

Ecological aspects of online learning in higher education: a qualitative multi-level exploration in a developing country

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Abstract

Using 22 undergraduate business students' online learning experiences during the COVID-19 lockdown in Pakistan (as the pandemic was the only time these students were enrolled as *online* students in Pakistan), this study demonstrates that online learning is a multi-level phenomenon and a practice situated within the environment. Despite online learning being a heavily researched area, research has under-examined the interaction of the Community of Inquiry (CoI) framework with the context. By adopting an ecological perspective, and by examining the interaction of micro, meso, and macro levels, this qualitative research provides useful insights into the interaction of the individual (microlevel) captured through the CoI framework, with the broader environment in which learners are located (meso and macro levels). It contributes to research on online learning broadly, and the CoI framework specifically, by revealing that each element of the CoI framework (micro-level), is influenced by macro (developing country), as well as meso (institutional policies and institutional preparedness) levels. It also spotlights the negotiated relationship between the individual and the systemic forces. The findings of this study are particularly relevant given that online education has the potential to become a norm in higher education in developing countries.

Keywords Multi-level · Online learning · Developing country · Teaching presence · Social presence · Cognitive presence · Ecological perspective

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1 Introduction

Distance education or online learning has a great potential for the dissemination of higher education in developing countries. In developed countries like the USA, online learning has been one of the fastest-growing trends among educational institutions with a high percentage of higher educational institutions offering online courses, and undergraduate enrolments higher than graduates among students taking at least one distance education course (Seaman et al., 2018). Furthermore, recent research in developed countries demonstrates there are a number of challenges in online learning (Ellis & Bliuc, 2019). Means et al., (2013) found in their metaanalysis that students in online learning conditions perform better based on whether learning is collaborative or independent. Delahunty et al., (2014), in their review of research on interaction in online learning, conclude that learning goals, interpersonal relationships and emotions are equally important in a virtual environment. Cherney et al. (2018) in a review of online course student collaboration literature, identify different elements that play a role in group interaction processes. These are quantity and quality of interaction, social loafing, free riding and social presence. Students often feel a lack of connection to their online classmates (Newberry, 2001) with online interaction not building a sense of community (Gallagher-Lepak et al., 2009), thereby affecting the socio-emotional aspects in online learning. Zembylas et al., (2008) demonstrate that students (novice online learners) feel multiple emotions, positive as well as negative. Conrad (2002) also found in a study of online students, that many expressed a high degree of fear, uncertainty, and anxiety about the course even before it started. Additionally, Means et al. (2013) contend that the setting (home, informal), the content and the technology all affect learning. Therefore, prior literature on online education gives us a scattered picture and points to multiple factors playing a role in online learning.

Moreover, as there is a paucity of research on online learning and developing counties, not much is known about the different issues which could be barriers to the advancement of online education. For instance, online teaching in universities in Pakistan, a developing country, is in the nascent stage (Kanwal & Rehman, 2017). All universities in Pakistan use face-to-face pedagogy as a norm (except for The Virtual University which is a distance education university and only provides distance education). Additionally, multiple barriers to the promotion of e-learning have been identified (Farid et al., 2015; Hussain, 2007). Despite online learning being the oddity and not the norm, at the advent of the COVID-19 pandemic, and the lockdown in Pakistan, the Higher Education Commission¹ (HEC), issued directives² on 13 March 2020 to *all* universities "to offer effective online teaching as a substitute for regular classes". Research demonstrates that online learning in developing countries was a challenging process for all in universities during the COVID-19 pandemic (Zarei & Mohammadi, 2021). However, the studies examining online learning in developing

¹ The Higher Education Commission is a government regulatory body overseeing all higher education institutions in Pakistan.

² http://www.mofept.gov.pk/Detail/OTk4ZjM0YjAtMjM0Zi00Yjk5LThkZjQtNTYyMDYyMzM2Njc1

countries (c.f Sangster et al., 2020; Zarei & Mohammadi, 2021) have not explored the interaction of the contextual factors with the online learning experience. This is especially important as online and distance learning is a practice situated in environments (Veletsianos et al., 2022). The current exploratory qualitative study seeks to fill this gap and contributes to understanding the multi-level factors that influence online learning by examining the interaction of micro, meso, and macro levels. This study hopes to add value to the online learning literature by providing insights into the interaction of the individual's online learning experience (micro-level), with the broader environment in which learners are located (meso and macro levels). The present study offers a novel conceptualisation of students' educational experience in online environments (captured by the COI framework), by adopting an ecological perspective (Veletsianos et al., 2022). Thus, this study probes an underexplored area within the context of a developing country (Pakistan). It uses the COVID-19 period as the research context, as this was the only time students were enrolled as online students across Pakistan and at such a large scale. It draws on students lived experiences as students' perceptions provide crucial insights into online learning processes (Redpath, 2012).

Using a qualitative approach to explore 22 undergraduate business students' online learning experiences, and by adopting an ecological perspective, this study hopes to shed light on how the contextual factors affected students' educational experience in online learning. The findings of the current study will help those devising higher education polices to understand how the environment interacts with the students' educational experience in an online environment. It is particularly important to explore developing country students' (and in the case of Pakistan, a once-in-a-lifetime) experience of online learning in higher education, as online education has the potential to revolutionize the dissemination of higher education in a developing country, resulting in a more educated workforce and an improved national economy.

2 Literature review

2.1 The theoretical lens: The Col framework

One framework that conceptualizes the students' educational experience in an online environment, is the Community of Inquiry (CoI) framework by Garrison et al. (2000). The CoI framework is used for assessing the online educational experience, especially in an inquiry-based learning context (Kim & Gurvitch, 2020; Martin et al., 2020) and is a popular framework for both practitioners and researchers in distance education (Maddrell et al., 2017). It is used as a conceptual framework for "studying the potential and effectiveness of an online course", (Cohen & Holstein, 2018, p.545). The CoI framework suggests that three elements; teaching presence, social presence, and cognitive presence exist in the online environment. According to the CoI theoretical framework, "...learning occurs within the community through the interaction of three core elements: cognitive presence, social presence, and teaching presence" (Garrison et al., 2000, p. 88). Social presence implies individuals

presenting themselves to others (as a real person) through open communication, group cohesion, and affective expression (Arbaugh, et al., 2013). This also includes student-to-student interaction. Cognitive presence is the critical evaluation of learning material to construct meanings by the student. Teaching presence includes student-instructor interaction and refers to the involvement of the lecturer in creating and facilitating the online learning environments and discussion. Garrison and Arbaugh (2007) contend that while there is a complementary relationship between teaching presence and cognitive presence, social presence is considered particularly important for online pedagogy. The interaction of teaching presence and social presence creates a conducive learning environment for students, with mutually reinforcing social and cognitive dimensions enabling supporting dialogue, and discourse. The interaction of teaching and cognitive elements enhances learning through deep thinking (Garrison & Arbaugh, 2007). They argue that the elements influence one another. It is the positive interaction of all three elements that results in a rich, meaningful online learning experience (Caskurlu, 2018). Indeed, 'presence' is the most researched sub-theme (Martin et al., 2020, p. 7). Recent research in higher education validates the CoI framework empirically (see for instance Abe, 2020; Caskurlu, 2018; Cooper & Scriven, 2017; Kay et al., 2019).

