Library and Information Services' reflections on emergency remote support and crisis-driven innovations during pandemic conditions (Pre-Print)

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Abstract

Crisis-driven innovation (CDI) is needed to manage scarcity in resources. The recent COVID-19 crisis exacerbated the prevailing digital exclusion in, especially in the education sector. Sudden changes in otherwise stable higher education environments necessitated immediate and decisive innovation, particularly where education support services are concerned. This study reports on an academic library and information service's reflections on emergency strategies implemented during the COVID-19 pandemic. This study was conceptualised through the lenses of existing digital exclusion frameworks, and information poverty frameworks. Findings from qualitative data gathered via focus group interviews, emphasised the importance emergency remote library and information services. The pandemic conditions and sudden remote service delivery model highlighted the prevailing socio-economic and socio-technical inequalities and exclusions among students. The value of the study lies in reflections made on the institution-wide CDI strategy implemented, and the realisation that Library and Information Services must play an active academic support. The study offers a Library and Information Services model to prepare for future eventualities.

Keywords: Crisis-driven innovation, remote academic Library and Information Services, digital exclusion, information poverty, mobile library and information services

INTRODUCTION

Reportedly, 2020 was the year where emergency remote teaching became a sudden and unexpected reality in many higher education institutions (see Van Wyk et al, 2020; Ibacache, Koob & Vance, 2021). Library managers of academic support services and information specialists were confronted with unfamiliar challenges. Some libraries opted to close during this time, resulting in detrimental effects for students and academic staff such as information poverty and academic failure. In other cases, information specialists were suddenly tasked with moving face-to-face services and resources to online services, where, inter alia, digital literacy became aspects to be addressed. Similarly, not all information specialists were equipped to work from home. Conditions at home made the blending of work and home life complex and challenging. Furthermore, the disruption in mode of learning severely impacted

students affected by digital exclusion (Hopman, Allegranzi & Mehtar 2020). The self-isolation and interrupted learning also impact student's mental health and lead to anxiety (Crawford, et al, 2020). The resulting uncertainty caused dropouts as many students felt overwhelmed and neglected due to lack of support from teachers and peer-to-peer relationships (Ozili & Arun 2020). These conditions compelled innovative measures. Crisis-driven innovation (CDI) often stems from an urgent and sudden change in conditions or scarcity in resources. Providing academic libraries during periods of disruption and crises is not an unknown phenomenon, but often one that finds us ill-prepared. Crises, such as the one brought on by the COVID-19 outbreak, require immediate and decisive action to minimise negative impact, especially in South African higher education institutions. In the case under study immediate innovation and emergency planning commenced on an institution-wide basis. The resulting strategy formed part of a broader institutional emergency project.

The concept of disruptive innovation originated in the commerce and business fields (Bessant, Rush, & Trifilova, 2012), but it also has documented applications in Library and Information Services and education (Temiz & Salelkar, 2020). Although the 21st century technology innovation and the proliferation of technology theoretically support the sudden shift to remote learning, the preparedness of both students and library staff were unclear. Seen at the backdrop of an already unequal learning ecosystem, the exacerbation of the prevailing digital exclusion was an immediate concern to be address within the emergency remote teaching plans.

The South African higher education institution chosen for this study offers undergraduate and postgraduate programmes to around 50 000 students in disciplines of Education, Law, Commerce, Engineering, Social Sciences and Humanities. This study followed soon after the implementation of the CDI strategy plan, where an Emergency Remote Teaching Strategy was planned, approved and implemented within the span of one month. In compiling this strategy, a prior institution-wide project gathered quantitative data from 450 survey questionnaires sent out to lecturers as well as library support staff (Van Wyk et al., 2020). The foregoing project aimed to implement interventions which included resourcing, training, monitoring and training academic and support staff to continue with their programmes remotely. Taken that the mobile penetration in Africa is relatively high (see GMSA, 2020), the strategy explored the application of mobile technology in learning and support (Van Wyk, et al, 2020). High-level negotiations with several providers and telecommunications companies commenced to provide students and staff with data and whitelisted access. This study builds on the prior 2019 project at the case under study, which identified the need for further research, particularly where library support is concerned. The purpose of this paper is to report on the second study gauging the reactions, experience and perceived readiness of libraries to switch to supporting emergency remote teaching and support.

