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Pandemic pedagogies: reflecting on online learning using the community of inquiry framework

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ABSTRACT

The COVID-19 pandemic resulted in profound disruption to geography higher education. A pivot to online teaching required staff to rapidly adapt their practices to novel digital spaces. Whilst many studies have reported the different pedagogic approaches adopted, fewer have evaluated the resultant student learning experience. In this study, we aimed to create an evidence base regarding the benefits and challenges of online learning during the pandemic, mapped against the teaching, cognitive and social presences of the Community of Inquiry framework. We adopted a mixed-methods approach of online surveys (105 students) and focus groups (14 students), undertaken across two undergraduate geography programmes in a British university, exploring the benefits of asynchronous and synchronous online learning, and assessment and feedback strategies. We discovered flexibility in student work patterns and use of technology to facilitate engagement in learning. We also identified key challenges for students such as time management, maintaining motivation, engaging in online classes, and feeling part of an online learning community. We identify best practice in collaborative-constructivist online learning, so that in the event of any future remote pivot, or with sustained adoption of blended modes of delivery, we can achieve a high-quality student learning experience.

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Blended Learning; pandemic pedagogies; learning communities; community of inquiry

Introduction

The COVID-19 pandemic resulted in a profound shift in pedagogic approaches in Higher Education institutions globally. In March 2020, most aspects of teaching, learning and assessment pivoted rapidly from on-campus to predominantly online remote learning environments (Bartolic et al., 2021; Bryson & Andres, 2020; Crawford et al., 2020). The pivot to online learning required staff to rethink and adapt their practice quickly (Hodges et al., 2020). For many, this involved a move away from long-established campus-based pedagogic norms, necessitating intensified use of technology. Nonetheless, the pandemic provided opportunities for staff to be courageous (Dyer et al., 2020) and to reflect on how and what they teach and assess

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(Blanford et al., 2022). The sudden disruption resulted in staff needing to develop what was, for many, novel online "pandemic pedagogies". This provided opportunities to enhance the student experience, whilst also presenting new challenges and potential barriers to teaching and learning.

A change made by many staff was the adoption of both asynchronous and synchronous online learning (Hrastinski, 2008). Asynchronous learning requires students to independently engage with learning resources developed by staff. A common form of asynchronous delivery during the COVID-19 pandemic was the use of pre-recorded "lectures" to convey content to large student groups (Almendingen et al., 2021; Lapitan et al., 2021). Conversely, online synchronous delivery involves "live" teaching sessions, where students and staff concurrently attend a digital space (facilitated by platforms such as Zoom or Microsoft Teams and hosted in institutional virtual learning environments such as Blackboard or Moodle). Synchronous online sessions were used during the pandemic to convey key content or for more active learning, where students interacted with and/or reflected upon the content covered in asynchronous materials, receiving formative feedback (Bartolic et al., 2021; Chen et al., 2021).

Whilst a simple distinction between asynchronous and synchronous forms of delivery is useful, the greatest challenge with a pivot to online learning is ensuring that staff act as "facilitators of learning rather than conveyors of information" (Boling et al., 2012 cited by Bryson & Andres, 2020), thereby creating opportunities for personalised, student-centred learning. We argue that learning is more effective through social construction with others (Vygotsky, 1978). Online education thereby needs to support not only the acquisition of facts via broadcast teaching, but social negotiation and inter-personal construction of meaning through collaborative discussion with peers and tutors.

Garrison et al. (2000) designed what is now a research-informed collaborative-constructivist learning framework to promote effective online learning in higher education (later adapted by Peacock & Cowan, 2016). Their conceptual framework was founded on the assumption that to achieve learning outcomes an online educational experience is best embedded within a Community of Inquiry (COI) (Lipman, 1991). A COI is a group of students and staff who collaborate and engage in dialogue and reflection to co-construct meaning and confirm understanding (Garrison & Akyol, 2017). It is important to note that there is both independent thinking and interaction in a COI. The COI theoretical framework is comprised of:

(1) Teaching presence: what the tutor/facilitator does to create a purposeful and productive COI. Teaching presence is essential for achieving the desired learning outcomes. Anderson et al. (2001, p. 5) define teaching presence as "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes."
(2) Cognitive presence: the extent to which learners can construct meaning through reflection and discourse within the COI (Garrison et al., 2000). A feature of this is the relationship between public and private worlds and spaces. Cognitive presence is at the core of a COI, requiring engagement from learners in all phases of practical inquiry (Garrison & Akyol, 2017).
(3) Social presence: the ability of learners to project themselves socially and emotionally. Relationships between individuals (both staff and students) within the COI

> and a sense of belonging is an important element of social presence. Effective social presence is achieved in an environment which supports and encourages questioning and expression and contribution of ideas (Garrison & Akyol, 2017).

The online approaches to teaching, learning and assessment adopted by geography academics resulted in different student and staff experiences during the 2020–21 academic year in the UK and further afield (Bartolic et al., 2021; Drumm & Jong, 2020). Looking forward, it is likely that the rapid adoption of many of these pandemic pedagogies will result in more selective and permanent changes to teaching, learning and assessment in higher education (Blackledge, 2021; Thomas & Bryson, 2021).

