Smart Learning Environments

RESEARCH

Open Access

International undergraduates' perceptions of social engagement in online and face-to-face learning environments: a photo-elicitation approach to thematic analysis

Toni McLaughlan*

*Correspondence:
t.mclaughlan@lancaster.ac.uk

Lancaster University, Bailrigg, Lancaster LA1 4YW, UK

Abstract

This mixed-methods study explores international undergraduates' perceptions of social engagement with American peers at a US university comparing online to face-to-face environments. It addresses gaps in research on the social engagement of international undergraduates and on employing participant-generated visual approaches to investigation. Descriptive statistics from survey data showed that, while international students reported greater satisfaction, frequency, and comfort in engaging with American peers in face-to-face versus online contexts, they did not rate their overall of face-to-face interaction as highly as Americans did nor as lowly for online environments. Thematically analyzed qualitative data from photo-elicitation interviews prompted seven themes (disconnectedness, loneliness/homesickness, discourse expectations, building friendships, diversity and intercultural issues, anxieties, conflict) illuminating the nuances in attitudes among international undergraduates toward social engagement. Results suggest possible distinctions between international students based on region as a potential area of future study.

Keywords: Distance education, Social engagement, International students, Photo-elicitation, Higher education

Introduction and literature review

Internationalization of higher education has been a well-established albeit evolving trend for decades. Broad and inconsistent in definition, internationalization, at present, seems largely accepted as "the intentional process of integrating an international, intercultural, or global dimension into the purpose, functions, and delivery of post-secondary education, in order to enhance the quality of education and research for all students and staff and to make a meaningful contribution to society" (de Wit et al., 2015, p. 29). To offset costs of international education, many are turning to distance learning (de Wit, 2019). The sudden catapult into virtual spaces following the pandemic (Marinoni, 2019) has inspired creative programming approaches to online education and likely influenced changes in attitudes toward web-based educational opportunities, prompting many "new

normals" to be adopted into the field (Marinoni, 2019). Thus, situating studies of internationalization within the context of the pandemic may have interesting implications for the overall future of global education as researchers work to distinguish online learning's more versus less successful components. This particular study investigates international students' social engagement with their American peers in online compared to face-to-face (F2F) learning environments using participant-generated visual methods (PGVMs), given their demonstrated success in eliciting rich data, especially in sensitive contexts involving possible power relationships (Kortegast et al., 2019) such as race, language-related differences, or student-faculty interactions—all potentially relevant to this study.

Literature review

Internationalization: institutional motivations and intercultural challenges

Recent data states that nearly eight million students are "globally mobile" (Altbach, 2020, p. 76). The US receives the largest absolute number of internationals—nearly 1 million in, 2018 (de Wit & Altbach, 2020). This population contributes significantly to the American economy—$38.7 billion during, 2019–2020 despite mid-year pandemic-induced shutdowns (NAFSA, 2020). Cooper (2020) lists yearly average undergraduate in-state tuition costs as $8182 in, 2016 compared to $22,048 for international students, clearly illustrating not only a massive disparity in fees between groups but also the drive behind international recruitment efforts among many of the US' largest public research institutions, where international students may comprise more than, 20% of student enrolment. Thus, motivations at the forefront of such trends seem contentious: while many institutions tout exposure to multicultural perspectives and world-readiness for graduates (Baldassar & McKenzie, 2016), many policies are instead financially- and economically-driven (Wimpenny et al., 2020; Fabricius et al., 2016), and research suggests that many institutions' services and orientation programs do not fit the needs of their international populations (Appe, 2020; Perry et al., 2017). In fact, even at some of the world's most esteemed "international" universities, faculty are not trained in or do not they feel prepared for working with international populations (Wimpenny et al., 2020), posing significant issues for the effectiveness of internationalization policies and especially for international students.

As international mobility is limited mostly to students who speak English and can afford life abroad and heightened tuition fees (Baldassar & McKenzie, 2016), calls to reform internationalization policies and programs are growing toward inclusivity, intercultural learning and respect, and the overall improvement of society (de Wit, 2019; de Wit & Altbach, 2020). Though elitism remains, change is happening, with some HEIs charging international fees at in-state rates (Durrani, 2019) or moving to adjust costs of distance learning compared to face-to-face programs (Deming et al., 2015). Distance learning may offset elitism and financial anxieties by removing pricey transnational mobility requirements. In its various formats, including Internationalization at Home (IaH), traditionally defined as on-campus academic activity consisting of global interactions, collaborations, coursework, etc. (Soria & Troisi, 2014), and Internationalization at a Distance (IaD), defined by Mittelmeier et al., (2020, p. 269) as "all forms of education across borders where students, their respective staff, and institutional provisions are

separated by geographical distance and supported by technology," distance learning may provide promising new initiatives for today's global society.

Internationalization and social engagement

Socially, distance learning programs may also aid in issues of discrimination, homesickness, and culture shock that international students often face (Perry et al., 2017), as students remain in close proximity of their strongest support systems. However, internationals face adverse stereotypes in general from their domestic peers regardless of learning environment. Literature shows that American undergraduate students often hold negative attitudes toward working with international students, citing insufficient language skills and inadequate comprehension of course material (Jacobi, 2018). International students are aware of such attitudes: research consistently lists linguistic capabilities among their primary concerns (Perry et al., 2017). In fact, self-perceptions of English language abilities correlate with their psychological well-being and confidence in interacting with domestic students, which in turn also correlates with their mental wellness and their social engagement activity (Rath, 2021). Social engagement, often used interchangeably with terms like interaction, involvement, or even collaboration, refers to one's integration into academic and social systems. It can occur inside or outside of the classroom or in any social area of an institution, including clubs, dorms, student unions, etc., and is associated with higher levels of happiness, sense of belonging, and confidence when involved in learning activities (Rath, 2021).