Given the research context (undergraduate business school students), this study also applies the seminal work of Garrison et al., (2000, 2001) as a theoretical lens, as Arbaugh et al. (2010) suggest that online management education research should be grounded in educationally-based theories like the CoI. Research on online learning in management education also suggests instructors are important for positive online environments (Arbaugh, 2010a), and course design (Arbaugh & Benbunan-Fich, 2006). Teaching presence in online management education is important (Arbaugh, 2008, 2010a; Ke, 2010; Daspit & D'Souza, 2012), the interaction between learners and their instructor ensures success in an online course in the business disciplines (Arbaugh & Benbunan-Fich, 2007), discipline-related differences exist in both the design and conduct of courses (Arbaugh, 2013) and social presence matters in online graduate management education (Arbaugh, 2014).

While the CoI framework has been used in online management education research (see for instance Arbaugh & Hwang, 2006; Shea et al., 2010; Daspit & D'Souza, 2012; Daspit et al., 2015), the CoI model is not without limitations. This has resulted in researchers suggesting the CoI framework should include psychological capital (Daspit et al., 2015), learners' epistemic beliefs (Huang et al., 2019), and learning presence (Shea et al., 2012). Most research using the CoI framework (survey method) is carried out in developed countries (Stenbom, 2018). Stenbom (2018) suggests that it is necessary to expand the settings (context) to make more generalizable claims. Using mainly American and Canadian contexts limits the generalizability of the CoI framework, as the online learning environment of a developing country is different from a developed country. The difference between developed and developing countries was visible during COVID-19 when each country confronted its unique challenges in higher education (Sangster et al., 2020). Furthermore, the three elements are also micro-level factors, as they represent the realm of the classroom with teacher-student interactions (Hung et al., 2015). The CoI framework and the three elements, do not take into account the influence of the broader environment in which online learning occurs. This is problematic as online learning is situated in particular environments (Veletsianos et al., 2022).

The predominance of certain empirical settings and the lack of inquiry into macro and meso levels suggest that the external environment is assumed to be similar and therefore has no impact on the elements of the CoI framework. Conversely, external and internal factors have been explored in technology integration in classrooms (Hur et al., 2016) with researchers arguing that the educational ecosystem contributes to the online educational quality and success for online learners (Moore & Piety, 2022). This implicit assumption (similar environment), within the CoI literature is a weakness of this body of research. What is missing from empirical work on the CoI framework is the influence of context on each of the elements of the framework. The CoI framework assumes that online learning is a single-level phenomenon. Conversely, the present study considers online learning as a multi-level phenomenon, incorporating micro, meso, and macro levels. The conceptual framework of the study is presented in Fig. 1. It builds on Veletsianos et al.'s (2022, p. 319) 'ecological perspective', and their argument of finding "ways to think of people in the context of their broader environments and systems, highlighting how experiences and behaviours are not exclusively localized to the individual".

This study contends that micro-level factors or the three elements of the CoI framework, specifically social, cognitive, and teaching presence could be influenced by meso and macro levels. This is especially significant given Pakistan's context. Farid et al. (2015) identify software, technical, institutional, personal, and cultural dimensions impact the adoption and promotion of e-learning in Pakistan. The focus of the CoI research so far has largely been the individual level/micro-level; to look at the three elements or the dynamics of the elements or the interrelatedness of the elements, rather than explore the factors that may *affect* the three elements. While this research aims to explore students' once-in-a-lifetime experience of online learning in higher education in a developing country, this study posits that the microlevel online educational experience, captured through the CoI framework, could be influenced by contextual aspects of Pakistan's higher education system (meso-level), as well as the pandemic and national issues (macro-level). The CoI framework is a micro-level exploration of a psychological nature (Lee et al., 2021). This study defines micro-level as operationalization and enactment of classroom-based activities, the realm of the classroom with teacher-student interactions (captured through the CoI framework); meso-level as institutional context and pedagogical orientations; and macro-level as national system and policies, the socio-cultural context, as well as the global trends impacting education, (Hung et al., 2015). Understanding the broader environments in which learners are located is essential as "online and distance learning is a practice situated in environments-places, spaces, and times, with particular people, in particular contexts, with particular technologies, within particular institutions" (Veletsianos et al., 2022, p. 318). The study also draws motivation from Arbaugh et al. (2010) to investigate 'other factors', (macro-level and meso-level), while exploring the 'educational experience of online learning' (microlevel) in management education. While broadly exploring the once-in-a-lifetime experience of online learning (captured by the elements of the CoI framework) this



Fig. 1 A conceptual framework of the study

research also asks the specific question: how is each element of the CoI framework influenced by macro and meso levels.

3 Methods

This research draws on an interpretive/constructivist paradigm because the focus of this research is to explore the online educational experience of undergraduate students of management education while endeavouring for a deeper and more rigorous understanding of factors affecting online course delivery (Arbaugh et al., 2013). The paradigm is in keeping with the original premise of the CoI framework, which is a collaborative-constructivist process model, rooted in Dewey's educational philosophy and social constructivism (Garrison, 2017). Following the interpretive/ constructivist paradigm, a qualitative research design was adopted to understand the

perceptions of students becoming online learners while taking into account the existence of multiple realities and experiences. Baig et al. (2021) have also suggested qualitative methods for research on e-learning in higher education as experiments and surveys cannot capture in-depth details.

3.1 Context

The present study is situated in the context of undergraduate (UG) students in three business schools in Pakistan. These three business schools were the first to move online. Their students were proficient in the use of technology as they were comfortable using computers and smartphones, had exposure to learning management systems (LMS), and owned multiple devices. It thus placed the participants of these schools in a better position to deal with technological shifts in the learning environments. This was probably why these three schools were the first to move to online pedagogy. Secondly, for purposes of validity and generalizability, the data was drawn from three and not one business school, all of which had moved online in April 2020 and the students had completed respective terms, including examinations for all courses, half the term face-to-face, and half the term online. Some students were enrolled in five courses in that term while others were enrolled in six courses. The data, therefore, reflects a wide spectrum of subjects/courses as well as instructors in management education. Furthermore, all students in this study were only fully online unlike in previous studies.

3.2 Data collection

The choice of participants was purposeful (Lincoln & Guba, 1985) as they were to meet the criteria that the business students were to (a) be studying at the undergraduate (UG) 2nd-year level, (b) should have completed half the semester in a physical classroom and half online during the pandemic. A total of 22 Zoom, reflective interviews (Table 1) were collected in May–June 2020 after the online term was over.

