NursingOpen Open Access WILEY

Enhancing nursing students' cultural awareness through Community of Inquiry-guided online 'Internationalization at Home' strategies—An intervention study

Siu Ling Chan | **John Tai Chun Fung** | **Naomi Takemura** | **Pui Hing Chau** | **Jay Jung Jae Lee** | **Hye Ri Choi** | **Wai Hin Wan** | **Harrison Withrow** | **Chia-Chin Lin**

School of Nursing, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong City, Hong Kong

Correspondence
Siu Ling Chan, School of Nursing, Li Ka Shing Faculty of Medicine, The University of Hong Kong, 5/F, Academic Building, 3 Sassoon Road, Pokfulam, Hong Kong City, Hong Kong.
Email: pollycha@hku.hk

Abstract

Aim: Internationalization at Home (IaH) strategies play an important role in nursing curricula to enhance nursing students' cultural awareness in the globalized world. The Community of Inquiry (CoI) is a theoretical framework for the optimal design of online learning environments to support critical inquiry and discourse among students and teachers. To optimise nursing students' online cultural awareness learning experiences, it was timely to develop online IaH strategies based on a sound theoretical model. This study aimed to examine the effectiveness of CoI-guided online IaH strategies on enhancing the cultural awareness of nursing undergraduates who enrolled in a community nursing course.

Design: This was an interventional pre-test post-test study.

Method: One hundred and six nursing undergraduates who enrolled in the course participated in the study. The online IaH strategies were developed focusing on the interactions of teaching presence, cognitive presence and social presence of CoI framework and they were integrated into the course. A previously validated Cultural Awareness Scale was adopted for pre-post evaluation. Higher scores indicate greater cultural awareness.

Results: The results showed that there was a significantly higher total score of cultural awareness of participating students at post-online IaH strategies. To be effective, aligning CoI-guided online IaH strategies with course content, pedagogy and assessment was shown to be significant. The inclusion of technological elements in related strategies was also critical to engage student learning. The positive change on the total score of cultural awareness suggested the effectiveness of the deployed strategies. In this ever-changing educational landscape, it may provide insights to educators regarding considering online IaH strategies with theoretical underpinning for curriculum planning and design.

1 | BACKGROUND

Internationalization is a widely used term in higher education with the notion of globalization of the environment. While globalization is a forceful change in society, internationalization is a conscious action in response to the challenges of globalization (Wächter, 2000). In higher education, internationalization was defined as 'the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of post-secondary education' (Knight, 2004, p. 2). It overarches various levels of higher education at policy, institutional and provider levels (Knight, 2004). Internationalization contributes to enhancing the quality of education, research and service for society in higher education as a means (de Wit & Deca, 2020; Kraska et al., 2018). Accordingly, a growing number of higher education institutions has engaged in internationalization acknowledging its sustainable impact on educational policy and practice (De Wit & Altbach, 2021; Ergin et al., 2019).

1.1 | Intercultural learning, internationalization abroad and internationalization at home

One of the key applications of internationalization to the curriculum of higher education is intercultural learning which refers to 'acquiring increased awareness of subjective cultural context (world view), including one's own, and developing greater ability to interact sensitively and competently across cultural contexts as both an immediate and long-term effect of exchange' (Bennett, 2009, S2). Intercultural learning starts from cultural awareness and eventually pursues cultural competence.

Intercultural learning has been implemented in higher education via internationalization abroad (IA) and internationalization at home (IaH) (Leask, 2013; Sercu, 2023). IA includes in-person activities such as cross-border student exchanges which contribute to inculcating global-mindedness, intercultural skills and international understanding in students in higher education (Khalid & Janee Ali, 2018; O'Brien et al., 2021; Safipour et al., 2017). IaH was developed as a curriculum design which aimed at developing international and intercultural knowledge, skills and attitudes for students without leaving their own countries for study-related purposes (Almeida et al., 2019; Crowther et al., 2000). This alternative is increasingly considered since only a small proportion of students can be internationally mobile (Chen et al., 2024; Engwall, 2024). IaH was defined as the 'purposeful integration of international and intercultural dimensions into the formal and informal curriculum for all students within domestic learning environments' (Beelen & Jones, 2015, p. 69). With the increased use of videoconferencing and webinars, IaH achieved popularity rapidly during the novel coronavirus disease-19 pandemic and beyond, in which information and communication technologies in teaching and learning cannot be undermined (Leung et al., 2020; Shadiev & Sintawati, 2020).

1.2 | Cultural awareness and cultural competence

Intercultural learning plays a significant role in nursing education in order to develop nursing student's cultural awareness. Cultural awareness is the practice of assessing one's own culture and realizing how it influences one's thinking about those from other cultures (Kaihlanen et al., 2019; Tomalin & Stempleski, 2013). As such, cultural awareness is the deliberate self-examination and in-depth exploration of one's personal biases, stereotypes, prejudices and assumptions (Campinha-Bacote, 2007). While cultural competence is an essential skill in nursing due to the growing diversity of care recipients globally, cultural awareness is the first step in developing cultural competence (Campinha-Bacote, 2002; Deardorff, 2017; Kaihlanen et al., 2019; Krainovich-Miller et al., 2008). For instance, non-Chinese residents in Hong Kong reached 8.4% which is a 70% increase over the past decade (Census and Statistical Department HKSAR, 2022; Lui et al., 2018). When nurses lack an awareness of their patients' culture, it would cause ineffective communication, patients' non-compliance and even patient safety risks (Cerveny et al., 2022; Osmancevic et al., 2023). Cultural awareness training for nursing students, as part of the process of cultural competence, is of paramount importance in equipping a nursing workforce that can provide quality care to diverse care recipients (Lonneman, 2015). However, it was reported that nursing education provided scarce opportunities for nursing students to become culturally aware (Hultsjö et al., 2019).

1.3 | Connection between cultural awareness and IaH strategies

Although various teaching methods have been implemented to enhance cultural awareness among nursing students such as lectures, group discussions and problem-based learning, their effect was examined as not significant (Gradellini et al., 2021; Kaihlanen et al., 2019; Repo et al., 2017; Shadiev et al., 2020). On the contrary, IaH as the teaching and learning strategies were demonstrated to be effective in enhancing cultural awareness of nursing students as reported in two studies (Leung et al., 2021; Psychouli et al., 2020). However, the theoretical framework for guiding the development of IaH strategies were not clearly elaborated.