Whilst many studies have reported on the different approaches undertaken in response to the pandemic (for example, Bartolic et al., 2021; Crawford et al., 2020), fewer have assessed the benefits and challenges presented to students by the pedagogic approaches that were implemented (Crawford et al., 2020) and how these relate to developing collaborative-constructivist online learning. In this study, we aimed to create an evidence base regarding the benefits and challenges of online learning for geography students during the pandemic, mapped against the COI framework (Garrison et al., 2000; Peacock & Cowan, 2016), to identify best practice to take forward in teaching, learning and assessment. Geography is a relevant subject to examine for two reasons; firstly, because online delivery as part of the curriculum is not new to the discipline and, secondly, the interdisciplinary nature of geography serves as a sounding board for online teaching in other subjects (Schultz & DeMers, 2020).

Methods

Study context

This research was undertaken as a student-staff partnership project, where students (authors Cox and Alexander) were actively involved in designing, implementing, and presenting the research with staff (authors West, Hill and Abzhaparova). The context of this study is a geography department in a large, teaching-oriented university in the UK, with data collection taking place at the end of the 2020–21 academic year. The department delivers two undergraduate programmes in human and physical geography, with 262 registered students in the 2020–21 academic year across three year-groups (FHEQ Levels 4–6).

At the end of the 2019–20 academic year, the first UK COVID-19 lockdown resulted in the rapid closure of the university campus and a pivot to online learning for the final weeks of the teaching semester. During summer 2020 plans were finalised for the 2020–21 academic year, which relied on online teaching, learning and assessment, with limited on-campus sessions depending on government regulations. At the beginning and end of the 2020–21 academic year students on the two geography programmes experienced limited on-campus learning and local fieldtrips, but most teaching and assessment took place online, with students working remotely. Teaching and learning were facilitated via the university's virtual learning environment (Blackboard), which allowed for the curation of asynchronous learning materials and facilitation of online synchronous classes. Table 1 summarises the key pandemic pedagogies that were adopted by staff across the two geography programmes.

Table 1. Key pandemic pedagogies adopted on the geography programme.

Theme	Pedagogies
Asynchronous Delivery	• Most large lectures, where the primary focus was content delivery, were pre-recorded using software such as Panopto and PowerPoint. • Students were asked to watch and engage with these resources in their own time prior to synchronous sessions. • Virtual fieldtrips were introduced to showcase locations to students. These were photo/GIS-based activities completed asynchronously.
Synchronous Delivery	• Live sessions were typically scheduled in small groups (between 5–20 students). • For much of the academic year these sessions took place in digital spaces, such as Blackboard Collaborate or MS Teams. • The sessions provided students the opportunity to apply and/or reflect upon the knowledge developed in their asynchronous learning. • Towards the end of the academic year, the easing of COVID-19 restrictions allowed for limited local day-long field-based learning.
Assessment and Feedback	• Exams were either removed from modules or undertaken online as open-book assignments. • Synchronous sessions offered students frequent formative feedback/feed-forward on their coursework and mock exam answers. • Many staff offered additional weekly online drop-ins to support students and provide a space to ask assessment-related questions.

Data collection

The research project passed through the ethical review process of the first author's institution. A two-stage, mixed-methods approach was adopted for data collection. Stage 1 used an online survey to prompt students to reflect on the benefits and challenges of the teaching, learning and assessment experiences adopted during the pandemic. Questions were a combination of quantitative evaluations of practice (multiple choice and Likert scale) and free-text qualitative comment boxes. There were 24 questions in total covering programme context and demographics, the generic learning experience, asynchronous and synchronous activities, assessment, and subject-specific issues (fieldwork and dissertations). In designing the survey, the five authors developed questions independently referring to existing evaluations of learning during the pandemic (e.g. Adnan & Anwar, 2020; Lee et al., 2021; Means & Neisler, 2021; Mok et al., 2021). Questions were collated to remove redundancies, ensure logical flow, and to address fully the research aims. The survey was piloted by the student partners with a small selection of their peers to check for clarity of questions and survey fatigue, following which no changes were made.

The survey was conducted in April and May 2021, towards the end of the final teaching semester. The response rate was 40% (a sample of 105 from a population of 262 students). Table 2 summarises the programme, year of study, age and gender of the survey participants. All participants were UK nationals and there were no international/overseas students. In the results, patterns of responses with respect to the student demographics are cited only where inferential statistical analysis (one-way ANOVA) proved significant.

Stage 2 of data collection invited students to participate in a focus group to explore the themes covered in the survey in greater depth. Fourteen students, who nominated themselves at the close of the survey, participated across six focus groups. These students were broadly representative of the cohorts, coming from both the human and physical geography programmes, across all three year-groups, and with a broadly equal gender

Table 2. Breakdown of survey respondents.

	Programme		Year of Study*			Age			Gender**		
	Human Geography	Physical Geography	Year 1	Year 2	Year 3	18–21	21 +	Prefer not to Answer	Male	Female	Prefer not to Answer
n	54	51	31	37	36	59	36	10	53	43	9

*Year of study refers to years 1–3 of an undergraduate programme (FHEQ Levels 4–6).
**No answers were recorded for Transgender Female, Transgender Male, Gender Variant/Non-Conforming or Not Listed..

balance. The focus groups were led by authors [Cox, Alexander and Hill] as student partners and external staff. Authors [West and Abzhaparova] were not involved in the focus groups as they were members of the teaching team and did not wish to influence student responses by their presence. The focus groups contained no more than three participants and ranged from 40–90 minutes in length. The focus groups were guided by a series of prompt questions, agreed by all five authors, expanding on the themes covered in the survey.

The focus groups were recorded and transcribed verbatim. Transcripts were read by the authorship team and thematically analysed using a deductive coding approach (Braun & Clarke, 2013). Codes were used for the key themes in the survey questions relating to the overall learning experience, asynchronous and synchronous learning, assessment and feedback, and subject-specific issues. Transcription and coding were undertaken in NVivo.

