

Studying spaces in networked learning

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Abstract

As universities are making huge efforts on newly emerged learning spaces to accommodate the technologies involved in networked activities (Boys, 2014), it is important to know what students' practical preference of the study spaces on campus are. This paper found four types of study spaces on campus that international postgraduate researchers preferred, including university libraries, university postgraduate researchers' offices, student accommodations, and university cafés. However, due to the impact of COVID-19 pandemic, in the United Kingdom, higher educational institutions had to move almost all the learning activities online. This paper concerned international postgraduate researchers' learning experience during the lockdown in 2020 in the UK. At that time, many international postgraduate researchers often faced difficulties of lacking both learning resources and learning connections in the community and losing access to the study space they preferred previously on campus. This paper found students have different learning experiences during this period. While isolation brought negative impacts on some international postgraduate researchers' learning experience and connections with others in the community, others have not been influenced by it or even have benefited from it. These contrary learning experiences were mainly associated with students' different preferences for study spaces, ways of communication, and methods of having connections with others in the community on campus. Finally, the authors suggest that universities should change postgraduate students' offices and accommodations to enhance students' learning outcomes.

Keywords

Networked Learning, higher education, physical spaces, international postgraduate researchers, lockdown, learning experience

Introduction

Nowadays, learning situation is complex and it is hard to describe it as purely offline or online (Carvalho & Yeoman, 2018). With the rapid development of the interpenetration of digital and material, activities on campus are involved with digital tools and resources, which makes universities become hybrid and digital infrastructures (Goodyear, 2020). Therefore, it is common to see students bring networked digital devices in universities (Boys, 2014; Carvalho et al., 2016; Tylor, 2019). This phenomenon – networked learning – has been studied over the last twenty years, and it “promotes connections between people, between sites of learning and action, between ideas, resources and solutions, across time, space and media” (NLEC, 2021, p.319).

As technologies involved in networked activities become a mainstream on university campuses, educational architecture is changing to adapt to the prevalence of the networked digital devices on the campus (Boys, 2014; Carvalho et al., 2016; Tylor, 2019). From a micro perspective, it is also easier to provide more power stations for charging batteries. From a meso perspective, new types of learning spaces are emerging on campus, such as new learning commons, learning hubs and reconfigured libraries (Carvalho et al., 2016; Tylor, 2019). Students have a wide range of options to study. However, “among the many methods employed to foster student learning and development, the use of the physical environment is perhaps the least understood and the most neglected” (Strange & Banning, 2001, p.30).

A space is defined as “a phenomenon that is manifest between person, location and community interactions” (Wattchow & Brown, 2011, p.92). Relating to educational flexibility, space has always been seen as an obstacle that needs to be overcome to improve the access to learning opportunities. The growing use of mobile, personal,

connected technologies makes learning not restricted to specific spaces (Goodyear et al., 2014). Learning spaces were constituted in part by the devices that were taken from location to location, which were used to support study across time and space (Gourlay & Oliver, 2016). Studies find that the sense of learning being almost ubiquitous has paralleled how people use and experience space (Brooks, 2011; Gourlay & Oliver, 2016). Therefore, which spaces to study on university campus is an important question (Bligh & Crook, 2017; Temple, 2008).

Networked technologies (both institutionally provided and personal owned) not only bring students opportunities to study at times and space suited them, but also create a rich network of learning relationships (Goodyear, 2014). Timmis & Muhuro, 2019). Nowadays in higher education, the ability and opportunity to build relationships with the learning community is one of the most important responsibilities for students (Sihvonen, 2020). Furthermore, networked learning regards studying as a matter of engagement with others in a community (Oztok, 2019).

Networked learning includes both online and offline learning (Goodyear *et al.*, 2004). However, under the massive pressure of the COVID-19 pandemic, higher education institutions have moved most teaching activities online (Peimani & Kamalipour, 2021). Under such circumstances, it is hard to stimulate students' learning experience and meet their expectations on higher education (Marinoni et al., 2020). And the situation can be more difficult for international postgraduate researchers who lack the physical support of their immediate families during lockdown, and their connection with others in the community on campus are mainly from networked learning, concluding both offline and online activities.