The recruitment was through the snowball method (Kuzel, 2010). The author identified a few students (personal contacts) who were enrolled in these business schools in Pakistan. The students were e-mailed invitations to participate in a Zoom interview. The author did not know any of these individuals personally. The interview was the first meeting and the first ten minutes or so were spent making the participant comfortable, especially their concerns regarding anonymity. Each interview began with the author (interviewer) asking the student to share reflections on the experience of the transition to online learning. The students were given space to reflect and to speak without interruption. There was no set of pre-determined questions as the idea was to capture reflections or the memory of a phenomenon. The open-ended nature of this technique does not limit the response of the students in the same ways that structured/semi-structured interviews and surveys can. The interviews were not linear and the flow of data was different for each student. However, each student reflected on each course, pre-lockdown and post-lockdown. After they reflected on their experience of the transition to online classes, a few later questions

Gender/Code	Age	Year of study	Interview Transcript word count	
F1	21	2	6348	
F2	21	2	6599	
F3	21	2	7913	
M1	23	2	7801	
M2	20	2	6063	
F4	22	2	7094	
F5	21	2	9657	
F6	21	2	7105	
F7	21	2	7276	
M3	22	2	9318	
F8	22	2	6511	
F9	21	2	5084	
M4	21	2	8057	
F10	21	2	6420	
M5	20	2	8482	
F11	21	2	6149	
M6	21	2	9229	
M7	21	2	5860	
M8	20	2	4340	
M9	20	2	7462	
M10	22	2	7535	
	Gender/Code F1 F2 F3 M1 M2 F4 F5 F6 F7 M3 F8 F9 M4 F10 M5 F11 M6 M7 M8 M9 M10	Gender/Code Age F1 21 F2 21 F3 21 M1 23 M2 20 F4 22 F5 21 F6 21 F7 21 M3 22 F8 22 F9 21 M4 21 F10 21 M5 20 F11 21 M6 21 M7 21 M8 20 M9 20 M10 22	Gender/CodeAgeYear of studyF1212F2212F3212M1232M2202F4222F5212F6212F7212M3222F8222F9212M4212F10212M5202F11212M6212M7212M9202M10222	

Key: F = Female M = Male

21

2

5168

M11

were asked, based on notes (during the interview), on what needed further elaboration. These reflective interviews lasted from 40 to 65 min approximately. All the participants spoke in the English language. The interviews were audio-recorded under the conditions of confidentiality of the individual's and their School's identity.

3.3 Data analysis

Data analysis was done in multiple phases using an inductive approach, progressing from within-interview to an across-interview analysis and from first-order concepts to second-order themes and aggregate dimensions (Gioia et al., 2013). While the description of the process is linear, the data analysis process was iterative with re-coding and re-categorizing of quotes carried out whenever necessary (Saldana, 2009). The interview text was coded using two coding methods: codes that emerged from the data (first-order codes and second-order categories) and later, a priori codes from the elements of the CoI framework. The first stage of the analysis was to develop first-order codes. These first-order codes were generated as soon as the

Example of a Quote	1 st Order Codes
Teacher for [course] asked us to open our cameras, but for that we had to be attentive because everything that we were doing, behind in our home, everyone was able to look at it. Like we couldn't sleep, we couldn't eat, we had to sit in a professional setting, we had to act a certain way, like we were in a class. F1	Camera On
And also on a Zoom meeting, the attention span greatly decreased. We couldn't just stare at the screen of our laptops and listen to the instructor for an hour and fifteen-twenty minutes. Just felt like watching a really drag Youtube video. M3	Live Zoom
I can't seem to motivate myself enough to wake up on time to just open the laptop and attend those classes, because motivation level is like zero right now. And then again when the teacher does speak, I sometimes feel like it's just not worth it anymore. I don't have to be there. And since attendance is not mandatory anymore , I feel like I don't have to be there. So there's no like motivation level. F2	Attendance not mandatory
For some of classes we had CP. Some instructors changed it to written CP, that we would submit before the class. And some instructors had a normal CP session; you could raise your hand on Zoom and that's how we would interact. And one of them just completely ignored the whole component altogether. And said 'I will grade you on whatever happened before the mid-term', so I thought that was slightly unfair. F6	Graded Class Participa- tion vs. Not graded CP

Table 2 Sample quotes for some first-order codes

first interview transcription was received. First-order coding was achieved using open coding as suggested by Glaser and Strauss (1967) where each transcript was reviewed line by line, and the coding of the narrative was based on the student's descriptions.

The first six transcriptions generated many new codes, as well as some repeated codes, while the next thirteen generated mostly repeated codes. All initial coding was carried out by the author and another member of the research team. Each independently coded the first six transcriptions. These were then discussed. Then the next thirteen interviews were done similarly. The coding and emerging findings were discussed at several points to determine key themes and synthesize findings. The last three interviews had no new codes and interviews were stopped at that point, adopting theoretical sampling (Ligita et al., 2019). The number of interviews was also deemed appropriate for exhaustive inquiry (Crouch & McKenzie, 2006) as the study aimed to produce a rich, detailed understanding of the online learning experience, similar to Morgan-Thomas and Dudau, (2019) who used 24 student interviews to capture student engagement in eLearning. In the first phase, all interviews were coded for first-order codes (Table 2).

However, the analysis process revealed that the first-order codes fell under particular themes (Table 3). Therefore, all the first-order codes were then placed under themes or second-order categories using Strauss and Corbin's (1998) notion of axial coding for this purpose.

It also emerged during the first-order coding and second-order categories coding process, that students were not actively involved in learning and felt learning

First-order codes	Second-order categories		
Compulsory Attendance vs. Attendance Not Mandatory	Institutional Policies		
Graded Class Participation vs. Not graded class participation			
Letter grade vs. Pass/Fail policy			
Live Zoom sessions vs. Recorded videos vs. no classes			
Camera off vs Camera On			
The novel experience: Students' assumptions based on face-to-face classes	Institutional support and technology preparedness		
Learning Management System still work-in-progress			
Dysfunctional family environment	Online learning during the COVID-19 pandemic		
Using home as a learning space and the upside down routine	physical lockdown		
Confined physical space and severely limited physi- cal/social activities			
Abrupt shift to online			
Long Live Zoom Sessions			
Emotional demands			
Frequent Electricity outages	Developing country issues		
Internet Connectivity issues			
Underdeveloped technology in HEIs			

Table 3	Various	first-order	codes and	d the themes	(second-order	categories)
					(

was compromised in the online experience. This led to another reading of the transcripts to tease out *why* this may be the case or what was underpinning students' perceptions of the educational experience of online learning. As the CoI framework captures the educational experience of online learning, the transcripts were re-read, with each chunk of the transcript marked as either a part of teaching presence, cognitive presence, or social presence. The quotes were marked for each element of the CoI framework by actively looking for whether the participant was talking about the teacher or teaching style (teaching presence) or his/her learning (cognitive presence) or his/her emotions/participation in class (social presence). Each chunk of data was coded as belonging to one or several of the elements of the CoI framework following a coding template created by the author drawing inspiration from transcript coding (Garrison et al., 2000, 2006).