1.4 | Community of Inquiry framework guiding development of online IaH strategies at course level

To be effective, the basis for teaching and learning should put strong emphasis on the course content, pedagogy and assessment, regardless of its face-to-face, online or blended learning (Yuen et al., 2018). Meticulous planning on these three areas was crucial to successful student learning experiences. Indeed, the pandemic has hastened the shifting of face-to-face learning to online learning in educational sectors. To enhance students' cultural awareness through online learning, it was timely to develop online IaH strategies against course content, pedagogy and assessment, based on a sound theoretical model. An educational model could help educators to apply the educational research findings to the betterment of curriculum design and development (Cooper & Scriven, 2017). Community of Inquiry (CoI) framework, which is grounded in John Dewey's progressive understanding of education, is widely adopted for studies addressing online learning environments in higher education (Alaulamie, 2014; Garrison & Arbaugh, 2007; Garson, 2017). CoI framework is an approach to designing critical parts of online learning (Wilson & Berge, 2023). It can help support critical thinking, critical inquiry and discourse among students and teachers (Castellanos-Reyes, 2020; Chan et al., 2017). It can be an important design when developing online learning strategies in a course. CoI is based on a constructivism concept to online learning that views online educational experience as rising from the interactions of teaching presence, cognitive presence and social presence (Swan et al., 2009). Teaching presence frames the moderation and guidance of an instructor to facilitate students' social and cognitive processes throughout a learning experience to achieve the intended learning outcomes (Choy & Quek, 2016). It focuses on student–teacher interaction. Scenarios, case studies and role play via online setting are examples of active and collaborative teaching skills in which they can induce effective deep learning among participating students. Social presence concerns the student's experience of learning through a sense of community, wherein her/his emotion, attitude and support system would promote collaborative learning (Dixon, 2015). It emphasizes student–student interaction. Online project-based learning activities promote teamwork among students. Through collaborative effort, students can learn from their peers, exchange ideas and provide constructive feedback to one another. Cognitive presence represents the student's engagement with the course content and his/her ability to create meaning through sustained reflection and critical thinking (Garrison & Arbaugh, 2007; Stenbom, 2018; Swan et al., 2009). It concentrates on student–content interaction. Video lectures and online exercises allow students to go through the process of intellectually interacting with content that results in changes in their understanding or cognitive mind. As a robust theoretical framework, CoI may guide the development of online IaH strategies towards cultural awareness enhancement of nursing students through the interactions among the three presences.

This study aimed to examine the effectiveness of the CoI-guided online IaH strategies on enhancing cultural awareness of nursing students who enrolled in an undergraduate nursing course.

2 | METHODS

2.1 | Study design

This study adopted a pretest–posttest design, in which the level of change on cultural awareness among nursing students was examined before and after the online IaH strategies.

2.2 | Participants

Undergraduate nursing students in a university in Hong Kong were invited to participate in the study. The inclusion criteria were those studying Year 4 of the Bachelor of Nursing full-time programme, and who enrolled in the Community and Global Health Nursing (CGHN) Course. By convenience sampling, 194 Year 4 students who had enrolled the Course were invited to join the study via their registered university emails. Participants provided online informed consent before participating in the study. We ensured their voluntary participation, anonymity and data confidentiality. The Institutional Review Board (IRB: UW19-845) approved this study.

2.3 | Intervention

The CoI-guided online IaH strategies for enhancing students' cultural awareness were incorporated into the 6-credit CGHN Course with 52 contact hours that covered a wide range of topics related to community and global health learning such as social determinants of health, cultural issues in community health practice, home assessment, case management, community assessment, community care services, community disease control, demography and epidemiology. One of the course learning outcomes was to facilitate students to develop an understanding of cultural competence. Since developing students' cultural awareness is considered as one of the core steps throughout the process (Hultsjö et al., 2019), the online IaH learning components were integrated into the course as described in Figure 1. It highlighted the 3 presences with each presence focusing on respective interactions and the developed teaching and learning pedagogies that may enhance the cultural awareness level of students. As reiterated in the CoI framework, the teaching presence, social presence and cognitive presence focus on student–teacher interaction, student–student interaction and student–content interaction, respectively. For teaching presence, case studies related to cultural diversity and cultural home assessment were conducted through online flipped classrooms, tutorial sessions and gamifications in a
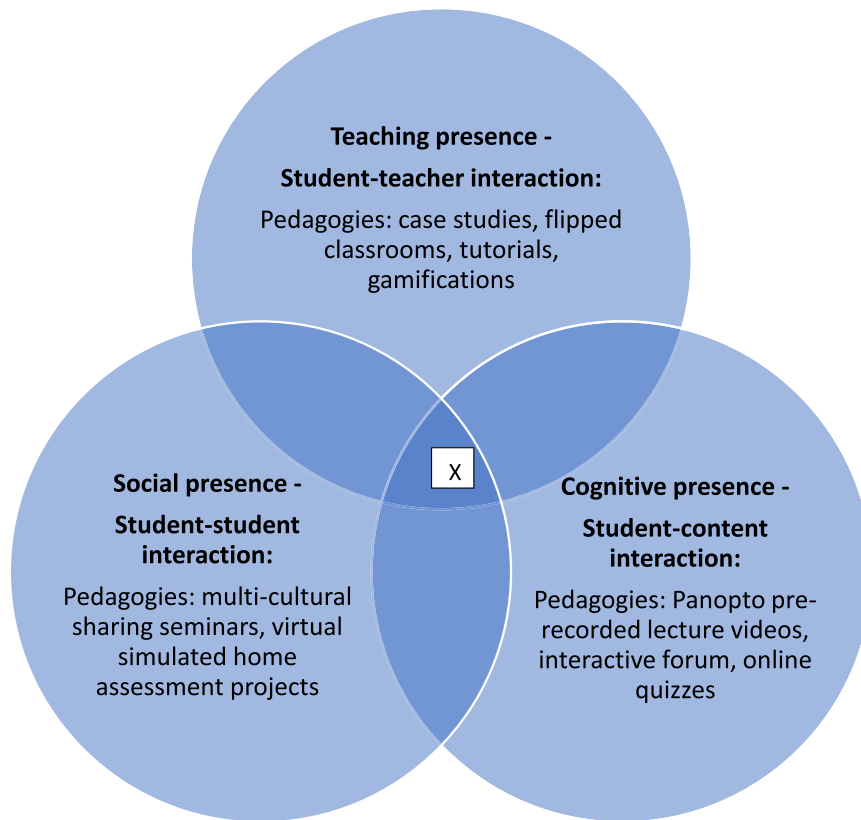
synchronous mode by course teachers and tutors who organized delivery of related materials. These activities were structured to enhance student–teacher interaction. The outcome was to facilitate social and cognitive presence of students by keeping them on task. For social presence, 12 international nursing students from seven Asian countries (Brunei, Indonesia, Malaysia, Myanmar, Philippines, Singapore and Thailand) who had previously joined the incoming exchange programmes at the university were invited to introduce their healthcare systems and exchange their cultural health practices with the Year 4 students in two 2-h online synchronous multi-ethnic cultural sharing seminars via Zoom. The international nursing students were briefed on the sharing content using an instructional guideline by the course teachers. Discussion was facilitated by course teachers during the seminars and breakout rooms were arranged for enhancing sharing and exchange among students. The Year 4 students were also required to work in groups to conduct virtual simulated home assessment projects. These activities were organised to reinforce student–student interaction, in which students were able to 'be themselves' in a community of peers that encouraged collaborative learning. For cognitive presence, viewing of online pre-recorded Panopto lecture videos with embedded questions, followed by online interactive forum and online quizzes were arranged to strengthen student-content interaction. The Panopto lecture videos covered didactic teaching of intercultural learning theories and the process of developing cultural competence using the cultural assessment tools. The online interactive forum and online quizzes allowed students to reflect on their learning ability. In so doing, students

