

# MEDIATING EPISTEMOLOGICAL ACCESS THROUGH ASYNCHRONOUS ONLINE DISCUSSION FORUMS DURING THE COVID-19 PANDEMIC: IMPLICATIONS FOR RE-IMAGINING ONLINE COLLABORATIVE SELF-DIRECTED PEER ENGAGEMENT AND LEARNING

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## ABSTRACT

The COVID-19 pandemic precipitated the burgeoning of online learning and asynchronous online discussion forums in higher education due to restrictions on face-to-face teaching and learning interactions. Previous research on asynchronous online discussion forums focused on the processes that enhance or limit discussion threads and how discussion posts develop students' reflection and critical thinking skills. Although asynchronous online discussion forums are regarded as spaces for interactive learning, very little is known about how they facilitate epistemological access and enable collaborative peer learning interactions during periods of disruption such as the COVID-19 pandemic. The current study explores voluntary asynchronous online discussion forum participation in a non-credit bearing course from a unique angle of mediating epistemological access to online learning. This study draws on connectivist theory as a theoretical framework in a digital age where the student is in control of engagement interaction and information exchange. The central research question posed is how does an asynchronous online discussion forum mediate epistemological access to online learning and facilitate collaborative self-directed peer learning during the COVID-19 pandemic? The present study is underpinned by an inductive qualitative exploratory case study approach. A total of 2 146 discussion posts from 1 348 students across five faculties were downloaded from the learning management system and analysed using thematic analysis. This study indicates that epistemological access using a technology-mediated tool, is best facilitated through agency at the institutional, the instructor and the student level. The findings show that despite academic and technological challenges an online discussion forum enables epistemological access, interactive exchange of information and the formation of collaborative peer learning communities. In an age of digital inequalities, this study provides a starting point to uncover ontological barriers to epistemological access to online learning and signals the importance of integrating epistemological access, pedagogy and technology. This article concludes with implications for re-imagining the design of online multi-modal pedagogy to mediate online collaborative self-directed peer engagement and learning.

**Keywords:** epistemological access, asynchronous online discussion forums, COVID-19 pandemic, self-directed learning, collaborative peer learning, online learning, student engagement

## INTRODUCTION

The COVID-19 pandemic disrupted education worldwide (Baticulon et al. 2021) and precipitated the burgeoning of online learning and asynchronous online discussion forums in higher education (HE) due to restrictions on face-to-face teaching and learning interactions. Emergency remote teaching and learning was viewed as a solution to allow students to complete their studies. Epistemological access constitutes “learning how to be a successful participant in an academic practice” (Morrow 1994, 40) and thus became crucial. A study by Picciano, Seaman, and Allen (2010) found that lecturers were of the opinion that providing students with access to online courses was important despite perceptions of the inferior quality of online course offerings in HE. Abawajy (2012) argues that online discussion forums enable collaborative learning and that learning experiences benefit from effective collaborative learning systems. Asynchronous online discussion forums (AODF) are computer-mediated communication tools to enable interaction and learning to take place (Loncar, Barrett, and Liu 2014; Hewitt 2005; So 2009). Students are able to work at their own pace and at times that are convenient for them to read and contribute to discussion threads (Loncar et al. 2014; Thomas 2013). Loncar et al. (2014) argue that discussions commonly take place on the learning management system (LMS) and that AODF provide a space for students to build interactive online communities (Loncar et al. 2014). Swan et al. (2007) argue that AODF are often used as a pedagogical practice in online courses. As such, self-directed collaborative peer learning has become increasingly important in online learning since the pandemic. Instructors thus need to consider how to design effective asynchronous discussions (Andresen 2009) which facilitate epistemological access to online learning.

Previous research on AODF focuses on the processes that enhance or limit asynchronous online discussion threads (Curran et al. 2009; Hewitt 2005). Research has also focused on how online discussion forums have enabled the exchange of various types of knowledge (Curran et al. 2009). How discussion posts develop students’ reflection and critical thinking skills has also been the focus of previous studies (Thomas 2013; Yang 2008). In addition, previous research focusses on mandatory participation in AODF (So 2009). Extant literature focuses on how developing countries have used AODF to continue the learning process thereby mitigating the effects of the COVID-19 pandemic on education (Baticulon et al. 2021; Tadesse and Muluye 2020). However, research has not focused directly on a non-credit bearing course designed as a resource to enable epistemological access to help students learn in an online environment.

