

# Multifaceted Challenges and Opportunities: Concurrent Mixed Methods Research to Investigate Chinese Exchange Students' Experiences in the U.S. Transnational Online Learning Ecology

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## **Abstract**

Transnational online education has become an emerging trend in promoting academic collaboration and exchange in higher education during and after the pandemic. Guided by the learning ecology framework, we conducted concurrent mixed methods research by distributing an online survey to Chinese students ( $N=51$ ) to collect quantitative and qualitative data. This helped us deeply understand their experiences and perceptions of a cross-cultural online learning environment in the United States. We applied multiple regression and thematic analysis to analyze the data. The merging of both types of data analysis indicated the confirmation of the importance of discipline-based English learning environments, the transformation of online learning practices, the insufficiency of student-to-instructor interactions, discordance of technological self-efficacy and the disadvantages of technology-assisted instruction, and discordance between the usefulness and difficulties of learning activities and assessments. We further discussed appropriate strategies and techniques to promote online teaching and learning excellence in transnational distance education.

*Keywords:* Academic contradictions, academic adjustments, Chinese students, collaborative exchange program, online learning ecology, transnational online education

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Transnational education refers to various types of higher education services, courses, and programs from institutions that locate outside the home country (Hu et al., 2019; Yang, 2008). Owing to the influence of the pandemic, international traveling was banned, which suspended and prevented the mobility of students and instructors in transnational contexts (Phan, 2023; Stewart & Kim, 2021). Alternatively, the distance delivery model was adopted to continue intercultural learning and exchange experiences in various circumstances during and after the pandemic (Bentata, 2020; Liao et al., 2020; Whatley et al., 2022). However, transnational distance education is a relatively new and complicated area (Stewart, 2019). Exchange students' learning experiences in such learning contexts remained under-researched (Dai & Garcia, 2019; Qin & Te, 2016; Stewart, 2019). Mixed methods research (MMR) is a research method to collect both quantitative and qualitative data to increase the trustworthiness and comprehensiveness of research findings (Creswell, 2014; Creswell & Plano Clark, 2018). Because of the complexity of transnational distance education, MMR is a good fit to explore what exchange students have experienced in the learning context to better inform policies or promote social change (Krpec et al., 2017; Molina-Azorin & Fetters, 2019). For instance, transnational education has been mainly used to internationalize and enhance higher education curricula in China for the past decades (Feng, 2013; Hu et al., 2019). Because of the pandemic, many Chinese exchange students had to stay in their home country to experience online and distance instruction in a transnational context for the first time. In terms of the emerging need of delivering transnational distance instruction in this context, the purpose of this MMR was to investigate Chinese exchange students' perceptions and experiences in transnational distance education offered by a university in the United States (U.S.). The research contributes to the body of knowledge in the field of transnational distance education. The findings will indicate the challenges and opportunities faced by Chinese exchange students in the program, which can be beneficial to raising instructors' and administrators' awareness of improving existing teaching practices and support services to promote the quality of transnational distance education.

## **Literature Review**

### **Transnational Online Education**

Transnational education, also known as borderless or international education, is defined as various types of educational services and programs provided by overseas higher education institutions to benefit local students (Bovill et al., 2015; Hu et al., 2019; Knight, 2016; Wilkins & Juusola, 2018). It has become increasingly prevalent to promote intercultural experiences and competency among students in higher education worldwide (Dai et al., 2020b; Moufahim & Lim, 2015; Wilkins & Juusola, 2018; Yu, 2021). Exchange or international students refer to the students who study abroad to gain intercultural learning experiences in a host country within a short time (Newsome & Cooper, 2016). For instance, Chinese exchange students anticipated Western-oriented learning environments to gain international experiences, as indicated in foreign language learning, advanced curricula, and innovative teaching approaches (Willis, 2010; Yu, 2021). However, others argued that transnational education has been used as a profit-generation tool or soft power to reinforce stereotyped ideologies or even neocolonialism in cross-cultural contexts (Aquino et al., 2023; Moufahim & Lim, 2015; O'Dowd, 2021; Wilkins & Juusola, 2018; Yu, 2021). Given the influence of the COVID-19 pandemic, there was a growing phenomenon of developing transnational online education, such as virtual exchange and study abroad programs, to temporarily replace in-person intercultural learning experiences (Bowen et

al., 2021; Liu & Shirley, 2021). On the one hand, the advancement of technology and adaptive delivery methods could strengthen international connections and collaborations in virtual environments (Aquino et al., 2023; Han & Resta, 2020; Henderson et al., 2017; Howard et al., 2017). Taking a global health virtual exchange program as an example, students in the U.S. had the opportunity to further understand the issues and conditions related to Syrian refugee camps through virtual reality (Bowen et al., 2021). Howard et al. (2017) also discussed the use of video conferencing tools to deliver live study abroad experiences for students both in Italy and U.S. On the other hand, the adoption of virtual learning approaches might limit students' personal interactions and immersion in local cultural and social contexts (Bovill et al., 2015; Liu & Shirley, 2021). Chinese students had little online learning experience before the pandemic (Fang et al., 2023). Without sufficient training, they encountered various challenges during the transition, such as technical difficulties, anxiety, social isolation, and information overload (Chen et al., 2020; Lin, 2022). As a result, it is highly possible that Chinese exchange students would experience dual barriers in transnational online education (Ren & Zhou, 2022).

