

School-community resilience building: A case of integrating disaster risk management in school education in NCT of Delhi

Vipul Kumar Nakum¹, Dr. Sriram Divi²

¹Research Scholar, Pandit Deenadayal Energy University, Gandhinagar

²Associate Professor, Pandit Deenadayal Energy University, Gandhinagar

Abstract

The role of 'Education for All' is envisaged at creating a better human resource, socio-cultural development, integration of social and national values, and modernization of the society. Education for all is also the prime requirement for the country as a whole in terms of socially, economically, politically, culturally, morally, and moving towards quality, equity, and efficiency of the Indian education sector.

On the other hand, the increasing risk of climate change and disaster makes critical infrastructures such as schools highly vulnerable. The comprehensive school safety framework aims to reduce the chances of all hazards to the education sector (UNDRR, 2017). It focuses on child-centered and evidence-based efforts to promote disaster risk management throughout the education sector and ensure universal access to quality education.

The paper attempts to highlight the efforts made in the state of NCT of Delhi to ensure the safety of children in schools as the region is prone to multiple hazards, including earthquakes, floods, air pollution, dust storms, lightning, fires, heatwave, cold wave, etc. A systematic review of the school safety indicators enacted in the state, supported with the three empirical cases of its implementation, has been presented in this paper. The paper also reviews similar best practices promoting a culture of safety within the education system.

Keywords

Comprehensive School Safety, Disaster Risk Management, Resilience, School Community, Education

Introduction

The 'Education for All' is envisaged at creating a better human resource, socio-cultural development, integration of social and national values, and modernization of the society. Education for all is also the prime requirement for the country as a whole in terms of socially, economically, politically, culturally, morally, and moving towards quality, equity, and efficiency of the Indian education sector. Since independence, the Government of India has initiated several policies and programs for achieving Universal Elementary Education (UEE), such as National Education Policy (NEP) Sarva Shiksha Abhiyan (SSA), among others. These efforts have culminated in the Right to Free and Compulsory Education Act for 6-14-year-old children, known as the RTE Act.

Considering India's multi-hazard profile, the Government of India realized a School Safety Policy in 2016. It is rightly flagged in the policy that 'school safety' encompasses the creation of safe environments for children starting from their homes to their schools and back (NDMA, 2016). This includes safety from large-scale natural and human-made hazards, local hazards & risks/violence within school premises, transportation accidents, and environmental threats having adverse effects on the lives of children. Further, like schools and nearby communities nurture a symbiotic relationship, more so in case of disasters, this relationship should be institutionalized and strengthened to manage disasters and make the communities resilient efficiently.

The NCT of Delhi is the second-largest urban agglomerate of India after Mumbai and home of 1,67,87,941 people (Census, 2011). The region is highly prone to both natural and anthropogenic hazards. It has witnessed earthquakes, floods, air pollution, dust storms, lightning, fires, heatwave, cold wave, etc.

The NCT of Delhi is located in a seismically vulnerable area, i.e., seismic zone IV of the macroseismic zoning map of the country (MES, 2016). Delhi region has been experiencing earthquakes and tremors regularly, majorly due to underlying fault lines located in the area such as (i) Mahendragarh Fault, (ii) Great Boundary Fault, (iii) Moradabad Fault, and (iv) Sohna Fault. Some significant earthquakes of the region are the earthquake of Delhi (M: 6.5, 1720), the Mathura earthquake (M: 6.8, 1803); the Bulandshahar earthquake (M: 6.7, 1956); and the Faridabad earthquake (M:6.0, 1960). A report of the National Center for Seismology, Ministry of Earth Sciences, Government of India on Seismic Hazard Microzonation of NCT Delhi on 1:10,000 scale, 2016 presents the earthquake hazard index of NCT Delhi. The seismicity in the region is also governed by soil conditions, i.e., liquefaction potential.

Another significant hazard in the region is flooding along the River Yamuna. Since 1900, Delhi experienced nine significant floods in 1924, 1947, 1976, 1978, 1988, 1995, 1998, 2010, and 2013 when the Yamuna River crossed its danger level of 204.83 m (Gupta, 2017). In 2018, around 10,000 people evacuated their homes, mostly from settlements close to the river, when the Yamuna river at Delhi Railway Bridge in the North district stood at 206.05 meters (Davies, 2018). In 2019, the water level reached an alarming level of 203.37 meters at Delhi Railway Bridge, slightly under the danger level of 204.83 meters.