Although AODF are regarded as spaces for interactive learning, very little is known about how asynchronous online discussions could provide epistemological access and enable interactions, which facilitate collaborative self-directed peer learning amongst students during periods of disruption such as the COVID-19 pandemic. The purpose of the current study is to explore voluntary asynchronous online discussion forum participation in a non-credit bearing course from a unique angle of mediating epistemological access to online learning. The central research question posed is how does an asynchronous online discussion forum mediate epistemological access to online learning and facilitate collaborative self-directed peer learning during the COVID-19 pandemic? The article begins by providing insights into technology mediated asynchronous online discussion forums. The interaction between collaborative, peer and self-directed learning is then sketched before describing connectivist theory as the theoretical framework. Methodological considerations are delineated and followed by the context of the case study. The findings are then discussed before making suggestions for further research. This article concludes with the contribution of this study and reimagining epistemological access to online learning through AODF which enable collaborative self-directed peer learning in a post-pandemic era.

## **EPISTEMOLOGICAL ACCESS TO ONLINE COURSES**

The increase in online learning in HE is a result of its ability to meet students' needs for flexible access (Picciano et al. 2010). Morrow (1994) made a distinction between formal access which refers to access to a HE institution and epistemological access which refers to access to the goods distributed by a HE institution. The academic practice has recently shifted to an online practice, which includes technology mediated online discussion environments. Online communities use asynchronous, text-based, computer-mediated communication (Hewitt 2005) and Mukhtar et al. (2020) argue that discussion forums are a feature of online learning systems. Effective online learning during periods of crisis depends on the preparedness of universities to ensure the quality of online learning (Steele, Holbeck, and Mandernach 2019). COVID-19 ushered in a shift to digitised education (Crawford et al. 2020). Crawford et al. (2020) provide responses to challenges experienced in HE from twenty countries as a result of the pandemic. Many countries responded by focusing on online pedagogy and making content available online (Crawford et al. 2020). This is supported by a review conducted by Tadesse and Muluye (2020) on the impact of the pandemic on educational systems in developing countries which indicates that AODF were adopted as online strategies to ensure that students continued to learn through emergency remote teaching and learning. However, institutions were confronted by resource constraints and students experienced limited access to the internet, connectivity and technology

despite zero-rated resources (Crawford et al. 2020). A study by Baticulon et al. (2021) indicates that during the pandemic medical students experienced barriers to online learning due to the lack of fast and reliable internet connectivity and conducive study spaces.

## **ASYNCHRONOUS ONLINE DISCUSSION FORUMS**

Asynchronous online discussion forums (AODF) provide a space for students to interact, build interactive online communities and critically discuss topics (Loncar et al. 2014). The design of AODF involves a taxonomy of three models: the embedded model, the auxiliary model and the hybrid model (Abawajy 2012). In the embedded model, the course is online and relies on self-directed learning. This model enables online collaborative learning between students and the facilitator and self-directed discussions promote engagement and exposes students to multiple perspectives gained from interaction with peers (Alrushiedat and Olfman 2013; Zydney et al. 2012). The auxiliary AODF supplements a face-to-face instruction delivery mode where knowledge is constructed through interaction with peers (Abawajy 2012). In the hybrid model AODF are an integral component of face-to-face learning within a classroom and collaboration may take place on project work in small groups in a blended learning mode (Abawajy 2012). Online learning spaces necessitate that students interact with content as well as with each other making AODF educationally-viable learning environments (Abawajy 2012).

### **Interaction in Asynchronous Online Discussion Forums**

Students share and again knowledge through online interactions (Nandi, Hamilton and Harland 2012). Three types of interaction in online courses were postulated by Moore (1989), student-instructor, student-student and student-content interactions. Asynchronous online discussion forums have thus been designed using these three types of interactions.

#### ***Student-instructor interaction***

The success of learning in online courses has been associated with the quality of interaction between students and facilitators (Nandi et al. 2012). The role of a facilitator varies and Abawajy (2012) postulates that facilitator should play a passive role while Andresen (2009) contend that students should lead discussions but that their involvement in AODF is not as important as the design of the forum. Yang (2008) highlights a limitation of unstructured online discussions that are not moderated by instructors since students may post messages without learning anything. Morrow (1994) thus argues that the agency of an instructor is essential to facilitate epistemological access.

### ***Student-student interaction***

Student-student interaction occurs when students engage with their peers in order to capitalise on the support, varied viewpoints and shared levels of expertise (Yang 2008). Asynchronous student participation is divided into three types: those who only read posts, those who post with limited interaction and those who use the discussion forum for interactive participation (Nandi et al. 2012). Additionally, some students may also assume a passive role (Yang 2008), while others may seek assistance. Hewitt (2005) argues that in order for students to comment on post, they are required to undertake high-level deep thought processing in order to construct coherent responses. Students are thus enabled to take ownership of the discussion forum (Zydney, DeNoyelles, and Seo 2012).

### ***Student-content interaction***

In order to provide structure, threads are used in online discussion forums to allow students to interact with content. Online discussions comprise threads and AODF are able to host multiple discussions. A thread is “a hierarchically organized collection of notes in which all notes but one (the note that started the thread) are written as ‘replies’ to earlier notes” (Hewitt 2005, 568). Threads make it easy for students to trace the evolution of discussions and may be related or unrelated to a previous thread (Hewitt 2005). Threads also have a lifespan and may be abandoned or experience the “thread death phenomenon” (Hewitt 2005, 571) when students cease to post further replies.