Albeit still present, adverse social interactions may be less severe in online environments. Conaway and Bethune (2015) write that an online classroom is generally perceived as a "non-threatening, unbiased, safe environment" (p. 162) but found in their study implicit bias, for example, in favor of stereotypically "white" names in English among faculty members of virtual classes. However, investigation of an international institution in South Africa found promising responses to the university's distance learning programs in the realms of students' interpersonal and emotional experiences when compared to literature on face-to-face (F2F) experiences in South Africa, particularly among racially and linguistically discriminated groups (Mittelmeier et al., 2019).

Essentially, distance learning may minimize such encounters, but at the risk of decreased interaction with the host language and culture. Initially, IaH and IaD may seem counterintuitive to policies that aim to expose students to diversity in creating "global graduates," with fewer opportunities to socialize outside of class and potentially reduced linguistic and cultural exchange. However, literature suggests these sorts of social exchanges are rare anyway: Jacobi (2018) cites that academic collaboration between undergraduate domestic and international students typically only occurs when required; studies out of the US and Europe note that internationals generally look to co-nationals for both socialization and information exchange (Fabricius et al., 2016; Tang et al., 2018); in fact, many international students do not view social interaction or cultural exchange as a goal for studying abroad at all, though they do report feeling that sociocultural accommodations for international students remain unmet at their US institutions of study (Tang et al., 2018).

Moreover, F2F intercultural academic collaboration is not necessarily found to significantly reduce ethnocentric attitudes (Jacobi, 2018). Aside from the experiences of

daily-life operations, it may be hypothesized that international students lose little interactive advantage with a host-country's culture when studying online, and that this "loss" may be balanced or even outweighed by the benefits that distance learning presents. Along the same line, intercultural exchange is not necessarily absent in online learning contexts. In an extensive review of the literature on internationalization and virtual spaces, Lima et al. (2020) found that most virtual learning programs yielded positive outcomes in intercultural competence, participation and communication, appreciation for diversity, foreign language pedagogy, and navigating multicultural collaboration. Additional research is necessary in detailing why these differences in findings occur.

International students' perceptions of social engagement in different learning environments remain mixed, and though peer interaction may not be a goal for many in this population, improvement of English communication skills is (James-MacEachern & Yun, 2017). Furthermore, considering the reflections of experiences in isolated, one-off online courses within otherwise F2F programs may not yield accurate illustrations of the experiences perceived by fully-online students, according to Dumford and Miller (2018), whose research shows that students who take greater numbers of online classes report minimized engagement in both collaborative learning and "discussions with diverse others," essentially defeating the purpose of internationalizing distance learning for the development of global competencies and seemingly contradicting the findings for positive intercultural competence development found by Lima et al. (2020).

With recent work highlighting increasingly positive attitudes toward distance learning on behalf of international undergraduates (Fidalgo et al., 2020), combined with seemingly no shortage of drive toward degree mobility among students or decrease in financial motivations from Western universities, virtual programs may be viewed as perhaps the most realistic compromise between stakeholders in moving toward global educational equity. Therefore, investigation into undergraduate international students' perceptions of learning with domestic students in online versus F2F environments is worth pursuing, as de Wit and Altbach (2020) discuss online mobility as potentially promising for internationalization while also citing a "surprisingly limited" amount of reliable data in this area (p. 14).

Gaps in the literature and research questions

This study uniquely evaluates international students' perceptions of social engagement in both learning environments, as no studies to the best of the researcher's knowledge investigate a group of participants who have taken full semesters both online *and* in person—a rare circumstance resulting from the pandemic—and therefore have a solid basis for comparison regarding engagement trends in both contexts at the same university. Furthermore, Kortegast et al. (2019), after an extensive literature review, contend that photography-based research in general remains relatively limited in higher education research despite its widening reach. They stress that research in top higher education journals continue to underutilize alternative paradigms and qualitative approaches in general—especially in North American studies. Given the data enrichment benefits of participant-generated visual methods (PGVMs), including but not limited to minimizing possible perceptions of power relationships in eliciting qualitative data, bringing participants' tacit knowledge to the forefront, and constructing a more reflective space for

discussion of subjective experiences, the implication is that researchers are potentially overlooking rich, valuable insight across the dynamic field of higher education. To the best of my knowledge, no study has comparatively investigated international students' perceptions of social engagement with American students in online versus F2F learning contexts using PGVMs. This study aims to fill this gap in the knowledge with the following research questions:

1. How satisfied are American and international students with their social interactions in F2F and online learning environments?
2. How do international students perceive social engagement with American peers in F2F and online classes?

Methodology and materials

A mixed-methods approach was adopted to gauge American and international graduate students' perceptions of social engagement with the local student population at a public research university of roughly 24,000 students in the northeast US ("NUSU"). The quantitative portion involved adaptation of the National Survey of Student Engagement (NSSE, 2013), its Experiences with Online Learning topical module (NSSE, 2021), and the Psychological Sense of School Membership (Goodenow, 1993). Qualitative components of the study included a reflexive photography approach to semi-structured interviews that were investigated using the inductive approach of thematic analysis (Braun & Clarke, 2006; Nowell et al., 2017).

Participant-generated visual methods

This study makes use of a PGVM—specifically, reflexive photography (RP)—in guiding photo-elicitation interviews. Photography-based research techniques have advanced throughout recent decades, particularly in anthropological and social science fields (Harper, 1988; Schulze, 2007). In a review of over 100 studies involving visual methods, Pain (2012) revealed that the primary reasons for applying visual methods are the facilitation of rich data collection and the impact it can have on the rapport between researchers and participants, particularly regarding possible power or privilege dynamics. After a similarly extensive literature review, Kortegast et al. (2019) noted similar trends in motivations for adopting visual methods, illustrating that PGVMs challenge power dynamics by breaking normative research processes, many of which participants report feeling reluctant to share through. PGVMs, on the other hand, are shown to empower participants by providing them what they perceive as an avenue that may influence the direction of the research and the representation of the data through their reflective photo selection and the experiences they choose to share. Furthermore, discussing their feelings toward interactions with American students, especially if unfavorable, could invoke feelings of anxiety or unease with the interviewer, who is American. In addition, the interviewer of this study could be viewed by the international undergraduate student participants as being in a position of power or privilege. Care was taken to provide a safe conversational space given the potential for sensitive topics related to negative interactions, rejection, linguistic shortcomings, racial tensions, etc.

to arise. Beyond this, however, photo-elicitation interviews have also been shown to be beneficial in use with participants who are being interviewed in a non-native language (Samuels, 2004; Shaw, 2013). Therefore, the use of RP with photo-elicitation interviews, given its positive record in working under such circumstances, seemed appropriate for this particular study.