RATIONALE

The study was conducted to explore information specialists experience on the CDI plan implemented at a higher education institution in South Africa. The rationale of this study was to expand on the prior institution-wide project plan that informed the CDI planning in 2019. As a follow up study, twenty-six (26) information specialists and their six (6) managers were approached to explore their experience, efficacy and reactions to emergency remote teaching and strategy for the library sector as an academic support partner. The aim was to further improve on the implementation success of the strategy.

THE CONCEPTUAL LENS INFORMING THIS STUDY

Studying and planning for rapid and innovative interventions during times of uncertainty, must consider the transboundary nature of the ecosystem, as well as and the sociotechnical and socio-economic variables at play. A multi-theoretical approach was the best option for this study to underpin all the tangents and complexities in developing a best practice model. Crisis innovation models, critical digital librarianship, digital exclusion frameworks, and the exposure to information poverty frameworks informed this study. As such, the constructs of information poverty, mobile learning, digital literacy, crating microcontent, digital exclusion and related concepts were further explored.

Frameworks and models for studying information poverty have been addressed by Chatman (1996) Brits (2007) and Bronstein (2014). Most information poverty frameworks and models hinge on information seeking behaviour around human needs and information needs. Studies report the prevalence of perceived secrecy, feared deception, risk-taking and situational relevance (Bornstein, 2014). Studies allude that the information-poor may be silent, conceal or ignore their information needs. This avoidance behaviour rests on incorrect perceptions and anxieties around anticipated negative consequences of seeking and sharing information. In an educational ecosystem this behaviour can have detrimental consequences. The result is unfulfilled information needs and a greater possibility of failing.

In addition to information poverty frames, critical digital pedagogy and critical librarianship frames offered a deeper scope for praxis under crisis conditions in an educational landscape already marked by inequalities. Drabinski (2019) explains that critical librarianship acknowledges the existence of power relations in creating library spaces in that decisions are made on: "Rather than concerning itself with the radical, or root, of various problems, this critical stance looks at what is and tries to understand how it came to be that way, what various systems produce and reproduce in the world, what the stakes might be in accepting something as natural, and how we might imagine systems, structures, objects, and processes differently" (Drabinski, 2019:51). Critical librarianship sets out to address disrupting systems of inequality and exclusion (Jacobs & Marugu, 2017) and it is intrinsically connected to critical pedagogy. Some of the shared constructs between critical librarianship and critical pedagogy, among

others, of digital exclusion, social injustice, and information poverty which are all often observed during times of disruption. As such, critical librarianship links to critical digital pedagogy in the sense that it, inter alia, addresses social justice, power structures, access to information, openness, capacity, trust and inclusion issues. The concepts of critical librarianship and critical digital librarianship must be explored further in African higher education. It is pivotal for librarians and information specialists to understand and apply critical values to digital that the role of libraries in open pedagogy under emergency conditions be realised.

LITERATURE REVIEW

Higher education institutions in South Africa have implemented alternative strategies and CDIs for remote teaching and learning during the disruption (Crawford et al., 2020). CDI is explained as emergency planning necessitated by sudden changes or scarcity in resources (Bassant, Rush & Trifilova, 2012; Flavin & Quintero, 2018). CDI may be a more familiar concept in business models than in higher education and libraries. During COVID-19 it was useful to also apply this model to higher education institutions (Van Wyk, et al, 2020), where education and information support. These temporary measures were rapid responses to sudden disruption but was not designed to replace face-to-face services permanently.

The institution understudy already had online platforms and virtual classrooms in place for all services and programmes offered before the COVID-19 outbreak. This position assisted the rapid response to the crisis. In this institution embedded library support was in place for both asynchronous and synchronous instruction, facilitation, learning and teaching. Reportedly, the most popular online platforms used here are Blackboard, Zoom, Microsoft teams and Google Classroom (Ting, Carin, Dzau, & Wong 2020).

The foremost challenge faced was the prerequisite access to stable and affordable connectivity. The use of online platforms and resources furthermore requires sufficient and affordable data. In the case under study, this infrastructure was offered free of charge to students on residential campuses but became a barrier to access during lockdown. While many students in this institution do not have stable internet connectivity, most have access to mobile phones. The learning management system referred to in this case offers both offline and mobile access to learning content and information sources. Deserving students received sponsorships to purchase data for study purposes.