4 Results and discussion

The findings of the study are covered in this section. While broadly examining the once-in-a-lifetime experience of online learning (captured by the elements of the CoI framework), this research also asked the specific question: how is each element of the CoI framework influenced by macro and meso levels. The results are

organized to respond to each element of the CoI framework. The findings suggest online learning is a multi-level phenomenon. It also puts the spotlight on the negotiated relationship between the individual (micro-level) and the systemic forces (meso and macro levels) revealing that the practice of online learning is not just individualbased rather it is situated within environments, and that the particular environment affects the quality of online learning. The quotes illustrate the educational experience of the undergraduate students in these business schools and the influence of the macro and meso-levels on the three presences of the CoI framework (micro-level).

4.1 Teaching presence

Teaching presence is defined as "the design, facilitation, and direction of cognitive and social process for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Anderson et al., 2001, p. 5). In the 'direct instruction' category of the teaching presence element, the instructors positioning themselves as subject-expert (Arbaugh & Hwang, 2006) remained intact with most instructors continuing with the face-to-face methods of primarily explaining their teaching slides (on Zoom or the recorded lectures). However, similar to Cochran et al. (2016), and O'Neill et al. (2021) students valued in-person presence and needed to see the instructor. Students stated that they missed seeing the full view of the instructor and his/her performance in class. Students found the virtual medium inadequate as it could not fully capture the teacher's presence, as the 'teaching' screen was divided between the slides, the instructor, and the participants (Borup et al., 2012).

when they are sharing the screen or they are showing slides, then you have to look at the screen. So you can't look at the screen and the instructor simultaneously M9

This reduced the teaching presence of the instructors, impacted the learning experiences of the students, and had implications for their social presence and cognitive presence as the students complained of easily losing motivation and interest. The loss of interest may also be linked to certain expectations regarding pedagogy and teacher behaviour. They expected the virtual medium to replicate the classroom. Some described what had been the norm in a traditional classroom.

Most of the Business School classes are very interactive, very communicative with the instructors and with our peers. And our instructors [Instr]³ really emphasize creating social connections in universities, especially in the Business School. Because a lot of times a group was made and we had to interact with them for the entire course. F7

A major component of teaching presence is also 'design and organization' which begins before the course starts and continues during the course as the

³ All instructors have been denoted as [Instr] to keep anonymity.

instructor facilitates the course. In other words, the design of the course has to be adjusted to the virtual medium. However, the quotes suggest that few instructors adjusted their pedagogy.

a huge part of the course that we were to study after the mid-terms, which was a lot more complicated than pre-mid-term material, [Instr] had to cut all of it out, because [Instr] believed that it would actually cause complications for us, instead of helping us learn. F7

In most cases, there was a change in the *amount* of course content as it was reduced either nominally or substantially. Instructors mostly replicated the class-room environment while online, learning to cope with technology and a new virtual medium, as some of the instructors had not been trained enough by the business school.

The online classes were just very chaotic and no one understood what to do. The teachers were new to the 'Zoom'. A lot of teachers did not know how to operate 'Zoom'. The classes were ending early. F1

On the other hand, some business schools were well prepared and gave their faculty and students time and some technical support.

I'd say it was done in a very systematic and proper way. They told us how these classes would be taken. Like they showed us, sent us tutorials and procedures, and then our instructors had also trial classes to really make us acquainted and comfortable with this. F8

The level of business school preparedness had an impact on the educational experience and the elements of the CoI framework. Teaching presence was also affected by institutional policies. Some business schools gave the option to instructors to use either live classes on Zoom (also uploaded later as a recorded video), 'only recorded' classes uploaded to the business schools' LMS, or no classes at all.

[Instr] actually had a poll where [Instr] asked if we would want live lectures and to keep up the component of attendance and class participation or should [Instr] upload recorded lectures so that we could listen to them on our own, or no lectures at all. And a lot of students said no-lectures at all. F7

These institutional policies were a direct result of the developing country's issues of internet connectivity and electricity outages. Each of these mediums had a different teaching presence because it was greatly impacted by the lack of pedagogical work relating to student-teacher interaction or 'facilitating discourse' (Arbaugh, 2008). Where only recorded lectures were offered, the dimension of 'facilitating discourse' was absent and this had implications for students' online learning experiences. Facilitation requires instructors to be helpful, with discussion and feedback as an important component (Arbaugh, 2008). Facilitating discourse was completely absent for all 'only recorded' classes. But the idea of not having a class discussion; not being able to ask questions in real-time that really affected our learning. So our focus shifted from learning about [course] to just passing the course. M3

Faculty who used Zoom, also uploaded the recordings after class. Some students commented it was useful to go back to the recording if they had missed something or not understood something, similar to Cochran et al. (2016). The live Zoom sessions, on the other hand, were more conducive to generating a greater teaching presence because there was an option to have live discussions online. An instructor who made an effort to draw students in had a higher teaching presence. The quotes above also reveal the negotiated relationship between the individual and the systemic forces. The micro-level element of teaching presence was compromised by both meso and macro levels. Teaching presence was to a large extent negatively impacted by institutional preparedness and policies (meso-level) which were dependent on the macrolevel issues of electricity shortage and internet connectivity. The absence/reduction of teaching presence affected the other two elements of the CoI framework; cognitive presence and social presence. Teaching presence is vital as there is a positive relationship between teaching presence and students' perceived learning and satisfaction (Arbaugh, 2008). Teaching presence is also described as a binding element as it influences the development of both cognitive and social presence (Garrison et al., 2000). Teaching presence is needed to sustain and establish a CoI environment (Garrison et al., 2010). Daspit and D'Souza (2012) in their study endorse the role of the instructor as crucial in student learning containing technology. However, in this research, the role of the instructor was influenced by meso and macro-levels.

4.2 Cognitive presence

Cognitive presence is an indication of students' learning or critical thinking. Learners engage in enriching their understanding. They move from understanding a concept to exploration, integration, and application of their learning (Garrison & Arbaugh, 2007). The quotes below uncover the negotiated relationship between the individual and the systemic forces. For instance, students' assumptions made it difficult to transition from the physical classroom environment to the online environment and this impacted their cognitive presence.

It's just that I've studied in classrooms all my life so it was quite a big transition from the live classroom to online classes. Honestly, it affected me a lot at the start of online classes. I couldn't understand them and I couldn't concentrate properly. I'd tend to doze off during my online lectures. M9

Some business schools did not impose a mandatory student attendance or class participation policy and changed grading to pass/fail, due to issues such as internet connectivity and electrical breakdowns in the country.