Results

Context

Students were asked in the survey to rate their overall experience during the pandemic, and the overwhelming majority (85.7%) reported a negative impact. This was true across demographic groups (i.e. year of study and programme) and prior experience of online learning (agreeing with Bartolic et al., 2021; Lee et al., 2021; Means & Neisler, 2021). The qualitative survey comments, however, suggested the negative responses related mainly to the lack of campus/social opportunities and activities external to the curriculum.

There was a greater spread of responses related to the effectiveness of online learning. The most common response (40% of students) was "neutral", with 32.4% indicating that online learning had been effective and 27.6% highlighting that it had been ineffective. These responses did not significantly differ across demographic groups (agreeing with Mok et al., 2021).

In the survey and focus groups students expanded on how there were both benefits and challenges associated with online learning. We present these results mapped broadly against the Community of Inquiry conceptual framework (Garrison et al., 2000; Peacock & Cowan, 2016). We relate our findings to extant literature as we present them, progressing to deeper analysis and curation of best practice in the concluding section.

Teaching presence

It was important for staff to carefully structure and guide students across a number of different learning approaches adopted during the pandemic. Together, these comprised

a mix of asynchronous independent cognitive activities and online socially interactive learning (Table 1). In the survey, the students were asked to score the different pedagogic approaches and features of online learning. The majority of subject content was delivered to students via pre-recorded lectures and directed independent learning, which students engaged with outside of timetabled sessions (i.e. asynchronously). The use of pre-recorded lectures for content delivery was the second highest scoring practice (Table 3), with over 80% of respondents rating them as moderately/very valuable for their learning.

Students were also prompted in the survey to reflect specifically on what aspects of the use of pre-recorded lectures they perceived as valuable for their learning (Table 4).

The benefits and challenges of the use of pre-recorded lectures were explored qualitatively in the focus groups. Students commented:

> *I like the recorded lectures as they were good to re-watch before the exams for top tips you missed the first time. It was good to be able to go back and check something if you were unsure from your notes.*

> *Re-watching lectures from campus sessions can be tricky with interruptions, but when they're pre-recorded the sound quality is better and less interruptions make it much easier to work with.*

Students perceived that pre-recorded lectures offered them a personalised and flexible approach to their learning (as noted for a small sample of Performing Arts Education students in Indonesia by Simamora, 2020). Students liked the ability to easily re-watch certain parts of the recordings to clarify areas of confusion. They also liked the ability to

Table 3. Responses to the question "What have you found most valuable in supporting your learning online over the academic year? 1 is not at all valuable; 2 is not particularly valuable; 3 is neutral; 4 is moderately valuable; 5 is very valuable".

Approach/Feature*	Mean
Personalised approaches to online support such as drop-ins and 1-2-1 meetings	4.32
Weekly pre-recorded lectures	4.24
Weekly online small-group sessions	3.71
Being able to self-pace learning using asynchronous online materials	3.23
Getting to know peers in small-group settings	3.09
Using interactive tools like quizzes and discussion boards	2.58
Being anonymous in online classes by turning off my camera	1.91

* Approaches/features are ranked by mean score.

Table 4. Responses to the question "What has been useful about the pre-recorded lectures/materials for your learning? 1 is strongly disagree; 2 is disagree; 3 is neutral; 4 is agree; 5 is strongly agree".

Aspect of pre-recorded lecture*	Mean
The recordings can be re-watched when needed (e.g. revision before an exam)	4.72
There is flexibility in terms of watching (e.g. when you watch, ability to pause or watch in small parts)	4.71
It's easy to take detailed notes for revision	4.04
I can understand what I am meant to learn from the pre-recordings	3.44
I can find a quiet study space to watch the recordings	3.38
I am motivated to watch them (e.g. they are interesting and engaging)	3.25
The amount of time it has taken to undertake any work from them has generally been manageable	2.84
The amount of time it has taken to watch them each week has been manageable	2.77
I can ask my tutor questions in a timely manner	2.10

* Aspects are ranked by mean score.

pause and watch the recordings – they reported that this flexibility made note taking, and subsequent revision, easier (Table 4).

The staff also needed to assess the cognitive load of tasks (Skulmowski & Xu, 2022) and it seems that this was not as effective as it might have been for some of the pre-recorded materials. Some students believed the addition of pre-recorded lectures, alongside synchronous small-group sessions, was challenging in terms of their weekly time management (agreeing with Gonzalez-Ramirez et al., 2021; Lee et al., 2021). They explained that in each week they may be expected to engage with several recorded lectures across different modules. The students did highlight, however, that this challenge was mitigated when staff split longer (>30 minutes) recordings into "bite-sized" learning resources. Students believed this allowed them to not only manage their workload, but to locate content within the recordings more easily to clarify understanding and support revision:

> *Some [pre-recorded lectures] were too long to manage considering we had several modules-worth each week to watch. Broken down ones do help with managing your time though.*

Moving from asynchronous to synchronous learning, the majority of timetabled sessions with staff were typically small group based (Table 1). In the survey, students rated the online sessions lower than the asynchronous pre-recorded lectures, with only 56% rating them as moderately/very valuable to their learning, and 11.5% rating them as not particularly valuable (Figure 1). In the survey and focus groups the students reflected on the aspects of the online sessions that were more or less useful to their learning experience (Table 5).