### **Academic Contradictions and Adjustments in Transnational Education**

The change of learning contexts could lead to a significant impact on students' learning identities and experiences, as indicated by academic, cultural, social, psychological, and emotional adjustments (Dai & Garcia, 2019; Wilczewski et al., 2022). On the one hand, the collaborative programs with overseas institutions accommodated the needs of exchange students and enriched their intercultural learning experiences through offering advanced curricula, international course materials, innovative teaching strategies, and emerging technologies (Hu et al., 2019; Moufahim & Lim, 2015; Yu, 2021). On the other hand, academic contradiction was one of the critical barriers faced by students in a transnational distance learning context. For example, teaching practices in China tended to be instructor-centered and lecture-focused (Dai et al., 2020a; Wang et al., 2018; Yu, 2021). These were different from student-centered and discussion-based learning environments in an American classroom (Jackson & Chen, 2018; Safipour et al., 2017). In terms of assessment approaches, Chinese students experienced the transition from textbook-based, high-stakes exams to diverse, contextualized, and formative assessments in American academic culture (Dai & Garcia, 2019; Dai et al., 2020a). Moreover, instructors increased the use of web-based instructional resources and Internet-based technologies in online courses. Other contradictions included course structure, international course materials, classroom policies, grading criteria, and expected learning outcomes (Dai et al., 2020b; Hu et al., 2019; Luyt, 2013; Safipour et al., 2017; Yang, 2008). Academic adjustment refers to "the degree to which a student fits in the academic context of studying in the university and how comfortable they feel in that context" (Wilczewski et al., 2022, p. 698). Accordingly, Chinese exchange students needed to change their learning agency and practices while navigating cross-system differences, such as from dependent to independent and from passive to active learners (Dai & Garcia, 2019).

### **Chinese Exchange Students' Virtual Learning Experiences**

Online or virtual learning is different from face-to-face instruction, which often required more effort from instructors and students. As the Community of Inquiry (CoI) framework implied, the interrelationships among social, cognitive, and instructor presence could influence the effectiveness of online learning experiences (Garrison et al., 2000). The integration of remote and distance instruction further complicated the process of transnational education and students'

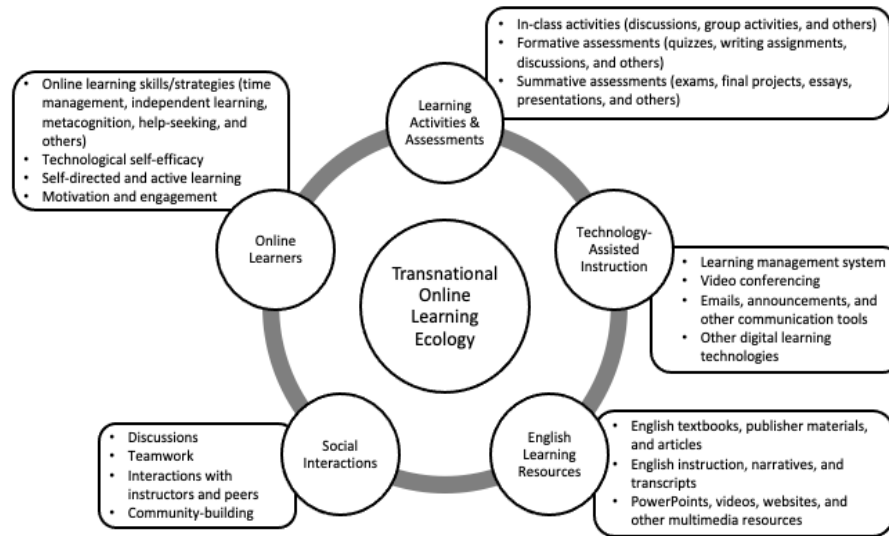
cross-cultural learning experiences (Chen et al., 2020; Gemmell & Harrison, 2017; Stewart, 2019). Some researchers have studied international students' experiences and perceptions of online learning during the pandemic, which showed ambivalent findings (Stewart & Lowenthal, 2021; Wilczewski et al., 2022). On the one hand, the flexibility and accessibility of online education make transnational education operative during and after the pandemic. On the other hand, many international students reported the lack of guidance or preparation during the unexpected transition to online instruction (Alaklabi et al., 2021). The disadvantages of online education made international students face additional challenges, such as social isolation, the lack of instructor presence, and disorientation. Other researchers investigated Chinese students' expectations of online learning environments, which showed that Chinese students highly valued various levels of instructor presence and technology integration, such as instructors' technological competency, online teaching experience, emotional support, and effective communication (Lin, 2022; Fang et al., 2023). Some researchers focused on the benefits, faculty perceptions, and systematic considerations of virtual exchange programs in higher education during the pandemic (Lee et al., 2022; Weaver et al., 2022). However, limited research has been conducted to investigate the experiences of Chinese exchange students who enrolled in a transnational distance education program. For instance, guided by the CoI framework, one quantitative research showed cognitive and instructor presence, as indicated in student-to-content and student-to-instructor interactions, were two strong predictors of Chinese students' learning satisfaction in a cross-cultural online learning environment (Ren & Zhou, 2022). Further research is needed to explore Chinese exchange students' perceptions and experiences before targeting appropriate support resources and services to improve the effectiveness of transnational distance teaching and learning.

## **Theoretical Framework**

Learning ecology (LE) is defined as a model to indicate essential components needed to achieve learning in physical, virtual, formal, or informal spaces, including learning activities, instructional resources, and interactions and relationship building (Barron, 2006; Barron et al., 2007; Soszynski, 2022). In this research, based on the academic contradictions and adjustments discussed before, we adapted a cross-cultural online LE model from the LE theory to reflect the specialty of transnational education in a distance context. The newly developed model contains (see Figure 1) learning activities/assessments, technology-assisted instruction, English learning resources, social interactions, and online learners.

