

Assessing Educational Vulnerabilities in Flood Prone Area to Identify Strategies for Promoting Education: A Case of D.G. Khan District

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Abstract

Natural disasters disproportionately affect education sector, especially in the developing world hence it causes both short term and long term disruptions. These disasters especially floods affected education facilities, interfere with learning systems and pose a major concern to learners, educators and education officials in Pakistan. Therefore, the objective of this study was to analyze the educational risks of 2022 flood on the education sector of D. G Khan and to address the issues affecting students in order to reduce the impacts of floods on education. This study adopted the qualitative research approach for the collection of data to gain profound understanding of the problem. Hence an open ended interview guide was developed for conducting individual face-to-face interviews with the participants to collect the data. As the research sample, 30 children and teachers of the primary school were chosen and thematic analysis techniques were used. The research revealed that the impacts of floods were on school structures, as well as administrative and institutional facilities. The study also underscored the continued educational activities that could not take place for several months demoralizing educators and students. The interventions include rebuilding of the affected schools, training of teachers, organization and integration to facilitate inter-departmental cohesiveness and partnership to connect with the lowest stratum of society. This research will help to educate others regarding the extent of loss that happened in the educational sector of D. G Khan and the need for support.

Keywords: Educational Vulnerability, Natural Disasters, Flood Catastrophe.

Introduction

Disasters are a major threat that affects both the developed and the developing world. All the countries of the South Asian region have been impacted in the recent past by heavy downpour and monsoon floods. In this respect, the 2022 floods in Pakistan affected all the sectors, and the education sector was no exception to it. Similar to most of the other developing countries. According to the estimates, 84 million students between the ages of 6 and 16 years are not in school due to floods; this is 44 percent of the total children in this age range (Lassa & Surjan, 2023).

Flooding is considered as one of the most frequent natural disasters that leads to many victims and huge losses in many parts of the world. Affected by the climate change, the flood disasters especially happen in the low-lying coastal regions (Bosschaart, 2016; Sujaya et al., 2023). From the past research on disasters it has been identified that children being the most sensitive group of society are the most impacted by natural disasters with respect to education and schooling. As stated by the World Health Organization report of 2011, it is estimated that between 3-40%

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of children are deprived of education and schooling in view of natural disasters (Emadi & Choubin, 2022; Pal et al., 2023). They are not only vulnerable but also the least group to get food and health care as humanitarian aid. The children schooling is impacted since they are away from their guardian. Hence, disasters affect children and make them illiterate and develop behavioral and psychological problems.

The facilities of the schools are also affected by the natural disasters which in turn hampers the children's access to education. For instance in Pakistan, as the worst floods in the country's history in 2010 cut off access to 1600 schools on record. This demonstrates the significance of the school safety (Masten & Narayan, 2012; Waseem & Rana, 2023).

In the course of disasters, schools participate in the provision of disaster assistance to the public. Floods are the most frequent natural disasters in developing countries especially in Pakistan. Floods usually affect Pakistan during the monsoon periods and this is as a result of a lot of rainfall (Echendu, 2023).

The officials of Pakistan government revealed that due to climate change, more floods are expected to occur in the future. Pakistan has also experienced severe floods in the past particularly in the year 2010. Nationwide, these floods had affected 10,000 schools of which 9,000 were primary schools. The students and the teacher were the most impacted since there was a poor evacuation and coordination plan (Shah & Arif, 2020; Hussain et al., 2023).

Floods in District Dera Ghazi Khan has affected the educational system and has caused disruption and hindrance in the teaching and learning process. The concern in this case revolves on the educational problems of primary students and teachers. The consequences of floods have not only affected the physical facilities of the schools but also affected the academic activities which in turn affected the process of quality education (Mukaroma & Dewi, 2021). On this basis, the objective of this research is to examine the specific educational risks in flood affected areas of District Dera Ghazi Khan with respect to the difficulties faced by students, teachers, and schools during floods. It will also discuss on the strategies that have been put in place by schools and children in order to minimize the effects of floods on education, and come up with appropriate suggestions and recommendations to improve the provision of education in such cases (Hossain et al., 2023).