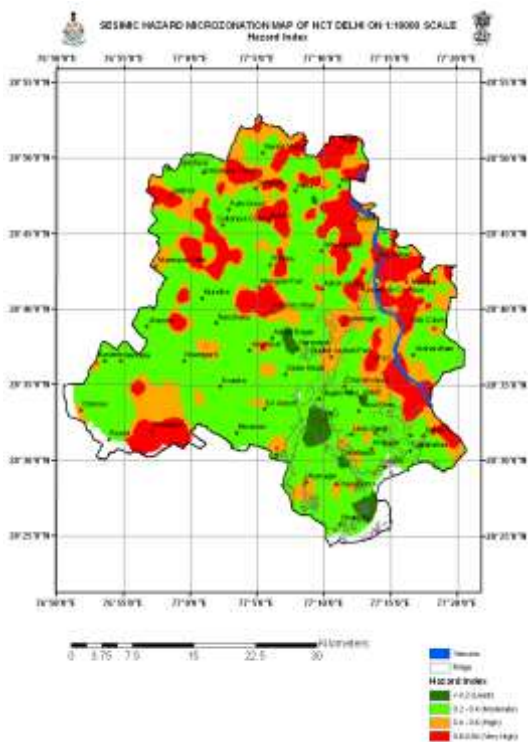


Figure 1: Seismic Hazard Index of NCT Delhi on 1:10,000 scale (MES, 2016)



Figure 2: Drainage pattern of Delhi and its Flood Plains (USGS, 2016)

The common day-to-day hazard for the region is fire. There are several major industrial establishments located in and around the area. The region is prone to fires due to chemicals, LPG, explosives, and short circuits of electrical systems. As per the records, 70% of fires have arisen due to short-circuiting and another 17 % due to carelessness (Department of Delhi Fire Services, 2022).

Cold waves and heat waves also affect NCT Delhi almost every year. On top of this, air pollution is becoming a growing concern now. IQAir also ranked Delhi with the worst air quality in the world capital city ranking (IQAir, 2020). The findings of the Ministry of Earth Sciences published a research paper in 2018 that confirmed the primary attributes are 41% to vehicular emissions, 21.5% to dust, and 18% to industries. The smog of 2017 has been reported as one of the worst air quality levels in Delhi since 1999. Biological hazards, mostly seasonal diseases, are also common. The recent COVID 19 pandemic, too, had shown its multifaceted effects. All these hazards have direct and indirect impacts on children and education in schools. Schools often get closed in the wake of floods, heatwaves, and now the COVID-19 pandemic.

1. Materials and Methods

This paper draws its findings through a systematic review of the literature and an empirical study. The authors have reviewed the policy frameworks around school safety in India in general and the NCT of Delhi in specific, such as the National School Safety Policy 2016 and the Minimum Standards of School Safety 2017, Directorate of Education, Government of NCT of Delhi. Along with this, efforts are also made to review the international best practices better to understand the principles of comprehensive school safety better.

The authors also present three empirical cases from three different areas of NCT of Delhi derived from the more extensive field study on the Urban Resilience Programme in Delhi.

2. Results & Discussion

a. Integration of Disaster Risk Management into School Education

The recent practices and studies suggest school children are the best enabler for increasing disaster resilience among the community. Safe schools are significant, considering that children spend a considerable amount of time. A safe school with the capacity to safeguard its occupants and resilience to cope directly impacts a child's vulnerability to disaster and climate change risks.

The comprehensive school safety framework aims to reduce the risks of all hazards to the education sector (UNDRR 2017). It focuses on child-centered and evidence-based efforts to promote disaster risk reduction throughout the education sector and ensure universal access to quality education. It rests on three pillars; 1) safe school facilities, 2) school disaster management, and 3) risk reduction education.