Reflexive photography

RP is a phenomenologically-oriented approach (Harrington & Schibik, 2003) that involves the inclusion of images to which participants attribute subjective meaning while reflecting upon their individual lived experiences (Harper, 1988; Schulze, 2007). Harrington and Schibik (2003) postulate that, as a data collection method, RP encourages more creative analysis on behalf of participants as they reflect on their images, perceptions, and experiences. In an RP approach, the researcher encourages participants to expand upon the motivations and opinions that underlie their perceptions as presented through images, identifying the related events, individuals, and interactions that relate to the image and why they are considered important. While photographic approaches often allow for either researchers or participants to produce images (Collier & Collier, 1986 as cited by Harrington & Schibik, 2003; Denzin & Lincoln, 1994), or to choose photographs that were made before the study (Harper, 2002), the "reflexive" element of RP typically consists of photograph selection or production by the participants, who then reflect on the images' inclusion (Harper, 1988), often in follow-up interviews or writing, as is the case with this study: participants were asked to self-select and/or self-edit images that represent their feelings when interacting with American students in online and F2F learning environments. The photographs were then used in guiding photo-elicitation interviews.

Photo-elicitation interview methods

Harper (2002) suggests that photo-elicitation interviews add validity and reliability to word-based surveys and often lead to deeper, more emotional data from participants. He further proposes that including images in interviews evokes the inclusion of *different* information than strictly verbal interviews due to differences in visual versus verbal processing in the brain, claiming the "images evoke deeper elements of human consciousness" (p. 13).

Instruments

Survey items were adapted from the NSSE (2013), its Experiences with Online Learning topical module (NSSE, 2021), and the PSSM (Goodenow, 1993). Although reliability and validity of the NSSE (Esquivel, 2011) and the PSSM (You et al., 2011) have been well-documented, it must be noted that adapting items as such may affect these findings. Since its inception in, 2000, the NSSE has been administered to nearly 6 million students at over 1500 universities (NSSE, 2020), including this study's participating university. However, because of the study's focus on social engagement with peers and a lack of updated data on the university's website, the administered adapted items were targeted for relevance and brevity. While both the NSSE and PSSM include questions with Likert-type scales that range between 1 and 4, 5, 6, or 7, the items adapted for this

study involved only items using a 4-point scale; this same scale and response choices were adopted in this study with the purpose of maintaining validity and reliability. Both American and international non-first year undergraduates were included in the quantitative portion of the study in efforts to determine any baseline differences between local and international populations. The survey consisted of 25 items, which included eight demographic items, two open-ended response items, and 15 items adapted from the abovementioned instruments.

Survey procedures

A link to a survey developed on SurveyMonkey was sent to all non-first year undergraduate students at the university via their institutional email addresses along with ethics and participant consent forms. Students indicated a willingness to be interviewed by providing their email address at the end of the survey. All 18 international students who provided email addresses were contacted for interviews and given a brief description of the study, a description of reflexive photography, and a request for students to prepare at least one image that represents their feelings interacting with American students in online classes and one to represent F2F engagement. Seven international students representing six countries engaged in semi-structured interviews ranging from 25 to 45 min via Zoom between May and June, 2021. Interviews were selected as the method of qualitative data collection, as they facilitate investigation of "further information, elaboration, and clarification of responses" (Creswell, 2014, p. 32), which was anticipated, given the nuanced experience of each interviewee facing potentially unique interactions in relation to their diverse backgrounds and nations of origin.

Survey participants

A total of 315 ($n=315$) students responded to the survey, with a breakdown of demographics shown in Table 1. Data from students who were listed as sophomores but had not yet engaged in a full semester of F2F classes at the university (perhaps the result of entering with credits earned at another institution, for example) were excluded in order

Table 1 Participant demographic information

	Total survey respondents	**Survey respondents having at least one full semester of each learning environment**	
American students	253	251	
International students	62	58	
Total	315	309	
Nationalities represented	Bolivia, Botswana, Cameroon, Canada, Colombia, China, Dominican Republic, India, Indonesia, Italy, Netherlands, Nigeria, Saudi Arabia, South Africa, South Korea, Taiwan, Turkey, United Kingdom, Vietnam; Undisclosed: 3 participants		
Male interviewees	**Nationality**	**Female interviewees**	**Nationality**
Ayman	Saudi Arabia	Bisa	Botswana
Abdulaziz	Saudi Arabia	Sonia	Colombia
Min-jun	South Korea	Nancy	The Netherlands
Li Wei	China		

to compare students' F2F with online experiences at this particular university. In the end, data from 309 students (251 Americans and 58 internationals) were included.

Photo-elicitation interview procedures

Interview participants

Of the 58 international survey respondents, 18 expressed interest in being interviewed for the study. As discussed in the section above, all were contacted, and seven completed the photo-elicitation, semi-structured interview. Interviewee breakdown for nationality and gender is shown in Table 1 with pseudonyms to maintain anonymity.

Interview approach

Interviews were conducted using Zoom and lasted between 25 and 45 min in duration. Before the interview and in line with the reflexive photography approach, participants were requested to select or produce at least two images: one that represents their perceptions of individuals and events in their engagement experiences with American peers in F2F settings and another representing interaction in online settings. This set the stage for photo-elicitation interviews that then followed reflexive tenets by inquiring about the motivations for and importance of including these specific images as representative of their experiences. All interviews were transcribed using the Otter web-based transcription tool and revised for accuracy by the researcher. After, a step-by-step thematic analysis as exemplified in Nowell et al. (2017) was adopted to facilitate identification of important themes relevant to the research questions within the interviews and the images they provided. Thematic analysis (Braun & Clarke, 2006) involves inductive coding, allowing the data to drive the development of themes; this is appropriate here, given the absence of any predetermined coding frame. Braun and Clarke (2006) further argue that this approach is useful in revealing similarities and differences in interviewees' views, especially in diverse groups of varied backgrounds and experiences.