Students engaged with transmissive resources prior to the online "class", allowing them to test their understanding and apply it to ongoing assessment preparation when they were together with staff and peers online (Tucker, 2012). The focus of these sessions became learning rather than teaching (Higgitt, 2014). There is clearly an important role for the tutors in engaging students with higher level critical thinking and reflection online in "flipped" form, supporting their embracing of cognitive independence through watching pre-recorded lectures. We also see here important cross-overs with social and cognitive presences.

Students appreciated the opportunities that the online synchronous sessions provided for asking assessment-related questions and gaining formative feedback on their work in progress (discussed further below). Agreeing with Lee et al. (2021), our respondents commented that the small-group nature of these sessions afforded them greater opportunity to ask staff questions compared with traditional large-group lecture sessions on campus:

> *Having pre-recorded lectures has meant that when we do have live online sessions we have more opportunities for feedback on coursework and to ask questions.*

In the survey, students highly rated the personalised support they received from tutors (scoring 4.32 out of 5 - Table 3). In particular, students appreciated the immediate, frequent and small-scale nature of feed-forward. Previous research has reported that the ability to engage in dialogue with staff about assessments improves the learning experience and outcomes for students (Nicol, 2010). Through dialogue, students are supported to decode feedback, developing a shared understanding of assessment requirements (Hill

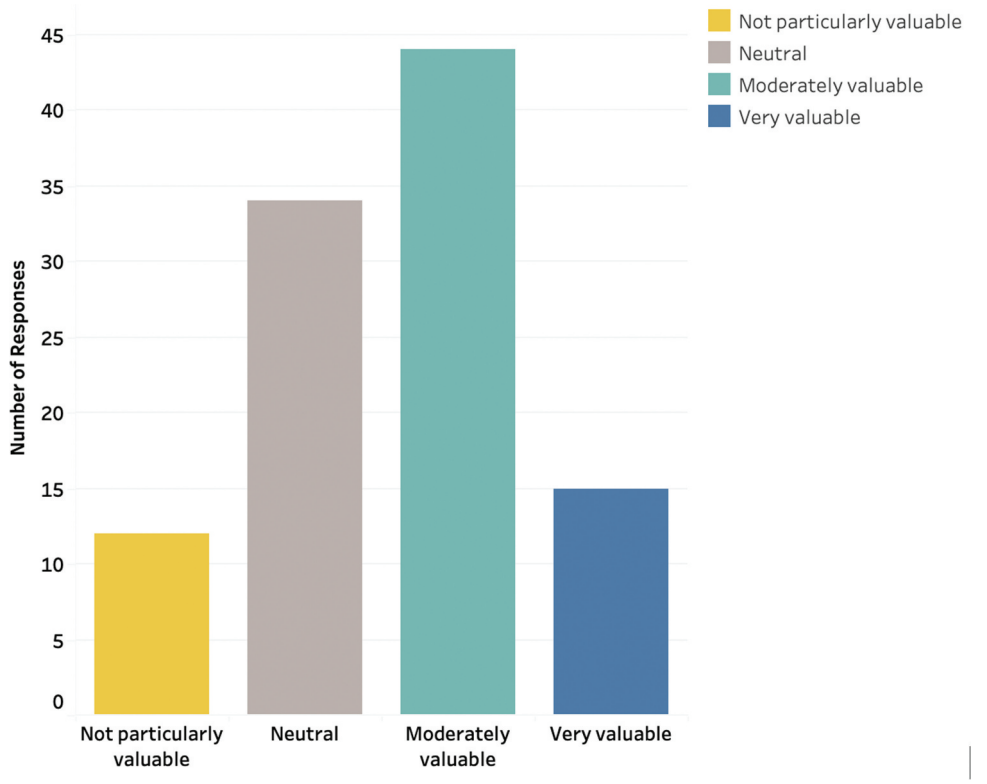

Figure 1. Responses to the question "How would you rate the value of online seminars/small-group sessions/practicals?".

& West, 2020, 2022). They are also able to work meaningfully with a range of emotions associated with receiving feedback (Hill, Berlin, et al., 2021; Hill, Healry, et al., 2021).

The online sessions presented opportunities for staff to flexibly adopt technology enhanced learning, using digital tools to engage students in active learning (Bartolic et al., 2021). As discussed above, a common goal of the synchronous online classes was to work with students to offer formative feedback/feed-forward on their work in progress. This involved students screensharing their work, with staff and peers offering suggestions for improvement. This opportunity was afforded by the small-group nature of the

Table 5. Responses to the question "What has been useful about the online small-group seminars/workshops/practicals for your learning? 1 is strongly disagree; 2 is disagree; 3 is neutral; 4 is agree; 5 is strongly agree".

Utility of online synchronous sessions*	Mean
Some students are not keen to put on cameras and microphones and this impacts negatively on my learning	4.04
It's good to focus on the practical task or the assessment rather than learning new content	3.79
It's easier to ask staff questions about the content compared with large on-campus lectures	3.67
I find it productive to work in a small group of students with a staff member	3.50
I have the opportunity to test my understanding of the content in the pre-recorded lecture	3.23
It's a good way to get to know other students and staff members	2.73
It can be daunting speaking up in front of my peers	2.70

* Utility is ranked by mean score.

sessions and the ability to use the technology to easily share content and work collaboratively.