were able to construct and integrate knowledge through sustained reflection (Wilson & Berge, 2023). All these online IaH strategies focused on facilitating meaningful learning experiences through the interactions of the three presences (Fiock, 2020). Throughout the intercultural learning process, course teachers and tutors were reiterated to always create a relaxed and open attitude for students through the online platform (Chan et al., 2021). The course began in the spring semester 2021 and the CoI-guided IaH strategies were implemented between February and April 2021.

2.4 | Data collection

This was the first study to investigate the effects of CoI-guided IaH strategies on cultural awareness among undergraduate nursing students. We invited all 194 eligible students in the Year 4 cohort to participate. A post hoc power analysis was performed. Students' sociodemographic characteristics and cultural awareness were investigated through pre (T0)- and post (T1)-online questionnaires using Qualtrics between January and May 2021.

2.4.1 | Sociodemographic questionnaire

Data on demographic variables (e.g. age, sex and ethnicity) and cultural-related experiences (e.g. joining overseas university exchange programmes, living or studying abroad prior to enrolling in the university, attending training related to internationalization and

cultural competence in the university, interacting with foreigners in course learning or campus activities, and having cross-cultural encounters in daily life) were collected.

2.4.2 | Cultural Awareness Scale (CAS)

The CAS is a 36-item self-report questionnaire, originally developed to measure changes in the level of cultural awareness of nursing students regarding programme outcomes (Martin-Thornton, 2017; Rew et al., 2003, 2014). These 36 items were used to measure five subscales related to cultural awareness, namely general educational experience, cognitive awareness, research issues, behaviours/comfort with interactions and patient care/clinical issues. They are to measure students' learning experience in cultural awareness with the interventions introduced in related programmes. Each item was rated on a 7-point Likert scale (0 = not applicable, 1 = strongly disagree to 7 = strongly agree). The CAS score was the average score of the 36 items (reverse score for some items), with a higher score indicating a higher level of cultural awareness and competence in education. The general educational experience subscale (14 items) examined students' learning of cultural awareness in the nursing curriculum. The cognitive awareness subscale (seven items) assesses students' behaviours, attitudes and beliefs influenced by cultural diversity. The subscale of research issues (four items) evaluates how well the faculty incorporates cultural factors into their research. The subscale of behaviours/comfort with interactions (six items) focused on students' level of comfort when dealing with people from diverse cultural groups. The subscale of patient care/clinical issues (five items) appraises the level of students' ability to apply cultural awareness and competence into clinical practice. The scale was previously well validated. It demonstrated satisfactory content and construct validity and reliability with a Cronbach alpha of 0.82 (Rew et al., 2003). In this study, the CAS was the main tool to measure the change in the level of students' cultural awareness after the adoption of IaH strategies that focused on student–student, student–content and student–teacher interactions.

2.5 | Data analysis

The participants' sociodemographic variables were presented using descriptive statistics. Cronbach's alpha coefficient was used to assess the internal consistency of the CAS. Associations between participants' sociodemographic variables and the CAS at baseline was examined with linear regression models. Linear mixed-effects models were employed to examine the changes in the level of students' cultural awareness from pre-to-post-online IaH strategies, with Correlation Compound Symmetry as covariance structure. Wald tests were adopted for the significance testing of the coefficients. Age, sex, ethnicity, experience of joining overseas university exchange programmes, living or studying

abroad prior to enrolling in the university, attending training related to internationalization, cultural competence or global health in the university, interacting with incoming students in course learning or campus activities, and having cross-cultural encounters in daily life were included as factors in the models. Furthermore, to assess if these factors were associated with the change in the level of students' cultural awareness outcomes, additional linear mixed-effects models were fitted with their interaction terms with time and a significant interaction term indicated association between the change and the factor. Linear mixed-effects model could handle missing without the need of imputation. P–P plots were used to test for normality of the residuals. SPSS, version 28.0 was adopted for statistical analysis (IBM Corp., Armonk, NY, USA). The level of significance was set at $p < 0.05$.

3 | RESULTS

3.1 | Sociodemographic characteristics of participants

A total of 106 Year 4 students participated in the study, with a response rate of 54.6%. Table 1 showed the participants' sociodemographic characteristics with 42% aged 18–21 and 58% aged 22–31. Most of them were female (73%) and Chinese, born in Hong Kong (79%). The majority had experience interacting with foreigners in other course or campus activities (68%), but not joining overseas university exchange programmes (82%), living or studying abroad prior to enrolling in university (92%), attending training related to internationalization and cultural competence in the university (86%), and having cross-cultural encounters in daily life (55%).

3.2 | Effects of the IaH strategies on students' cultural awareness

Cronbach's alpha of the CAS was 0.790 (pre-IaH strategies) and 0.885 (post-IaH strategies). There was insignificant association between the CAS and subscales at baseline with the sociodemographic characteristics, except attending training related to internationalization and cultural competence in the university was associated with higher CAS score (0.251, 95% CI = 0.031, 0.470, $p = 0.026$) and general educational experience subscale score (0.358, 95% CI = 0.058, 0.658, $p = 0.020$).