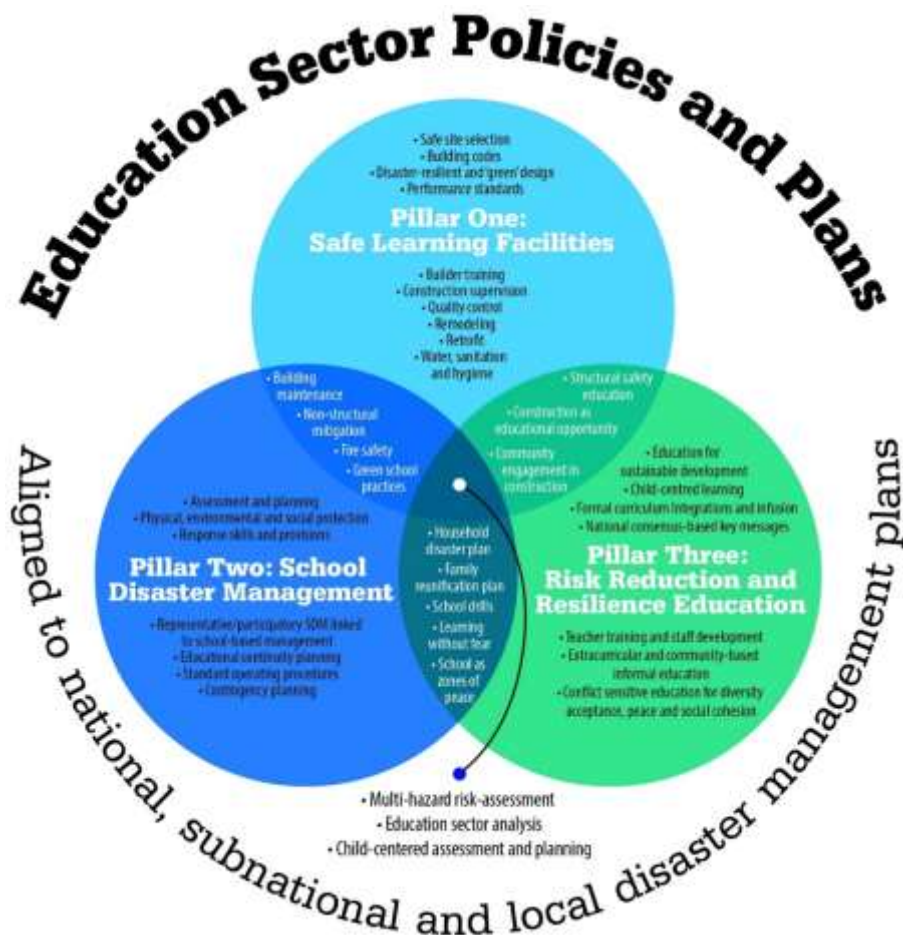


Figure 3: Comprehensive School Safety Framework (UNDRR, 2017)

A similar concept prevalent in Japan called “*Bokomi*,” meaning a *Disaster Safe Welfare Society*” which is based on elementary school districts established by residents, has developed into a highly resilient disaster public infrastructure through systematic efforts (Shiwaku and Shaw, 2016). It ensures that all schools are at the highest level of safety through their design and emergency plans regularly updated and tested through drills. In case of any disaster, the school district and nearby community share a symbiotic relationship, thus working in close coordination for response and relief. The community is the first responder to any disasters, and the schools, in return, can provide safe shelter to the community. The school districts act as the evacuation point, emergency shelter, and awareness generation hub.

For instance, during the 2011 East Japan Earthquake and Tsunami, the school districts effectively provided safe shelter for students, teachers, and the local community. It further envisages that all-new generations of children develop their capacities to respond appropriately when a disaster hits, to enable them to save their lives and contribute to protecting others. This is achieved through a tailor-made curriculum on disaster risk management and its implementation.

