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Artículos

Disaster Risk Management: Mitigating the Effects of Flooding at the University of Guyana[1]

Gestión del riesgo de desastres: Mitigación de los efectos de las inundaciones en la Universidad de Guyana

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Abstract

Literature tells us that resilience is an ability to recover from or adjust easily to misfortune or change. History is replete with cases of the resilience of humans, organizations, societies, and systems. The University of Guyana Library (UGL) has endured some major floods at its current Turkeyen campus location, which have resulted in significant damages, and change in space allocations. Its survival after these disasters can be attributed to a combination of critical strategies. However, it has been recognized that for academic libraries to recover quickly and be resilient in the face of disaster, it is important that there be plans and policies designed to guide risk reduction, response, and recovery. This research will document the effects of and the responses to the annual flooding that the UGL has experienced. It will also outline a proposal that makes specific recommendations for the UGL as it relates to planning for flood and its effects, securing assets to avoid flood damage, and maintaining the library's services and access to resources during flooding.

Keywords: disaster management, academic libraries, disasters in libraries, Latin America

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Resumen

La literatura nos dice que la resiliencia es la capacidad de recuperarse o adaptarse fácilmente a la desgracia o al cambio. La historia está repleta de casos de resiliencia de humanos, organizaciones, sociedades y sistemas. La Biblioteca de la Universidad de Guyana (UGL) ha sufrido algunas inundaciones importantes en su ubicación actual del recinto de Turkeyen, que han provocado daños significativos y cambios en la distribución de espacios. Su supervivencia después de estos desastres se puede atribuir a una combinación de estrategias críticas. Sin embargo, se ha reconocido que para que las bibliotecas académicas se recuperen rápidamente y sean resilientes ante un desastre, es importante que existan planes y políticas diseñadas para guiar la reducción de riesgos, la respuesta y la recuperación. En este trabajo se presentan los efectos y las respuestas a las inundaciones anuales que ha experimentado la UGL. También se describe una propuesta que hace recomendaciones específicas para la UGL, en lo que respecta a la planificación para inundaciones y sus efectos, asegurar los activos para evitar daños y mantener los servicios de la biblioteca y el acceso a los recursos durante estos eventos.

Palabras clave: gestión de desastres, bibliotecas académicas, Latinoamérica

Disaster Risk Management: Mitigating the Effects of Flooding at the University of Guyana

Introduction

Natural disasters are part of nature and occur throughout the world. Zhou et al. (2018) define them as "… the natural processes that occur in the ecosystem, which can lead to loss of stability" (p. 567). The occurrences of natural disasters and an intensification of their usual catastrophic aftermath have been evidenced by events such as the deadly 2004 tsunami which resulted from an earthquake near the Indonesian island of Sumatra and devastated Indonesia and many countries in Asia (Zaveri, 2014), the severe 2013 flood disaster in India (Ziegler at al., 2014), and the ravaging 2017 hurricanes Irma and Maria that hit several Caribbean islands (ALA, 2018). Disasters affect people, services, systems, infrastructure, and most importantly, libraries. According to Ugwuanyi et al. (2015) "libraries like any other organization are most likely to experience disaster which are likely to result in their loss of expensive, precious or even elusive materials" (p. 4).

Throughout recent history, the coastlands of Guyana have constantly been affected by flooding. Flooding in Guyana is mainly caused by heavy rainfall, either in keeping with seasonal patterns or random, unexpected rainstorms. Sea defense breaches also result in significant flood catastrophes in Guyana. According to Pelling (1997), in Georgetown, the capital of Guyana "surface water drainage is hampered by underlying, impervious clay soils and a resultant flat topography and elevation at about or below mean high water level" (p. 204).

Like all other forms of natural disasters, floods can have significant negative impacts on libraries. The University of Guyana Library (UGL) has endured some major floods at its current Turkeyen campus location, which have resulted in significant damages. In 2005 the University of Guyana Library experienced its worst flooding disaster at its Turkeyen Campus. Not only did the library lose a number of books, journals, correspondence, catalogues, computer hardware and software, and furniture, but staff members were also displaced for several weeks following the flood. This disruption affected the library's ability to cater to its clients effectively in terms of the provision of physical spaces and access to resources. While the 2005 floods were the worst in the history of the UGL, the library continues to face flooding and its effects in various degrees annually. With climate change and unpredictable weather patterns, it is critical that the UGL not only be in a state of readiness to respond to future disasters, but also have plans for the avoidance of such disasters. This paper will highlight how flooding has affected the UGL and some of the resulting changes. A proposal for mitigating the effects of flooding at the UGL will also be presented as it relates to planning for floods, securing

assets to avoid flood damage, and maintaining the library's services and access to resources during flooding.

Literature Review

All types of disasters can potentially be devastating for libraries, but it is water-related disasters such floods that are the most severe (Zaveri, 2014). In his research, Few (2003) posited that "climate change is likely to cause an increase in flood hazard in many areas of the world" (p. 45). Libraries will not be spared the resulting hardships, as Robertson (2014) is of the view that any library situated within close proximity to an expanse of water is at risk of flooding. Flood waters can be relentless, thereby causing disruptions for long periods of time (Few, 2003). Many examples existing in the body of literature show how libraries have been affected by flood disasters.