Literature Review

The literature reviewed suggests that in many cases floods have severely impacted the educational system to an extent that students struggle to access education. In times of floods, the school structures are used for shelters hence the schooling process is halted and students may fail to return to school or become truants. This is evident by studies done in flood regions that students are the most impacted part of the society by the negative impacts of floods because either their schools are closed for learning or they have to cross through floods which is risky (Fahad & Haffar, 2022).

From the statistics of the flood influenced schools, it was identified that 19,205 schools including primary, secondary and high schools (Farsangi, 2021). Among these, 11,890 were partially damaged, and 7,221 were completely damaged including education facilities. Hence, 6 million enrolled learners and 84,587 teachers were impacted in this case. The findings indicated that one million learners were defined as out of school. Long distances and poor facilities have always been a factor that has affected the accessibility to schools. This was further exacerbated by the floods as the above mentioned source depicted that property valued in millions of rupees was destroyed (Naidu & Mutanga, 2022).

The floods that happened in Pakistan in year 2022 affected 2155 km of roads as well as destroyed 394 bridges. The general demolition of structures also implies that the students are usually faced with challenges in accessing schools, arriving late and dropping out. Some eight million people in the various flood disaster areas required health care interventions. Malaria,

cholera, other vector-borne and water-borne diseases, and acute respiratory diseases are still issues to be addressed. Illnesses that are common in the society are as a result of inadequate water supply and poor sanitation, decayed water facilities among others. All these conditions affect the health status of children and their learning capacities in schools (Englund & Andre, 2023).

The bureau of UNESCO known as Asia Pacific Regional Bureau for Education stated in the year 2012 that floods have severe impacts on education. According to it, in the flood prone regions, the school going children were absent from classes and many of them had dropped out of school. The floods have also affected the household income and assimilation of the children in school and their health status. During the elementary and high school, there was a higher tendency for classes to be cancelled especially in areas that were flooded (Mawonde & Dzvimo, 2022).

Some of the many consequences include the conversion of schools into evacuation centers because of structural issues as well as increasing class size because of the large number of students. Exemplary weather conditions, school officials and heads have stated the questioning of school administration and education. Moreover, the schools which utilize the same facilities are affected by the disturbances in classes (Ardales & Espaldon, 2016; Rafiq & Mohy-ud-Din, 2018; Farooq, 2023).

Furthermore, they are poorly constructed, old, and situated on the floodplains, many school structures are also at risk of floods. In the rainy season the population and especially school children are exposed to flooded towns and school buildings which affects their learning. High levels of flood risk increase the negative effects of education and limit the pupils' access to their legal rights to education. Ones on public and private properties both are affected by the flood crisis to a greater extent.

Thus, supplying school children with disaster education and training that would enable them to develop a catastrophe attitude. In the same way, when schools are administered properly with good infrastructure then children perform well and quality education is provided to them (Thamtanjit, 2020; Qaisrani, 2021).

Materials and Methods

The research study was predominantly a qualitative one and the data was collected through systematic individual interviews. For the purpose of the study, the target group consisted of 30 children, teachers and administrators of the primary school and purposive sampling was applied in the research while the data was analyzed thematically. The sample includes 15 children, 10 school teachers and 5 school administrators. The data was collected through face to face and online interviews. Almost all the respondents were involved in the flood related activities in schools and post-flood response and rehabilitation in D. G. Khan.

A structured interview schedule was developed which focused on the subject's knowledge and opinion related to the sector before, during and after the flood. Thus, the need to assess the effects of the 2022 floods on education was identified in the literature review. The length of the interview with each of the respondents ranged from 30 minutes to 60 minutes. The respondents' consent was obtained, the interviews were noted down and the use of WhatsApp messages and voice notes was made to get some elaboration from the respondents on the information they had provided earlier. Later, the information was sorted to develop themes and subthemes.

Results and Discussion

Education has been a challenge even before the floods but the rains that fell between July and August 2022 and the floods that followed made it worse.

Damage to Schools during Floods

The majority of the respondents explained that children could not return to school due to school destructions. They noted that many schools were in a poor state even before the flood hit and with the floods, out of the 336 schools, 128 were totally destroyed, affecting the already struggling education sector. Damaged schools were high in number in D. G Khan District; 83 schools were damaged following Rajanpur 21, Layyah 18 and Muzaffargarh 5.