Table 2 presented the mixed model analysis of the CAS scores of the Year 4 students at baseline and post-IaH strategies. The change in CAS total score (within-group difference $d = 0.275$, 95% CI = 0.204, 0.346, $p < 0.001$) and three subscales' scores—general educational experience ($d = 0.449$, 95% CI = 0.360, 0.538, $p < 0.001$), cognitive awareness ($d = 0.209$, 95% CI = 0.088, 0.330, $p = 0.001$) and research issues ($d = 0.559$, 95% CI = 0.418, 0.700, $p < 0.001$) were significantly enhanced at post-IaH strategies. The subscales of behaviours/comfort with interactions and patient care/clinical issues

TABLE 1 Sociodemographic characteristics of the participants (N = 106).

	N (%)
Age[a]	
18–21	44 (42)
22–26	61 (58)
27–31	1 (0)
Sex	
Male	29 (27)
Female	77 (73)
Ethnicity[b]	
Chinese-born in Hong Kong	84 (79)
Chinese-not born in Hong Kong	20 (19)
Non-Chinese-born in Hong Kong	1 (1)
Non-Chinese-not born in Hong Kong	1 (1)
Experience of joining overseas university exchange programme	
Yes	19 (18)
No	87 (82)
Experience of living or studying abroad prior to enrolling into university	
Yes	9 (8)
No	97 (92)
Experience of attending training related to internationalization, cultural competence or global health in the university	
Yes	15 (14)
No	91 (86)
Experience of interacting with foreigners in the course learning or campus activities	
Yes	72 (68)
No	34 (32)
Experience of having cross-cultural encounters in daily life	
Yes	48 (45)
No	58 (55)

[a]While controlling for this variable in the regression, only two levels '18–21' and '22–31' were used due to the small number of participants aged 27–31.

[b]While controlling for this variable in the regression, only two levels 'Born in Hong Kong' and 'Not born in Hong Kong' were used due to the small number of non-Chinese participants.

were not significantly enhanced post-IaH strategies ($d = -0.118$, 95% CI = −0.257, 0.021, $p = 0.095$; $d = 0.125$, 95% CI = −0.012, 0.261, $p = 0.074$).

Sociodemographic variables were not significantly associated with changes in outcomes from pre- to post-IaH strategies, except those with overseas exchange experience less increase in patient care/clinical issues subscale scores ($p = 0.015$). Among those with overseas exchange experience, there was insignificant change in the patient care/clinical issues subscale scores (−0.158, 95% CI = −0.536, 0.220, $p = 0.392$), whereas among those without such experience, there was significant increase in the score (0.186, 95% CI = 0.041, 0.331, $p = 0.013$).

4 | DISCUSSION

4.1 | Aligning CoI-guided online IaH strategies with course content, pedagogy and assessment

In this study, the CoI-guided online IaH strategies were developed based on course content, pedagogy and assessment. For the course content, students learnt about topics related to cultural diversity which were relevant to community and global health nursing through the pre-recorded lecture videos. It allowed students to view and review the course content at their own pace (Chan et al., 2021) before they answered the cultural questions embedded in the videos. For the pedagogy, international nursing students and the Year 4 students shared and exchanged their multi-ethnic cultural experiences with instructional guidelines through seminars. The cultural sharing facilitated students' understanding of healthcare systems internationally, including challenges and disparities in health, which was necessary to develop nursing competencies in addressing the healthcare needs of the global population (Flaubert et al., 2021). For the assessment, facilitating the process of developing cultural awareness in community care could provide an avenue for students in making the learning more relevant (Engerbretson et al., 2008; Kaihlanen et al., 2019). Students were to work in groups to conduct virtual home assessment projects and demonstrate their cultural assessment skills in a designated virtual home environment through video recording. All these online IaH strategies were developed to enhance students' cultural awareness through student–student, student-content and student-teacher interactions. This was consistent with the constructivist approach as embraced by the CoI framework (Chan et al., 2021).

4.2 | Inclusion of technological elements in CoI-guided online IaH strategies

In this ever-changing educational landscape, a sustainable online pedagogy should include technological elements in the curriculum with a sound educational design (Phillips et al., 2012; Steele et al., 2019; Xu & Boudouaia, 2023). The benefits of a well-designed online pedagogy may be beyond those in a traditional classroom setting. They include engaging students asynchronously and incorporating multimedia resources to enrich the online learning environment. In this study, four virtual simulated homes were designed for students to learn about the skills in home assessment synchronously through tutorial discussions and asynchronously in a self-paced manner. The adoption of online virtual simulated home settings offered a safe learning environment for students to acquire in-depth knowledge and skills in home assessment (Sinclair & Relouw, 2022). The homes simulated the real world and reflected how cultural issues might affect effective health maintenance. To facilitate simulated home assessment, a virtual tour of the homes was uploaded to the students' learning management system. The simulation experiences

TABLE 2 CAS scale and subscale pre- and post-IaH strategies ($n = 106$).

Outcomes	T0 Mean (SD)	T1 Mean (SD)	T1–T0[a] Mean (95% CI)	p value
Cultural Awareness Scale	4.753 (0.370)	5.028 (0.485)	0.275 (0.204, 0.346)	<0.001*
Subscales				
General educational experience	4.448 (0.501)	4.897 (0.557)	0.449 (0.360, 0.538)	<0.001*
Cognitive awareness	5.132 (0.601)	5.341 (0.645)	0.209 (0.088, 0.330)	0.001*
Research issues	4.552 (0.679)	5.111 (0.783)	0.559 (0.418, 0.700)	<0.001*
Behaviours/comfort with interactions	4.678 (0.780)	4.560 (0.807)	−0.118 (−0.257, 0.021)	0.095
Patient care/clinical issues	5.326 (0.647)	5.451 (0.687)	0.125 (−0.012, 0.261)	0.074

Abbreviation: CI, confidence interval.

[a]Based on mixed-effects models adjusted for age, sex, ethnicity, experience of joining overseas university exchange programmes, living or studying abroad prior to enrolling in the university, attending training related to internationalization, cultural competence or global health in the university, interacting with incoming students in course learning or campus activities and having cross-cultural encounters in daily life. Deviation from normality assumption of the residuals was not detected by P–P plots.

*$p < 0.001$.

together with other teaching and learning strategies, have been shown to be effective in giving students the opportunity to gain intercultural understanding of culturally diverse families (Leh, 2016; Marja & Suvi, 2021).