### **Networked learning**

Asynchronous online discussion forums serve as networking hubs that enable collaboration between students. Collaborative learning “is based on the idea that learning is a naturally social act in which the learners discuss among themselves and learn from each other” (Abawajy 2012, 11). Through collaborative learning students acquire new knowledge and skills and engage with peers (So 2009). Peer learning involves “a group of students taking collective responsibility for identifying their own learning needs and planning how these might be addressed” (Boud 2001, 10). Keppell et al. (2006) assert that peer learning promotes self-directed learning (SDL) where all parties learn. Self-directed learning has also become increasingly important in online discussions since the pandemic (Durnali 2020). According to Geng, Law and Niu (2019) university readiness, instructor readiness, student self-directed readiness and technology readiness are required in online learning environments. Li et al. (2021) argue that through SDL students are able to search for resources to fulfil their learning experiences. In the present digital era asynchronous access to resources has positioned SDL at the centre of online learning (LaTour and Noel 2021).

## CONNECTIVIST THEORY

In a digital age connectivist theory suggests that students are able to learn in a networked environment (Siemens 2004). Connectivist theory includes principles of complexity, networks and self-organisation theories. While students may form networks, Harris and Sandor (2007) argue that the facilitator is also a referral network point. The network of learning requires active participation (Siemens 2004) where students are in control and interact with peers (Loncar et al. 2014). Peers constitute the social structure in a network and create connections and links between various sources of information such as other students, comments and replies (Alrushiedat and Olfman 2013). The nine principles of connectivism (Siemens 2004) are depicted in Table 1 together with a contextual interpretation of these principles within this study.

**Table 1:** Contextual interpretation of Siemens (2004) connectivist principles.

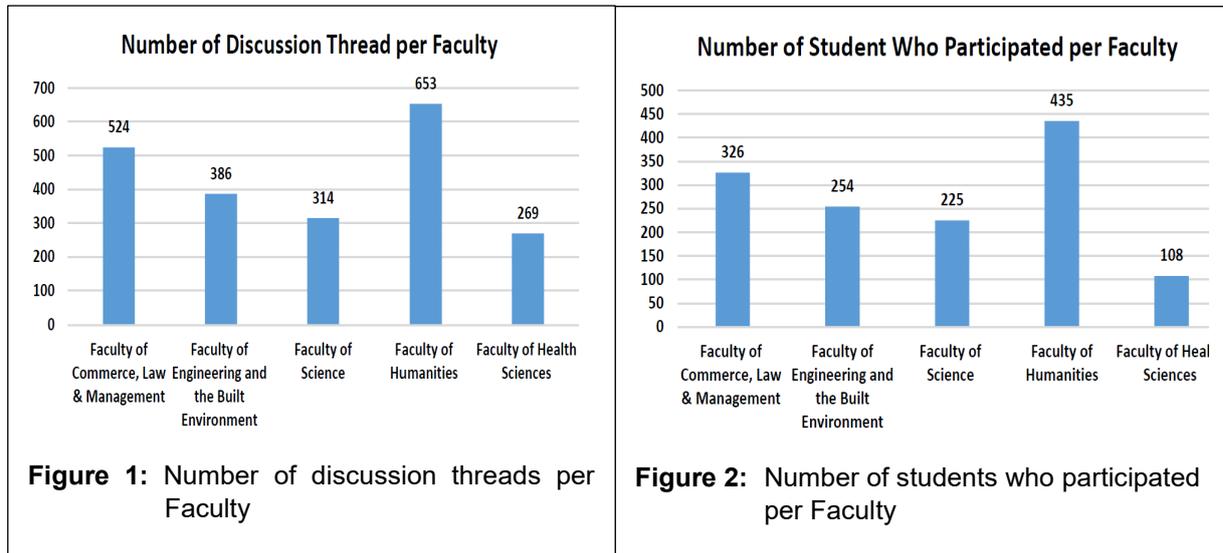
Connectivist Principles	Contextual Interpretation
1. Learning and knowledge require diversity of opinions to present the whole, and to permit selection of a best approach.	Undergraduate and postgraduate student participation.
2. Learning is a network formation process of connecting specialised nodes or information sources.	Student-student, student-instructor and student-content connection nodes.
3. Knowledge rests in networks.	Co-construction of information in replies to posts.
4. Knowledge may reside in non-human appliances, and learning is facilitated by technology.	Asynchronous online discussion forums.
5. The capacity to know more is more critical than what is currently known.	Voluntary participation, interaction and engagement.
6. Learning and knowing are constant, on-going processes (not end states or products).	Frequency of posts throughout the academic year.
7. The ability to see connections, recognise patterns and make sense between fields, ideas, and concepts is the core skill for individuals today.	Collaborative, peer and self-directed learning.
8. All connectivist learning activities aim to be current (producing accurate, up-to-date knowledge).	Mediated asynchronous online discussions.
9. Decision-making is learning. Choosing what to learn and the meaning of incoming information is influenced by a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.	Importance of context within which access to learning and where learning takes place.