Results

Surveys

The following data are averages derived from a series of questions related to several social engagement topics from the previously described survey using a Likert-type scale of 1 (least favorable) to 4 (most favorable). It is important to first note that all statistics reported here are descriptive with fairly small sample sizes (Americans: $n = 251$; international students: $n = 58$) and should only be used for indicative purposes (Fig. 1).

International students do not appear to perceive online peer engagement as unfavorably as their American counterparts when observing the descriptive means (Americans: $\mu = 2.12$; International students: $\mu = 2.44$). International students' mean perceptions fall higher in all categories of engagement online compared to Americans'. Conversely, Americans' mean perceptions of F2F engagement ($\mu = 3.02$) exceed internationals' ($\mu = 2.83$) though not across each individual category of engagement: both groups report feeling near equal levels of comfort in interacting F2F, with international students' averaging 0.01 points higher than Americans'.

Essentially, the differences in means across all engagement categories are greater for the American group than the international group when comparing online to F2F

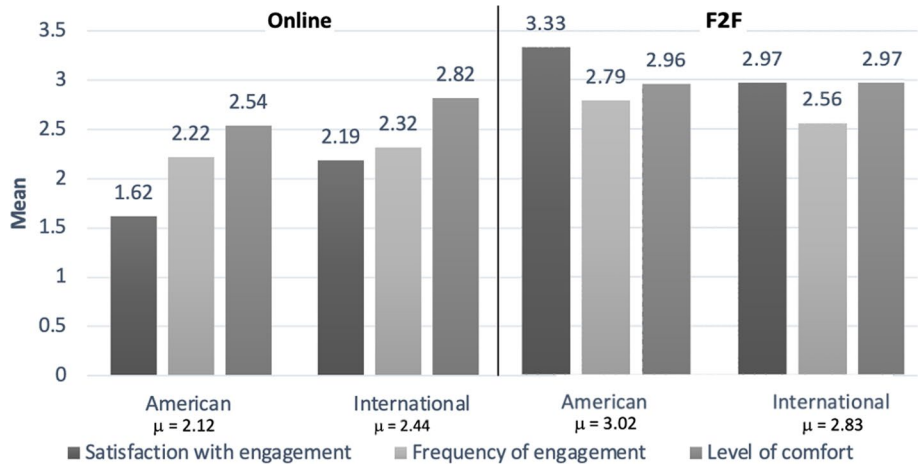

Fig. 1 Mean perceptions of Online (left) and F2F (right) social engagement

environments. This may suggest a greater perceived difference in engagement between the two environments among Americans, with the biggest difference in means being their reported satisfaction with peer engagement, which scored higher for F2F environments. Still, like Americans, international students' perceptions of peer engagement were greater in F2F environments albeit to a lesser extent across all categories of engagement.

Results of photo-elicitation interviews via thematic analysis

Semi-structured photo-elicitation interviews were essential in more deeply exploring the perceptions and lived experiences of international undergraduate students and did assist in clarifying the data above.

This study's qualitative data adopted a trustworthy thematic analysis as outlined in Nowell et al. (2017), who base their step-by-step approach to Braun and Clarke's (2006) thematic analysis in Lincoln and Guba's (1985) conceptualization of *Trustworthiness.* The researchers pose the criteria of *credibility, transferability, dependability,* and *confirmability* as standards for valid, reliable qualitative analysis. These standards have been applied and reviewed throughout each step of their study in projecting a six-step approach to thematic analysis as "trustworthy" (Nowell et al., 2017) and is the approach to thematic analysis undertaken here.

In line with recommendations by Braun and Clarke (2020), several underlying theoretical assumptions must first be addressed in applying thematic analysis. The ontology is intersubjective and epistemology interpretive: as meaning and experience were understood to have been produced socially and reiterated intersubjectively and given the researcher's role in acknowledging recurrence but also emphasizing meaningfulness beyond it, a constructionist approach was upheld throughout analysis. To highlight participants' contributions and meaning as fully as possible, data interpretation was approached experientially. This seemed particularly important in this study given the individuality of each participant's social context and experience, beyond which no claims here were made, and their own perceptions and opinions of navigating those contexts.

An inductive, open-coding approach to analysis was applied iteratively. Given the researcher's role in interpreting the data during the coding process while simultaneously aiming to maintain the constructed meaningfulness of participants' contributions, coding was both semantic and latent. Table 2 below lists the initial twelve themes, eleven additional themes, and the final seven themes that emerged from the analyses. To follow are analytical definitions of each theme and their value in answering the research questions are discussed, along with an overview of supporting interviewee data and quotes.

Diversity and intercultural issues

This theme centers around participants' perceptions of Americans' reactions to and engagement with their culture, background, language, and/or nationality. Participants often cited feelings of "standing out." Whether they felt they stood out more in F2F than online environments involved race (a visible variable that is impossible to hide in-person but only visible when cameras are on), linguistic accent (an audible variable that is more notable in participatory environments), and names (visible to all in Zoom classes but more easily hidden in-person). All participants reported standing out for at least one of these traits, with one submitting an image of John Lennon embedded in a photo of the band Guns and Roses to represent his F2F engagement with American students. Participants reportedly perceive Americans as reacting to their international identity in a variety of ways. Several participants alluded to perceiving local students as being "uninformed" as opposed to prejudiced or impolite, though several noted that the comments were at times insensitive or even disrespectful:

> *So definitely a lot of comments were like, I would say insensitive, but at the same time, I wouldn't blame it on them. Because some people, I can just tell, they just don't know any better. Some people are at least just simply clueless. But then some are just simply disrespectful.—Bisa*

Except for Bisa, no interviewees experienced any engagement with Americans related to their international identity during online classes. Perhaps surprisingly, most participants preferred F2F environments despite the occurence of negative interactions related to their cultural backgrounds, with three of them viewing F2F classes as opportunities to teach peers about their cultures.