I had my first class every day at 11, so I stopped waking up for that 11 am class, just because the attendance policy got suspended. I did listen to the recorded lectures but the interaction part was gone. I couldn't ask my [Instr]

in real-time if there was a problem, so I had to ask a friend. So my learning did get affected. F1

As a result of various institutional policies (meso level) that were informed by national issues (macro-level), some students did not feel they must attend classes. Some transitioned to online classes by initially attending the classes, but as time passed they stopped attending the class in 'real time' and watched the recording of the class (shifted to the asynchronous class) as the need arose, for instance just before a quiz. The cognitive presence for 'only recorded' classes in comparison to Zoom classes was also weak. Even for live lectures, whenever teacher engagement was less, the students were quickly demotivated and lost interest, resulting in negative emotions that led to a low cognitive presence.

The slides would be running on the screen, we could see [Instr]in the video and [Instr] would just read and if anybody stopped and asked a question, then [Instr]would explain, but then that was it, nothing too exciting or anything like that. So then I stopped attending the lectures. F7

The lack of teaching presence impacted cognitive presence as cognitive presence and teacher presence are strongly related (Garrison et al., 2000). The connection between students and teachers is crucial (Ke, 2010). Instructors should provide pedagogical guidance, feedback, and learning opportunities that facilitate meaning-ful interactions and exchanges with fellow students (Arbaugh, 2010a; Ke, 2010; Conrad, 2002). Instructors are important for creating a dialogue in online learning (Ivancevich et al., 2009) which results in a higher cognitive presence. This was missing. Some instructors used Zoom chat to mark class participation (CP) and grade students.

The instructors are not that engaging with you at all, they are talking to the screen, they can't see you what you are doing. They can't know if you are paying attention, so for them, it's just recording a lecture and for us it's marking our attendance. F10

Similar to Cochran et al. (2016), the use of a chat window was largely an unengaging experience whereas it should be the opposite (Hrastinski, 2009).

so you can imagine everyone wants CP, so 60 people answering at the same time in the chat. It's pointless because I don't think the teacher has enough time during the lecture, to deliver a lecture, to read through 25 responses, mark CP..... you can just copy and paste something from the internet in like 2 seconds, you can type what [Instr] is talking about and you can copy and paste it. M4

The micro-level element of cognitive presence was influenced by both meso and macro levels. Some business schools were insistent on live classes, mandatory attendance, and graded class participation (meso-level). This resulted in subversive behaviour by several participants and a lack of cognitive presence. Some business schools also introduced a pass/fail policy instead of a letter grade for that term. It made an impact on cognitive presence as students lost motivation. Business schools' policy of having students keep their cameras switched on during Zoom classes made a positive impact on cognitive presence. However, several business schools agreed to let students switch off their cameras as they would complain of low bandwidth and internet connectivity issues. When the cameras were switched off, the students felt they could take liberties. The quotes suggest that the students were passive recipients and did not realise that they would have to assume much of the responsibility of the learning, because of the change in pedagogy.

The macro factor of the physical lockdown affected cognitive presence as well. A major reason for being' mentally absent' while being physically present in a live Zoom session was the home environment. Most students found it difficult to shift psychologically from a physical environment, which is a university, to a physical environment, which is the home. This impacted cognitive presence as well.

It was harder for me to motivate myself to work because when you come home you associate your home with relaxation and comfort etc M8 [the bedroom] is where I do my gaming and I do my whole late night fun, eating pizzas and watching Netflix. M6

Long sessions of watching the screen were exhausting because students were sitting in one position and physically looking at a screen. This affected their cognitive presence. The lockdown resulted in students feeling tired, exhausted, and sleepy making them disengaged while attending Zoom classes.

I was constantly sitting. I wasn't able to move from one class to another. I wouldn't be able to exert; I wasn't moving my body that much. I think it was hardly 5%. M9

4.3 Social presence

Social presence refers to students' engagement within an online environment, as *real* people. Social presence includes open communication, affective expression, and group cohesion. Open communication requires students to feel comfortable participating in course discussions and comfortable in interacting with other course participants. The pass/fail policy (meso-level) impacted their social presence (micro-level).

We knew that even if we studied hard it would not make a difference, as there was no letter grade. We also knew that if we wanted to study, we could always access the lectures that were already recorded. So, we are not losing anything. There was no incentive, there was no reason for us to take the [live] classes. M2

The above quote illustrates the negotiated relationship between the individual and the systemic forces. Several universities agreed to camera off (meso-level) as students would complain of bandwidth and internet connectivity issues (macro-level). As explained by a student,

there is this hanging sword of connectivity issues. Because even during this call, I am in [city], I have a stable internet provider but we do not have an

infrastructure that provides a high-speed consistent internet. It drops. It does not mean we don't have access to the internet, it's just not that reliable. M3

The policy of getting students to remain on-camera vs off-camera (meso-level), during Zoom made a difference. When the cameras were off, students felt they could take liberties.

What they'd do is, shut their cameras and they'd be gone, roaming around here and there, and then return after a bit and pretend that they were around. F8

Another participant commented that he had become invisible despite the camera being on. It affected his cognitive presence as well as social presence.

because when the teacher is seeing me [in the physical classroom], there is an eye contact from both sides. [Instr] is giving me importance. I know that [Instr] is looking at me and [Instr] is giving me motivation. But the [Instr]'s eyes in the online class, those two eyes are divided by 50 eyes of students. So I don't know if [Instr] is looking at me. So that interaction and motivation is divided by 50. M6

Students who participated actively while in the on-campus classroom couldn't bring themselves to ask as many questions or to actively connect with the instructor online.

Because in the physical classroom you raise your hand and the instructor sees you, after maybe one or two other questions. [Instr] would come to you. But here it's very different. You can't just butt in; you don't know when to step in because [Instr] is delivering the lecture. So there is no organic way of putting a question. I don't think that it feels okay to interrupt the instructor in between, in Zoom classes; I have never been in favour of that because that disrupts the rhythm which is already very difficult to get. M4

Open communication also requires risk-free exchanges and a safe space where there is respectful acknowledgement of each other's communication (Mann, 2001). However, students felt awkward and uncomfortable. The micro-level element of social presence was influenced by both meso and macro levels. Pakistan's high power distance culture (macro-level) made students uncomfortable interrupting instructors during the lecture, in the online medium. Students complained that internet connectivity issues (macro-level) created clumsiness in communication making them more visible in the online pedagogy as opposed to the physical classroom, while others found participating online stressful because of cognitive overload.

It's really hard to constantly unmute, when to raise hand, then go back to mute. It's just very hectic. F10

They felt they had to compete with other students to get the attention of the instructor by managing multiple tasks in Zoom. Furthermore, the COVID-19 and the physical lockdown (macro-level) had a considerable impact on emotions and took a psychological toll, and subsequently influenced learning. The quotes demonstrate

students' emotional experiences, both positive and negative, concerning online learning and how each level impacted, shaped, and was shaped by other levels.