**Figure 1**

*Adapted Model of Learning Ecology in a Transnational Distance Context*



Guided by the adapted model of transnational online LE, the mixed methods research (MMR) aimed to address the following research questions:

RQ1: How did transnational online learning ecology influence Chinese exchange students' learning satisfaction (as indicated in learning activities/assessments, technology-assisted instruction, English learning resources, social interactions, and online learners)?

RQ2: What have Chinese exchange students experienced in the transnational distance program?

## **Methodology**

### **Research Setting**

A university in the U.S. established a partnership with a Chinese university to develop a public administration exchange program. Before the pandemic, there was a requirement for Chinese students to only enroll in in-person programs offered at foreign institutions for accreditation purposes. In the Fall of 2022, because of the remaining restrictions on international travel, the faculty of the U.S. institution designed and delivered the courses in synchronous and asynchronous online sessions to students in China. The research was conducted on a group of Chinese undergraduate students ( $N=80$ ) who enrolled in the online exchange program. The purpose of the research was to understand their experiences and perceptions of the transnational distance learning context.

## **Research Design**

MMR is often used as a third research methodology to collect multiple sources of quantitative and qualitative data to comprehensively explore a phenomenon, with an aim to increase the validity of the research findings (Creswell & Plano Clark, 2018; Krpec et al., 2017; Molina-Azorin & Fetters, 2019). Concurrent MMR is a research method that collects and analyzes qualitative and quantitative data simultaneously (Creswell, 2014). In the research, we used an online survey containing closed and open-ended questions to collect both types of data from a large number of participants.

## ***Data Collection***

Guided by the adapted LE model, we developed an online survey to collect quantitative and qualitative data to explore students' experiences and perceptions of transnational distance instruction within one phase (see Figure 2). The online survey consisted of three sections: three demographic questions, a 19-item survey rated by a 4-point Likert scale, and four open-ended questions. The 19-item component of the survey measured students' perceptions of teaching and learning practices in transnational distance education; the scale ranged from 1 = strongly disagree to 4 = strongly agree. For instance, to measure students' perceptions of English learning recourses, one of the statements included "English course materials helped me achieve the learning objectives." To measure online learner readiness, we used four statements, such as "I was able to effectively manage my time to meet the course deadlines" and "I was able to ask for help from my instructors and classmates."

Four open-ended questions were included, to encourage students to describe their experiences in the transnational distance exchange program, such as advantages, limitations, challenges, and suggestions. For example, one of the questions was, "What were the things that benefited you from the program, and why?" We first created the online survey in English, translated it into Chinese, and invited two bilingual researchers to cross-check the accuracy of the translation. Students responded to the open-ended questions in Chinese, and we translated their responses from Chinese to English and invited two bilingual researchers to cross-verify the accuracy of the translation. We also conducted a pilot study with 30 participants to test the reliability of this survey. The Cronbach's Alpha was 0.96, which indicated an excellent reliability for a survey instrument (Taber, 2018). We used an online questionnaire platform, Wenjuanxing, to distribute the online survey to the target population. A total of 51 students completed the survey, with a 64% response rate.

## ***Data Analysis***

In the data analysis phase, we analyzed qualitative and quantitative data within one phase. For quantitative data analysis, we used the IBM SPSS Statistics for Windows, version 24, 2016 (IBM Corp., Armonk, N.Y., USA) to run descriptive statistics and conduct multiple regression to measure the relationships between the variables of transnational online learning ecology and students' learning satisfaction. In terms of qualitative data analysis, we used thematic analysis to interpret and categorize students' responses to open-ended questions (Braun & Clarke, 2012). Then, we compared and merged the results of quantitative and qualitative data analysis to draw a comprehensive picture of Chinese exchange students' perceptions and experiences in the transnational distance program. The integration analysis was guided by the principles of confirmation, expansion, and discordance (Fetters et al., 2013). Confirmation refers

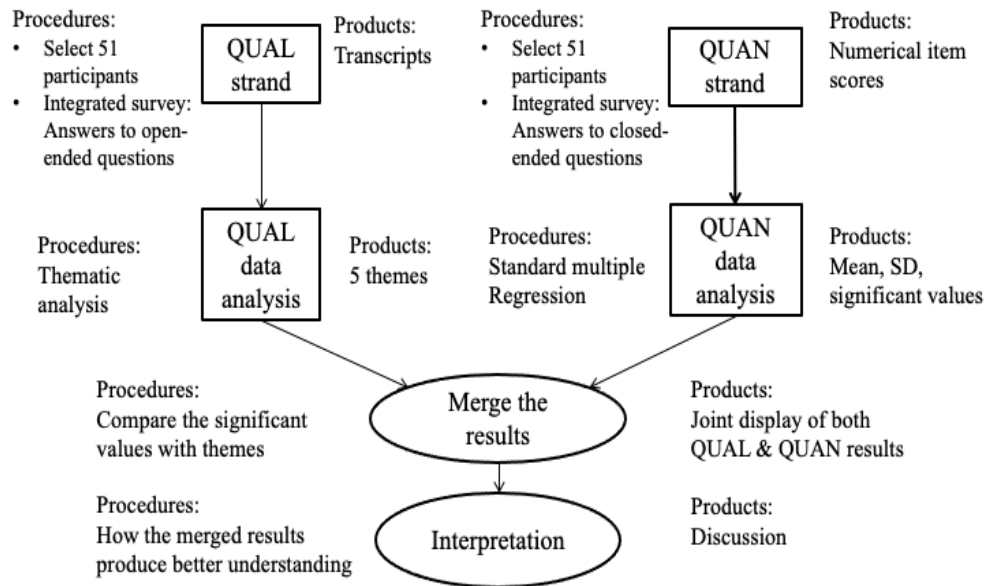
to the consistent conclusions from both types of data. Expansion means the data divergence enriches insights into a phenomenon. Discordance indicates the inconsistency and contradiction between two types of data results. Inspired by Bustamante’s idea (2019), we further developed a joint display, a visualized mixture combining the side-by-side display and comparison of results to represent data integration in MMR, to capture insights from the merging of data in this study (Fetters et al., 2013; Guetterman et al., 2015).