Through the nine principles connectivism offers a theoretical framework for providing a deeper understanding of students' peer learning, collaboration and interaction (Alrushiedat and Olfman 2013).

## METHODOLOGICAL APPROACH

The present study is underpinned by an inductive qualitative exploratory case study approach (Creswell and Poth 2018) at a research-intensive university. The data collection process

involved downloading 2146 discussion threads (see Figure 1) from 1348 students across five faculties (see Figure 2) from the University's LMS. A thematic analysis (Braun and Clarke 2006) of discussion threads was conducted to examine students' online peer collaborative interactions, help seeking and information sharing engagements under conditions of voluntary non-graded participation in an AODF.



### The case study

The case study university requested a resource site on the LMS to help all students learn online during the pandemic in 2020. The Helping You Learn Online site was developed to facilitate asynchronous online learning and provided a variety of resources to support students throughout their academic journey. The course design was based on a social constructivist approach to online pedagogy. The first two versions in 2020 did not promote discussions however, the third version followed a shift to a new LMS in 2021 and intentionally included an AODF as a pedagogical tool. Online content included resources and SDL was an integral component. The AODF included facilitator-led discussions for students to “introduce themselves”, “share their study spaces” and “post specific questions related to online learning”. The design included student-led discussions where students created their own threads. Students were informed of the purpose of the AODF and that their peers would provide suggestions to help them learn online. The discussion forum was the only environment for students to interact and was moderated by a facilitator and a postgraduate peer facilitator who posted responses where necessary. Students were not obligated to respond to posts but did so voluntarily.

## **FINDINGS**

The analysis of the data highlights epistemic access, interactive learning and academic and technical challenges that emerged as critical findings which are discussed in the sections that follow.

### **EPISTEMIC ACCESS**

The findings indicate that epistemic access was mediated through self-directed request for assistance and peer collaboration to gain access to online learning, courses and lecture materials, Turnitin, tutors and tutorials, the online library, exam information and past papers.

#### **Experience with online learning**

Students shared their first week's experience with online learning on the discussion forum. A positive attitude was expressed by a student who "missed two sessions" but was confident that "soon I'll get on track" (4 Likes 135:315-135:564). Viewing week one as a fun week and obtaining support was posted as, "the fact that there is a lot of work and we need to do it online with the new app that we aren't familiar with made things worse, but other than that week 1 was also a fun week, I mean I am learning new interesting things and I am able to get necessary help when needed thanks to the WhatsApp group chats" (1 likes 150:712-150:1218). Some students experienced "trauma" and others felt they were "getting used to this online learning" (2 likes 138:193-138:549). Student posts informed others that, "I missed my first class due to not having a conference link. SAD week it was" (1 likes 144:365-144:548) and "I did not learn for the first week due to lack of connection and data" (1 likes 142:651-142:828). Others expressed their first week as, "horrible" and "I'm terrified I'm falling behind in my courses" (146:523-146:902). However, peers offered to "help each other" (16:187-16:447).

Students were not ready to adequately participate on the LMS. Assistance with accessing courses and learning material were captured as, "I am new to canvas and struggling to browse through for classes and course material" (25:563-25:786). The university was also not ready to allow students to adequately participate in online learning because some courses were not published timeously on the LMS. A few post indicated that students struggled to locate their courses on the LMS and this was often posted as, "I don't have any courses on my dashboard" (198:1158-198:1340). Replies from peers included, "contact your faculty immediately, send an email with a screenshot" (199:223-199:365).

Not managing time, struggling to use the LMS, being behind with studies and not adapting fast enough led some students to express their stress in terms of the imposter syndrome of not belonging at the University. A student explicitly made reference to this as, "the imposter

syndrome is also kicking in” (137:507-137:979) and conveyed this as, “I am a first-year still trying to adapt. The workload is so unbearable ... I even feel like I don’t deserve to be here” (7 likes 132:795-132:1144). The peer facilitator’s response was, “don’t feel that way ... you will get used to it and you definitely deserve to be here” (2 likes 133:46-133:360).

### **Access to learning materials**

Assistance with learning materials such as lecture videos, textbooks, Turnitin, tutors and tutorials, online library materials, exams and exam past papers were requested to mediate epistemic access. A student started a thread entitled “lecture videos” by stating, “I can’t access lecture videos” (19:779-19:892). A deep level of interaction and engagement was demonstrated by a student who posted helpful suggestions for lecturers to solve the access to videos problem by including the “subject of the video”, the “date of the class”, a “transcript” and a “summary” of the video (2 Likes 143:212-143:1136). The student’s rationale was that, “if a student has missed a day then we will know which video was missed” and “when we are studying we know which video contains the right information, instead of listening to all of them again” (2 Likes 143:212-143:1136).