4.3 | Changes in the level of students' cultural awareness post-CoI-guided online IaH strategies

From the study results, it demonstrated the CoI-guided online IaH strategies significantly enhanced the overall students' cultural awareness. Specifically, the subscales covering general educational experience, cognitive awareness and research issues were highly significant ($p < 0.001$). These findings were concurred with those reported by Kor et al. (2022). Indeed, enhancing students' cultural awareness was one of the course learning outcomes. It was essential to incorporate international, intercultural and/or global dimensions into the course content, together with relevant learning outcomes, assessment tasks and teaching methods into the course of study (Leask, 2020).

This study showed a non-significant finding for the subscale of behaviour/comfort with interaction. The subscale of behaviour/comfort was linked to student–student interaction. Perhaps, a longer period of relationships between the Year 4 students and the international students can be established to enhance the comfort in their interactions (Jon, 2013). Building intercultural relationships could help overcome discomfort in interaction and intercultural comfort is the feeling of interacting safely and appropriately with different ethnic groups (Bernstein & Salipante, 2017). Future interventions might explore the feasibility of extending interactive sessions synchronously and asynchronously for local and international nursing students, as well as devising more meaningful interactive experiences in terms of student–student interaction such as using story circle methodology to enhance interaction among participants (Deardorff, 2020).

This study also revealed the other non-significant results on the subscale of patient care/clinical issues. The sharing of healthcare systems and cultural health practices by international nursing students might not directly elicit the Year 4 students' insight into culturally related issues in patient care. Future practice could incorporate virtual community/clinical visits to culturally diverse settings and scenario-based discussions for both local and international nursing students (Markey et al., 2020; Sinclair & Relouw, 2022). It might promote their intercultural learning related to cultural and clinical issues in patient care. Use of Photovoice would also be a valuable tool for students in terms of enhancing their cultural self-reflection that better prepares them to provide culturally competent care for people in need (Farrugia, 2022).

4.4 | Sociodemographic characteristics and CAS

At baseline, it showed that those previously attended training related to internationalization and cultural competence in the university had significant associations with the CAS and the general education experience subscale. The effective learning of cultural awareness among students was enhanced through designing relevant IaH pedagogical activities in the curriculum (Kor et al., 2022), which was also a consistent finding in the current study.

Interestingly, those with overseas exchange experience (18%) demonstrated less increase in patient care/clinical issues subscale as well as insignificant change in the score of the same subscale. Conversely, a significant change was detected among those without the experience. It may be due to the fact that students who had attended the overseas exchange interacted with culturally diverse groups through direct encounter in activities like service-learning and clinical placement. Their cultural awareness in patient care had already been enhanced through the international and in-person experience (Kardas & Sahin, 2023; Kohlbry, 2016; Photopoulos et al., 2023; Wang et al., 2021). Therefore, when

they further participated in the online IaH activities, no significant change was shown. On the other hand, students who never attended the overseas exchange (82%) may find the experience unique and fruitful by interacting interculturally with their overseas counterparts through sharing cultural health practices. Exposing nursing students to health practices in other cultures through the online IaH activities could strengthen their cultural awareness (Leung et al., 2020).

4.5 | Research instrument adopted in this study

The primary outcome of this study was CAS, with a Cronbach's alpha of 0.790 (pre) and 0.885 (post). This indicated the research instrument adopted had satisfactory internal consistency and was of comparable level as the reported value of 0.82 in the literature (Rew et al., 2003). Although the majority of the participating students in Hong Kong are Chinese, they studied in the university with English as the medium of instruction and the use of this English scale did not affect its internal consistency.

4.6 | Study strengths and limitations

This is the first study to investigate the effects of the CoI-guided IaH strategies on cultural awareness among undergraduate nursing students. The development of IaH strategies based on the CoI framework featured a solid theoretical foundation in terms of the interactions of the three presences. This study has a few limitations. First, the lack of a control group made it unable to compare to the intervention group in the changing level of cultural awareness, in which it is difficult to confidently determine if the changes are due to the CoI-guided IaH strategies or other variables. Second, our study was conducted in a single site and the response rate was 54.6%, which would prevent the study findings from being extrapolated and therefore it would limit generalizability. Third, perspectives from the Year 4 students on deploying the CoI-guided IaH strategies throughout the course of study were not qualitatively explored. It might fail to validate if the study findings were grounded in the experiences of participating students.

4.7 | Implications for nursing

Internationalization of higher education is entering a new era, focusing on IA to IaH (de Wit & Deca, 2020; Katsumoto, 2024). In this study, the CoI-guided IaH strategies were relevant to the intercultural learning needs of the Year 4 students via the online platform. Virtual encounters and interactions between international and local students can promote their intercultural learning through IaH (Chan et al., 2017; Shan Shirley Huang et al., 2023). Integrating the IaH strategies into the course level would be a sustainable change in internationalizing the nursing curriculum (Katsumoto, 2024; Li &

Xue, 2023). Strategically, incorporating international students' cultural experience sharing as part of the nursing curricula might help to improve local students' knowledge, skills and attitudes (Antón-Solanas et al., 2021). IaH strategies could be introduced to all nursing programmes of different educational levels (de Wit & Deca, 2020; Leung et al., 2021). To sustain, it is important for the faculty to provide international experiences based on a pedagogical framework that helps students to critically reflect on themselves and others and transform their thinking regarding cultural awareness, in which it would help to prepare their future nursing roles in taking care of culturally diverse patients (Munna & Kalam, 2021).

5 | CONCLUSIONS

The COVID-19 pandemic has hindered the internationalization of higher education by restricting international travel. IaH emphasizes making university students interculturally and internationally competent without study-related travelling. The CoI-guided IaH strategies were developed and integrated into the related course of an undergraduate nursing programme. The findings suggest its effectiveness in enhancing students' cultural awareness. Internationalizing the nursing curriculum could benefit student learning through the implementation of online IaH strategies guided by the CoI framework.

AUTHOR CONTRIBUTIONS
S.L.C., J.T.C.F., C.-C.L.: Study conception/design. S.L.C., N.T., P.H.C., W.H.W.: Data collection/analysis. S.L.C., N.T., H.R.C.: Drafting of manuscript. S.L.C, J.T.C.F., N.T., P.H.C., J.J.J.L., H.R.C., W.H.W., C.-C.L.: Critical revisions for important intellectual content. S.L.C., C.-C.L.: Supervision. S.L.C., N.T., P.H.C.: Statistical expertise. S.L.C., J.T.C.F., J.J.J.L., W.H.W: Administrative/technical/material support.