The isolation of international postgraduate researchers is problematic for at least three reasons. First, being isolated in one space makes students without access to learning spaces they otherwise used to study. Most students, including international postgraduate researchers, had to study online at home or even in rented accommodations, not only without access to the physical learning spaces they otherwise used to study, but also the decrease of the frequency of offline communication and socialisation with others. Thus, it is necessary to figure out when international postgraduate researchers were unable to access other physical spaces on campus during lockdown, how they connect with others in the community and what impact this situation has on their learning experience.

Second, the lack of communication and connection between learners can weaken the sense of community. Networked learning is a "learning in which information and communication technology is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources" (Goodyear et al., 2004, p.1). Previous research focusing on networked learning indicates that networked learning is "closely aligned with other sociocultural theories of learning including social constructivism, activity theory and actor-networked theory". An agreed opinion is that connection between community members is one of the components for networked learning occur (C. Jones, Ryber, & de Laat, 2015; Oztok, 2020, p.266).

To maintain and strengthen community cohesion, sense of community, pedagogical activities and socialisation are three main ways, and each of them are not opposite but complement each other (Oztok, 2020; Goodyear et al., 2004). Although spaces for formal education like university campuses are being extended with networked technologies, students who were isolated at accommodation without enough socialisation and connection with others will lack the learning activities that involves engagement and reaction in group-based work for a common goal (Boys, 2014; Oztok, 2020). Thus, the sense of community is decreased by isolation.

Third, a separation between a learning community and its learning resources can hinder the learning process or desired outcomes. Compared with other e-learning, networked learning thinks highly of the connection: interactions with others or online materials in isolation are not sufficient to constitute networked learning, as interaction should connect the learning community and its learning resources (Goodyear et al., 2004). Zhao and Kuh (2004) provide evidence of positive development in higher education when learning community experience was positively associated with student gains in personal and practical competence, social development, greater effort, and deeper engagement. Furthermore, there is a study indicating that students who have more communication and engagement with peers, academics and the institutions are likely to have a higher-level academic achievement compared with others who involved less at university (Krause, 2005). Therefore, how can we ensure that international postgraduate researchers are connected with each other, and that the learning community is functional when students are isolated from each other with minimal resources?

As universities are making huge efforts on newly emerged learning spaces to accommodate the technologies involved in networked activities (Boys, 2014), it is important to know what the international postgraduate researchers' preference of learning spaces on campus are. As it can bring reference value to the design of

educational architectures on campus, create a rich network of learning relationships for students on campus, and bring them valuable learning experience. Moreover, when international postgraduate researchers were isolation in the accommodation or rented house during lockdown, and unable to access other study spaces on campus they otherwise used to study; with the lack of communication and connection in the community; a separation between learning community and learning resource, what are influences on their learning experience and connections with others in the community on campus? *For convenience, the following students in this paper will refer to international postgraduate researchers.*

To clarify, based on the previous discussion, this study seeks to address the following questions:

1. What are the learning spaces that international postgraduate researchers prefer to study on campus?
2. How lockdown influenced international postgraduate researchers' learning experience and their connections with others in the community on campus?

Methods

To answer the research questions, purposive sampling was used in this study as it has the advantage of obtaining in-depth information through focusing on a relatively small number of instances deliberately selected on the basis of known attributions (Denscombe, 2017). The researchers invited potential participants in the social media who are interested in this study and selected eight full-time international postgraduate researchers (four male and four female postgraduate students) that meet the criterion.

The criterion is international postgraduate researchers who have already studied in the United Kingdom for at least one year, and still living in the United Kingdom during lockdown in 2020. Institutional ethical approval was granted for the data collection, with confidentiality and anonymity guaranteed participants, the project conforming to the ethical guidelines required by the British Educational Research Association (BBERA, 2011), and met the requirement of the UK Data Protection Act (1998).

In addition, semi-structured interviews have been conducted during the 2020 lockdowns in the United Kingdom. All the eight interviews were conducted through recorded voice calls and lasted from forty-five minutes to one hour. The transcription and translation work were finished later.