Another example is the virtual whiteboard function, which was built into the virtual learning environment and allowed students to post questions and offer reflections on the content being covered. In the focus groups, students spoke positively about these interactive tools. A benefit was the ability to engage with the class anonymously, removing the potential barrier of a student lacking confidence to ask a question verbally or in front of the rest of the class. Students also commented that many of these tools offered them the ability to participate at the same time, generating a useful resource for staff to identify and clarify misunderstanding:

> *Participation was better because it [the whiteboard] was anonymous. People weren't afraid to write anything, everyone just freely asked the questions they needed to.*

> *I liked the ability to contribute on the whiteboard without having to speak in front of the class. Additionally, everybody can contribute at the same time rather than waiting for their turn to speak and possibly missing out.*

Tools such as virtual whiteboards and breakout rooms clearly generated online learning benefit. However, after repeated or frequent use in sessions, for some students they became a detracting factor to their learning. This suggests a need for staff to provide a carefully planned variety in the types of technology used in online sessions:

> *Some lecturers used breakout rooms every week, and after a while they were really draining. In the end I don't think they helped at all with learning using them that much.*

Cognitive presence

The provision of pre-recorded lectures and other asynchronous learning resources offered students a sense of autonomy as they could self-pace their learning and complete tasks when it suited their individual timetables. Greater independence and flexibility provided by online learning has been stated as a benefit in previous studies (Cranfield et al., 2021; Paudel, 2021). In our focus groups, this personalised approach to learning was noted as a benefit by students:

> *I find I work best when I wake up immediately in the morning, so I could tailor all of my learning to that schedule. I would say freedom to organise yourself, that's been my biggest positive.*

> *The pre-recorded lectures for me are fantastic as I can learn when I am best suited . . . it just means I can get the most out of it as I am in the right head space.*

The students did, however, highlight a number of challenges and limitations in maintaining a strong cognitive presence with online learning (Table 6).

Staying motivated when studying at home, in physical isolation from the campus and their peers, was the main challenge students faced during the 2020–21 academic year (agreeing with Means & Neisler, 2021; Mok et al., 2021). Students commented:

> *The biggest thing has been when it's all online it's a lot more difficult to be motivated. All you are doing all day is looking at a screen rather than going and actively learning in a classroom.*

I liked coming onto campus. It gave me a routine, and not having that made my working day a lot harder. I wouldn't be up at 9 am to go into uni. Being on campus and being in that work environment, you are not thinking about washing your clothes or the dishes.

Whilst some students enjoyed the flexibility that asynchronous learning provided, others felt the lack of direction as to when to engage with the learning resources made managing study time during the week more challenging (agreeing with Mok et al., 2021; Paudel, 2021) (Table 6). For example, in the traditional campus-based timetable, students would have scheduled lectures. With the pivot to asynchronous pre-recorded lectures, students instead needed to independently identify timeslots within their week to engage with the materials:

I don't think I have had an academic year where I have had to be so organised; making sure I am on top of things. There was no-one there to constantly update you and so you needed to plan and manage your own time carefully.

In the focus groups, students commented on the challenges of indistinct study spaces and living environments, a factor which also affected their motivation to study:

I honestly struggled so much, living in a student house. The bed is right next to the desk. You literally got out of bed and were at your desk. There is just no switching off.

I was scared that I would be stuck at [the family] home, as I can't work there, I have no desk in my room.

Students identified the challenge of having a suitable study space in their home or student accommodation that was separate to social and/or private space. Many students in rented accommodation explained that their desks (if they were fortunate enough to have them) were often located in their bedrooms, blurring the physical boundaries between their study and personal lives. As a result, they found it hard to disengage from their studies during the pandemic, as they could constantly see their computer or work on the desk. Students also commented upon the distractions of working from shared accommodation (see also Mok et al., 2021), inter-twined with the social lives of family members or their peers. They attempted to negotiate the spatio-temporalities of communal living, seeking out comfortable and quiet spaces and times to study (Means & Neisler, 2021). The materiality of accommodation often had clear consequences for learning, reminding us

Table 6. Responses to the question "What have you found most challenging about learning online over the academic year? 1 is not at all challenging; 2 is not particularly challenging; 3 is neutral; 4 is moderately challenging; 5 is very challenging".

Challenges to learning online*	Mean
Keeping motivated when studying at home	4.68
Not being able to interact with my peers	4.20
Managing my time	4.09
Not being able to physically see my tutors for feedback and support	4.05
Not being able to go on fieldtrips to apply my learning	3.49
Being confident enough to participate in online discussions/activities	2.70
Poor internet access making it hard to attend online synchronous classes	2.56
Being unfamiliar with the technology and tools used by staff	2.30
Not being on campus to access student support services	2.14

* Challenges are ranked by mean score.

that the nature of physical spaces, and the cognitive impact of this, remains significant to online learning (Card & Thomas, 2018).

Our students rated the challenges of accessing and using technology for online learning as having minimal impact (Table 6). It is important, however, to highlight the significance of digital poverty and the impact that limited access to IT has had on learning during the pandemic globally (Blanford et al., 2022; Means & Neisler, 2021; Mok et al., 2021; Paudel, 2021). A small number of students in our study did experience challenges in terms of internet connection affecting their ability to engage with learning and assessment:

> *It [the wifi] temporarily cut out during an assessed presentation, which was obviously really stressful, and could have impacted my grade as I was distracted by fixing that and worrying it would happen again*

Social presence

Students were asked to reflect in the survey on whether they had felt like part of a community of learners whilst studying online during the 2020–21 academic year. Many students (53.4%) responded that they did not feel a part of a community (Figure 2), although this was more to do with lack of opportunities to engage in wider aspects of university life.