CONFLICT OF INTEREST STATEMENT
The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT
HKU/HA HKW IRB: UW19-845.

ORCID
Siu Ling Chan https://orcid.org/0000-0002-8198-9302
John Tai Chun Fung https://orcid.org/0000-0002-5237-056X

Pui Hing Chau https://orcid.org/0000-0003-0287-8020

Hye Ri Choi https://orcid.org/0000-0002-8290-6644

REFERENCES

Alaulamie, L. A. (2014). *Teaching presence, social presence, and cognitive presence as predictors of Students' satisfaction in an online program at a Saudi University*. Ohio University ProQuest Dissertations Publishing.

Almeida, J., Robson, S., Morosini, M., & Baranzeli, C. (2019). Understanding internationalization at home: Perspectives from the global north and south. *European Educational Research Journal*, *18*(2), 200–217. https://doi.org/10.1177/1474904118807537

Antón-Solanas, I., Tambo-Lizalde, E., Hamam-Alcober, N., Vanceulebroeck, V., Dehaes, S., Kalkan, I., Kömürcü, N., Coelho, M., Coelho, T., Casa Nova, A., Cordeiro, R., Sagarra-Romero, L., Subirón-Valera, A. B., & Huércanos-Esparza, I. (2021). Nursing students' experience of learning cultural competence. *PLoS One*, *16*(12), e0259802. https://doi.org/10.1371/journal.pone.0259802

Beelen, J., & Jones, E. (2015). Redefining internationalization at home. In A. Curaj, L. Matei, R. Pricopie, J. Salmi, & P. Scott (Eds.), *The European higher education area*. Springer. https://doi.org/10.1007/978-3-319-20877-0_5

Bennett, M. J. (2009). Defining, measuring, and facilitating intercultural learning: A conceptual introduction to the intercultural education double supplement. *Intercultural Education*, *20*(sup1), S1–S13.

Bernstein, R. S., & Salipante, P. (2017). Intercultural comfort through social practices: Exploring conditions for cultural learning. *Frontiers in Education*, *2*, 31. https://doi.org/10.3389/feduc.2017.00031

Campinha-Bacote, J. (2002). The process of cultural competence in the delivery of healthcare services: A model of care. *Journal of Transcultural Nursing*, *13*(3), 181–184. https://doi.org/10.1177/10459602013003003

Campinha-Bacote, J. (2007). *The process of cultural competence in the delivery of healthcare services: The journey continues*. Transcultural C.A.R.E. Associates.

Castellanos-Reyes, D. (2020). 20 years of the Community of Inquiry framework. *TechTrend*, *64*(4), 557–560. https://doi.org/10.1007/s11528-020-00491-7

Census and Statistics Department, Hong Kong Special Attention Region. (2022). Population Census. Retrieved October 11, 2022, from https://www.census2021.gov.hk/en/census_results.html

Cerveny, M., Kratochvilova, I., Hellerova, V., & Tothova, V. (2022). Methods of increasing cultural competence in nurses working in clinical practice: a scoping review of literature 2011-21. *Frontiers in Psychology*, *13*, 936181. https://doi.org/10.3389/fpsyg.2022.936181

Chan, E. A., Lai, T., Wong, A., Ho, S., Chan, B., Stenberg, M., & Carlson, E. (2017). Nursing students' intercultural learning via internationalization at home: a qualitative descriptive study. *Nurse Education Today*, *52*, 34–39. https://doi.org/10.1016/j.nedt.2017.02.003

Chan, S. L., Lin, C. C., Chau, P. H., Takemura, N., & Fung, J. T. C. (2021). Evaluating online learning engagement of nursing students. *Nurse Education Today*, *104*, 104985. https://doi.org/10.1016/j.nedt.2021.104985

Chen, L. V., Li, M., Ma, J. J., & Wang, J. S. (2024). Factors influencing college students' willingness to continue learning in internationalization at home. *Cogent Education*, *11*(1), 2331290. https://doi.org/10.1080/2331186X.2024.2331290

Choy, J. L. F., & Quek, C. L. (2016). Modelling relationships between students' academic achievement and Community of Inquiry in an online learning environment for a blended course. *Australasian Journal of Educational Technology*, *32*(4), 106–124. https://doi.org/10.14742/ajet.2500

Cooper, T., & Scriven, R. (2017). Communities of inquiry in curriculum approach to online learning: Strengths and limitations in context. *Australasian Journal of Educational Technology*, *33*(4), 22–37.

Crowther, P., Joris, M., Otten, M., Nilsson, B., Teekens, H., & Wächter, B. (2000). *Internationalization at Home: A position paper*. European Association for International Education.

De Wit, H., & Altbach, P. G. (2021). Internationalization in higher education: Global trends and recommendations for its future. *Policy Reviews in Higher Education*, *5*(1), 28–46. https://doi.org/10.1080/23322969.2020.1820898

de Wit, H., & Deca, L. (2020). Internationalization of higher education, challenges and opportunities for the next decade. In A. Curaj, R. Deca, R. Priicopie (Eds.), *European higher education area: Challenges for a new decade* (pp. 3–11). Springer. https://doi.org/10.1007/978-3-030-56316-5_1

Deardorff, D. K. (2017). Chapter 1. Intercultural competence—An overview. In *Intercultural competence in higher education international approaches, assessment and application*. Routledge.

Deardorff, D. K. (2020). *Manual for developing intercultural competencies: Story circles*. Routledge.

Dixon, M. (2015). Measuring student engagement in the online course: The online student engagement scale (OSE). *Online Learn*, *19*(4), 1–15. https://doi.org/10.24059/olj.v19i4.561

Engerbretson, J., Mahoney, J., & Carlson, E. D. (2008). Cultural competence in the era of evidence-based practice. *Journal of Professional Nursing*, *24*, 172–178. https://doi.org/10.1016/j.profnurs.2007.10.012

Engwall, L. (2024). *Internationalization in higher education and research: Perspectives, obstacles, alternatives in higher education dynamics* (Vol. 62). Springer. https://doi.org/10.1007/978-3-031-47335-7

Ergin, H., de Wit, H., & Leask, B. (2019). Forced internationalization: an emerging phenomenon. *International Higher Education*, *97*, 9–10. https://doi.org/10.6017/ihe.2019.97.10939

Farrugia, A. M. (2022). A picture with a caption: Using photovoice as cultural self-reflection in communication sciences and disorders. *Journal of Communication Disorders*, *100*, 106277. https://doi.org/10.1016/j.jcomdis.2022.106277

Fiock, H. (2020). Designing a Community of Inquiry in online courses. *International Review of Research in Open and Distance Learning*, *21*(1), 134–152. https://doi.org/10.19173/irrodl.v20i5.3985

Flaubert, J. L., Le Menestrel, S., & Williams, D. R. (2021). *The future of nursing 2020–2030: Charting a path to achieve health equity*. National Academies Press (US). https://doi.org/10.17226/25982

Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *The Internet and Higher Education*, *10*(3), 157–172.