## Quantitative Results

According to the demographic information of the participants ( $N=51$ ), 41% of them were male students, and 59% of them were female students. Amongst these participants, a majority of them (86%) reported that their English proficiency was equal to or higher than the level of CET-4, an official college English test used in Chinese higher education to assess students’ English skills, while seven students had limited English proficiency compared to their classmates.

**Figure 2**

*A Diagram for the Concurrent Mixed Methods Research Design*



In the study, students’ perception of learning activities/assessments (LA) was measured by two Likert-scale items, including “in-class learning activities enhanced my understanding of main concepts, and assignments helped me achieve the learning objectives.” Technology-assisted instruction (TAI) referred to the use of digital technologies to deliver online instruction, containing a learning management system (LMS), video conferencing software, social networking tools, emails, and publisher platforms. Students’ perception of TAI was measured by two items, including “I was proficient in using the needed digital technologies to complete online courses, and the adoption of digital technologies enhanced my learning outcomes in online courses.” English learning resources (ELR) was assessed by items such as “I could easily

understand the content of English instructional materials; I could easily understand the English instruction delivered by U.S. instructors, and English course materials helped me achieve the learning objectives.” Social interaction (SI) was measured by students’ perceptions of interaction with classmates, interaction with instructors, collaboration with classmates to complete team projects, and participation in group discussions. Online learners (OL) implied learners’ characteristics and their readiness for online instruction was measured by online learning skills (time management and help-seeking), self-directed learning, and emotional engagement. Students’ learning satisfaction (LS) was evaluated by three scale items, including “I enjoyed American academic culture in the online environment; my learning experiences of the transnational distance education met my expectations, and I was satisfied with my learning outcomes in the program.”

Preliminary data screening included examinations of the histograms of all five variables’ scores and the scatter plots for all pairs of variables. Univariate distributions were reasonably normal with no extreme outliers. Bivariate relations were fairly linear. All slopes had the expected signs, and there was no bivariate outlier. Therefore, we conducted standard multiple regression to measure the relationships among TAI, SI, OL, ELR, and LA with LS in the program. As shown in Table 1, the standard multiple regression was statistically significant:  $R = .86$ ,  $R^2 = .74$ , adjusted  $R^2 = .72$ ,  $F(5, 45) = 26.11$ ,  $p < .001$ . This meant students’ LS was well predicted from this set of five variables, with approximately 74% of the variance in students’ learning satisfaction accounted for by the regression. Amongst these five predictors, OL and ELR were significantly predictive of students’ LS: OL  $t(45) = 2.49$ ,  $p < .05$ ; ELR  $t(45) = 3.74$ ,  $p = .001$ . The proportions of variance uniquely explained by these two predictors were:  $sr^2 = .04$  for OL and  $sr^2 = .08$  for ELR. According to the descriptive statistics of closed-ended questions, the scores for several items were relatively lower than others, including interaction between students and instructors ( $M = 2.57$ ,  $SD = 0.67$ ), online group discussions ( $M = 2.61$ ,  $SD = 0.64$ ), help-seeking outside the classroom ( $M = 2.55$ ,  $SD = 0.67$ ), communication in English ( $M = 2.49$ ,  $SD = 0.70$ ), American academic culture ( $M = 2.57$ ,  $SD = 0.78$ ), and transnational distance learning experience ( $M = 2.59$ ,  $SD = 0.78$ ).

**Table 1**

*Standard Multiple Regression to Predict Students’ Learning Satisfaction (LS) from Technology-Assisted Instruction (TAI), Social Interactions (SI), Online Learners (OL), English Learning Resources (ELR), and Learning Activities/Assessments (LA)*

	LS	TAI	SI	OL	ELR	LA	b	$\beta$	$sr^2_{\text{unique}}$
TAI	.59						.045	.027	.0004
SI	.741	.634					.152	.146	.007
OL	.770	.619	.777				.289	.331**	.035
ELR	.790	.569	.694	.658			.436	.431***	.080
LA	.579	.486	.503	.603	.583		.097	.042	.001
						Intercept=	-2.649		
Mean	7.92	6.06	11.22	10.94	11.10	6.04			
SD	2.028	1.223	1.942	2.327	2.003	.871			
						$R^2 = .744$			
						$R^2_{\text{adj}} = .715$			
						$R = .862^{***}$			



Note. \*\*\*  $p = .001$ , \*\*  $p < .05$

## Qualitative Findings

We first translated students' responses to the open-ended questions from Chinese to English. Guided by the transnational online LE model, we applied thematic analysis to interpret and identify the data with five themes: the usefulness of discipline-based English learning environments, the challenges of technology-assisted instruction, the adjustment of online learning practices, the lack of interaction with instructors, and the difficulties of completing learning activities and assessments.