I don't know who is laughing at my back that's one point. When I do something stupid in the [physical] class there is laughing going on, I know; but [online class] there is something unseen going on. I don't know who is whom M6

A large number of students expressed some form of distress and used words like stress and anxiety. They also experienced a sense of isolation and loneliness. A major cause of the stress was inhospitable home environments where there was friction with parents. While the girls expressed this openly, the boys implied the stress.

So staying constantly within your family, having to interact with the same people all the time, its hindering to any relationship but when you are forced to do this and you are in a lockdown and you don't have a routine and you genuinely don't get along with your families; it can have a terrible impact on your mental health. And it's not conducive to learning as well. F10

All the above quotes illustrate the negotiated relationship between the individual and the systemic forces and that online learning was situated within the broader environment defined in this study as meso and macro levels.

4.4 Online learning is a practice situated in environments and a multi-level phenomenon

This study contributes to research on the CoI framework by revealing that each element of the CoI framework (micro-level) was influenced by macro and meso levels. By adopting an ecological perspective (Veletsianos et al., 2022), this study draws attention to the interactions between micro, meso, and macro levels, and how each level impacts, shapes, and is shaped by other levels. The above quotes demonstrate that online learning is a multi-level phenomenon and a situated practice, as well as the negotiated relationship between the individual and the systemic forces. Both macro (national issues) and meso levels (institutional policies and preparedness) influenced the educational experience of the online pedagogy (micro-level) in business schools in Pakistan. Each level shapes and was shaped by other levels. This is reflected in Fig. 2. While the figure attempts to neatly box the issues into levels, the lived experience suggests a complicated picture with each element of the CoI framework influencing each other, as well as being influenced by other levels. The quotes suggest "that individual actions impact systems, that systems impact individual actions, and that our online and distance learning activities are situated" (Veletsianos et al., 2022, p. 319). Teaching presence, social presence, and cognitive presence were each influenced by macro and meso levels, and each element influenced each other as well.

Teaching presence (micro-level) was heavily shaped by the meso-level. This includes the technological infrastructure/nascent stage of online pedagogy, at the business schools. Students found their LMS inadequate and institutional preparedness as weak. Teachers were given insufficient training on the alteration of the



Fig. 2 The influence of macro and meso levels on the CoI framework

pedagogy. Most instructors had not adjusted the course design or content or teaching approach. Timetables were not planned based on the demands of a virtual environment. The long sessions of three online courses per day were exhausting. Students were juggling assignments, readings, and quiz preparations for all the courses (five or six) that were online. Most of them found getting up for the 8 am class tough. Institutional policies of attendance dictating the camera on/off, etc. were directly linked with the developing country's issues of internet connectivity and electricity outages (macro-level). While attendance is mandatory in all Pakistani business schools, because of unreliable connectivity, most business schools changed their policies regarding attendance, class participation, grading, cameras, and recording of lectures. Students that had to be online, because of compulsory attendance would come on Zoom, mute the mic, switch off the camera and go back to sleep.

The macro-level, which had a knock-on effect on the meso-level of intuitional policies and preparedness, also impacted social presence and cognitive presence. In live video classes (synchronous classes), social presence was better, as the use of videos for academic purposes generates discussions and collaborations (Draus et al., 2014; Miller & Redman, 2010). In those business schools where there was no policy on mandatory attendance or graded participation, students had little, or no incentive to attend the session. Few students came online during the synchronous classes, resulting in hardly any *within-class* interaction. This compromised the social presence. Poor internet connectivity also impacted social presence as either the instructor could not hear the question or other students could not hear the student. The students' peer interaction was also limited because of the limitation of the virtual medium. They felt they had to compete with other students to get the attention of the

instructor by managing multiple tasks in Zoom. Technology influences online learning (Means et al., 2013).

Cognitive presence was heavily influenced by student assumptions based on oncampus life and traditional face-to-face teaching methods. They were not mentally prepared for the abrupt change. While students understood the reasons for going online, their expectations remained the same. Cognitive presence and social presence were also influenced by teaching presence. Students expected teachers to be interactive and expected the teacher to take a lead. An interactive course environment plays a crucial role in student satisfaction (Arbaugh, 2008). Some students felt they were burdening the instructor, and uncomfortable even emailing instructors. This may also have to do with being an undergraduate, as student experiences of undergraduates are unique to them (Jones, 2018) and they are different from MBA's as autonomy, cognitive maturity, and ownership is underdeveloped (Arbaugh 2010b). They all struggled with adjusting to the 'home as a learning space' as well as 'the family'. Family support has been positively related to students' online learning during the pandemic (Mo et al., 2021) and there is a significant relationship between cognitive presence and students' perceived learning (Arbaugh, 2008). While the onus of cognitive presence fell on the student as it called for self-regulation and discipline (Cho et al., 2017), the students did not realize the new pedagogy called for managing one's learning. Most importantly, teaching presence, cognitive presence, and social presence influenced each other as well. To conclude, this study draws attention to the ecological aspects of online learning and that online learning is a practice situated within environments.

5 Conclusions

This qualitative research makes a theoretical contribution to research on the CoI framework, by drawing attention to macro and meso levels as an important influence on the elements of the CoI framework. It uses the online pedagogy during the pandemic in Pakistan to illustrate that online learning is a multi-level phenomenon and a practice situated within a particular environment. So far, empirical research on CoI has not examined the influence of context or external factors, while research using TAM as the framework does (see for instance Kanwal & Rehman, 2017; Mo et al., 2021). By adopting an ecological perspective, and by examining the interaction of micro, meso, and macro levels, this qualitative research provides useful insights on the interaction of the individual (micro-level), captured through the Community of Inquiry (CoI) framework, with the context (meso and macro levels). This research makes sense of how each level impacts, shapes, and is shaped by other levels (Veletsianos et al., 2022). The findings suggest that the CoI framework needs to be re-evaluated given the rapidly changing technological environment, especially post-COVID-19. It also puts the spotlight on the negotiated relationship between individuals and the systemic forces, thus calling into question the generalizability of successful online learning experiences.

Regarding the future of online pedagogy in higher education in a developing country like Pakistan, the macro-level may not be controllable but meso-level issues can be managed through well-thought-out policies and better institutional preparedness. Universities need to enhance teaching presence through faculty training, well thought, proactive online pedagogical policies, and preparedness. Similar to Arbaugh (2014: 357) this study also suggests that universities "rigorously evaluate LMS prior to adoption". Additionally, the class timetables should be scheduled to reduce zoom fatigue and to reduce long sessions of sitting in front of the computer at length. Each class should have a built-in 'walk around the room' break, within each session, to reduce student disengagement and fatigue. Class participation should be video-based, and participants can be given turns to contribute to discussions during the term. Thus, social presence can be established through teaching presence. The heightened social presence, established through teaching presence would eventually lead to cognitive presence.