Posts enquired on prescribed textbooks and the sale of second hand textbooks. This was exemplified as, “what textbooks do I need to purchase” (81:46-81:221). The reply was “your lecturers will advise, if you rush you will end up buying what you will be freely provided” (69:18-69:183). The sale of second hand textbooks indicated the “price” the condition as “almost new” and in “a very good condition” (33:186-33:1262). Some students expressed an interest in obtaining PDF versions of prescribed textbooks as, “don’t you have the book as a PDF??” (161:945-162:213).

Epistemic access was made possible by student requests for assistance to gain “access to Turnitin” in order to “submit assignments and research proposals” (22:340-22:459). The facilitator replied by “uploading resources” (27:2-27:681). A post on how to assess similarities was directed to peers as, “How does one use Turnitin before completing an assignment just to check for any similarities” (6:338-6:546). Another post specifically stated, “should one worry if Turnitin similarity score is above 10 or 15” (8:18-8:222). These posts were responded to by a peer who provided not only the “purpose of the Turnitin tool” but also explained the university’s maximum similarity score of “15%”, how to reduce similarity and “rephrase the highlighted content” (1:475-1:1435). This indicated a high quality of information exchange, in-depth interaction, engagement and peer collaboration.

Accessing tutorials online is essential for epistemic access. Posts included, “how to access tutorials? ... today seems I’ll miss my Tutorial” (97:452-98:133). Students requested access to

“contact details for tutors, course coordinators and lectures” (58:183-58:397) in order to gain access to their courses or to report issue with the conference facility that allowed students to attend online lectures and tutorials.

Various posts indicated that some students did not know “how to access the online library” (188:237-188:467). The impact of this was that students could not access resources to complete their assignments. Posts included requests for assistance with “how we navigate the online library to read even on leisure books. Your help would assist in advancing online resource use” (24:235-24:750). The seriousness of such threads elicited responses from peers, the peer facilitator and the facilitator who directed students to the “Helping You Learn Online home page” and the “online tab to ask a librarian for assistance” (188:644-189:143). The peer facilitator was able to facilitate epistemic access by providing the link for students to obtain a “library pin” (26:271-26:654).

Students also requested access to exam information and past papers. Threads began with a question regarding where to “find the exam timetable” (28:32-28:82) and peers provided the “final timetable” (29:1-29:143). Epistemic access was also mediated through peer collaborative learning on how to access exam past papers which were regarded as being “very helpful and guiding” (168:178-168:328) although some posts explicitly stated that “there aren’t any memos available though” (169:50-169:215).

## **INTERACTIVE ONLINE LEARNING**

Interactive learning was mediated by encouraging students to introduce themselves, to share their study spaces and to request advice from peers on how to study online. Peer learning communities were formulated in requests for study partners and WhatsApp groups. Self-directed interaction was also exemplified in initiatives to enquire on Ubuntu and to interactively share memes.

### **Introduce yourself**

As one of the pinned discussions, the facilitator asked students to introduce themselves by posting videos, pictures or saying a few words in the “Introduce Yourself” thread (1:21-1:380). Students responded by providing their names, where they were from, what they were studying and sometimes added a friendly gesture as follows:

Reply: “My name is 💎 I am a 4th year student. I’ve missed being situated in a class amongst my comrades, but with the current situation I am happy to be able to be here. I’m from the west of Joburg and I look forward to the first semester and further adjusting to online classes while we await our vaccine ... Let’s conquer the edge this 2021.” ♥ (1 like 136:652-137:32).

Some students took the opportunity to establish “long lasting friendships” (3 likes 219:163-219:592) in the hope of forming a support network. Introductions stated this as, “I would like to get in touch with you” (1 like 30:568-31:190) and “are you keen to join the community outreach club with me?” (2 likes 6:150-6:385). Students also made reference to the current COVID-19 context and remote hybrid learning under which they were studying and trying to establish friendships as, “I am 📍 from Ghana ... I am currently following my classes from Accra in the current COVID-19 context” (176:703-177:254) and “Grateful for the opportunity of hybrid learning” (5 likes 33:244-33:481).

A thread entitled “Ubuntu” enquired on the institutional environment as, “have The Have Mores changed the environment at our institution?” (46:1-46:247). A peer shared information on Ubuntu and the university’s reputation, quality of education and the ranking as, “[the university] has always thrived to bring the best quality of education and is no wonder why its amongst the best institutions in the country and in the world” (3 likes 89:1-89:88). A student also started an interactive thread on memes to introduce an edutainment aspect. The meme regarding “how to achieve straight A’s” confirmed that the advice “actually works” and was recommended to peers (10 likes 4:77-5:462).