### ***Theme One: The Usefulness of Discipline-Based English Learning Environments***

In the exchange program, Chinese students believed that the use of English learning resources effectively fostered their learning experiences. About half of the students expressed their positive attitudes about the use of English instructional materials to increase their English skills in a discipline-immersed language learning environment. For instance, a student wrote: "while reading English textbooks, I could learn about a large number of terminologies in English, which was helpful to enhance my English reading skills." Others mentioned that "the program provided us with an atmosphere where we could learn English in a more practical manner, such as reading materials in English, taking synchronous online courses, and communicating with foreign faculty." A student pointed out that "faculty shared new knowledge, such as international cases and practices, with us. These were very interesting and broadened my horizon and enriched my learning experiences." Although some students with limited English proficiency encountered challenges and difficulties in understanding subject knowledge in English, especially during synchronous online courses, the adoption of English instruction and learning resources created a discipline-based immersive language learning environment. Chinese students could increase their English skills in an authentic context and gain intercultural learning experiences to develop cross-cultural competence in a situated manner.

### ***Theme Two: The Challenges in Technology-Assisted Instruction***

The success of transnational distance teaching and learning highly relied on the affordances of the Internet and technology. Chinese students with limited e-learning experiences faced difficulties while navigating technology-assisted instruction. In the U.S., Internet-based instruction had been widely applied in higher education before the pandemic, unlike Chinese universities. To continue the transnational exchange program, the faculty of the U.S. university utilized multiple technologies to deliver the courses in both synchronous and asynchronous online manners, including a learning management system (LMS), video conferencing applications, publisher websites, communication tools, and online proctoring software. As a result, almost every exchange student expressed their negative feelings toward the use of technology-assisted instruction. For instance, they experienced "unstable Internet issues" during synchronous online sessions and "bugs" (some students used this word in English in their responses) while taking exams on the LMS or reviewing course content on the publisher's website. Some students mentioned "because of unstable connections, sometimes, the online sessions were frozen, or I was kicked out of the meeting. Since we were taking courses in English, it was so easy for me to get lost, which was a terrible experience." Owing to Internet censorship in China, some technologies based in overseas countries were blocked. The servers of

these technologies selected by the faculty were located in the U.S., which often caused unstable connections for students in China. Thus, some students wrote, “some URLs and website addresses crashed to prevent us from accessing the content when needed.” Other students also stated that “we preferred print textbooks to electronic learning materials. The online system was not very effective or user-friendly.” Many students even suggested the instructors consider applying some technologies based in China. Some of the students acknowledged the benefits of technology-assisted instruction in promoting their learning experiences, as indicated in the flexibility, convenience, and accessibility. However, with limited experience in using educational technologies and the lack of stable Internet connections, Chinese students often felt frustrated while taking Internet-based courses in a transnational learning context.

### ***Theme Three: The Adjustment to Online Learning Practices***

In the transnational distance program, students faced various difficulties and had to adjust their learning practices while experiencing American academic culture and online education at the same time. Some students mentioned that the learning experiences helped them develop independent and active learning skills. For instance, a student stated, “to better comprehend the content delivered in the classroom or in the textbook, I took time to search information on the Internet after class.” Other students mentioned, “I was able to develop an effective study plan, such as watching instructional videos, reviewing notes, and completing assignments; I used translation software a lot to increase my understanding of terminologies or main concepts.” Meanwhile, others said that they were able to develop online learning skills, as indicated in time management (“effectively managing my time,” “completing assignments in a timely manner,” and “catching up with a tight program schedule”), motivation and persistence (“excited to learn new knowledge in different socioeconomic contexts” and “engaged in English instruction”), self-discipline (“preparing and reviewing the course notes to complete the assignments”), collaboration (“communicating and studying with my classmates”), and help-seeking (asking for help from my classmates and instructors). Therefore, on the one hand, the complexity of transnational distance education enriched students’ cross-cultural learning experiences. On the other hand, students were “forced” to transform their learning practices to adapt to contradictions between Chinese and American educational systems as well as traditional classroom teaching and online instruction.

### ***Theme Four: The Lack of Interaction with Instructors***

In the transnational distance program, due to time differences, linguistic barriers, and other factors, the interactions between Chinese students and American faculty were very limited. For instance, some students mentioned that “because of the lack of in-person connections in the class, we could not feel the learning atmosphere, which had a negative impact on our learning experiences and outcomes.” Although the faculty provided two synchronous online sessions each week, “we still had very limited opportunity to interact with them during the class. When we had questions, we could not communicate with the faculty in a timely manner; similarly, the faculty could not provide us with immediate feedback via emails or other methods to solve our problems.” A student said “I sent emails to faculty but never received their responses. I was anxious while waiting for their responses to address my problems. This definitely was not a pleasant experience.” Most of the time, they had to solve the problems by themselves or ask for help from their classmates. Other students also mentioned, “we still preferred in-person instruction and face-to-face communication with American faculty and hoped that the pandemic

could end soon.” As a result, the lack of synchronous and asynchronous online interactions with instructors had a negative impact on students’ intercultural learning experiences.