Table 2 Thematic iterations

Initial themes	*Standing out, Wasting time in breakout groups, Teacher-centeredness, Taking other students' time, Awkwardness of online communication, Uninformedess of American students, Making friends, Extracurriculars, Distractions, Course participation requirements, Serving as cultural translators, The role of switching cameras on/off*
Added themes: phase 3	*Loneliness, Wasting time beyond breakout groups, Peer collaboration, Generalized indifference, Anxieties, Home, Wanting more interaction, Participating face-to-face, Conflict, Social pressures of participating*
Finalized themes: phase 4	*Disconnectedness, Loneliness/homesickness, Discourse expectations, Building friendships, Diversity and intercultural issues, Anxieties, Conflict*

Disconnectedness

Any discussion of muting microphones, turning off web-cameras, distraction from other devices or websites, loss of social opportunities, and "wasting time" is included in the theme of disconnectedness. It is highly relevant to understanding their perceptions of social engagement with American students in online settings, as microphones, cameras, and attention are vital in interacting online; "wasting time" was typically in reference to breakout groups that were intended by instructors to mirror in-class teams often viewed by students as peer engagement opportunities that, when online, were typically unheeded. One participant submitted an image of the participants in the breakout group, all with microphones muted and cameras off (Fig. 2).

Not only was disconnectedness the most referenced participant experience throughout the data, but five of the seven participants selected images reflecting disconnectedness to represent their social engagement in online settings. Several students noted possible solutions to the disconnection issue, emphasizing the difference in social engagement between classes in which cameras are required to remain on throughout class, as well as heightened peer engagement when they have the same groups all semester or can choose their groupmates. Min-jun pointed out the added linguistic challenges involved in listening without the visual cues of lip movements and facial expressions. All interviewees regretted the loss of time and social opportunities and admitted to wanting more interaction with their classmates.

Discourse expectations

This theme comprises matters of the instructor's newly heightened role, requirements for participation, and the relation of these factors to student interaction and classroom communication (Fig. 3).

> *No one really cares about your arguments, but we have to argue and listen to you—like, actually listen to you—because we're physically in the class. We can't mute you. We cannot skip you.—Abdulaziz*

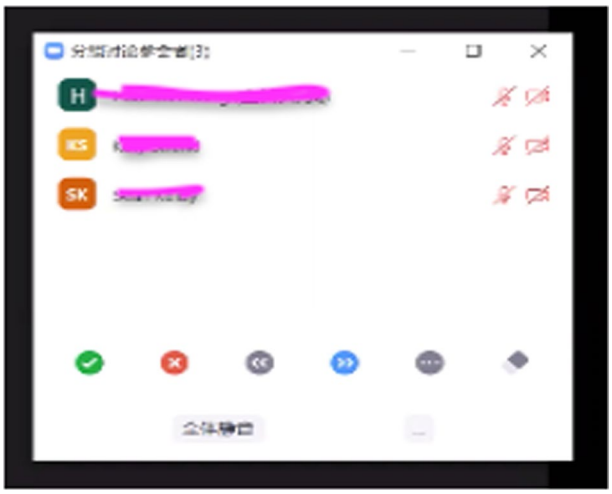

Fig. 2 Li Wei's photo representing online engagement

Fig. 3 Abdulaziz's image submission to represent F2F (*left*) and online (*right*) interaction adapted from a popular meme featuring Kabosu, the Doge of Dogecoin (2023)

According to participant accounts, whereas in-class participation is commonly expected and at times even required in grade calculations, the opposite expectation has grown in virtual classes: participants frequently described a newly teacher-centered, lecture-based class structure. Combined with the removal of the participation requirements typically found in F2F environments, thus giving instructors an even heightened central role in online classes, students reported feeling that even asking a question or adding to discussion, which they would do without hesitation in F2F settings, is now an interruption.

Building friendships

When discussing the friendships they have made during their undergraduate careers, most participants described in-person contexts as starting points for social engagement: F2F classes, doing homework together, dorm-living, or involvement in athletics, and extracurricular activities. Some of these clubs transitioned online during the pandemic, where they reportedly remained the interviewees' main source of social engagement with American students. Min-jun, on the other hand, self-identifies as an introvert and did not develop friendships F2F or engage with American students from his online classes, even when they created social media groups for academic purposes. Li Wei, on the other hand, expressed wanting friendships with American students, but faced language barriers and a struggle with peers to find cultural common ground. However, he did state that he had a fairly large circle of Chinese friends on campus with whom to work and socially engage.

Bisa is the only interviewee to mention having made friends through online classes. She believes that race plays a part: in F2F classes, she expressed minimal social engagement with predominantly white classmates, whereas online, she can hide her race by turning the camera off. She referred to "Black NUSU" as its own "multicultural little circle" when face-to-face. Even her American friends, she noted, typically have foreign-born parents.

The "awkwardness" of reaching out personally to classmates in online settings compared to F2F was often reiterated:

> *If I see them in real life, it's really easy for me to reach out if I want to work together or anything. But the online classes, I would not be in a breakout room and try to*

study with someone because… it doesn't work. Yeah, it's awkward to just chat someone on the side online like that.—Nancy

Loneliness/homesickness

Being alone inherently suggests a lack of social engagement and is therefore related to the topic at hand, whereas "home" typically invokes a sense of social connection that international students often miss. Not surprisingly, many codes fell within this theme regardless of learning environment: with COVID-related lockdowns, loneliness became a shared global phenomenon while for international students, such feelings are often experienced even in F2F settings. With five of 14 total images coding for loneliness (two online; three F2F), this theme was highly supported in the data. What is interesting, however, is that this pattern is found almost equally between F2F and online environments, whereas other photographically-supported themes were strictly related to only one learning environment.