### **Study spaces**

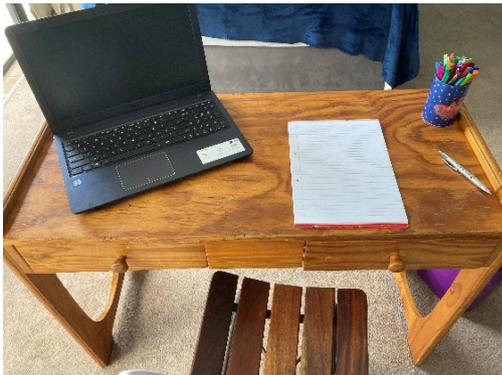
Students shared their indoor and outdoor study spaces during remote learning conditions. One student posted a picture of cattle grazing (Study Space A) as an example of a study space and a peer response was, “when you have class at 1pm but need to milk a cow at 3pm” (2 likes 1:15-1:287). Most pictures of study spaces included a room with a desk, chair, laptop, stationery and a lamp (Study Space B-D). A study space where the wall was decorated received comments from peers such as, “Who made the design on the wall for you? You know how funny studying is, I bet you, you will count those birds on your wallpaper one day ... lol Your space looks really nice!” (18:90:248-18:453:731). A description of an unsuitable overcrowded study spaces was communicated as, “I’m currently sharing a house with 10 people and several animals. There’s never a quiet moment alone” (5 likes 67:795-68:463). Most students however did not post any pictures and preferred to share their study space in text such as, “I like my room, ... no distractions” (4 likes 39:209-39:451). Some students did not have dedicated study spaces and stated, “Unfortunately-I have no study space I usually study sitting on the couch” (13 likes 28:540-29:105). A peer comment to this was, “Find one as soon as possible man. Couch studying is very risky, especially if there is a TV there. Why don’t you study in your room?” (29:151-29:384).



Study Space A (25 Likes)



Study Space B: My study space (49 Likes).



Study Space C: The essentials (39 Likes).



Study Space D (29 Likes)

**Figure 3:** Examples of study spaces

The pictures of study spaces (A-D) and narrative responses are indicative of the contextual realities of study spaces that students shared which either facilitated or were barriers to their epistemic access and online learning experiences.

### How to study

Epistemic advice was sought from peers on how to study online. A student noted that, “I don’t know how to study online” (1 likes 307:262-307:526). One post communicated the need to “get the hang of this online journey!” (191:372-191:671). Others enquired on “how should a first year Computer Science student study? Must they just read the textbook? Or do tutorials by watching how to do it online?” (2 likes 17:690-17:929). A peer suggestion was succinctly captured as “to survive in this online learning you must do your lectures at the time allocated in your timetable because when you skip that time your work will pile up” (7 likes 63:266-63:530). Another response stated, “I personally suggest you use YouTube video tutorials” (1 like 18:43-18:270). A student acknowledged that, “most people are not taught how to study and just wing it. Knowing how to study now will help you” (2 likes 220:178-220:956).

## **Study partners and WhatsApp learning communities**

Networked communities were requested in the form of study partners and WhatsApp groups in order to facilitate epistemic access. Requests for study partners were explicitly articulated as, “If there is anyone doing the same course as me, maybe we can get to know each other and help each other out” (219:1119-220:109). This was met with positive responses such as, “I’m only doing Manfinn III but I’m down to be a study buddy” (57:459-57:644).

WhatsApp was perceived as a means of communication to “make learning easy” (212:477-213:132) and posted as, “Please let us keep in touch if you have WhatsApp then we can communicate there and possibly get more people to be able to make learning easy” (212:477-213:132). Posts on the formation of WhatsApp groups were met with positive responses from peers to, “WhatsApp me, I can try to help” (17:563-17:606). Students were proactive and used their agency to create a WhatsApp learning community where one did not exist and posts included, “I was wondering if we could create a WhatsApp group where we would be able to assist each other” (7 likes 16:752-17:363). Demonstrating collaboration to network, a first-year student created a WhatsApp group and stipulated that the purpose of the “group is to uplift other students who are struggling in any module” and to “allow other Accounting Sciences students doing 2nd, 3rd years to assist us anywhere we struggle” (14:111-15:646). The overall sentiment networking to formulate WhatsApp learning communities was expressed as, “It’s great to know there are colleagues to assist in this journey” (3 likes 22:292-22:509).

## **CHALLENGES**

The findings revealed academic and technological epistemic barriers.

### **Academic challenges**

Academic challenges were experienced with falling behind with learning and not being familiar with university terminology.