### ***Theme Five: The Difficulties of Completing Learning Activities and Assessments***

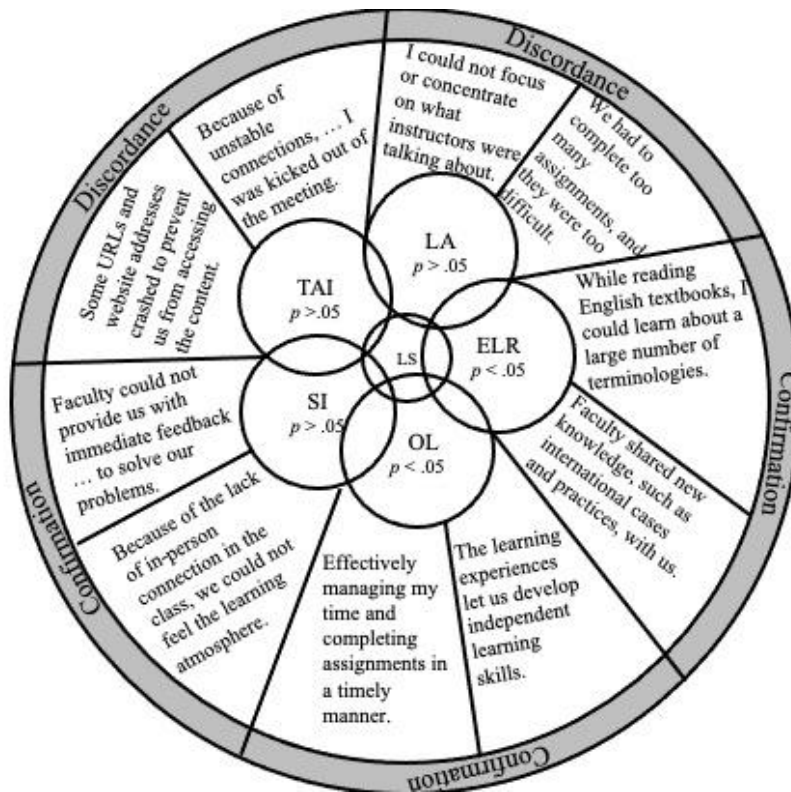
Finally, due to intensive course loads within the exchange program, Chinese students encountered various difficulties while completing learning activities and assessments. For instance, these students were not native English speakers, and they had to spend longer time understanding and digesting the subject knowledge in English before completing their assignments. For instance, many students said that “during the synchronous online courses, instructors were talking too fast, and I could not focus or concentrate on what instructors were talking about. It did not give me enough time to understand, and it was so easy for me to get lost.” Because of fast-paced synchronous online courses, sometimes, instructors could not upload recorded lectures immediately after each class, which prevented the students from reviewing the course materials to finish the assignments. Some students also complained that “we had to complete too many assignments, and they were too difficult” and suggested faculty “decrease the number of team projects and tests, make assessments easy, and allow multiple attempts.” Some students mentioned what they have learned in the class was often not helpful for them to complete the assessments. Because of limited online sessions, there was no time for instructors to discuss each question in detail in the class. Too often, these students had to ask their classmates for correct answers. Therefore, they hoped to have “tutoring services to help them understand the course content and complete assignments.” Due to a tight program schedule and unfamiliarity with the course content, students often felt overwhelmed and even disengaged while participating in learning activities and assessments.

## **Discussions and Implications**

Based on the integration principles of confirmation, expansion, and discordance suggested by Fetters et al. (2013), we further merged the results from both types of data and used PowerPoint® (<http://office.microsoft.com>) to develop a joint display to visualize the relationships between qualitative and quantitative results (see Figure 3) (Bustamante, 2019). The integration of both types of data analysis enriched and enhanced the interpretation of complicated learning experiences among Chinese students in a U.S. transnational exchange program. We summarized five findings that emerged from the integration, including confirmation of the importance of discipline-based English learning environments, confirmation of the transformation of online learning practices, confirmation of the insufficiency of student-to-instructor interaction, discordance between technological self-efficacy and the challenges faced in technology-assisted instruction, and discordance between usefulness and difficulties of learning activities and assessments. These themes provided a comprehensive picture to describe multifaceted opportunities and challenges experienced by Chinese students while negotiating academic contradictions and difficulties in the U.S. transnational online learning context.

**Figure 3**

*Joint Display: The Integration of Qualitative and Quantitative Data*



***Confirmation: The Importance of Discipline-Based English Learning Environments***

The results of multiple regression and qualitative findings confirmed the importance of discipline-based English learning environments in enhancing students' intercultural learning experiences. In the multiple regression, the variable of English learning resources (ELR) was one of the strong predictors of students' online learning satisfaction ( $t(45) = 3.74, p = .001$ ). The proportion of variance uniquely explained by this predictor was:  $sr^2 = .08$ . Similarly, in qualitative findings, students reported that the adoption of English learning resources and instruction allowed them to learn about new subject knowledge and experience an immersive language learning environment. They were able to increase their English skills in a discipline-based context through reading articles and textbooks in English, writing assignments in English, and participating in online discussions with instructors and classmates in English. Meanwhile, the use of English learning resources also gave students opportunities to develop cross-cultural competence in a transnational context.

This finding is consistent with previous literature that students who enrolled in transnational programs benefited from international resources in increasing their English skills and gaining meaningful intercultural learning experiences (Moufahim & Lim, 2015; Willis, 2010; Yu, 2021). However, in China, English language teaching is often separate from subject knowledge training. Chinese exchange students are more likely to experience linguistic barriers and learning gaps while learning about discipline knowledge in English (Dai et al., 2020b; Liao

& Wei, 2014; Senyshyn, 2019). Therefore, the institution could consider providing language support resources and services to promote their learning outcomes, such as short-term English language programs, bilingual tutoring services, live closed captions during synchronous online courses, and a glossary of terminologies and definitions in the subject knowledge (Moussa, 2021).