A limitation of this study was the exploratory nature and the small sample size of 22 undergraduate students. However, this research provides insights on the CoI framework/ online learning, and how students negotiated the context of a developing country and the pandemic. Building on this research, quantitative studies can be carried out to predict and measure the moderating influence of contextual factors identified in this study in Fig. 2. While the size met the aims of exploration for this study, larger studies using mixed methods across two or more developing countries can be carried out. Research can also be carried out on MBA students as undergraduates and graduates are different (Arbaugh, 2010b).

Abbreviations COVID-19: Coronavirus disease 2019; UG: Undergraduate; LMS: Learning management system; HEC: Higher education commission of Pakistan; CoI: Community of inquiry framework

Author contribution All sections of the paper are written by the sole author.

Data availability The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to them containing information that could compromise the research participant privacy.

Declarations

Ethical approval All approvals have been obtained as per institutional guidelines.

Informed consent Informed consent has been obtained as per institutional guidelines.

Conflict of interest The authors have no competing interests to declare that are relevant to the content of this article.

References

Abe, J. A. A. (2020). Big five, linguistic styles, and successful online learning. The Internet and Higher Education, 45, 100724.

Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks*, 5(2), 1–17.

- Arbaugh, J. B. (2008). Does the community of inquiry framework predict outcomes in online MBA courses? International Review of Research in Open and Distance Learning, 9, 1–21.
- Arbaugh, J. B. (2010a). Sage, guide, both, or even more? An examination of instructor activity in online MBA courses. *Computers & Education*, 55, 1234–1244.
- Arbaugh, J. B. (2010b). Do undergraduates and MBAs differ on-line? Initial conclusions from the literature. Journal of Leadership & Organizational Studies, 17, 129–142.
- Arbaugh, J. B. (2013). Does academic discipline moderate CoI-course outcomes relationships in online MBA courses? *Internet and Higher Education*, 17(1), 16–28.
- Arbaugh, J. B. (2014). System, scholar or students? Which most influences online MBA course effectiveness? Journal of Computer Assisted Learning, 30(4), 349–362.
- Arbaugh, J. B., & Benbunan-Fich, R. (2006). An investigation of epistemological and social dimensions of teaching in online learning environments. Academy of Management Learning & Education, 5, 435–447.
- Arbaugh, J. B., & Benbunan-Fich, R. (2007). Examining the influence of participant interaction modes in web-based learning environments. *Decision Support Systems*, 43, 853–865.
- Arbaugh, J. B., & Hwang, A. (2006). Does "teaching presence" exist in online MBA courses? Internet and Higher Education, 9, 9–21.
- Arbaugh, J. B., Desai, A. B., Rau, B. L., & Sridhar, B. S. (2010). A review of research on online and blended learning in the management discipline: 1994–2009. Organization Management Journal, 7(1), 39–55.
- Arbaugh, J. B., DeArmond, S., & Rau, B. L. (2013). New uses for existing tools? A call to study on-line management instruction and instructors. Academy of Management Learning & Education, 12(4), 635–655.
- Baig, M. I., Shuib, L., & Yadegaridehkordi, E. (2021). A model for decision-makers' adoption of big data in the education sector. *Sustainability*, 13(24), 13995.
- Borup, J., West, R. E., & Graham, C. R. (2012). Improving online social presence through asynchronous video. *The Internet and Higher Education*, 15(3), 195–203.
- Caskurlu, S. (2018). Confirming the subdimensions of teaching, social, and cognitive presences: A construct validity study. *The Internet and Higher Education*, *39*, 1–12.
- Cherney, M. R., Fetherston, M., & Johnsen, L. J. (2018). Online course student collaboration literature: A review and critique. *Small Group Research*, 49(1), 98–128.
- Cho, M., Kim, Y., & Choi, D. (2017). The effect of self-regulated learning on college students' perceptions of community of inquiry and affective outcomes in online learning. *The Internet and Higher Education*, 34, 10–17.
- Cochran, J. D., Baker, H. M., Benson, D., & Rhea, W. (2016). Business student perceptions of online learning: Using focus groups for richer understanding of student perspectives. *Organization Man*agement Journal, 13(3), 149–166.
- Cohen, A., & Holstein, S. (2018). Analysing successful massive open online courses using the community of inquiry model as perceived by students. *Journal of Computer Assisted Learning*, 34(5), 544–556.
- Conrad, D. L. (2002). Engagement, excitement, anxiety, and fear: Learners' experiences of starting an online course. *The American Journal of Distance Education*, 16(4), 205–226.
- 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).
- Crouch, M., & McKenzie, M. (2006). The logic of small samples in interview-based qualitative research. Social Science Information, 45(4), 483–499.
- Daspit, J. J., & D'Souza, D. E. (2012). Using the community of inquiry framework to introduce wiki environments in blended-learning pedagogies: Evidence from a business capstone course. Academy of Management Learning & Education, 11, 666–683.
- Daspit, J. J., Mims, T. C., & Zavattaro, S. M. (2015). The role of positive psychological states in online learning: Integrating psychological capital into the community of inquiry framework. *Journal of Management Education*, 39(5), 626–649.
- Delahunty, J., Verenika, I., & Jones, P. (2014). Socio-emotional connections: Identity, belonging and learning in online interactions. A literature review. *Technology, Pedagogy and Education*, 23(2), 243–265.
- Draus, P. J., Curran, M. J., & Trempus, M. S. (2014). The influence of instructor generated video content on student satisfaction with and engagement in asynchronous online classes. *MERLOT Journal of Online Learning and Teaching*, 10, 240–254.

