Chinese college students' sense of community comparing synchronous and asynchronous online courses. Box's M indicated that covariance matrices of the dependent variables were equal across groups ($p = .075$), Wilks' Lambda was used to assess the multivariate effect. According to the result, there was a statistically significant difference in the sense of community between synchronous and asynchronous online courses, Wilk's Lambda = .993, $F_{(1, 1189)} = 4.19$, $p = .015$, partial $\eta^2 = .01$. Univariate ANOVA follow-up results indicated that only the level of learning ($F_{(1, 1189)} = 8.05$, $p = .005$, partial $\eta^2 = .01$) was significantly different between these two teaching formats (see Table 1). The results implied that students in asynchronous online courses ($M = 3.49$, $SD = 0.62$) have a higher level of learning than students in synchronous online courses ($M = 3.39$, $SD = 0.65$).

Table 1. Tests of between-subjects effects of classroom community

CCS	Synchronous class (n=535)		Asynchronous class (n=654)		$F_{(1, 1189)}$	p-value	Partial η^2
	M	SD	M	SD			
Connectedness	3.41	0.54	3.47	0.54	4.03	.05	.003
Learning	3.39	0.65	3.49	0.62	8.05	.005	.01

Following Clarke and Braun's data analysis (2003) to further examine students' perspectives of advantages and challenges for the two teaching formats, the authors focused on searching for themes by examining the initial coding process and fitting the coded data together, thus constructing an organized theme that is coherent and relevant to the current study. The final refinement of the themes was focused on defining and naming themes. Findings were checked to existing related literatures for discussion and relevance of the study.

Advantages and challenges of synchronous distance learning

Three themes emerged from the transcribed data regarding the advantages of synchronous distance learning: interaction, classroom environment, and course quality. Additionally, three themes were summarized for the challenges of synchronous distance learning: learning progress, technology issue, and classroom environment (see Table 2).

Interaction was perceived to be an important factor that influence students' sense of community in an online setting. This study indicates that students in synchronous online courses were able to ask questions in class and receive the feedback from the instructor right away. They could also discuss and share ideas and resources with other students synchronously. Some students also reported that they felt brave and relax to ask and answer questions in synchronous courses. *Classroom environment* in this study indicated that synchronous teaching format has developed an interactive learning environment as students were more actively participating in class learning and discussion. They also expressed that the instructor supervised them to learn during synchronous learning, and they were able to search for additional resources via the internet when listening to the lecture. Finally, they did not need to rush to the classroom in order to take a good spot when having the online courses. Along with this line, synchronous online courses provide a high *course quality*. For example, students reported they were able to read the slides and hear the teacher's lecture clearly compared to that in a physically classroom. They also appreciated the opportunity to access to various learning resources.

In terms of challenges, *learning progress* was perceived as one challenge in synchronous online courses. To be specific, some students expressed that the instructor talked too fast and they were not able to follow the class. They also had a difficult time to learn by their own pace. *Distraction* is another challenge in synchronous online courses. For example, some students did not turn off their mic so that background noise were made. Moreover, some students did not participate actively in class, while others discussed unrelated topics. These behaviors distracted other students from learning. Finally, *technology issue* has been reported as one obstacle when learning in synchronous online courses. For instance, students sometimes missed the learning content or information about the course assignments due to

the slow internet speed. They also complained about the various learning management systems (LMSs) they need to use for different subjects, and some of them were not familiar with using the LMSs. Finally, they expressed their exhaustion due to a long time concentrating on using the electronic device for learning.

Table 2. Summary of codes and themes toward taking synchronous online courses

Synchronous distance learning			
Themes of advantages	Codes/subthemes	Themes of challenge	Codes/subthemes
Interaction	Be able to ask questions in class Can discuss learning content with peers	Learning progress	Cannot follow with the class Cannot self-control the learning pace
	Easy and fun to communicate with peers and the instructor		Miss the learning content or assignment information due to the slow internet speed Too many LMSs that need to use for different courses
	Feel brave and relax to ask questions or answer questions	Technology issue	Not familiar with using the software Feel tired due to focus on the electronic device for a long time
	Receive right away feedback		
	Students share resources in class More discussion opportunities		
Classroom environment	More actively participation	Distraction	Noise made by students who do not turn off the mic Some students do not actively participate the class Some students chat about things that are not relevant to the learning content
	The instructor supervises me to learn		
Course quality	No need to rush to the physical classroom to take a good spot		
	Search internet for additional resources while listening to the class		
	Can see the slides clearly		
	Can hear the teacher's voice clearly Can access to various learning resources		

Advantages and challenges of asynchronous distance learning

Two themes emerged regarding the advantages of asynchronous distance learning: self-control learning and self-directed learning. Four themes were concluded regarding the challenges of asynchronous distance learning: social isolation, interaction, course load, and technology issue (see Table 3).