Disaster Management and Risk Management

The CDI in this study had to consider existing disaster plans. Ezenyilimba, Maduagwu and Eze (2018) allude to the four components of a disaster management plan namely: prevention, preparedness, response, and recovery. Although most higher education institutions have disaster management and risk management strategies, these did not address the challenges faced during lockdown and many institutions struggled with this transition. The COVID-19 pandemic significantly differs from previous disasters (Dahlke et al, 2021). Whereas most of the South African Library and Information Services have disaster plans in place, it is questionable whether these prepared libraries sufficiently, neither assisted them during the recent lockdowns. Ezenyilimba, Maduagwu and Eze (2018) describe disaster management as plans activated during unforeseen events to prevent harm to people and resources and to continue operating. However, the full impact of emergency remote services was not anticipated and clearly mapped in existing policies.

Emergency remote teaching and emergency remote library services

eLearning should not be confused with emergency remote teaching and learning (ERT), where support attempts to provide emergency and temporary access to instruction and instructional supports in a manner that is quick to set up and is reliably available during an emergency or crisis, (Van Wyk et al, 2020). ERT is a temporary shift to an alternate education delivery mode that may return to normal once the crisis ends. eLearning refers to learning in which instruction, and engagement with lessons, activities and assessment occur predominantly online, as is the case in this study.

The evolution in technology and its ubiquitous nature changed all facets of society, including higher education and libraries. It altered the way we live, how business activities are conducted, and how knowledge is shared. Considering the continuous evolution of technology and the emergence of 4th industrial revolution (4IR), technological skills have become an essential requirement and to participate in the current digital era. Libraries have also witnessed the transformation, but there are still sectors in Africa and southern Africa that have not made this transition and still rely on outdated practices and technologies. Nowadays, teaching and learning activities are being subjected to various technological innovations offering flexibility for students and information specialists. Literature has also shown that effective use of technological resources, such Mobile library services offer student ample access towards a high learning gain. Therefore, lack of information and digital literacy and fluency will hamper students' potential to succeed (Matli & Ngoepe, 2020)

Microlearning and Mobile library services

Wang et al (2021) suggest that microlearning has benefits during disruptive events. Microlearning is seen as offering learning content in smaller, episodic, manageable, and easy to use by students, often using mobile technology as access point. Wang et al (2021) mentions that characteristics of microlearning could include shorter engagement periods, offering less content at a time; coherent, and being media rich. Micro-learning as part of the learning strategy was considered in this case for overall ERT strategy and well as for library support. This is learning that focuses on a subsections of a topic at any one time. Sadeck (2016) distinguishes between eLearning, which is technology-assisted learning, and eTeaching, which is what the educator does in an online environment. He posits that eTeaching should be the preferred term as this directly involves the educator. An argument for eFacilitation in libraries could be made. The ERT strategy for this study had to be cognisant of these difference.

Digital literacy and digital fluency

Due to the proliferation of digital technologies and educational technologies, digital literacy and digital fluency are requisite skills for information specialists, lecturers and students alike. Digital literacy entails individual awareness, attitude, cognitive thinking and the ability to appropriately utilize technological tools and infrastructures. It also entails locating, assessing, analysing and integrating digital resources to generate new insight in a specific context. Digital literacy entails individual awareness, attitude, cognitive thinking and ability to appropriately utilize technological tools and infrastructures (Matli & Ngoepe, 2020). It also entails locating, assessing, analysing and integrating digital resources to form generate new insight in a specific context. Literacy exceeds mere ability to read and write with meaning and understanding, and the digital skills goes beyond having mere technical skills. Individual cognition perceived on the digital tools is pivotal for student transition (Clarke, 2020). Students who lack technological skills are at a severe disadvantage. This sociotechnical reality has compelled the need to improve digital literacy, which is the prerequisites to be a participant in a digital ecosystem (Nelson, Courier, & Joseph, 2011). The ubiquitous and pervasive nature of disruptive technologies resulted in reformation of society at large. Considering the continuous evolution of technology and the emergence of the 4IR, technological skills have become essential for participation in an online teaching and learning environment. Clearly, a lack of digital literacy will negatively impact students' success, especially during times of crises.

Literacy fluency exceeds the ability to read and write and imply that sensemaking and understanding will take place. Likewise, digital skills go beyond having technical skills (Clarke, 2020). Jacobson and Mackey (2013, 2016) allude that a narrow definition of digital literacy would not suffice in online teaching and learning as digital pedagogies and critical digital librarianship are important subsets to be

considered. Lecturers need to inculcate a more comprehensive approach to metaliteracy to advance critical thinking and reflection in online learning communities.