As previously noted, the students highlighted a common challenge of being able to stay motivated whilst working in isolation off campus. This, in part, related to a lack of formal and informal peer-to-peer and staff interaction:

> *I think the biggest disadvantage was not being able to talk to your mates easily. Normally I see and speak to them about assessments, either in or after the class, or on the way to the next one. Those quick and informal discussions don't happen online, and you don't realise they are actually quite important to keeping up with the work and staying motivated.*

> *It's just draining not having that social interaction. Even in university if you are stuck on something, that informal peer reviewing process is one of things which was get you unstuck and motivated again to carry on.*

Students explained that, when learning online, opportunities for social interaction and informal conversation between peers and staff were more limited (agreeing with Buckley et al., 2021; Lee et al., 2021; Means & Neisler, 2021). There was no easy way to access rapid peer-support to collaborate and problem-solve together (Blanford et al., 2022), as is the case with on-campus learning, where conversations between peers naturally develops around classes. As Thomas et al. (2021) note, the social affordances of campus as physical "place", enabling chance encounters and building a sense of belonging amongst students, were diminished through online learning during the pandemic. The students highlighted the importance of informal interactions to their motivation, explaining how they helped one another to learn and understand assessment requirements.

Not physically seeing staff and peers led some students to describe the online learning experience as impersonal and isolating, which many linked to the lack of use of cameras and microphones in online synchronous classes (Buckley et al., 2021; Cranfield et al., 2021). The majority of students (approximately 80%) agreed that not using cameras

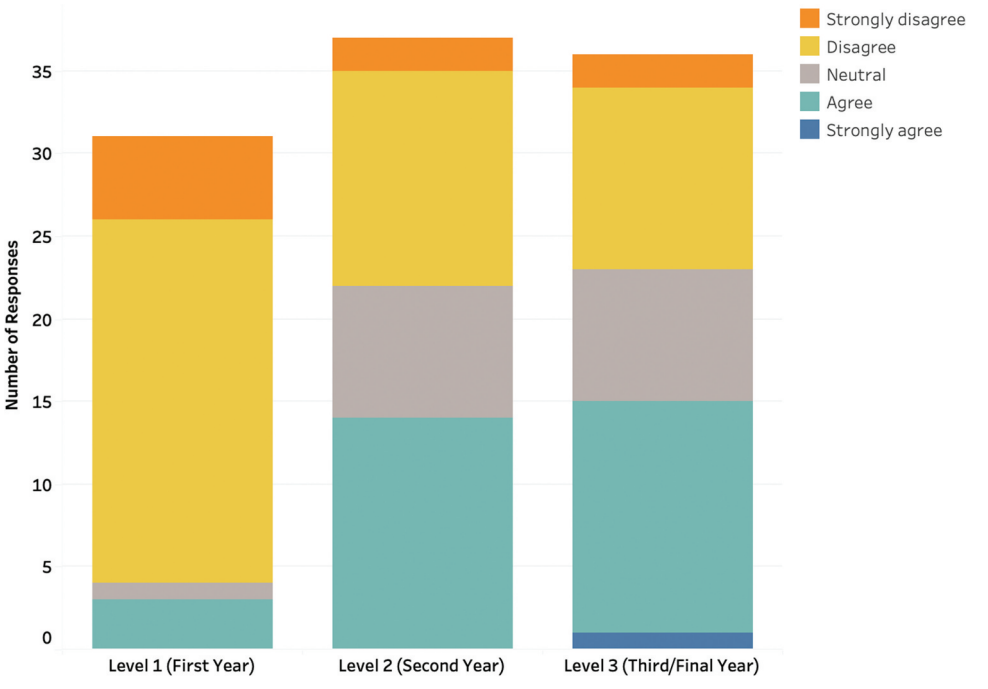

Figure 2. Responses to the question "Have you felt part of a community of learners over this past year?".

made sessions harder to engage with, impacting negatively on their learning as there is a lessened community spirit amongst students and staff:

> *There was definitely something about not seeing staff often in person, which was negative or impersonal about the online sessions, especially when everyone didn't have cameras on.*

> *I had more feelings of anxiety learning online. It's harder to connect to people who you can't see so there is less feeling like a community*

Despite our students generally agreeing that the online classes would have been more enjoyable and beneficial had there been greater use of cameras, they also identified multiple barriers which made them hesitant to turn their cameras on:

> *It sounds so vain, but in a normal classroom you don't have a mirror in front you. You are not sat there thinking do I look tired, am I paying attention, do I look like I'm interested?*

> *There were definitely a couple of times for me where I had just rolled out of bed at 8:55 before a 9:00 class, so I just don't feel like I look good at all.*

> *If people were at home they might not be comfortable having their camera on in their bedroom as that is their private space. Like, this is my private area, I don't want to let the whole class into my room.*

Many students stated concern or worry about their physical appearance when using cameras in online sessions. There was a heightened sense of being "spotlighted", with everyone watching and potentially making judgements. One student compared

this to when in an on-campus class, rather than asking a question from a seat amongst their peers, being asked instead to come to the front of a lecture hall and ask their question. Due to the "up close" camera, students explained how they would often worry whether they appeared to be engaged or interested in the content when staff and other students were contributing, and this became a distraction to their learning.

A further factor preventing students from using their cameras in online sessions was that many were working from a space at home and were therefore less comfortable with having their camera on as it essentially welcomed their peers and staff into their private space. Our findings agree with the research of Castelli and Sarvary (2021) who discovered that webcam use dropped away over a teaching semester as undergraduate students expressed concern about their personal appearance and surroundings. Buckley et al. (2021) also discovered low use of cameras in online sessions, with 47% of staff reporting students rarely used cameras, and 30% never used them. Some of our students did note, however, that use of cameras and microphones was context dependent, with factors such as the size of the group and how well they knew the other students influencing their decision to use their camera. They felt more confident to turn on their cameras in smaller, more familiar groups.