Participants discussed their feelings of isolation during lockdown, and many reported going home at some point during the pandemic. Min-jun and Bisa particularly emphasized the comfort of being back home, with family, and the role such support had on them mentally and academically, and both explicitly expressed a preference for synchronous versus asynchronous lessons in distance learning.

Nonetheless, F2F environments also left participants feeling isolated, particularly for the participants who also reported feeling that they stood out either racially or linguistically, as corroborated by previous literature (Mittelmeier et al., 2019). They described classroom scenarios in which they felt excluded or that their ideas were not valued or recognized by American teammates, even when they were validated as correct by the professor. Interestingly, despite these feelings of loneliness, homesickness, and intercultural challenge, all participants with the exception of Li Wei discussed preferring social engagement with peers in person and a desire to return to the classroom overall, often citing a solid group of friends from international and minority student circles on campus.

Anxieties

About half of the participants recounted feelings of nervousness when interacting with American students, generally in the form of language or cultural barriers or overall shyness. Based on participants' accounts, it is easier to avoid social engagement entirely online, as the trend is to mute yourself, turn your camera off, and let the instructor lead. F2F environments, however, with their participation requirements and social pressure to respond to classmates, are perceived to create interpersonal situations that international students consciously navigate; this distracts from academics.

As Li Wei was the only student to prefer the online environment, he is also the participant who expressed the most anxiety. Nonetheless, no participants reported any anxiety in their online experiences, though this is likely the result of the disconnectedness discussed above. Even when required to participate, avoiding social engagement with peers in online contexts is much easier:

> *I would like just text [the answer], like in the Zoom chat. I don't even like texting for everyone. I literally just send it to the professor because like that's how shy I am.—Sonia*

Conflict

Social engagement often involves disagreements; investigating potential differences in conflict occurrences regarding learning environment may yield valuable insight. Though conflict was cited least of the themes that emerged, three of the participants discussed negative interactions with American students, all in F2F environments that they perceived to be the result of their international and/or racial status. In online classes, they note their foreignness is less visible. Still, Bisa did recount a time in which she felt a "different energy" from her classmates when her camera was on. She disclosed the negativity to her instructor who then turned all cameras off for future class meetings and changed team groupings to anonymize Bisa's race; following, the negativity reportedly subsided.

Discussion

In answering the research questions, both quantitative and qualitative data yielded rich data needed in the development of a fuller narrative of international undergraduates' lived experiences in interacting with American peers at NUSU in F2F compared to online learning environments. Though crucially only to be used for indicative purposes, descriptive statistics showed that, while international students reported greater satisfaction, frequency, and comfort in engaging with American peers in F2F versus online contexts, they did not rate their overall of F2F interaction as highly as Americans did nor as lowly for online environments. The question of why this dissimilarity in the range of perceived differences may exist is an interesting one.

This study highlights several possible reasons that international students my not view F2F engagement as highly as American undergraduates. Though international students may trend similarly to American undergraduates in their preferences toward and perceptions of engagement in F2F over online environments, and though some of their reasons for doing so likely overlap, they do not view their peer interactions quite as highly as their US counterparts, perhaps the result of the culturally-centered challenges they described. For instance, given that breakout groups involved US and international students alike, both groups experienced the same disconnectedness of muted microphones, switched-off cameras, and unanswered attempts at interaction. Likewise, international students' perceptions of sending chat messages to just one peer during online class as "creepy" or "awkward" are likely mirrored by US students: questions seem to go only to the professor when there is no peer next to you in class. However, during the interview phase of this study, the international group described these breakout sessions as missed opportunities to socially engage, whereas this may not have been the case with Americans who do not require social engagement to enhance their language skills and who, when under COVID lockdown, remained near family and friends. This is unlike the interviewees who—with the exception of one of seven—remained stranded far from home in the US. Interviewees also cited uniquely international reasons for preferring F2F engagement, such as missing facial expressions or visible articulations that more

greatly assist non-native speakers in linguistic processing and comprehension. They regarded F2F settings as opportunities to serve as "cultural translators" who address insensitivities, stereotypes, or cultural misunderstandings when engaging with American peers. The international participants in this study stated that such encounters occur less frequently in online contexts. Thus, while Jacobi (2018) suggests that F2F intercultural academic collaboration is not necessarily found to significantly reduce ethnocentric attitudes due to minimal social interaction between domestic and international students, the international students interviewed for this study do not feel that is the case according to their lived experiences and may further support the value of intercultural diversity in the classroom.

Still, loneliness was attributed to F2F environments among the interviewees as well, highlighting one potential explanation for the slightly higher rating of online engagement among the international group compared to the American group. Previous studies have found that such feelings of F2F loneliness were stronger among students who perceive anxieties such as language barriers or racial isolation (Mittelmeier et al., 2019; Rath, 2021), corroborated by the current study's qualitative data. Thus, some international students welcomed the absence of social pressure in responding to classmates F2F or in group work and felt relieved by the elimination of participation requirements in online learning, which some believed disrupted their ability to focus on academic course content. If online learning signified less group work, or group work that was done more independently because of the distance learning format, it may explain why the international group did not perceive online learning quite as unfavorably as Americans.

Though the participants' feelings toward the inclusion of photographs were not explicitly investigated, several interviewees did state that they not only enjoyed the reflective process and searching for representative images, but they believed they were recognizing feelings that had not yet surfaced for themselves, reflecting the richness in data that is often associated with photo-elicitation methods (Kortegast et al., 2019; Pain, 2012):

> *I've been going to PWIs [predominantly white institutions] so much that like, sometimes I don't really realize that they are treating me differently until like, I focused on my pictures… But it definitely is there. The racial difference definitely is there, now that I reflect on it... I like talking about this. I never do. –Bisa*

Limitations and recommendations for future research

This study has several limitations. It should be noted that "international student" for the purposes of this study was defined as an individual requiring a student visa to enroll at the university. Foreign-born students who can bypass this requirement for any number of reasons may have been classified as "American" in the dataset. Similarly, all Americans were categorized homogeneously, removing any nuance for gender, race, parental nationality, mother tongue, etc.; these factors likely play a significant role in students' peer interactions on campus and should certainly be explored. Including Americans in the photo-elicitation interview component of the study may also be a source of rich data and may provide illuminating findings in comparing the lived experiences of American compared to international persons of color, for example.