Information Poverty and Protective Information Behaviour

Marcella and Chowdhury (2021) remind that information poverty and information deficit, of the information rich and the information poor have pervaded information services and information science for decades. Similarity, researchers in information behaviour have explored information as an empowering agent, in terms of the ways in which access to and use of information can assist individuals to overcome obstacles, take advantage of the opportunities available to them and improve their lives (Marcella & Chowdhury, 2021). One of the biggest challenges higher educational institutions face is the issue of digital divide existing among students. Digital divide refers to the gap between individuals who have access and skills to use information and communication technology and those that do not (Soomro, Kale, Curtis, Akcaoglu, & Bernstein, 2020). Important to note that South African higher education institutions are faced with complex and unequal socio-economic realities and equality gaps (Howard et al., 2020). Here, information poverty is a social condition that has been around for decades. IFLA (2018) describes information poverty as a condition where individuals, groups and communities lack the essential attributes, access and resources to find and apply quality information. Marcella and Chowdhury (2020) state that information poverty points to the exclusion from access to information sources. Exclusion may be the result of sets of barriers that may include technological-, educational-, and economic barriers, among others and leads to an information deficit. The occurrence of emergency conditions will exacerbate these existing barriers and information poverty. Typically, information poverty and poor information infrastructure and support go hand in glove (IFLA, 2018). Not having the required infrastructure, such as connectivity, data, devices, and laptops, as well as digital fluency is problematic. In addition, human agency is necessary to accommodate the dire need for human support among disadvantaged students. They must be able to rely on the continuous support of online and emergency remote library services. Mere access to technological resources does not guarantee better academic performance, if students lack technological skills to capitalise on such technologies for learning.

Human agency and collegiality in a changed online landscape

Generally human agency is described as an individual's will and capacity to make purposive decisions and consciously reflect and act on their environment. Bandura (2018) states that is a metacognitive capability to reflect on your capabilities, actions and thoughts. The two questions are how does human agency change in an online environment; and can agency be collegial and collective? Aitken and Hays (2021) state that online education requires human agency, while Bandura (2018) postulate that collective agency is just as important in sharing knowledge.

RESEARCH DESIGN

This study followed the implementation of a CDI strategy at a higher education institution in South Africa. The broader institutional CDI plan indicated the need for further research to prepare libraries to continue operations during COVID-19 lockdown. The purpose of this paper was to explore the readiness of staff to switch to emergency remote teaching and information support. It aimed to implement interventions on further training and support required and to resource staff to cope with the sudden change and rapid response to this change. This study collected qualitative data during focus group interviews with information specialist and their managers. The non-probability sample was purposively selected, consisting of information specialists of 26 campus libraries of the institution. The transcribed data were coded and thematically analysed. Focus groups in research studies can be described as a form of group interview in the presence of an interviewer or moderator (Bezuidenhout, Davis, & Du Plooy-Cilliers 2014). In the focus group studies, the interaction within the group is important to get the desired information on a specific research topic and the collective views are more important that the individual's view. It is important to note that the focus group was done after the results of the broader study was known, and initial training and orientation were already in place.

The qualitative data collected during the focus group interview were analysed using thematic reflective analysis to codify categories and main themes from the rich data gathered. Vaismoradi et al. (2016) state that qualitative research, as a group of approaches for the collection and analysis of data, aims to provide an in-depth, socio-contextual and detailed description and interpretation of the research topic. In this case in-depth socio-technical information and data were gathered. Qualitative content analysis and thematic analysis are classified under the qualitative descriptive research design aimed at systematically describing a phenomenon, situation, or population.

Thematic analysis is related to phenomenology, and focuses on the participants' perceptions, opinions, feelings and experiences subjectively (Noon 2018). The focus group interviews were recorded and transcribed. Coding the rich data and certifying transcripts as a true and correct reflection added to the trustworthiness of the study. Researcher observations and field notes map the analytical process and uncover researchers' perspectives and refine data collection.

COLLECTION OF DATA

The focus group interview was conducted online, recorded and transcribed. The transcription was audited and certified to be a true copy of the focus group discussions. During the focus group

discussions participants shared their experiences, challenges and involvement in the institutional ERTS. In addition, secondary data were considered from the literature review and from the broader institutional quantitative study (see Van Wyk, et al, 2020). Primary data were obtained from the focus group interview, transcribed and thematically analysed. Guided by the chosen conceptual constructs, the group were prompted with questions around their observation, reactions and experiences on the ERTS implementation, the management of the crisis, observed sociotechnical challenges among staff and students such as access, inequalities, networking and levels of digital literacy and fluency among staff and students. There was good synergy in the group and discussions resulted in rich and useful data. Collected data in this study included research observations and fieldnotes. All research ethics were observed.