Despite students identifying benefits of discussing assessment in the online small-group sessions, they did highlight a barrier relating to the need to attend scheduled sessions or appointments to ask staff questions, in comparison to on-campus learning where they could quickly visit a staff member's office or easily catch-up at the end of a class. This was particularly the case with practical assessments, where issues with software, for example, might prevent a student progressing their work:

> *Getting support with practical assessments was harder as you had to schedule times or go to certain sessions, which wouldn't be the case if we were able to pop into a lecturer's office and hang around at the end of class.*

The students also reported a similar limitation associated with the use of pre-recorded lectures. On average, they disagreed with the statement that they were able to ask their tutor questions about the content covered in the recordings in a timely manner (Table 4) (also reported by Means & Neisler, 2021; Simamora, 2020). In the focus groups, students cited as a common limitation the time gap between them watching the lecture and attending a synchronous session with the tutor:

> *It was hard to ask questions about the content as there was a time gap between watching the lecture at home and then seeing a lecturer in a class.*

Overall, the flipped nature of the online sessions supported social constructivist learning, where students learnt by co-constructing knowledge via discussion with their tutor and one another about material introduced beforehand asynchronously (Laurillard, 2002; Vygotsky, 1978). However, this directed social learning was limited to either short weekly sessions or scheduled appointments with staff, and discussion was inhibited in the online setting due to students' infrequent use of cameras and microphones. A key question for staff therefore is how to foster peer-to-peer and tutor-student interaction and social learning more widely in online environments, as they would in the campus environment, and how to develop the

social skills necessary for students to work effectively in virtual spaces (Blanford et al., 2022).

The signature pedagogy of geography, fieldwork, faced a particular challenge regarding the COVID-19 online learning pivot. As reported in other studies (Bartolic et al., 2021; Li et al., 2022), our students experienced less fieldwork due the pandemic than they would have otherwise. Within geography, fieldwork not only plays an important role in enhancing the learning experience, but also provides opportunities to develop relationships between students and staff (France & Haigh, 2018; Fuller et al., 2006). Our students experienced some limited, local, day-long fieldtrips towards the end of the 2020–21 academic year (Table 1). Generally, the students agreed that not being able to go on residential fieldtrips was a challenge (Table 6). However, they explained that whilst they felt their learning had not necessarily suffered due to the virtual replacements offered, they had lost the social opportunities fieldwork provides, and some of the skills associated with this (Li et al., 2022):

> *I've definitely missed field trips due to COVID. It's not only the learning, as we can do that online and with GIS, but I feel I have missed out on the social and fun part of the residential trips.*

> *Not going on the residential trips was a real shame as we were all looking forward to it. This is a big part of why we do geography and being a geography student.*

Figure 2 shows that Level 1 (new first-year) students were less likely to feel a part of a community of learners compared with students in the higher year-groups – 87% of Level 1 students responded saying they (strongly) disagreed with feeling a part of a learning community. The difference in responses between the year-groups was statistically significant ($p < 0.001$). In a standard academic year, a residential fieldtrip occurs early in the first term to allow new students to bond with peers and staff. As a result of social distancing restrictions, however, this did not take place in 2020–21. This lost opportunity for cohort building was frequently highlighted by the first-year students:

> *I feel not having the fieldtrip at the start of the year made getting to know everyone even harder than it was already with everything online. I feel I have ended the year and still don't know everyone on the course, which is not great really.*

> *Unless you were lucky and happened to live with other geography students, I think it was very hard to make friends on the course, and not having the fieldtrip where we all are together for a week was a big loss.*

It is important to note that, despite these challenges, just under one third of students (30%) felt that they were part of a learning community during the 2020–21 academic year (Figure 2). Students commented that there was an "all in this together" feeling amongst the cohort and staff, with everyone respecting the issues that were being faced. Students frequently referred to social media as being a useful tool used to stay in touch with and support peers:

> *Looking back, I do feel like we were a good group who supported each other. I feel like I got to know others well as we all communicated via social media, and helped one another with things.*

It was clear that pre-existing relationships between peers was an important factor in how well they worked together and engaged in social media groups. Whilst second- and third-year students had already formed friendships prior to the pandemic, this was more of a challenge for first year-students who had started their studies in September 2020. This is likely a contributing factor to the difference in responses shown in Figure 2 amongst first-year and second- and third-year students. First-year students did note the effectiveness of the Geography Student Society and schemes such as Peer-Assisted Learning in helping them to get to know one another online. They also explained how some staff integrated additional opportunities into their modules, such as a reading group/book-club, which helped maintain peer-to-peer relationships outside of taught sessions.

Best practice in online learning

Our research sought to reflect on a range of pandemic pedagogies implemented over the 2020–21 academic year in a UK geography department, mapped to the Community of Inquiry Framework. The intent was to better facilitate effective online and blended learning in a post-pandemic context. Our results highlighted the need for a strong teacher presence to establish clear goals, organise learning activities, guide discourse, diagnose misconceptions and prompt student participation and quality of responses. This leads to positive relationships between teaching presence and student learning outcomes and satisfaction (Akyol et al., 2009). Students themselves need to have the cognitive presence to learn from flexible asynchronous content, whilst having the desire and ability to interrogate this material critically in collaboration with others in a discursive online learning environment.