#### ***Falling behind with online learning***

Challenges with online learning were experienced and captured in posts as, “online learning has its pros and cons” (59:321-159:529) and “I don’t think online classes are a good idea for us first-year students” (180:302-180:440). A first-year student posted “not having access to courses”, not knowing “who the lecturers are” or “what assignments are due” (13:481-13:834). Other posts described online learning as, “a living nightmare” (180:459-180:559). A student enquiry included, “how is online learning going to work, I’m so baffled by this whole thing I

think of it as the worst first-year” (226:797-227:319). Although students expressed their challenges learning online they also provided suggestions for how lecturers could make online learning easier by “uploading course material in advance so that we can go through everything before attending lectures” (8 likes 127:46-127:337). Late registrations caused some students to miss their “first assignment” (13:242-13:392) as exemplified in, “I just got registered today, so this basically means I’m behind” (6 likes 128:199-128:427). Amendments to registration also caused students not to attend lectures as evidenced by, “I was amending my registration, so I did not receive any lectures during that week” (1 like 155:68-155:292). A first-year student captured online learning challenges as, “online learning is a challenge because its new to me, I’m used to contact learning because I’m from high school ... I need to interact with someone in person” (152:243-152:751).

### **Terminology**

First-year students who were not familiar with university terminology made request for clarity on terminology in order to learn online. A student post expressed this as, “guys, I’m confused. What’s the difference between a cohort, a diagonal and a group?” (184:74-184:248). A response from a peer collaborated the need to clarify these terms by stating, “yes, please can someone clarify this” (184:452-184:554). This was clearly a post that required the intervention of the facilitator who provided the response in order to mediate epistemic access.

### **TECHNICAL CHALLENGES**

Students experienced technical challenges using apps, attending classes, submitting assignments, completing quizzes and muting messages. Technical assistance was requested as, “I need assistance on how to use the Canvas app” (208:274-208:462) and replies stated, “you can also text me I’ll gladly help you navigate your way around the app” (209:47-209:210). Students also experienced technical challenges with knowing “where to click to join a class” (87:556-87:671) and peers replied that, “some courses don’t do live conferences, they have pre-recorded lectures” (114:683-115:196). Assignment submissions were met with technical challenges resulting in requests for solutions to a “submission error message when I click the assignment tab when using the phone app to submit assignments” (93:702-93:1022). Without being prompted, a student offered a solution to technical issues by posting, “I downloaded the Canvas App and did some 3 quizzes and that’s when I got access to everything including PDFs sent by lectures, dates etc.” (79:400-79:669). Random posts resulted in “thread death” and received no responses from peers for technical assistance. This was evident in posts such as, “any ideas how I can switch off all the messaging? I am getting on average 389 messages per

day from all students across all degrees and I only need messages for my own degree?” (183:446-183:706).

### **Data and connectivity**

After viewing threads on data challenges, a postgraduate student started a thread in which the purpose of the data provided by the University was explained as being “for students to access academic materials and attend online classes” yet this student experienced challenges making use of the free data and stated that, “I can’t attend classes nor even to fully access my academic materials unless such articles are posted on Canvas” (1:731-1:2224). This student informed peers that, “the institution is failing us ... by limiting the use of data to certain sites and certain times of the day ... only those coming from advantage background have fair access to study materials and classes” (1:731-1:2224). The complaint was directed to the University stating, “Why should I be subjected to unfair and impossible academic access while you’ll demand fee payment at the end of the year” (1:731-1:2224). This student posted a link to a petition to resolve data issues. The facilitator referred the query to the appropriate structures and the student posted responses from the Senior Executive Team (SET) on the forum which stated that, “The SET had a robust discussion on this which focused on a number of matters which have got entwined in the data debate. This includes: use of device / use of VPN / use of Canvas” (1:731-1:2224). The University’s solution was to continue to provide “30GB (10GB Anytime and 20GB Night time) data-bundles per month for use on selected websites/URLs that can be accessed via the University network” (114:207-114:789).

Data posts made reference to the “lack of connectivity in certain areas” (74:370-74:604). Students who did not receive data posted enquiries such as, “Which service provider do you use? I didn’t get data” (152:441-152:535). The response was, “You will get it because I received mine ... I’m using MTN” (153:116-153:263). Responses included, “sometimes the VPN connects but the data don’t work and we have to buy our own data to write small quizzes, it’s really bad” (56:635-56:834). The impact on epistemic access was communicated as, “the last assignment I submitted was such a struggle because I didn’t have data. Had to go to a mall just to submit ... This VPN is nonsense. Never works” (81:257-81:705). The timeframe for using the free data was a further barrier to accessing learning materials and was stated as, “the only time the university data package works is from 00:00 to 5am which is still quite a challenge considering we are active during the day” (1:1095-2:32).

## **DISCUSSION**

Connectivist theory provided a lens through which to view epistemic access to networked

collaborative self-directed peer learning. The findings provide insights into online readiness, ontological barriers to epistemological access, networked learning and integrated epistemic access.