ANALYSIS OF DATA

The primary data from the focus group interviews are explained in Table 1. Secondary data obtained from the prior survey (Van Wyk, et al, 2020) assisted in the preparation of the focus group interviews. The subsequent focus group interviews transcriptions were analysed following thematic analysis steps explained by Clarke and Braun (2017) being: getting familiar with data, generate initial codes, identifying themes, revision and generating a report. Thematic analysis is the process of identifying codes from which patterns and themes derived (Vaismoradi et al., 2016).

DISCUSSION OF FINDINGS

Vaismoradi et al (2016) state that qualitative research, as a group of approaches for the collection and analysis of data, aims to provide an in-depth, socio-contextual and detailed description and interpretation of the research topic. As such, the study provides seven themes:

Theme 1: Response to the ERTS.

Participants shared that after some managers wanted to close libraries entirely, they eventually did form part of the ERTS. The critical importance of access to information during the sudden shift to remote learning was realised. Findings are that the information specialists found the ERTS useful but reported that despite training, they were only partially prepared for the challenges to be faced.

Theme 2: Networking

Participants reported that the transition was difficult, but the support and guidance received from the National and Regional library management assisted in transitioning from predominantly offering services in a physical setting. Librarians formed communities of practices (CoPs) to support each other remotely.

Theme 3: Perceived readiness for remote support

Library training and refresher courses offered the necessary exposure to digital and Mobile library services. Library electronic sources, tutorials and prescribed material was already embedded and accessible; via the library website and the learning management system. Information specialists were provided with laptops and data to work from home.

Theme 4: Management and monitoring

Participants reported that they were part of compiling daily action plans, and that they had to report on specific goals and outcomes. Participants felt supported by management.

Theme 5: Sociotechnical aspects

Participants mentioned that regrettably, affluent data and information providers were initially unapproachable in getting reasonable and discounted data packages for students. This had a negative effect on the prevalent information poverty during this crisis. They further shared that some students were overwhelmed and lacked motivated to study. The participants said that better collaboration between student-wellness divisions and libraries could have been better to assist students.

Theme 6: Human needs, skills and capacity

Participants shared that many students confided that that they feel isolated, anxious and overwhelmed. They reported that many students were struggling with social problems at home, and often could not find a quite space to study. They reported that a lack of student agency towards making self-reliant decisions pointed to the presence of information poverty and information avoidance behaviour. Furthermore, a lack of digital fluency among students and some lecturers was observed. To address these challenges, the Library and Information Services assisted with the creation of annotated bibliographies for assignments and online classes to assist access to the right information. Some participants conceded to their own lack of digital literacy and pedagogical knowledge as well as online facilitation skills. They felt that needed additional training.

Theme 7: Praxis and agency

Participants shard that they were in the process to develop improved online services to postgraduate students and online students but had to expedite the rollout of these plans on a wide scale when lockdowns were enforced. Students shared that they missed the opportunity that collaborative learning offered in physical library spaces.

General observations and comments were:

- Participants shared that the change in assessment strategies to include more self-study and portfolios of evidence instead of summative assessment, highlighted the need for students to know the sources and services available to them;
- The importance of honouring vendor agreements such as Digital Rights Management was reaffirmed, as innovative interventions must still be legal;
- The need for libraries to constantly update skills such as digital literacy was underpinned;
- The role of libraries as academic partner and as advocate for the eradication of information poverty was highlighted.

In Table 1 the seven themes and sub themes that emanated after coding and data analysis are summarised:

Themes	Sub Themes
Theme 1	
Responses to ERTS	Planning, implementation and monitoring
	Including the library as academic support partner
Theme 2	Sub themes
Outreach and networking initiatives	Collegiality
	User groups
	Support groups
Theme 3	Sub themes
Perceived readiness of library staff	Capacity
to continue online	Skills gaps
	Flexibility
	Resourcing
Theme 4	Sub themes
Management, monitoring, quality	Weekly reporting
and support	Contractual and legal considerations: revision of contractual
	agreement
	RDM
	Collaboration with other academic departments
	Time management, integration and productivity
Theme 5	Sub themes