Garson, K. D. (2017). Internationalization and intercultural learning: A mixed methods study. In G. García-Pérez & C. Rojas-Primus (Eds.), *Promoting intercultural communication competencies in higher education* (pp. 54–88). IGI Global. https://doi.org/10.4018/978-1-5225-1732-0.ch003

Gradellini, C., Gómez-Cantarino, S., Dominguez-Isabel, P., Molina-Gallego, B., Mecugni, D., & Ugarte-Gurrutxaga, M. I. (2021). Cultural competence and cultural sensitivity education in university nursing courses: A scoping review. *Frontiers in Psychology*, *12*, 682920. https://doi.org/10.3389/fpsyg.2021.682920

Hultsjö, S., Bachrach-Lindström, M., Safipour, J., & Hadziabdic, E. (2019). Cultural awareness requires more than theoretical education—Nursing students' experiences. *Nurse Education in Practice*, *39*, 73–79. https://doi.org/10.1016/j.nepr.2019.07.009

Jon, J. E. (2013). Realizing internationalization at home in Korean higher education: Promoting domestic students' interaction with international students and intercultural competence. *Journal of Studies in International Education*, *17*(4), 455–470. https://doi.org/10.1177/1028315312468329

Kaihlanen, A. M., Hietapakka, L., & Heponiemi, T. (2019). Increasing cultural awareness: Qualitative study of nurses' perceptions about cultural competence training. *BMC Nursing*, *18*, 38. https://doi.org/10.1186/s12912-019-0363-x

Kardas, U., & Sahin, S. (2023). Investigation of the relationship between cultural sensitivity and effectiveness levels among nursing students. *Nurse Education in Practice*, *72*, 103773. https://doi.org/10.1016/j.nepr.2023.103773

Katsumoto, S. (2024). Internationalizing international students' experiences: Analysis of intercultural dispositions for international students who engage in study abroad and internationalization at home. *Journal of Studies in International Education*, *28*(1), 125–142. https://doi.org/10.1177/10283153231178128

Khalid, J., & Janee Ali, A. J. (2018). Promoting internationalization at home in ASEAN higher education institutions: a proposed project. *ASEAN Journal of Community Engagement*, *2*(1), 4. https://doi.org/10.7454/ajce.v2i1.106

Knight, J. (2004). Internationalization remodeled: Definition, approaches, and rationales. *Journal of Studies in International Education*, *8*(1), 5–31. https://doi.org/10.1177/1028315303260832

Kohlbry, P. W. (2016). The impact of international service-learning on nursing students' cultural competency. *Journal of Nursing Scholarship*, *48*(3), 303–311. https://doi.org/10.1111/jnu.12209

Kor, P. P. K., Yu, C. T. K., Triastuti, I. A., Sigilipoe, M. A., Kristiyanto, H. D., Pratiwi, J. P. D., Perdamaian, T. K., Li, L. M., Pang, P. C. P., & Widagdo, T. M. M. (2022). Effects of an internationalization at home (IaH) programme on cultural awareness among medical and nursing students in Hong Kong and Indonesia during the COVID-19 pandemic: a mixed-methods study. *BMC Medical Education*, *22*, 368. https://doi.org/10.1186/s12909-022-03424-5

Krainovich-Miller, B., Yost, J. M., Norman, R. G., Auerhahn, C., Dobal, M., Rosedale, M., Lowry, M., & Moffa, C. (2008). Measuring cultural awareness of nursing students: a first step toward cultural competency. *Journal of Transcultural Nursing*, *19*(3), 250–258. https://doi.org/10.1177/1043659608317451

Kraska, M., Bourn, D., & Blum, N. (2018). From internationalization to global citizenship: dialogues in international higher education. Accessed 2022, October 11 https://discovery.ucl.ac.uk/id/eprint/10052526/7/Blum_Chapter.pdf

Leask, B. (2013). Internationalization of the curriculum and the disciplines: Current perspectives and directions for the future. *Journal of Studies in International Education*, *17*(2), 99–102. https://doi.org/10.1177/1028315313486228

Leask, B. (2020). Internationalization of the curriculum, teaching and learning. In P. N. Teixeira & J. C. Shin (Eds.), *The international encyclopedia of higher education systems and institutions*. Springer. https://doi.org/10.1007/978-94-017-8905-9_244

Leh, S. K. (2016). Enhancing understanding of poverty through simulation. *The Journal of Nursing Care*, *5*(7), 20. https://doi.org/10.4172/2167-1168.C1.028

Leung, D. Y., Kumlien, C., Bish, M., Carlson, E., Chan, P. S., & Chan, E. A. (2021). Using internationalization-at-home activities to enhance the cultural awareness of health and social science research students: a mixed-method study. *Nurse Education Today*, *100*, 104851. https://doi.org/10.1016/j.nedt.2021.104851

Leung, D. Y. L., Chan, E. A., Wong, A. K. C., Reisenhofer, S., Stenberg, M., Chan, P. S., Lai, K. H., Cruz, E., & Carlson, E. (2020). Advancing pedagogy of undergraduate nursing students' cultural awareness through internationalization webinars: a qualitative study. *Nurse Education Today*, *93*, 104514. https://doi.org/10.1016/j.nedt.2020.104514

Li, J., & Xue, E. (2023). Exploring the epistemology of internationalization at home: a scoping review approach. *Educational Philosophy and Theory*, *55*(3), 356–365. https://doi.org/10.1080/00131857.2021.2022473

Lonneman, W. (2015). Teaching strategies to increase cultural awareness in nursing students. *Nurse Educator*, *40*(6), 285–288. https://doi.org/10.1097/NNE.0000000000000175

Lui, T., Chiu, S. W. K., & Yep, R. (2018). *Routledge handbook of contemporary Hong Kong: Ethnic minorities and ethnicity in Hong Kong*. O'Connor, P. Taylor & Francis Group.