### **Online readiness**

This study indicates that epistemological access using a technology-mediated tool, is best facilitated through online readiness and agency at the institutional, the instructor and the student level. This is consistent with connectivist theory (Siemens 2004) in which knowledge and learning are facilitated by technology. A lack of university readiness for ensuring a smooth transition to a new LMS was evident in the discussion threads. A lack of student readiness to use the LMS to access online lectures was demonstrated through agency in help seeking behaviour on how to access resources and assistance as well as collaboration from peers to solve issue. Epistemic access was mediated through facilitator-student interaction, student-student interaction and student-content interaction and engagement in threads to facilitate access to learning materials. This study found depth in the engagement, interaction and collaboration involved in the exchange of information between students.

### **Ontological barriers to epistemological access**

Siemens' (2004) connectivist principles highlight a shifting reality due to the digital context in which online learning takes place. Academic and technical challenges posed ontological barriers to epistemic access to online learning. Academic challenges were a result of the imposter syndrome/phenomenon, falling behind with learning and not understanding university terminology. A lack of conducive learning spaces, learning while herding cows, overcrowded living conditions and a lack of dedicated study spaces were ontological barriers highlighted in posts. Technological challenges using the LMS to attend online lectures, to submit online assignments and quizzes, challenges with data and a lack of connectivity to the internet also served as ontological barriers to epistemic access. These barriers were compounded by the digital divide experienced by those who required data and the manner in which data were provided by the university which limited data access to an inconvenient time period between midnight and 5:00am in the mornings.

### **Integrated networked learning**

Networked learning was demonstrated through the integration of self-directed, collaborative and peer learning communities. This study shows that the AODF was a resource that provided students with epistemological access through networks which fostered collaborative peer self-

directed learning. Consistent with connectivist theory, the facilitator, peer facilitator and peers were referral network points and provided links and detailed information on how to solve challenges with epistemic access. Students may use AODF for feedback purposes (So 2009) however, students in this study used the AODF for peer collaborative learning which involved meaningful engagement by sharing information, URLs and uploading of pictures indicating a high quality of collaboration, engagement and interaction and contradicts the assertion by Gao, Zhang, and Franklin (2013) regarding limited meaningful interaction in threaded forums. Hewitt (2005) found that once a thread slipped out of the spotlight it was not likely to resurface. This study found that the thread on data was developed with replies and then resurfaced multiple times throughout the year without reference to the previous posts on data. Peer learning communities were facilitated on the discussion forum through self-directed initiatives which led to the formation of collaborative networked learning communities in the form of study partners and WhatsApp groups to mediate epistemic access. Social spaces were part of the design of the discussion forum and by introducing themselves and sharing study spaces, students collaboratively created social spaces through their own threads such as memes on how to obtain excellent results. The findings of this study indicate that collaborative learning occurred through voluntary peer discussions on discipline and general topics of concern and interest to students with limited interaction from the facilitator and peer facilitator.

### **Integrated epistemic access**

The design of an asynchronous online discussion forum necessitates the integration of online pedagogy in the form of an AODF and technology such as the LMS to mediate epistemological access to online learning. Connectivist principles suggests that epistemic access is possible through technology (Siemens 2004). Providing written feedback in an asynchronous discussion in a manner that encourages student interaction is a recommended instructional design (Zydney et al. 2012). This study indicates a blend of facilitator directed and student self-directed posts where the AODF pedagogy shifts the control to the student. Networked group cohesion through peer collaboration indicates the importance of collaboration in directing peers to resources to gain epistemic access through the AODF during the pandemic. Discussion forums have a role in blended learning pedagogy according to Andresen (2009). While this study focuses on an AODF during the pandemic, discussion forums also have a role to play in a post-pandemic blended learning pedagogy which addresses both epistemic access and learning.

### **SUGGESTIONS FOR FURTHER RESEARCH**

The findings of this study emerge from a qualitative case study at a research-intensive university

during the COVID-19 pandemic. Future research could benefit from insights gained from quantitative studies and other institutional types. Through data mining insights gained from conducting a quantitative sentiment and emotional analysis on discussions could inform both epistemic access and future online learning. This study focuses on an aggregated view of voluntary participation on the AODF and future research could focus on a de-aggregated analysis by faculty, which is linked to student performance in graded credit bearing courses.

## CONCLUSION

The purpose of the current study was to explore voluntary AODF participation in a non-credit bearing course from a unique angle of mediating epistemological access to online learning. This study contributes to an understanding of how AODF are used to provide epistemological access to learning resources which enable students to learn online through networked interaction and collaborative peer learning. This study provides a starting point to uncover ontological barriers in the form of academic and technological challenges to epistemological access. Re-imagining the design of online multi-modal pedagogy by integrating epistemological access, online pedagogy and technology in a post-pandemic era has the potential to improve online preparedness of institutions and students and to mediate online collaborative self-directed peer engagement and learning.

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