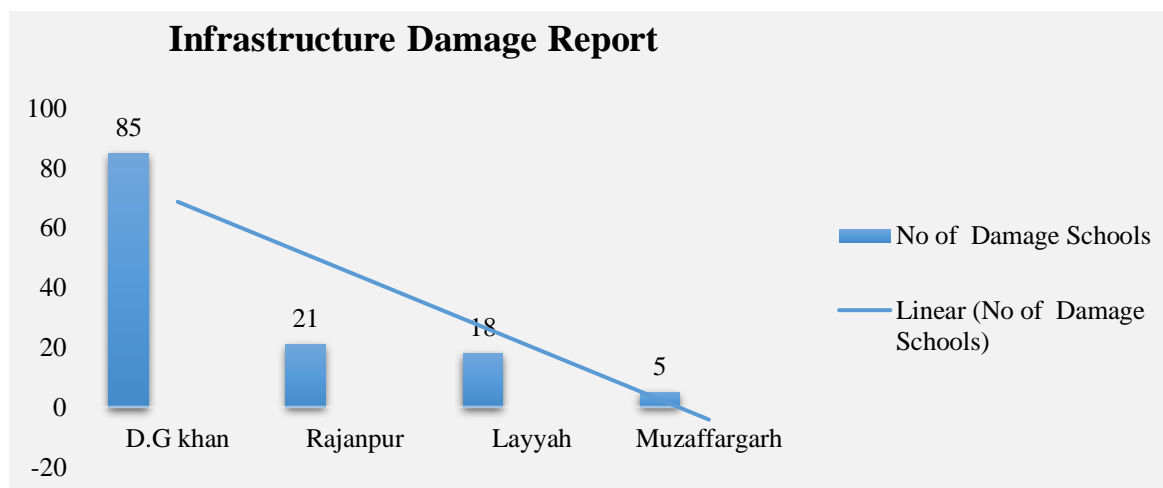
In the words of one of the respondents "it was rather sad to see that the situation of the schools was deplorable at the very least. Besides, it is known that many schools were in a rather poor condition, and floods only aggravated the situation".

This aspect of vulnerability of buildings to disasters was quite evident during these floods. A teacher from D. G Khan, one of the most affected districts narrated:

"The reason why urban flooding has particularly affected schools is the poor construction of school buildings. The only structures which were not affected by urban flooding were mosques, shrines and old schools. The allocation of funds towards education in our country is minimal, hence the funding that is given to schools is not adequate at all. The schools were closed for the two months. Following that schools were opened in 3 phases, first 20 schools were opened and then another 20 and at last on October 26, 2022 all the schools were opened even if some of them were unfit for education. It took approximately two months to reopen the schools. One can therefore deduce from this how much the floods affected schools" (IDI-030).

This, therefore, means that the substandard materials and the absence of standard construction have led to the school buildings being destroyed or collapse on such a large scale. Another issue that was also brought out by the respondents is equity. Not all districts may receive the same amount of attention in terms of acquiring resources and public and donors' focus. It was pointed out that the most affected district was D. G Khan and that hundreds of schools were either completely or partially devastated. This district already had limited ability to deal with the repercussions because of scarce funds and weak management.

Figure 1: Infrastructure damage report of D.G Khan Division



Using the School Structures for Temporary Shelter

After the floods, some schools were transformed into temporary shelters for the populace depending on the stability of the buildings' structures. As for the decision of the government to stop the project and save lives, the majority of the interviewees stated that it was correct

since the losses were rather significant and the lives of people were at stake. Another respondent stated that people also used the school compound to graze their animals especially the livestock.

A respondent mentioned,

“Developing countries like Pakistan should be ready for disasters. In such a situation, schools can be converted into shelters as the life of a human being is precious. Education is not as important in such cases, but the problem with using schools as shelters is that people further damage the building for their private use and the children suffer later on” (IDI-019).