In 1975, the Case Western Reserve University Library, Cleveland, Ohio was flooded, approximately 40,000 books and 50,000 maps became wet and muddy and the cost of recovery was estimated at $540,000 (Buchanan, 1988). Montserrat Public Library was flooded in the aftermath of Hurricane Hugo in 1989 and suffered significant losses (Cassell, 2004). The 1997 flood in Colorado caused irremediable damage to 500,000 volumes, as well as shelving, staff offices and study rooms in the Morgan Library at Colorado State University (Lunde & Smith, 2009). Ray (2006) described the 2002 Prague flood and its debilitating impact on the more than 40 libraries that got flooded throughout the Czech Republic where hundreds of thousands of books were destroyed, and damages to equipment and other infrastructure were estimated in millions of dollars. The resulting floodwaters from the 2004 tsunami in South and Southeast Asia damaged and all but obliterated several libraries in Sri Lanka, and Indonesia (Amarasiri, 2005; Robertson, 2005). Foley (2019) in chronicling the effects of the 2018 flood that affected Chifley library, a branch of the Australian National University (ANU) library, highlighted that many important collections were damaged, and sections of the library became infested with several types of mold.

Most noteworthy is that libraries affected by flood waters at the earliest possible time apply corrective and remedial action to save and salvage their resources. The Czech librarians and archivists quickly mobilized and were able to send a significant percentage of their flooded collections to be frozen after cleaning them and wrapping them individually in foil (Ray 2006). This freezing was undertaken to help with preventing the spread of mold. The items were subsequently thawed and processed over time using the appropriate measures.

Methodology

According to Coghlan & Brydon-Miller (2014), "positionality refers to the stance or positioning of the researcher in relation to the social and political context of the study -

the community, the organization or the participant group" (p. 628). A researcher's position within a study can range from being that of an insider to one as an outsider (Herr & Anderson, 2012). In this study, the researchers have an insider role in the research process as a result of their Senior positions in the university library where they hold supervisory responsibilities. This is in alignment with Herr & Anderson (2012), who posited that the insider researcher studies their own practice. The researchers in this study may contribute to the data based on some of their own experiences.

This study is qualitative in nature thereby qualitative strategies were utilised to collect and analyse the data. Data was collected through interviews and document analysis, and analysed through manual coding categorising. Purposive sampling was used to select the participants who are staff members at both the senior and junior levels in the library. The data was collected through interviews and document analysis.

According to Given (2008), interviews are direct means for researchers to get information on what people are thinking, feeling, and doing. The six interviewees included three supervisory staff and three junior staff. A semi-structured interview guide was used to focus the one-on-one interviews, which were audio-recorded with the participant's permission and transcribed verbatim. "Document analysis is a systematic procedure for reviewing or evaluating documents—both printed and electronic material" (Bowen 2009, p. 27). For this study, University of Guyana Library Annual Reports, minutes of meetings, local newspapers, and photographs were analysed to provide background information and historical insight on the flooding situation of the university library.

Case of University of Guyana Library

In January 2005, after a period of prolonged rainfall, the Turkeyen Campus was inundated with flood waters. On Monday, January 17th, 2005, staff at the university were met at the entrance with several feet of water. This prevented staff members from entering the Campus. Braving the flood waters to get to the library a few days later, senior and junior staff members were dismayed to see the library under three to four feet of water. In sharing their experiences, the interviewees had one common perception about the effects of the 2005 flood, that is, they all felt that it was *devastating*. According to one staff member who was interviewed, *"Seeing the library under so much water with books, furniture, and the catalogues soaked was so devastating. It was one of my saddest days."* For another interviewee, it was devastating seeing materials being disposed of, she shared, *"In the Social Sciences Division, which was on the ground floor at the time, it was devastating to see most of the books had to be thrown away."*

It was even more heartbreaking because immediate action could not be taken to save the resources. There was just too much water; according to one participant, *"we had to wait for the water to drop outside in order to release the water from inside. This caused fungus to affect the books."* By the time some amount of water had pulled off, it was somewhat safe for staff to access the library building, mold, and fungus had taken over

the entire ground floor and was creeping up to the first and second floors. There was damage and destruction all around, neither books, journals, shelves, furniture, or catalogues were spared. For those volumes of books that were not waterlogged, these were moved to an offsite location - the Sophia Exhibition Complex - for air-drying and a means of protection from fungus infestation.

Despite remedial works such as empoldering the library's outer perimeter in 2005, the library continues to face various degrees of flooding and effects annually. According to one participant, *"While some measures were put in place, these have not prevented water from coming into the library; rather what they did just took away a lot of space."* Another participant shared her perspective by saying, *"Water still seeps into the library after the rains, and it seems to be coming from beneath the ground."* Another participant shared the following perception in relation to the physical remedial works that were undertaken, "*The floor in the library should have been lifted rather than the outside of the library."* Figure 1 below shows an image of water on the Ground Floor in 2017 after a period of relentless rainfall.