Marja, S. L., & Suvi, A. (2021). Cultural competence learning of the health care students using simulation pedagogy: an integrative review. *Nurse Education in Practice*, *52*, 103044. https://doi.org/10.1016/j.nepr.2021.103044

Markey, K., Efua Sackey, M., & Oppong-Gyan, R. (2020). Maximizing intercultural learning opportunities: Learning with, from and about students from different cultures. *British Journal of Nursing*, *29*(18), 1074–1077. https://doi.org/10.12968/bjon.2020.29.18.1074

Martin-Thornton, R. (2017). Cultural awareness in nursing is a progressive growth. *Journal of Community & Public Health Nursing*, *3*, 177. https://doi.org/10.4172/2471-9846.1000177

Munna, A. S., & Kalam, M. A. (2021). Teaching and learning process to enhance teaching effectiveness: A literature review. *International Journal of Humanities and Innovation*, *4*(1), 1–4. https://doi.org/10.33750/ijhi.v4i1.102

O'Brien, E. M., O'Donnell, C., Murphy, J., O'Brien, B., & Markey, K. (2021). Intercultural readiness of nursing students: An integrative review of evidence examining cultural competence educational interventions. *Nurse Education in Practice*, *50*, 102966. https://doi.org/10.1016/j.nepr.2021.102966

Osmancevic, S., GroBschadl, F., & Lohrmann, C. (2023). Cultural competence among nursing students and nurses working in acute care settings: A cross-sectional study. *BMC Health Services Research*, *23*, 105. https://doi.org/10.1186/s12913-023-09103-5

Phillips, R., McNaught, C., & Kennedy, G. (2012). *Evaluating e-learning: Guiding research and practice*. Routledge.

Photopoulos, P., Tsonos, C., Stavrakas, I., & Triantis, D. (2023). Remote and in-person learning: Utility versus social experience. *SN Computer Science*, *4*(2), 116. https://doi.org/10.1007/s42979-022-01539-6

Psychouli, P., Collins, K., & Zadnik, M. (2020). Internationalization at home: An occupational therapy synchronous collaboration between Cyprus and the United States. *American Journal of Occupational Therapy*, *74*(5), 1–9. https://doi.org/10.5014/ajot.2020.037440

Repo, H., Vahlberg, T., Salminen, L., Papadopoulos, I., & Leino-Kilpi, H. (2017). The cultural competence of graduating nursing students. *Journal of Transcultural Nursing*, *28*(1), 98–107. https://doi.org/10.1177/1043659616632046

Rew, L., Becker, H., Chontichachalalauk, J., & Lee, H. Y. (2014). Cultural diversity among nursing students: Reanalysis of the cultural awareness scale. *Journal of Nursing Education*, *53*(2), 71–76. https://doi.org/10.3928/01484834-20140122-01

Rew, L., Becker, H., Cookston, J., Khosropour, S., & Martinez, S. (2003). Measuring cultural awareness in nursing students. *Journal of Nursing Education*, *42*(6), 249–257. https://doi.org/10.3928/0148-4834-20030601-07

Safipour, J., Hadziabdic, E., Hultsjö, S., & Bachrach-Lindström, M. (2017). Measuring nursing students' cultural awareness: A cross-sectional study among three universities in southern Sweden. *Journal of Nursing Education and Practice*, *7*(1), 107–113. https://doi.org/10.5430/jnep.v7n1p107

Sercu, L. (2023). Internationalization at home and the development of intercultural competence. Belgian University students' Views. *European Education*, *55*(1), 1–15. https://doi.org/10.1080/10564934.2023.2173079

Shadiev, R., & Sintawati, W. (2020). A review of research on intercultural learning supported by technology. *Educational Research Review*, *31*, 100338. https://doi.org/10.1016/j.edurev.2020.100338

Shadiev, R., Wang, X., & Huang, Y. M. (2020). Promoting intercultural competence in a learning activity supported by virtual

reality technology. *The International Review of Research in Open and Distance Learning*, 21(3), 157–174. https://doi.org/10.19173/irrodl.v21i3.4752

Shan Shirley Huang, W., Terry, D., & Peck, B. (2023). Enhancing students' cultural competency in tertiary health education using internationalization at home: A literature review. *Journal of Nursing Education*, 62(4), 199–206. https://doi.org/10.3928/01484834-20230208-04

Sinclair, B., & Relouw, H. (2022). Family and community nursing: The use of an unfolding simulation via zoom. *Clinical Simulation in Nursing*, 68, 58–63. https://doi.org/10.1016/j.ecns.2022.04.003

Steele, J., Holbeck, R., & Mandernach, J. (2019). Defining effective online pedagogy. *Journal of Instructional Research*, 8(2), 5–8. https://doi.org/10.9743/JIR.2019.8.2.1

Stenbom, S. (2018). A systematic review of the Community of Inquiry survey. *The Internet and Higher Education, 39*, 22–32.

Swan, K., Garrison, D. R., & Richardson, J. C. (2009). A constructivist approach to online learning: the community of inquiry framework. In *Information technology and constructivism in higher education: Progressive learning frameworks* (pp. 43–57). IGI global.

Tomalin, B., & Stempleski, S. (2013). *Cultural awareness—Resource books for teachers*. Oxford University Press.

Wa¨chter, B. (2000). Internationalisation at home: The context. In *Internationalisation at home: A position paper*. European Association for International Education.

Wang, C., Hou, X. Y., Khawaja, N. G., Dunne, M. P., & Shakespeare-Finch, J. (2021). Improvement in the cognitive aspects of cultural competence after short-term overseas study programs. *International Journal of Environmental Research and Public Health, 18*(13), 7102. https://doi.org/10.3390/ijerph18137102

Wilson, E. C., & Berge, Z. L. (2023). Educational experience and instructional design effectiveness within the Community of Inquiry framework. *International Review of Research in Open and Distance Learning, 24*(1), 159–174.

Xu, Q., & Boudouaia, A. (2023). A study on technology use for sustainable graduate education internationalization at home: Chinese teachers' experiences and perspectives. *Sustainability, 15*(13), 10621. https://doi.org/10.3390/su151310621

Yuen, S., Boulton, H., & Byrom, T. (2018). School-based curriculum development as reflective practice: A case study in Hong Kong. *Curriculum Perspectives, 38*, 15–25. https://doi.org/10.1007/s41297-017-0032-8