Inversely, another respondent was of the view that,

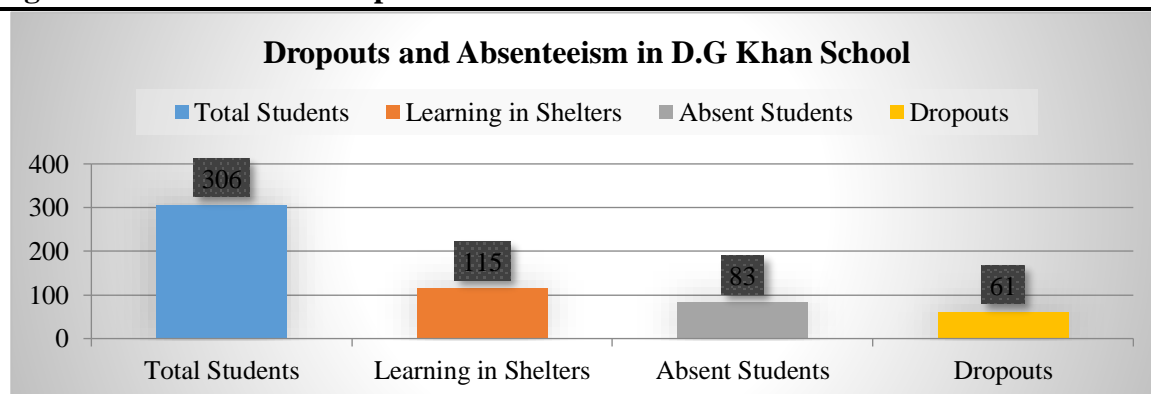
“It is my view that everyone has something to learn from others, but for a change or improvement in our education sector, it will require commitment from the teaching and non-teaching staff. For the institutions to be safe from disasters, all the administrators must be in agreement, and it should be made known to the government that the IDPs may not be allowed into the institutions” (IDI-006).

Student Absenteeism and Dropouts

When interviewed, the teachers and school management on the issue of dropouts in the aftermath of the floods, nearly everyone pointed at the likely increase in the number of dropouts particularly among the students in the secondary schools. However, at that time, they were concerned with students' absenteeism hoping that many families that left due to floods would come back when the water would recede and everything would improve.

One of the respondents stated that the restoration process has been initiated and the families and children are suffering from the effects and struggling to recover. On the contrary, one teacher from DG Khan who was also interviewed reported that “last year we had 306 students in the school and this year there are only 115. Out of the total 83 students are not present and 61 students are dropouts” (IDI-016).

Figure 2: No of student Dropouts and Absenteeism in a school of D.G Khan District



It can hardly be associated only with the floods, for DG Khan was almost completely affected by them; other factors that also contribute to student dropout should also be examined. Damage on the infrastructures was again mentioned as a factor that hinders access to education on a larger scale. A respondent said:

“The roads that were washed away by the floods are still not reconstructed and moreover, the influential people have further destroyed the roads to drain water from their compounds. Since the roads are under construction, children cannot

easily go to school, and this affects their attendance” (IDI-020).

Challenges faced by Teachers and Educational Staff

The floods that took place in D. G. Khan in the year 2022 also proved to be a nightmare for the teachers as they met with some or the other barriers that hindered their efficient teaching process. It relieved damage to school related structures, and many structures were flooded or completely washed away. This physical destruction not only affected the teachers but also affected the important teaching learning resources and aids. A teacher narrated “all our teaching tools were destroyed as well; we have to rebuild, but we do not have the funds to do so while still having to cover all the other needs of the school” (IDI-010).

The teachers had to deal with the challenges of providing education during the chaos including the challenge of finding space and resources to teach in. Also, the psychological stress that the teachers and students had to face along with the tragedy made the process of resuming academic activities even more challenging. A school administrator narrated “currently, a large number of our students are housed in provisional shelters, and some of the instructors have lost their homes as well; it is difficult to provide a coherent education” (IDI-015).

The floods revealed the important need for help in reconstructing schools, offering counselling services, and replacing educational materials so that the teachers and learners could heal and resume their academic processes.

Coping Mechanisms used by Students, Teachers and School Administration

In the 2022 floods of D. G. Khan, children, teachers, and school administration had to go through many struggles and used different ways to overcome the situation. Teachers were also affected by the disrupted schedules and we saw that classrooms and schools were destroyed, yet they offered emotional support to students and found ways of teaching them. These coping strategies were not only used to alleviate the consequences of the floods but also to strengthen the response of the educational institutions in D. G. Khan. A teacher said,

We attempted to ensure that the learners were active during the commotion. It was difficult to contain the children, yet we managed.” At the same time, school officials were busy ensuring that children were safe, that facilities had been restored, and that alternative learning spaces were provided” (IDI-011).