### ***Confirmation: The Transformation of Online Learning Practices***

The merging of quantitative and qualitative findings also validated Chinese exchange students and transformed their online learning practices to achieve learning excellence in transnational distance education. For instance, the multiple regression showed the variable of online learning practices was another strong predictor of students' online learning satisfaction with  $sr^2 = .04$  ( $t(45) = 2.49$ ,  $p < .05$ ). Likewise, in qualitative findings, students mentioned they had to adjust their learning practices to adapt to a different academic culture and online instruction. Because of the difficulty in understanding English instruction or the lack of immediate feedback from instructors, they developed independent and active learning skills to comprehend subject knowledge, as indicated in information searching, course preparation, and notes review.

The finding conforms with previous literature that the change in learning contexts had an impact on students' learning behaviors and identities (Dai & Garcia, 2019; Heng, 2018). For example, students changed their learning practices to adapt to a different academic culture. Meanwhile, Chinese students were able to improve online learning skills while transitioning to distance education, such as time management skills, self-discipline, collaboration, and help-seeking. However, without sufficient support and guidance, students often encountered many challenges while transforming their learning practices to adjust to cross-cultural online instruction (Alaklabi et al., 2021; Heng, 2018). Therefore, there is a need for institutions to provide online learning readiness evaluation and training, orientations, and seminar courses, as well as social and emotional support for students to decrease their anxiety and stress while transitioning to the special learning context (Senyshyn, 2019).

### ***Confirmation: The Insufficiency of Student-to-Instructor Interaction***

The integration of descriptive statistics and qualitative findings further verified the insufficiency of student-to-instructor interaction in the online delivery model. Although the item of social interactions was not a strong predictor of students' learning satisfaction in the multiple regression (SI  $t(45) = 1.09$ ,  $p > .05$ ), the scores for student-to-instructor interaction ( $M = 2.57$ ,  $SD = 0.67$ ) and help-seeking outside the classroom ( $M = 2.55$ ,  $SD = 0.67$ ) were relatively low compared to other scale items. This result was also consistent with the qualitative findings that expressed students' dissatisfaction with the fully online delivery model applied in the program. They believed that online instruction had a negative impact on their learning experiences and outcomes, especially in the lack of interpersonal connections and timely feedback from instructors. Moreover, in the qualitative findings, some students mentioned they were afraid to ask questions because of lack of confidence in speaking English. This was concordant with the low score for the item of communication in English ( $M = 2.49$ ,  $SD = 0.70$ ) on the Likert scale.

The finding is also consistent with previous research that Chinese students were dissatisfied with their online learning experiences because of social isolation, disengagement,

and the lack of instructor presence (Ren & Zhou, 2022; Tang et al., 2021; Zhang et al., 2020). Especially, exchange students with limited English proficiency often had fewer interactions with overseas instructors (Senyshyn, 2019). Therefore, instructors need to take Chinese exchange students' voices into consideration while designing and delivering online courses. For instance, instructor social presence could make a positive impact on learner engagement, satisfaction, and success in online instruction (Oyarzun et al., 2018; Watson et al., 2016). Accordingly, instructors could consider applying various strategies and techniques to increase their social presence in online courses, such as synchronous online office hours, contributions to group discussions, prompt responses to emails, joining class conversations on social media, frequent feedback, and online facilitation. Instructors can also integrate WeChat (the most popular social networking software among Chinese youth) as the main tool to communicate with Chinese students in the exchange program (Luo & Yang, 2022; Zhang, 2022). Institutions can further improve their learner support services to alleviate students' isolated learning experiences by providing bilingual mentors or teaching assistants and hosting virtual social events.

### ***Discordance: Technological Self-Efficacy and the Challenges in Technology-Assisted Instruction***

The merging of quantitative and qualitative data analysis showed a conflict in the perceptions of adopting technology-assisted instruction in transnational distance education. In the multiple regression, technology-assisted instruction was not a strong predictor of students' learning satisfaction (TAI  $t(45) = 0.26, p > .05$ ). The descriptive statistics also indicated relatively satisfactory scores for the items of academic technology access ( $M = 2.94, SD = 0.71$ ) and usage ( $M = 3.12, SD = 0.59$ ). However, in qualitative findings, almost every student mentioned that they experienced multiple technical difficulties while studying in the technology-supported cross-cultural learning environment. For instance, many students reported they experienced technical issues while "taking synchronous online courses and navigating on the LMS, such as unstable Internet connections, login issues, firewalls, and server crashes." A possible explanation for the discrepancies between qualitative and quantitative data analysis is the wording of the scale items. The scale items focused on students' technological proficiency instead of on the efficiency of infrastructure and the usability of academic technologies, such as hardware, software, and facilities. As a result, students believed they were technology savvy and confident in accessing and using technologies for learning. However, because of some external factors, such as the imperfection of infrastructure, unstable Internet connections, Internet censorship, and firewall issues, students often experienced technological frustrations while using technologies selected by the American faculty. Similarly, the score for the item of electronic instructional materials ( $M = 2.94, SD = 0.65$ ) was relatively satisfactory. However, in qualitative findings, some students reported they faced many challenges while using electronic resources, especially online publisher materials, and preferred print learning materials.

These findings are also confirmed by previous research that students with limited online learning experiences often encountered technical difficulties and frustrations in a web-based learning environment (Chen et al., 2020; Dai et al., 2020b; Lin & Gao, 2020; Zhang et al., 2020). The challenges faced in technology-assisted instruction also had harmful effects on Chinese students' cognitive presence (Ren & Zhou, 2022). Accordingly, institutions need to improve their infrastructure and support resources to minimize students' anxiety and enhance their transnational online learning effectiveness, such as stable Internet connections, well-designed

online learning systems, the availability of help desk services, and proactive support plans. Most importantly, institutions need to take ethical issues into consideration to better accommodate Chinese learners' needs and preferences. For example, they can conduct contextual and learner analyses before selecting the most appropriate, accessible, and user-friendly technologies to foster student engagement and success in a transnational distance context.