Notably, the international student sample was quite diverse and that specific regions and nations of origin and linguistic groups should be further accounted for and investigated individually. For example, of the 58 international survey respondents in the current study, 29 were of Chinese origin, comprising half of the survey sample size though only one of seven interviews. Interestingly, this group reported perceiving F2F social engagement least favorably compared to the other two groups—American and non-Chinese international undergraduate students—and their perceptions of online engagement were the most favorable of all groups. No other regions' participants' responses patterned this way when isolated from the remaining international data. Though all statistics are purely descriptive and for indicative purposes only, these findings may serve as a thought-provoking inspiration for additional study.

Conclusions

This study investigated international undergraduate students' perceptions of social engagement with American peers in online compared to F2F learning environments. The study made use of a mixed-methods approach that involved a survey adapted from the PSSM and NSSE scales along with reflexive photography in photo-elicitation interviews. Data was analyzed using a step-by-step thematic analysis framework that resulted in identification of seven themes: disconnectedness, loneliness/homesickness, teacher-centeredness, relationships, diversity and intercultural issues, anxieties, and conflict. Findings reflect that many international students describe feeling a slight preference for social engagement in F2F compared to online learning environments despite viewing the latter as less likely to hold the potential for conflict or bias, particularly among those who perceive or experience racial or linguistic anxieties. International students view F2F interactions as opportunities to serve as "cultural translators" who bridge gaps in intercultural misunderstandings and conflict. Loneliness is expressed in both contexts, though the likelihood of making friends is perceived to be substantially less in online environments, which are primarily teacher-centered, limit student interjection, and create an "awkward" environment for casually reaching out to peers in one-to-one conversation via side chats. In general, the international undergraduates involved in this study perceived less of a difference in social engagement between learning contexts compared to American undergraduates.

This study highlights that, whereas some international undergraduates may be predisposed to distance learning environments, many are not. Nevertheless, there are measures that institutions and instructors can take to accommodate the engagement needs of international undergraduates who may otherwise opt for international mobility but for a variety of practical reasons cannot. Instructors can support the linguistic and cultural anxiety of students by providing clear plans for class content and participation expectations in advance. Additionally, instructors may consider moving beyond asynchronous discussion boards and assignments for participation in favor of live participation requirements or may encourage students to have cameras switched on throughout lessons. Conversely, switching them off may provide more comfortable environments for racially discriminated students. Moreover, instructors may aim to provide concrete deliverables in breakout rooms that add student accountability to ensure that class time and peer interaction opportunity is not wasted, as even students who felt homesick and

did travel to their home countries for mental and academic support during distance learning also expressed an appreciation for synchronous lessons and chances to engage socially, albeit in limited capacities. In F2F environments, universities should promote inclusion to ensure awareness of multicultural extracurriculars and minority and cultural communities and events on campus, as these serve as documented sources of support for international students. These findings have implications for both distance learning and F2F instructors, curriculum and program administrators, developers of educational technologies, intercultural competence researchers, and internationalization movements as a whole.

Acknowledgements
The author acknowledges the support of academic staff on the Doctoral Programme in Higher Education Research, Evaluation and Enhancement at Lancaster University from which this publication has arisen. http://www.lancaster.ac.uk/educational-research/study/phd/phd-in-higher-education-research,-evaluation-and-enhancement/.

Author contributions
The corresponding author is the only author of this paper. TM. The author have read and approved the final version of the manuscript.

Funding
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Availability of data and materials
The datasets generated and analyzed during the current study are not publicly available as it will compromise the confidentiality promised to participants as much of the interview data is personal. Portions of interview data and full survey data are available from the corresponding author on reasonable request.

Declarations

Competing interests
The author declares that they have no competing interests.

Received: 5 November 2022 Accepted: 22 January 2023
Published online: 03 February 2023

References

Altbach, P. G. (2020). Corruption: A key challenge to internationalization. In E. Denisova-Schmidt (Ed.), *Corruption in higher education: Global challenges and responses* (pp. 76–81). Brill Sense.
Appe, S. (2020). Internationalization in the context of academic capitalism. *Research in Comparative & International Education, 15*(1), 62–68.
Baldassar, L., & McKenzie, L. (2016). Beyond "just being there": Teaching internationalization at home in two qualitative methods units. *Teaching Sociology, 44*(2), 84–95.
Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77–101.
Braun, V., & Clarke, V. (2020). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology, 18*(3), 328–352. https://doi.org/10.1080/14780887.2020.1769238
Collier, J., & Collier, M. (1986). *Visual anthropology: Photography as a research method*. University of New Mexico Press.
Conaway, W., & Bethune, S. (2015). Implicit bias and first name stereotypes: What are the implications for online instruction? *Online Learning, 19*(3), 162–178.
Cooper, P. (2020). Foreign student enrollment at U.S. universities may plummet this fall. *Forbes.* https://www.forbes.com/sites/prestoncooper2/2020/06/01/foreign-student-enrollment-at-us-universities-may-plummet-this-fall/?sh=54a508eaa768
Creswell, J. W. (2014). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson.
de Wit, H. (2019). Internationalization in higher education, a critical review. *SFU Educational Review, 12*(3), 9–17.
de Wit, H., & Altbach, P. (2020). Internationalization in higher education: Global trends and recommendations for its future. *Policy Reviews in Higher Education*. https://doi.org/10.1080/23322969.2020.1820898
de Wit, H., Hunter, F., Howard, L., & Egron Polak, E. (2015). *Internationalisation of higher education*. European Parliament, Directorate-General for Internal Policies.
Deming, D. J., Goldin, C., Katz, L. F., & Yuchtman, N. (2015). Can online learning bend the higher education cost curve? *American Economic Review, 105*(5), 496–501.
Denzin, N., & Lincoln, Y. (1994). *Introduction: Entering the field of qualitative research*. Sage.
Dogecoin. (2023). *Doge meme adaptation*. [Digital image]. https://dogecoin.com/trademarks/.
Dumford, A. D., & Miller, A. L. (2018). Online learning in higher education: Exploring advantages and disadvantages for engagement. *Journal of Computing in Higher Education, 30*(1), 452–465.