Table 1: Overview of the participants

Category	Pseudonym	Details
Ph.D.	Lisa	F, 26 Chinese
Ph.D.	Dan	M, 29 Chinese
Ph.D.	Nate	M, 29 Chinese
Ph.D.	Francis	M, 28 Chinese
Ph.D.	Yumi	F, 28 Chinese
Ph.D.	Rain	M, 33 Korean
Ph.D.	June	F, 32 Saudi Arabia
Ph.D.	Louise	F, 27 Chinese

For data analysing, this study used thematic analysis and followed Braun and Clarke's (2016) method of "identifying, analysing, and reporting patterns (themes) within the data". Specifically, inductive thematic analysis was adopted in this study, which aims to have a comprehensive understanding of the interview data and identify possible themes from the data themselves. Atlas.ti and Excel spreadsheet were used to analyse data, followed the six steps: becoming familiar with data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; and producing the report (Braun & Clarks, 2016).

Findings

International postgraduate researchers' preference of learning spaces on campus

University campus is being carefully designed and aiming to bring benefits for learners to study anywhere and anytime and provide full flexibility for students (Boys, 2014). New learning spaces such as learning hubs, study zones, innovation of libraries and classrooms are emerging on campuses (Boys, 2014; Carvalho et al., 2016; Tylor, 2019). In UK higher education, the average cost of building and maintaining the learning space is expensive, and thus making the most effective use of learning spaces is important (Temple, 2008).

This study found students selected learning spaces on campus by looking for the environment or atmosphere that suits them, as these spaces could improve their learning experience and promote connection with others in the community. The reality of the international postgraduate researchers preferred to study on campus consists of university libraries, university postgraduate researchers' offices, student accommodations, and university café. Students were looking for two types of study spaces: private and non-private learning spaces. Although such classification seems very general and taken for granted, by reflecting the following detailed analysis of the reasons behind international postgraduate researchers' selection of studying spaces on campus, as well as exploring their learning experience and their connection with others in the community on campus during lockdown, which could help on finding problems they are facing in connecting with others in a community in those physical spaces students preferred to stay on campus. The preliminary suggestions will be discussed in the later of this paper.

For students prefer private or independent study space on campus, accommodation, and postgraduate students' offices (office has to be used by student individuals) were the two choices for them. Students found it is necessary and important to study independently. They can make use of the advantages of networked learning by studying in a private and individual space. Networked technologies helped them to have communication with others online easily and organise learning resources more effectively. When they have a feeling and a need for face-to-face conversation or socialisation with others, they could go out to socialise with others without carrying too many learning materials. In networked learning, the uses of mobile, personal, and connected technologies make learning not restricted to specific spaces (Goodyear et al., 2014).

For students who prefer non-private study spaces on campus, they have a wider range of spaces to choose from, such as libraries, postgraduate students' offices, and café. Specifically, students identified three study spaces that were providing different studying environments that they preferred. First, a university library is regarded as a formal learning space. Students used to study in that environment and surrounded by others to help them enter the state of learning, and they do not need to have any verbal communication with others. Second, cafes on campus were chosen because students needed the noises and people. Doing postgraduate research is lonely work and students reported that going to the university café can help students have connections with the city and university when they were studying abroad. Some of them went to the café due to the lack of connection or belongingness in the office and department. Such as one of the participants, June, feels isolated when they were studying alone on campus.

Third, the postgraduate students' office has multiple functions for students. It put students into daily routine for learning. When they are on the way to campus, they are preparing the mood for study. Although they are not sitting in front of the desk and learning but doing something else on the underground or have some activities they used to on the way to the office, their mind and consciousness are preparing to enter the state of learning, and once they arrive and sit on the desk, they are ready to study.

In addition, offices also provide a balance between their private and social time at the same time. It is the best space for students to study according to the interview. When students went to the office and sit on the chair in the office, they are urged to study. Although they also were relaxing or having entertainment in their office, it is just for a while, and they can be back to study again as other students and researchers were working in their office. Also, when participants passed through others' offices, they got motivation and could focus on studying again in a short time. Or, when participants were relaxing in the office, others may pass through their office. Although the door was closed, it still brought pressure on students and pushed them to focus on studying again.