Self-control learning has been identified as an advantage of taking asynchronous online courses. Students learned anytime anywhere at home, and they could arrange learning depends on their own schedules. Asynchronous distance learning also enabled students to watch the course videos repeatedly. Therefore, students expressed that they felt more flexible and efficient through asynchronous distance learning. *Self-directed learning* emerged as another benefit. Students reported that they were more concentrated on learning when studying by themselves. While watching the course videos repeatedly, they believed a deeper learning was developed. Additionally, they were able to pause the video anytime they had a problem towards the lecture and searched resources to solve their confusions. Finally, the access to the rich learning materials and resources also motivated their learning.

For challenges, students experienced *social isolation* in asynchronous distance learning environment. To be specific, they had less opportunity for class communication and discussion. They also did not

know their peers' learning progress. Thus, they experienced a distance from others which demotivates their learning passion. Along with this line, they considered *interaction* to be another challenge in asynchronous online courses because they were not able to ask the instructor questions then receive right away feedback. Furthermore, some students noted that they did not fully understand the learning content through self-learning. *Course load* also negatively impacted students' learning in asynchronous online courses, as they mentioned that they were overwhelmed by the great amount of learning content and assignments. Finally, students also encountered *technology issue* in asynchronous online courses. Similar to synchronous distance learning, students worried about the slow internet speed that affected the quality of the course videos, and some of them were not familiar with using the course LMSs or related software. Lastly, they complained about the tiredness due to a long time concentrating on using the electronic device for learning.

Table 3. Summary of codes and themes toward taking asynchronous online courses

Asynchronous distance learning			
Themes of advantages	Codes/subthemes	Themes of challenges	Codes/subthemes
Self-control learning	Learn anytime anywhere at home	Social isolation	Less classroom communication and discussion Do not know others' learning progress
	Use time for learning more wisely		Feeling distance from others that demotivates learning
	Can repeatedly watch the course video	Interaction	Not able to ask the instructor questions right away Not able to get questions answered right away Not fully understand the learning content through self-learning
	Learning flexibly Learn more efficient		
Self-directed learning	More concentrate on learning	Course load	Too many assignments Overwhelming learning content
	Conduct deeper learning by watching videos repeatedly		
	Search resources and the internet to solve issues	Technology issue	Not familiar with using the software Feel tired due to focus on the electronic device for a long time
	Can access to rich learning resources that motivates learning		Slow internet speed influences the course video quality

Discussions

Synchronous distance learning

MANOVA results shown that Chinese college students do not have a different feeling of the community regarding their connectedness, cohesion, spirit, trust, and interdependence in either synchronous or asynchronous online courses. This finding mirrors previous studies that students do not have a preference between these two teaching formats (Johnson, 2008; Olson & McCracken, 2015). Results from the content analysis discovered that Chinese college students considered active interaction was motivated in synchronous online courses, and they experienced a more active classroom atmosphere. Students in synchronous online courses were more actively engaging in class and participating in discussion. They could also ask the instructor questions and receive feedback in real time. These findings echo the previous conclusions that synchronous distance learning helps students develop a stronger feeling of connection to their peers and instructor, as well as staying engaged with course activities (Yamagata-Lynch, 2014). As students could instantly communicate with the instructor and other students, they usually feel less distance with their peers and the teacher (Francescucci & Rohani,

2019; Patillo, 2007). Chinese classroom usually has a large student-teacher ratio, and students have to go to the classroom early in order to take a good spot. If they come to the class late, they have to sit in the back where they may not be able to see the slides or hear the lecture clearly. However, findings implied that by taking synchronous online courses, students are able to read the slides and hear the lecture clearly without rushing to the classroom, which further enhances their learning experiences.

Nevertheless, Chinese college students face several challenges in synchronous online learning environment. First, some students find it difficult to follow up with the class. This finding confirms that different individuals have different learning paces (Yip & Wong, 2019). Furthermore, students may be distracted due to the background noise accidentally made by other students or an emerged unrelated discussion. Students also experience technology issues, such as missing the important course information due to the slow internet speed. Additionally, since this is the first-time that universities in China launched fully online courses, there is not a unique LMS that to be used. Therefore, instructors have integrated different LMSs into their courses, and thus students have to adapt to the different online learning platforms. Meanwhile, they may have a difficult time to get familiar with using the various LMSs.