Durrani, A. (2019). *2 Tuition options international students should know about*. U.S. News & World Report. https://www.usnews.com/education/best-colleges/articles/2019-02-19/2-tuition-options-international-students-should-know-about
Esquivel, S. L. (2011). *The factorial validity of the National Survey of Student Engagement*. Doctoral dissertation, University of Tennessee-Knoxville. https://trace.tennessee.edu/utk_graddiss/965/
Fabricius, A. H., Mortensen, J., & Haberland, H. (2016). The lure of internationalization: Paradoxical discourses of transnational student mobility, linguistic diversity, and cross cultural exchange. *Higher Education, 73*(1), 577–595.
Fidalgo, P., Thormann, J., Kulyk, O., & Lencastre, J. A. (2020). Students' perceptions on distance education: A multinational study. *International Journal of Educational Technology in Higher Education, 17*(18), 1–18. https://doi.org/10.1186/s41239-020-00194-2
Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*, 79–90.
Harper, D. (1988). Visual sociology: Expanding sociological vision. *The American Sociologist, 19*(1), 54–70.
Harper, D. (2002). Talking about pictures: A case for photo elicitation. *Visual Studies, 17*(1), 13–26.
Harrington, C. E., & Schibik, T. J. (2003). Reflexive photography as an alternative method for the study of the freshman year experience. *Journal of Student Affairs Research and Practice, 41*(1), 23–40.
Jacobi, L. (2018). Ethnocentric attitudes of American and international students: Assessing the impact of collaboration. *Journal of Intercultural Communication, 47*(6), 530–544.
James-MacEachern, M., & Yun, D. (2017). Exploring factors influencing international students' decision to choose a higher education institution: A comparison between Chinese and other students. *International Journal of Education Management, 31*(3), 343–363.
Kortegast, C., McCann, K., Branch, K., Latz, A., Kelly, B. T., & Linder, C. (2019). Enhancing ways of knowing: The case for utilizing participant-generated visual methods in higher education research. *The Review of Higher Education, 42*(2), 485–510.
Lima, C., Bastos, R. C., & Varvakis, G. (2020). Digital learning platforms: An integrative review to support Internationalization of Higher Education. *Educação Em Revista, 36*(2), 1–18.
Lincoln, Y., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.
Marinoni, G. (2019). *Internationalization of higher education: An evolving landscape, globally and locally. IAU the 5th global survey*. International Association of Universities/DUZ Medienhaus.
Mittelmeier, J., Rienties, B., Gunter, A., & Raghuram, P. (2020). Conceptualizing internationalization at a distance: A "third category" of university internationalization. *Journal of Studies in International Education*. https://doi.org/10.1177/1028315320906176
Mittelmeier, J., Rogaten, J., Long, D., Dalu, M., Gunters, A., Prinsloo, P., & Rienties, B. (2019). Understanding the early adjustment experiences of undergraduate distance education students in South Africa. *International Review of Research in Open and Distributed Learning, 20*(3), 18–38.
NAFSA: Association of International Educators. (2020). *The United States of America benefits from international students.* [Infographic]. NAFSA.org. https://www.nafsa.org/sites/default/files/media/document/isev-2020.pdf
National Survey of Student Engagement (NSSE). (2013). U.S. English. https://nsse.indiana.edu/nsse/survey-instruments/us-english.html
National Survey of Student Engagement (NSSE). (2020). About NSSE. https://nsse.indiana.edu/nsse/about-nsse/index.html
National Survey of Student Engagement (NSSE). (2021). Online Learning. https://nsse.indiana.edu/nsse/survey-instruments/topical-modules/online-learning.html
Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16*, 1–13.
Pain, H. (2012). A literature review to evaluate the choice and use of visual methods. *International Journal of Qualitative Methods, 11*(4), 303–319.
Perry, C. J., Lausch, D. W., Weatherford, J., Goekin, R., & Almendares, M. (2017). International students' perceptions of university life. *College Student Journal, 51*(2), 279–290.
Rath, V. (2021). *The social engagement experiences of disabled students in higher education in Ireland.* Doctoral dissertation, Trinity College Dublin. http://www.tara.tcd.ie/bitstream/handle/2262/95415/PhD_VR_Final_26.02.2021%20Upload_Final%20V2%20MMYR_Appendixedt.pdf?sequence=3
Samuels, J. (2004). Breaking the ethnographer's frames: Reflections on the use of photo elicitation in understanding Sri Lankan monastic culture. *American Behavioral Scientist, 47*, 1528–1549. https://doi.org/10.1177/0002764204266238
Schulze, S. (2007). The usefulness of reflexive photography for qualitative research: A case study in higher education. *South African Journal of Higher Education, 21*(5), 536–553.
Shaw, D. (2013). A new look at an old research method: Photo-elicitation. *TESOL Journal, 4*(4), 785–799.
Soria, K. M., & Troisi, J. (2014). Internationalization at home alternatives to study abroad: Implications for students' development of global, International, and intercultural competencies. *Journal of Studies in International Education, 18*(3), 261–280.
Tang, X., Collier, D., & Witt, A. (2018). Qualitative study on Chinese students' perception of U.S. university life. *Journal of International Students, 8*(1), 151–178.
Wimpenny, K., Beelen, J., & King, V. (2020). Academic development to support the internationalization of the curriculum (IoC): A qualitative research synthesis. *International Journal for Academic Development, 25*(3), 218–231.
You, S., Ritchey, K. M., Furlong, M. J., Shochet, I., & Boman, P. (2011). Examination of the latent structure of the psychological sense of school membership scale. *Journal of Psychoeducational Assessment, 29*, 225–237.

Publisher's Note