Figure 1.

UG Library Ground Floor - 2017 Flood

The documents that were analysed corroborated the evidence gleaned from the interviews. Figure 2 below shows some of the severity of the effects of the 2005 flood.

Figure 2.

UG Library - 2005 Flood

Changes as a Result of the 2005 Flood

The 2005 flood was of such significance that it caused some major changes to the University of Guyana Library landscape. Some of these are:

- All public services such as circulation and photocopying services were removed from the Ground Floor.

- Major collections such as the Social Sciences and Quick Reference collections were removed from the Ground Floor.
- Staff workroom was removed from the Ground Floor.
- The Bag Bay, an area where students leave their bags while they are in the library, was shifted from its original location to another area.
- An annual 'flood watch' exercise is undertaken prior to the annual Christmas closure. During this exercise, all low-lying materials are placed at higher levels, and computer equipment and peripherals are removed from the Ground Floor.

Despite these changes, participants in the study felt that the library is still not fully prepared to deal with catastrophic events such as the 2005 flood and they all indicated that it is time for an effective plan to be put in place. One interviewee said, *"The library must have a written disaster plan which will enable us to be proactive rather than reactive."*

Proposal

The predictions of the dangers of climate change worldwide present a serious case of vulnerability for libraries in the geographical location of the Caribbean and Latin American region. Guyana remains vulnerable to the effects of climate change. The University of Guyana Library is not currently guided by a disaster preparedness plan, but it is not alone in this situation. According to Robertson (2014), many libraries fail to have plans that can successfully deal with disasters mainly because it is taken for granted. Superio, Alayon & Oliveros (2019) found that disaster management plans were not common among libraries in many different countries worldwide. As librarians, we are very concerned with our abilities to remain resilient in the face of floods, especially as it relates to existing infrastructure, and budgetary constraints. We are also concerned because "flooding and water ingress cause more damage to libraries than any other risk" (Robertson 2014, p. 2). We feel that resilience can be built through effective planning that is proactive rather than reactive. The following recommendations are being proposed for consideration as necessary steps to possibly prevent flooding in the library, or to reduce the debilitating effects of such floods. This proposal follows a model that addresses preparedness and mitigation efforts.

Preparedness

It is no longer sufficient to respond to and recover from flood events. Rather, it is time to have an effective plan in place such as the University of Toronto's Disaster Plan (2022) which outlines emergency contacts, salvage operations, post disaster analysis, and prevention. The IFLA Disaster Preparedness and Planning Manual (2006) is also an excellent guide for preparation of disaster plans. The UGL may best be prepared for any future flooding emergency if there is a flood preparedness plan in place such as those mentioned above, that caters for flood proofing of susceptible areas, robust preservation

management of rare and valuable collections, as well as regular maintenance checks of roofs and windows. This plan should also outline responsibilities of various staff, and reporting and warning mechanisms. The preparation and subsequent dissemination of such a plan should be the responsibility of a committee comprising a representative from all levels of staff within the library who would be able to share different perspectives. In addition, preparedness measures must ensure adequate training of staff members, and the installation of effective signage within the library.

Mitigation

Mitigative strategies will help the University library to significantly reduce the negative effects that floods can have on its assets, resources, and collections. Some actions that can be taken are:

- Give urgent and immediate corrective action to library materials that have been damaged by water, by moving water-damaged materials safely to a suitable environment as soon as possible to begin the process of sorting, air-drying, or freezing.
- Assign remote storage for rare and valuable materials that are not frequently accessed to avoid the infestation of fungus.
- Apply building codes and standards such as those adopted from the International Code Council (ICC) (2015) or the International Building Code (2018) to the construction of future library buildings.
- Undertake robust preservation and digitization projects especially for valuable resources.
- Have backup energy such as a solar system to avoid or minimize service disruption.

Conclusion

Flooding is undoubtedly one of the most severe disasters that can affect libraries across the Caribbean. The effect that flooding has had on the University of Guyana's Library is reflective of this view which was posited by Zaveri (2014). Over the years, flooding has significantly affected the University's Library, with the flood in 2005 being the worst thus far. The flood that occurred in 2005 destroyed numerous items, materials, and special collections, while leaving staff members who witnessed it devastated. Not only were valuable items in the library destroyed, but staff members were unable to attend work for several weeks due to the amount of water that filled the library. The aftermath of this flood was so intense that many infrastructural changes were made to the library. Though these changes were made, however, flooding continues to be a challenge for the library. While the aftermath of the floods that followed the 2005 flood was not as intense, it is still concerning since it continues to cause many disruptions to library services. As

expressed by the staff members who witnessed the flood and its aftermath, the changes made are insufficient to effectively mitigate flooding. The researchers posit the development of a comprehensive flood preparedness plan that they believe will effectively aid in the preparedness and mitigation of flooding in the library. With the development of such a plan, the library is likely to be less prone to flooding, and if flooding occurs, the effect will be minor. The researchers are hopeful that the development of this plan is brought to fruition in the near future.

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