Table 1: Themes

Sociotechnical constructs	Data costs, affordable connectivity and access
Sociotecnnical constructs	•
	Information poverty, information avoidance and protective
	behaviour
	Literacies, metaliteracy and fluencies
	Remote technical and information support
Theme 6	Sub themes
Human needs	Inclusivity/exclusion
	Motivation
	Anxiety
	Trust
	Collaboration
	Human agency
	Remote wellness support
Theme 7	Sub themes
Praxis, observed student agency	Critical digital pedagogy and online facilitation
	Observed changes in student agency
	Participation in hybrid online spaces
	Library online embeddedness and participation
	Literacies: Information, digital and metaliteracies
	Micro learning and microcontent
	Mobile learning and Mobile library services
	Instructional design, tutorials, facilitation

Ultimately the most important observation was that the institution's decision makers and sectional managers at first considered closing libraries and letting staff go on leave. This was opposed and the resulting response was praised and welcomed by both academics and students. The role of academic libraries as academic partners has often been underpinned in literature (see Henderson, 2016). This was corroborated in this study too, and librarians were generally of the opinion that the disruption afforded the opportunity of libraries to be valued as a worthy academic partner. As one of many examples, some information specialist relayed how they assisted lecturers with finding resources by creating annotated bibliographies to assist in document discovery.

RECOMMENDATIONS

It is during disruption that inequalities are most visible. In Figure 1 a transboundary model is presented. The need to cement the Library and Information Services as an academic partner capable of addressing inequalities and information poverty was established. The model takes into consideration that times of crises quality and legality should not be compromised, but that sociotechnical pressures such as information poverty must be seen as an ongoing reality. The model underpins the need for information specialists to be present, visible and proactive in higher education, and to embrace new developments. The model emphasises the importance of transboundary innovation and collaboration, both within the institution, as well as with external parties such as vendors, services and systems. The model underpins the importance of critical digital librarianship as well as critical digital pedagogy.

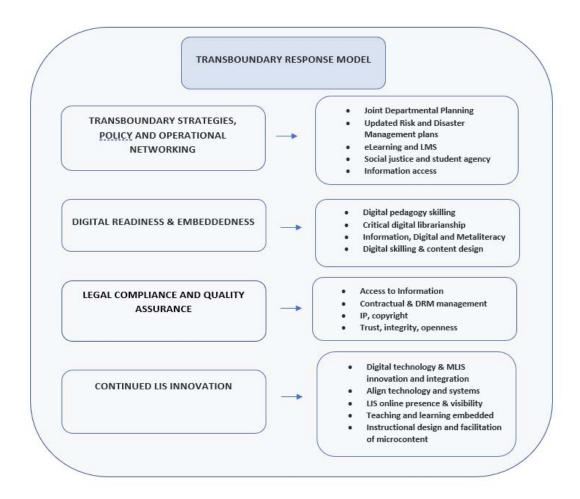


Figure 1. Transboundary Library and Information Service Response Model

On explaining critical librarianship Drabinski (2019) warns that in our efforts to make access to information seamless, the information specialist can become invisible. But the model explains four areas where the presence of the library in the transboundary working towards an innovative response to disruption is critical. The areas include adapted policies, strategies; constant monitoring of responses and readiness to change; the importance of legal compliance and a continuation to adapt and innovate

towards a responsible, just and inclusive system to cope with disruption. The model could be used to reaffirm the positioning of academic library services in higher education.

CONCLUSION

The aim of this study was to gauge the response of information specialists on the implemented ERTS. The most important finding was that the institution initial response was to close libraries during pandemic lockdowns. On the insistence of the library management, the libraries remained open and adapted services in an online setting. While emergency remote teaching is an emergency and rapid response to crises situations, the exercise allowed for much introspection on how to improve on current praxis. The valuable lessons learnt not only assisted libraries to improve on policies and procedures, it also highlighted the critical role that libraries play as an academic partner in a still unequal educational ecosystem. The true impact of information poverty was realised and the renewed importance of Library and Information Service presence and embeddedness in teaching and learning towards improved inclusivity and social justice came to the fore. The value of the study lies in the institution-wide transboundary response proposed as an intervention, which also serves as a blueprint for future eventualities. Findings emphasised the need for further research in library risk management, understanding the affordances of mobile library services and the creation of microcontent to support teaching and learning. The rigorous research in a real-life setting both on institutional level and on a Library and Information Service, level allowed for the capitalisation of circumstances for libraries to prove and establish its pivotal role as academic partner in higher education.

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