### ***Discordance: Usefulness and Difficulties of Learning Activities and Assessments***

The integration of data analysis revealed a discordance in learner perceptions of learning activities and assessments in transnational distance education. In the multiple regression, the variable of learning activities and assessments was not a strong predictor of students' learning satisfaction (LA  $t(45) = 0.42, p > .05$ ). However, the scores for the items, such as assignments and assessments ( $M = 3.08, SD = 0.39$ ) and in-class learning activities ( $M = 2.94, SD = 0.51$ ), were relatively high compared to other items. This was inconsistent with qualitative findings. In qualitative findings, students faced various challenges while completing these activities and assignments due to the intensive program schedule, limited discipline knowledge, low English proficiency, and the lack of transnational learning experiences. For instance, some students stated the courses were taught too fast, which did not give them enough time to digest the new knowledge before completing assignments. In fast-paced synchronous online courses, instructors did not have time to address students' questions about assignments. Many of them also complained they had to complete too many difficult assessments within a limited time period. One possible explanation for the contradictions is the wording of the existing scale items that exclusively focused on the usefulness of assignments and learning activities. Students agreed with the affordance of learning activities and assignments in increasing their learning outcomes. However, what students mentioned in the qualitative responses indicated their unpleasant perceptions and stressful experiences while dealing with challenging learning activities and assessments. Especially, they could not receive timely academic support and assistance to address these difficulties.

The finding is also consistent with previous research that students often had difficulty in following up with the instruction in synchronous online courses and experienced stress and anxiety because of academic demands in the transnational program (Dai & Garcia, 2019; Liao & Wei, 2014; Willis, 2010; Yu, 2021). Hence, it is critical for institutions to reconsider the program schedule to decrease course overload and provide effective and immediate tutoring services to alleviate academic stress and maintain student engagement. Instructors can also collaborate with instructional designers to first conduct a learner analysis to better understand students' prior knowledge, experiences, and preferences. For instance, they could develop aligned learning activities and assessments and well-designed course presentation to support students' completion of predefined learning objectives in online courses. Moreover, instructors are expected to provide immediate feedback, prompt responses, and online office hours to address students' questions and concerns about assessments.

### ***Limitations and Future Research Directions***

The research also has limitations in various aspects, as indicated in sample sizes, context, and instrument. For instance, we applied the convenience sampling to recruit the participants from a public administration exchange program in a Chinese university, and only 51 students completed the online survey. This indicated a limitation to generalize the findings to the larger

populations in other scenarios. Therefore, other researchers could consider collecting data from larger sample sizes in different disciplines, educational settings, institutions, and countries to contribute to a more comprehensive picture of transnational distance education. Moreover, because of the limitations of wording used in the Likert scale, to further elaborate on students' learning experiences, there is a need to redesign and redevelop the Likert scale items to better measure and enrich the insights of the phenomenon, such as the effectiveness of instructional strategies and teaching practices, the perceptions of learning activities and assessments, the desirability of course design and delivery, and the usability of academic technologies.

Further research can focus on analyzing the predictive power of other factors in influencing students' cross-cultural online learning satisfaction, such as social networking, institutional support, academic stress, and mental health. Other researchers could consider conducting qualitative studies to better understand the transformation and adaptation of learning practices and behaviors in transnational distance education. Future research is also needed to better understand students' perceptions and expectations of the delivery models implemented in the transnational distance program for further improvements. These research findings are expected to better inform future practices and interventions to foster the efficiency of transnational distance teaching and learning and contribute to the knowledge in the field.

## **Conclusion**

In conclusion, Chinese exchange students experienced multifaceted positives and negatives in the cross-cultural online learning context. On the one hand, they viewed Western-style teaching practices as legitimate to gain intercultural learning experiences and develop intercultural competency. For instance, they were able to increase their English proficiency and change their learning practices to become active and independent learners. On the other hand, they experienced various challenges and obstacles, such as linguistic barriers, academic stresses, technical difficulties, and social isolation. To some extent, academic contradictions were regarded as the "charm" to enrich students' learning experiences (Dai et al., 2020b). Therefore, instead of simply removing these differences, institutions need to improve their learner support services and resources to help exchange students transition to and negotiate with a new learning environment, such as seminar courses, orientations, language support, and tutoring services. Instructors also need to apply effective course design and delivery strategies and techniques to promote online teaching and learning excellence in a transnational context, such as instructor social presence, technology integration, emotional support, well-designed learning activities and assessments, and ethical considerations.

Transnational distance education has become an emerging phenomenon during and after the pandemic. The research findings enriched and expanded the understanding of the phenomenon and contributed to the knowledge in the field of transnational distance education. However, owing to the limitations of this study, other researchers could explore the phenomenon in different contexts or redevelop the Likert scale to measure the significance of additional factors in influencing students' perceptions and experiences in the transnational distance program, such as the usability of academic technologies, the desirability of course design, and the efficiency of course delivery model. The research also aimed to raise scholars' attention to



this unique group of students in the U.S. higher education and encourage more researchers to investigate the effectiveness of online teaching and learning practices in transnational contexts.

### **Compliance with Ethical Standards**

All procedures performed in the study involving human participants were in accordance with the ethical standards of the institution research committee.

### **Data Availability Statement**

The dataset used and analyzed during the current study is not publicly available but can be shared upon reasonable request.

### **Declaration of Interest Statement**

The authors declare that there is no conflict of interest pertaining to this research, and no funding was received for conducting this study.

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