Our findings also demonstrated the challenge of fostering social presence online. Students wanted to see the faces and/or hear the voices of their peers in online classes. Students rated not being able to interact with their peers as the second most challenging aspect about learning online, coming just after maintaining motivation when studying remotely. Relational contact with staff and peers was important for the students in maintaining a positive learning experience (Akyol et al., 2009). Personalised online support such as drop-in sessions with tutors and weekly online small-group workshops were highly rated (Gonzalez-Ramirez et al., 2021; Quintiliani et al., 2021).

In order for learning to be achieved online, our most important finding is the imperative of generating a sense of belonging (Goodenow, 1993) for students within a Community of Inquiry (COI) (Garrison et al., 2000; Peacock & Cowan, 2016). If students are unable to encounter one another on campus, developing meaningful social interactions as part of learning, staff would do well to generate encounters for and with their students online.

If a blended experience is being developed as a permanent feature of a course, the face-to-face and online learning elements need to be leveraged and integrated to develop and sustain a sense of student-centred community that transcends distance and is structured within and across all COI domains. To help academics plan and implement this process, we map the best practice identified from our research, as enablers for effective online learning, onto the COI conceptual framework (Figure 3).

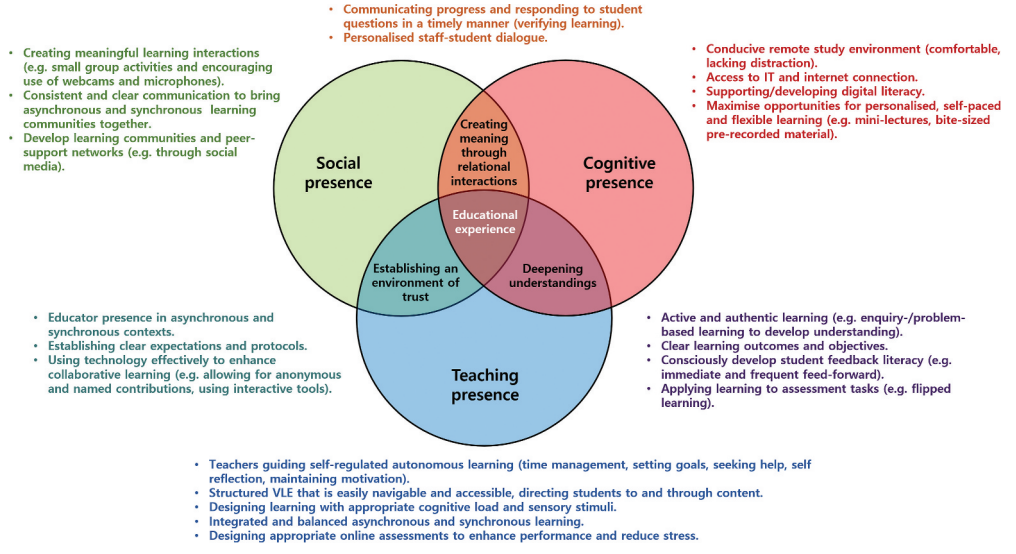

Figure 3. Enablers for effective online learning mapped onto the Community of Inquiry framework (Garrison et al., 2000; Peacock & Cowan, 2016).

Our student responses remind us that achieving effective learning in an online environment requires a strong Social Presence, sustaining relational interactions and communicating in an environment of mutual trust that promotes openness, equity and sharing. Ideally, community members listen and respond to the communications of the teacher and peers, checking their emergent understandings through social interactions. The extent to which learners can construct and confirm meaning (Cognitive Presence) comes from guided independent study, supported by synchronous and asynchronous dialogue and reflection. Teaching Presence, as the facilitative role provided by the teacher in directing cognitive and social processes, realizes personally meaningful and educationally worthwhile learning outcomes. We thereby encounter three requisite forms of interaction: learner to content, learner to learner, and learner to instructor, the existence of which helps achieve learning outcomes in distance learning environments (Schultz & DeMers, 2020). Finally, as the online environment places greater responsibility on students to take control of their learning process, our results highlight the need for increased self-regulation and self-efficacy amongst online students as critical attributes for securing a successful educational experience.

Conclusion

It is likely that the COVID-19 pandemic will result in a significant shift in how we teach and assess geography in higher education, with impacts lasting long beyond the 2020–21 academic year (Blackledge, 2021; Thomas & Bryson, 2021). Blanford et al. (2022) suggest that we should be seeking to "bounce forward" with teaching, learning and assessment post-pandemic, enacting better worlds within our virtual and physical classrooms. COVID-19 has provided us with an opportunity to reflect on our practice and to have the courage to adopt novel digital pedagogies (Dyer et al., 2020), which can be used to

supplement and enhance our traditional face-to-face modes of teaching. Doing so will prepare students for the workplace, which is likely to increasingly require graduates to operate in multi-locational and hybrid contexts post-pandemic (Cox et al., 2022). To achieve this, professional development is needed so that academics can learn the pedagogies and technological tools, coupled with instructional design, to create an effective collaborative-constructivist online/hybrid learning experience (Schultz & DeMers, 2020). Professional development can help staff to enact Laurillard's (2002) Conversational Framework, engaging students in the six types of learning (acquisition, inquiry, discussion, practice, collaboration, production) to deliver the true potential of digital technologies to learners.

Blended learning can support multi-modal forms of participation and multi-directional learning, facilitating collaborative learning that supplements the community created in face-to-face environments (Burns, 2020). Our research has showcased the benefits that online pedagogies can have on student learning, which, when combined with campus-based teaching moving forward, can result in a rich and varied suite of practices and a resilient, digitally enabled, high-quality student learning experience.

Disclosure statement

No potential conflict of interest was reported by the authors.

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