In order to develop a supportive classroom environment in synchronous online courses, instructors may consider assigning more active learning activities (e.g., group projects) in class, so that to encourage a stronger connectedness and participation (Hrastinski, Keller, & Carlsson, 2010). Instructors should leave time for questions during the lecture. They could also conduct an end-of-course survey to perceive any confusions students have, then review the materials and solve their questions in the next class. These two strategies would enhance students' understanding of the learning content. In terms of the technology issue, instructors should provide contact information of university technology support personnel who could provide students with learning platforms or software assistance. It is expected that the 5G wireless technology will be applied in future network so that to solve the issue of the slow internet speed. Finally, Chinese universities should also unify an LMS for future online courses in order to enhance students' overall online learning experience.

Asynchronous distance learning

Compared to synchronous distance learning, data results indicated that Chinese college students have a stronger feeling of the online classroom community regarding interacting, discussing, and sharing ideas with each other in asynchronous online courses. This finding mirrors the previous studies that students often experience meaningful learning when participating in asynchronous online course (Cho, Kim, & Choi, 2017; Hrastinski, 2008; Pratt & Palloff, 2011). Students in this online teaching format usually have more time to think in order to fully express their ideas and discuss topics in greater detail, as well as responding to others (Brierton et al., 2016; Sun et al., 2008). Previous studies noted that asynchronous distance learning offers flexibility for students to learn on their own pace (Hrastinski, 2008; Pang & Jen, 2018). Similar to this statement, content analysis results shown that Chinese college students can learn anytime based on their own schedules in asynchronous online courses, and this self-paced study furthermore creates a flexible and efficient learning environment. Additionally, asynchronous distance learning stimulates students' self-directed learning. For example, they are more concentrated on learning when study alone, and they are motivated to learn by accessing various learning resources. They are able to review the course video anytime they want, and they can pause the video while searching for different resources to solve any problems they have before keeping watching.

As concluded by previous scholars that students often lack the opportunity to interact and receive immediate feedback from their peers in real time (Francescucci & Rohani, 2019; Wang, 2008), findings of this study discovered that less real time classroom communication and discussion in asynchronous online learning environment would lead to a feeling of social isolation. Students' unknown of others' learning progress also results in a sense of distance from their peers. Additionally, students experience less interaction with the instructor as they are not able to ask questions and/or receive feedback right away in asynchronous online courses. The feelings of social isolation and the less opportunity for interaction with the instructor would diminish Chinese college students' learning passion and motivation. Although they are more focusing on learning, Chinese college students may not fully understand the materials simply through self-learning. An overwhelming course load also harms their learning motivation. Finally, students meet similar challenges regarding the technology issues in asynchronous online courses compared to that in synchronous distance learning.

In order to create a supportive classroom environment in asynchronous learning environment, instructors should arrange office hours to answer questions. They could also assign graduate teaching

assistants to help answer some of the questions or collecting questions from students. Additional to that, instructors should interact with students more often in the discussion board. Group projects could be assigned in order to encourage peer collaboration and interaction, so that to reduce students' sense of social isolation. Finally, mid-course evaluations could be conducted for the purpose of adjusting the course load based on students' learning progress.

Conclusion

Online courses have often been used as a supplement of traditional face-to-face classes in Chinese universities. However, during the epidemic period, online courses have been put under the spotlight. This study overall demonstrates that distance learning has positively impact on students' learning experience. As a result, higher education professionals and stakeholders should consider offering more online courses. The development of the LMS and other technology support systems should also be invested to facilitate the growth of distance learning. Additionally, universities should provide trainings for instructors and staff so that to prepare qualified professionals for online course delivery. Scholars noted that distance learning has been growing steadily worldwide and it will become a mainstream by 2025 (Palvia et al., 2018). Therefore, it is expected that distance learning will be offered more often across higher education institutions in China, so that to meet the demand of the increasing global online education.

Limitations and Future Study

Several limitations exist in the study. First, participants were recruited from all subjects across the selected university, the different teaching styles and levels of familiar with online teaching of the instructors may influence students' feelings of online community. It is possible that some instructors are more experienced in online teaching and they would create a stronger classroom community. Therefore, future studies should examine the characteristics of instructors. Additional to that, the different subjects also matter. In other words, instructors may assign more interactive activities or group projects in non-STEM courses (e.g., English, higher education), while teacher-centered lectures may usually be delivered in STEM courses (e.g., math, physics). As a consequence, future studies should specifically investigate students' sense of online community within the same fields. Students' previous experience of nonformal and/or informal distance learning would also influence their feelings toward taking classes online, thus future studies should control for their previous online learning experiences. Finally, this study recruited participations from one university which located in a well-developed province. Therefore, future studies should be conducted in less developed provinces so as to indicate more comprehensive conclusions.

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