International postgraduate researchers have contrasting experiences during lockdown

When students were isolated in the accommodations, they were unable to make use of other learning spaces on campus and nearly all the learning activities took place online. The separation between the learning community and learning resources brings a huge impact on students' learning experience (Zhao & Kuh, 2004). Isolation brought a negative impact on some students' learning experience and connections with others in the community. Whereas others have not been influenced by it or even have benefited from it. These contrary learning experiences

were mainly associated with students' different preferences for study spaces, ways of communication, and methods of having connection with others in the community on campus.

Positive experience

For students who had a positive learning experience during lockdown, they were used to the fully online learning environment and preferred to study in a private space. They could take advantage of networked technologies. Students like Francis thought online communication and socialisation is as effective as offline meetings. And the learning resources are easier to organise and to share with others in the online environment.

During lockdown, having online meetings with my supervisor is a relief for me, I feel less stressed and more relaxed in talking through screen compared to face-to-face conversations. Also, the frequency of communication and quality of my studying have also improved.

Online learning activities involve group-based work with others for a common goal, and the sense of community is decreased by the isolation (Boys, 2014; Oztok, 2020). For instance, Louise expressed that:

I do not think Covid-19 and lockdown affect me significantly. Instead, I enjoy this kind of situation because I can be alone. Online meetings with my supervisor and other people in my department bring me lots of benefits...I can have zoom meetings with my supervisor, use Google Drive documents to share documents, and work on a paper at the same time.

Specifically, according to the interview data, their learning experience were improved for the following reasons:

- accommodation provided them an independent learning environment that they preferred to study;
- networked technologies helped them save the commute time;
- communicate with others online across the screen gave them a sense of security and comfort compared to face-to-face conversations;
- online learning made them feel more efficient compared to traditional learning;
- the flexibility of online meetings.

Their connection with others were increased and the sense of community were also strengthened, because:

- they preferred to communicate online and thus they had communicated more with others online during lockdown compared to times before lockdown in the department building;
- online learning has the flexibility of time as well as the multiple ways of communication (video call, voice call and typing), which provide them a feeling of control of time and media;
- using software such as Google Driven documents brings them opportunities to be involved and engaged in group work for a project.

Negative experience

Students who had a negative experience during lockdown were not used to the fully online learning environment and preferred to study in a non-private space. Although networked technologies bring opportunities for learners to study anytime and anywhere that suit them (Goodyear, 2014), lockdowns made students lose access to the physical learning spaces they otherwise used to study, such as libraries, graduate student offices, and cafés. Students were used to studying at accommodations as they regarded accommodation as a private space. When asked their learning experience during lockdown, students like Yumi said:

It is a disaster for me. My life is in chaos. Accommodation is a space for relaxing. I just cannot do anything else here, especially studying, [...] I just need to go to the library or the office in my department building. I need real people not the one on the screen.

Meanwhile, building and maintaining connections with others only through an online environment did not suit them, as they prefer face to face communication and socialise with others on campus. Importantly, their learning largely relies on the connected learning community and learning resources (Goodyear et al., 2004). For example, students like Dan and Lisa emphasised the difficulties they were facing:

When I was in the office, I can have conversations with others during the break time. I have learned a lot from my colleagues. [...] they started doing research earlier than me and gave me lots of useful recommendations. (Dan)

I felt good in the office before. I felt I had colleagues and friends in the department buildings. But when everything goes online, in most of the online meetings or the seminars or whatever, I doubt anyone can remember me, [...] like I was in a programme with others for three months, but by the end of the programme, about half of them could not even remember my name. I feel sad. (Lisa)

What is more, according to the interview data, the possible reasons that students' learning experience decreased were:

- losing the physical learning spaces they used to study makes them lose their schedule and habit. It is hard for them to concentrate on studying for a long time and not being distracted;
- students need to separate different spaces and time for different activities. While previous transporting time and changing of physical space help students separate study time and relaxing time, stay at home blurs the line between studying and resting time, which then brought a negative impact on their learning experience;
- the quality of online meeting is worse than face to face meeting for these students because they felt both themselves and supervisors were easily being distracted, and students felt less active in the conversation and less engaging compared to offline meeting;
- online learning made them lose the opportunity of learning from others in the office, libraries, or other study spaces. Studying in the office can make them have a shared physical space to communicate with others, create a sense of belonging to the community, and motivate them to study.