- Ellis, R. A., & Bliuc, A. M. (2019). Exploring new elements of the student approaches to learning framework: The role of online learning technologies in student learning. *Active Learning in Higher Education*, 20(1), 11–24.
- Farid, S., Ahmad, R., Niaz, I. A., Arif, M., Shamshirband, S., & Khattak, M. D. (2015). Identification and prioritization of critical issues for the promotion of e-learning in Pakistan. *Computers in Human Behavior*, 51, 161–171.
- Gallagher-Lepak, S., Reilly, J., & Killion, C. M. (2009). Nursing student perceptions of community in online learning. *Contemporary Nurse*, 32, 133–146.
- Garrison, D. (2017). *E-learning in the 21st century: A community ofinquiry framework for research and practice.* Routledge.
- 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.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2–3), 87–105.
- Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, 15(1), 7–23.
- Garrison, D. R., Cleveland-Innes, M., Koole, M., & Kappelman, J. (2006). Revisiting methodological issues in transcript analysis: Negotiated coding and reliability. *The Internet and Higher Education*, 9(1), 1–8.
- Garrison, D. R., Anderson, T., & Archer, W. (2010). The first decade of the community of inquiry framework: A retrospective. *The Internet and Higher Education*, 13(1–2), 5–9.
- Gioia, D. A., & Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on gioiamethodology. *Organizational Research Methods*, 15–31.
- Glaser, B. G., & Strauss, A. L. (1967). The discovery of grounded theory: Strategies for qualitative research. Aldine.
- Hrastinski, S. (2009). A theory of online learning as online participation. *Computers & Education*, 52(1), 78–82.
- Huang, K., Law, V., & Lee, S. (2019). The role of learners' epistemic beliefs in an online Community of Inquiry. *British Journal of Educational Technology*, 50(4), 1882–1895.
- Hung, D., Jamaludin, A., & Toh, Y. (2015). Apprenticeship, epistemic learning, and diffusion of innovations in education. *Educational Technology*, 20–26.
- Hur, J. W., Shannon, D., & Wolf, S. (2016). An investigation of Relationships between internal and external factors affecting technology integration in classrooms. *Journal of Digital Learning in Teacher Education*, 105–114.
- Hussain, I. (2007). A study of students' attitude towards virtual education in Pakistan. Turkish Online Journal of Distance Education, 8(2), 69–79.
- Ivancevich, J. M., Gilbert, J. A., & Konopaske, R. (2009). Studying and facilitating dialogue in select online management courses. *Journal of Management Education*, 33, 196–218.
- Jones, R. (2018). The student experience of undergraduate students: Towards a conceptual framework. *Journal of Further and Higher Education*, 42(8), 1040–1054.
- Kanwal, F., & Rehman, M. (2017). Factors affecting e-learning adoption in developing countries-empirical evidence From Pakistan's higher education sector. *IEEE Access*, 5, 10968–10978.
- Kay, R., MacDonald, T., & DiGiuseppe, M. (2019). A comparison of lecture-based, active, and flipped classroom teaching approaches in higher education. *Journal of Computing in Higher Education*, 31(3), 449–471.
- Ke, F. (2010). Examining online teaching, cognitive, and social presence for adult students. Computers & Education, 55(2), 808–820.
- Kim, G. C., & Gurvitch, R. (2020). Online education research adopting the community of inquiry framework: A systematic review. *Quest*, 72(4), 395–409.
- Kuzel, A. J. (2010). Sampling in qualitative inquiry. In B. Crabtree & W. L. Miller (Eds.), *Doing qualita*tive research (2nd ed., pp. 33–45). London: Sage.
- Lee, R., Hoe Looi, K., Faulkner, M., & Neale, L. (2021). The moderating influence of environment factors in an extended community of inquiry model of e-learning. Asia Pacific Journal of Education, 41(1), 1–15.
- Ligita, T., Harvey, N., Wicking, K., Nurjannah, I., & Francis, K. (2019). A practical example of using theoretical sampling throughout a grounded theory study. *Qualitative Research Journal*, 20(1), 116–126.
- Lincoln, Y., & Guba, E. G. (1985). Naturalistic inquiry. Sage.

- Maddrell, J. A., Morrison, G. R., & Watson, G. S. (2017). Presence and learning in a community of inquiry. Distance Education, 38(2), 245–258.
- Mann, S. J. (2001). Alternative perspectives on the student experience: Alienation and engagement. Studies in Higher Education, 26(1), 7–19.
- Martin, F., Sun, T., & Westine, C. (2020). A systematic review of research on online teaching and learning from 2009 to 2018. *Computers & Education*, 159, 104009.
- Means, B., Toyama, Y., Murphy, R., & Baki, M. (2013). The effectiveness of online and blended learning: A meta-analysis of the empirical literature. *Teachers College Record*, 115(3), 1–47.
- Miller, S. T., & Redman, S. L. (2010). Improving instructor presence in an online introductory astronomy course through video demonstrations. Astronomy Education Review, 9(1).
- Mo, C., Hsieh, T., Lin, C., Jin, Y., & Su, Y. (2021). Exploring the critical factors, the online learning continuance usage during COVID-19 pandemic. *Sustainability*, 13(10), 5471.
- Moore, S. L., & Piety, P. J. (2022). Online learning ecosystems: Comprehensive planning and support for distance learners. *Distance Education*, 43(2), 179–203.
- Morgan-Thomas, A., & Dudau, A. (2019). Of possums, hogs, and horses: capturing the duality of student engagement in eLearning. Academy of Management Learning & Education, 18(4), 564–580.
- Newberry, B. (2001). Raising student social presence in online classes. Webnet
- O'Neill, D. K., Reinhardt, S., & Jayasundera, K. (2021). What undergraduates say about choosing an online or in-person course: Qualitative results from a large-sample, multi-discipline survey. *Higher Education Research & Development*, 41(4), 1199–1214. https://doi.org/10.1080/07294360.2021. 1896484
- Redpath, L. (2012). Confronting the bias against on-line learning in management education. Academy of Management Learning & Education, 11(1), 125–140.
- Saldana, J. (2009). The coding manual for qualitative researchers. Sage.
- Sangster, A., Stoner, G., & Flood, B. (2020). Insights into accounting education in a COVID-19 world. Accounting Education, 29(5), 431–562.
- Seaman, J. E., Allen, I. E., & Seaman, J. (2018) Grade increase: Tracking distance education in the United States. Babson Survey Research Group. Available at: http://www.onlinelearningsurvey.com/ reports/gradeincrease.pdf. [Accessed 30 June 2020].
- Shea, P., Hayes, S., Vickers, J., Uzuner, S., Gozza-Cohen, M., Mehta, R., & Valtcheva, A. (2010). A re-examination of the Community of Inquiry framework: Social network and quantitative content analysis. *The Internet and Higher Education*, 13, 10–21.
- Shea, P., Hayes, S., Smith, S. U., Vickers, J., Bidjerano, T., Pickett, A., ... Shoubang, J. (2012). Learning presence: Additional research on a new conceptual element within the Community of Inquiry (CoI) Framework. *The Internet and Higher Education*, 15, 89–95.
- Stenbom, S. (2018). A systematic review of the Community of Inquiry survey. The Internet and Higher Education, 39, 22–32.
- Strauss, A., & Corbin, J. (1998). Basics of qualitative research: Techniques and procedures for developing grounded theory (2nd ed.). Sage.
- Veletsianos, G., Childs, E., Cox, R., Cordua-von Specht, I., Grundy, S., Hughes, J., Karleen, D., & Willson, A. (2022). Person in environment: Focusing on the ecological aspects of online and distance learning. *Distance Education*, 43(2), 318–324.
- Zarei, S., & Mohammadi, S. (2021). Challenges of higher education related to e-learning in developing countries during COVID-19 spread: a review of the perspectives of students, instructors, policymakers, and ICT experts. *Environmental Science and Pollution Research International*, 1–7. Advance online publication. https://doi.org/10.1007/s11356-021-14647-2
- Zembylas, M., Theodorou, M., & Pavlakis, A. (2008). The role of emotions in the experience of online learning: Challenges and opportunities. *Educational Media International*, 45(2), 107–117.

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