An administrator stated,

Our goal was to make the schools operational again so that children could return to learning and we had a huge challenge in front of us, yet with the help of the community we were able to get through it” (IDI-021).

Some of the respondents alluded to the involvement of the non-governmental sector that partnered the government in constructing the Temporary Learning Centres (TLCs). Others include; poor accessibility of toilets and poor assurance of one’s safety especially for the children. The governmental and non-governmental organization based approaches to provide basic amenities such as roofs, toilets and access to life skills classes. Nevertheless, the coverage was rather limited given the scale of the affected schools. Some schools moved the learners into tents on their own or with the assistance of helpers or donors, which enabled classes to continue. The interviewed respondents reported that the students appreciated the possibility to continue learning in TLCs. Moreover, since most of the affected areas were located in regions that were gradually entering the winter season, the students could not study in tents in freezing temperatures. One of the educators was organizing communities and always explaining to mothers that if children went to school, they could get better jobs and have a better life in the future.

In his words.

“In such a situation, teacher support is very vital. It tells the parents that

education is not just about finding better jobs; it also makes one a better person. This encouraged my students and their parents to send their children back to school” (IDI-027).

Another respondent narrated,

“The following recommendations should be made for all the governmental and non-governmental organizations involved in the recovery phase: They should encourage the communities to support their children to go on with their education especially during the ration drive and immunization campaigns, which are very vital in this process. The government should ensure that schools are put back into their normal state and teachers should report back to work” (IDI-007).

Conclusion

The flood occurred in D. G. Khan in the year 2022 posed severe problems to the education sector and compounded the existing problems and affected the education system. This study documented the effects of the floods on the schools’ physical facilities, procedures, and learning and teaching processes, a situation that has been observed in other disasters across the globe (Masten & Narayan, 2012; Naidu & Mutanga, 2022). The effects were worse in flood affected zones including D. G. Khan where schools were not only institutions of learning, but also preventive shelters for flood victims (Englund & Andre, 2023; Thamtanajit, 2020). This duality emphasized the importance of having disaster ready infrastructures as well as implementing disaster preparedness measures in education. Students, teachers and school administrators were also found to have displayed resilience through adaptation in form of establishment of Temporary Learning Centers as well as mobilizing the community in an effort to reduce the impact of education on the children. These efforts highlighted the significance of synergy between the government agencies, NGO’s, and the community in disaster and education management. The future recommendations based on the findings of this study suggest that there should be an increased spending on the disaster-resistant school buildings, the preparation of teachers for disasters, and the linkage between the education and disaster management sectors to protect education during disasters in the future. This work offers recommendations concerning the need to adopt measures that support the resilience of education systems in disaster-prone areas, within the broader framework of disaster management.

Recommendations

- The schools which have been categorized to be high risk should be considered very important and the reconstruction of the affected structures should be done at the earliest opportunity. Since there are many damages that have been reported to have happened in schools, there is need to have provision of structures that are friendly to the climate in schools.
- The kind of damages should also be well depicted and the comparison between the buildings that succumbed to the pressure of floods and those that faced the 2020 floods should also be made.
- All the participants hold to TLC but this other model does not assure that all learners will receive it. The stakeholders in the education sector established that in the areas most affected by the floods, literacy especially for girls was very low. Since physical facilities in schools are scarce, the time allocated for learning is limited, and there are also few books and desks in the schools, it will take more persuasion to ensure that parents assist their children to access TLCs and other similar facilities.
- Certain regions have to be treated separately because they are still not advanced enough. For

instance, D. G Khan was the least in the aspects of poverty in Punjab before the floods impacted the region.

- The government, non-governmental organizations and private sector could be involved in a process of constructing safe homes that has a feature of being green which would make children feel secure and families return children to school.
- This implies that the government and schools should have contingency plans to act at the beginning of the yearly monsoon floods.

Suggestions for Further Study

- This research is specifically on the public sector education and, while the floods affected private sector schools as well as their management, teachers and students, the latter is not discussed in detail. An assessment of the situation of private schools is required.
- A discussing of the educational vulnerability and the ways to cope the situation found in D. G. Khan in relation to the other parts of Pakistan is required. It could raise awareness of differences in the responses and reveal the effectiveness of some strategies to be applied to enhance the resilience of the education systems.

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