Their connection with others were decreased and the sense of community were also weakened:

- as mentioned before, some students did not prefer an online environment. They had less communication and socialisation with others online compared to offline. And their sense of belongingness in the community decreased;
- online communication made students lose the shared atmosphere when they were in the same physical space. In the online environment, each of them was truly individuals and do not have a sense of being in a group;
- as an international student, despite having access to an online environment no matter where they are, they were often invisible in the online environment or as a minority group to some extent. Online learning weakened their connection with others;
- as students' connections with others largely relied on both online and offline social activities, the loss of the opportunity of face-to-face communication made them lose the shared physical buildings and atmosphere that is helpful to enhance the community experience and increase their feelings of belonging in the community.

Discussion and Conclusion

In summary, this study found that international postgraduate researchers' preference of study spaces on campus including university libraries, university postgraduate researchers' offices, student accommodations, and university café. Students presented that they chose the learning spaces on campus by looking for the environment or atmosphere that suits them. And a suitable learning environment could increase their learning quality and promote connection with others in the community. The authors found students were looking for two types of study spaces, namely private and non-private learning spaces. For students prefer private or independent study space on campus, accommodation, and postgraduate students' offices were often two optional spaces for them. For students who prefer non-private study spaces on campus, they have a wider range of choice that consists of libraries, postgraduate students' offices, and cafés.

Moreover, international postgraduate researchers have contrasting experience during lockdown. Students who have a positive experience during isolation because they accept the fully online learning environment and prefer to stay in a private space. They take advantage of the feature of networked technologies, that is, to bring students opportunities to study at times and spaces suited for them. Also, this study found that both the learning outcomes and connection with others in the community were increased. Because they have more frequent communications with others, and they can make best use of the resources online to improve their learning quality.

However, students who had a negative learning experience during lockdown because they were not used to a fully online learning environment and preferred to study in non-private study spaces. Without access to the study spaces they used to before lockdown, and thus their learning has been affected greatly. Students regarded accommodation

as a private space, and they were not enjoying studying in accommodation. Meanwhile, building and maintaining connections with others only through an online environment also did not suit them, as they prefer face to face communication and socialise with others on campus.

Furthermore, universities are making huge efforts on newly emerged learning spaces to accommodate the technologies involved in networked activities (Boys, 2014). Surprisingly, this empirical study found that international postgraduate researchers still preferred to study in the most traditional and common spaces like libraries, accommodations, offices, and cafes. Based on the previous findings, the authors suggest ways to improve the study spaces that international postgraduate researchers prefer to stay in and enhance their learning experience and connection with others on campus. Specifically, the authors made the following suggestions for universities to be devoted to improving postgraduate students' offices and accommodations, which are used by many students as the main learning spaces but being ignored to some extent.

For postgraduate researchers' offices, the authors first suggest that universities can also change the current layout of the office to create both private and non-private study spaces for students. For instance, for those who enjoy the private learning space, universities can add room dividers to create some independent working space. Besides, students should have opportunities to select their office. Most postgraduate researchers were assigned to an office at the beginning of their study. They have not been given many options on the selection of offices that suit them. Therefore, students can be given opportunities to state their need for the office. Allowing students to choose whether they want to have an individual office, or an office shared with others.

For accommodation, which was preferred to use as learning space by some students. However, most of the accommodations do not pay much attention to the learning function for students. The design of the accommodations, such as the size of the room and learning equipment, are not enough for students who select accommodation as their main learning space on campus. Therefore, the authors suggest universities could make an effort on improving and innovating student accommodations, such as designing a new type of accommodation which expands the role of learning.

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