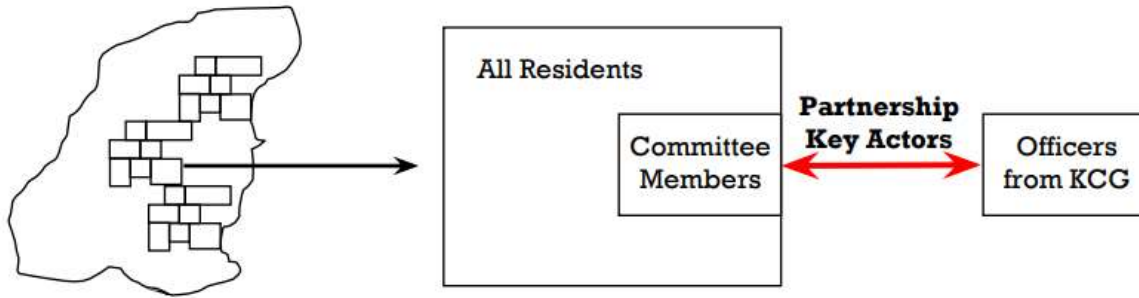


Figure 4: BOKOMI Model Kobe, Japan (Source: Community Linkages and Disaster Risk Reduction Education-2016, Shiwaku and Shaw)

b. Case of building resilience in school education in NCT of Delhi

The Government of NCT of Delhi is making efforts to provide educational facilities to every child and improve the quality of education. Initiatives are undertaken under this, including developing model schools by improving infrastructure and providing a safer school environment. Comprehensive school safety programs are being taken up by institutions such as UNICEF, Save the Children, etc., along with the government efforts in the NCT of Delhi. Similar school safety programs are also incorporated into all 11 District Disaster Management Authorities (DDMA) of NCT of Delhi. DDMA is the apex body responsible for disaster risk management initiatives in the district.

The Directorate of Education, Government of NCT of Delhi, has defined the Minimum Standards of School Safety in 2017. In exercise of the delegated powers of Rule 43 of Delhi School Education Act & Rules, 1973 and by the recommendations of the High-Level Committee for 'School Safety,' a comprehensive School Safety Checklist has been designed to encapsulate the minimum standards of School Safety to emphasize Zero Tolerance against any violation in this regard (Directorate of Education, 2017). It consists of 117 indicators under the following broad categories.

A. Safe structures and systems

- School Gate
- School entrance for visitors
- School entrance for staff
- School entrance and dispersal of students (entry & exit)
- Structural safety
- Toilets
- Abandoned/empty rooms
- Playground/lunch area
- Construction in school
- Food, water, and sanitation
- Electrical safety
- Fire/earthquake and other disaster preparedness
- Awareness and information regarding safety
- Ensuring the availability of suggestion and complaint box

B. Staff recruitment and orientation

- Police verification of all staff
- Orientation of new staff on school safety

C. Travel safety

- Excursion
- Transport

A comprehensive checklist is provided to each school to assure minimum standards of 'School Safety. The list is filled by each government school every month. *Sarvodaya Kanya Vidyalaya (SKV)*, a government school located in the Shastri Park area of Delhi, is one such school that strived to integrate principles of disaster risk management into their school environment and education. As provided by the Directorate of Education, Delhi, the school safety checklist is updated every month as directed.



Figure 5: Evacuation Map displayed at the entrance of the SKV Government School



Figure 6: East Delhi Municipal Corporation Primary School, Geeta Colony that was used as a flood shelter in 2018



Figure 7: East Delhi Municipal Corporation Primary School, Mansarovar Park displaying the Emergency Contact Numbers



As part of the disaster management planning, the school has prepared an evacuation map displayed at the school gate entrance, as given in figure 1 above. The school undertakes regular mock drills, and students participate in awareness activities. The security guard in the school is also well trained to ensure the safety of the students and does not allow access to strangers without due permission. School has formed the Parent Teacher Association to ensure the participation of parents in the education process and act as a prime source of awareness generation among the community on various aspects of disaster risk management.

The East Delhi Municipal Corporation Primary school located in Geeta Colony is another example that prepared the School Disaster Management Plan based on the format provided by the East-Delhi DDMA. The school has an evacuation map ready in the plan. Mock drills are conducted in the school, and fire extinguishers are installed. The school's location also makes it suitable to be used as a safe shelter during the time of the disaster, and it was used as an evacuation shelter during the 2018 floods in the area.

Like other government schools in NCT of Delhi, the East Delhi Municipal Corporation Primary School located in the Mansarovar Park also has a school safety checklist that they must update every month. The entry and exit of the school are marked clearly, along with emergency numbers displayed outside the principal's room which is a good practice of this school. The children are also well aware of the dos and don'ts of different disasters, and they know the evacuation procedure in case of an earthquake or fire incident.

3. Conclusion:

Safe education is equally important, and quality education in the altering scenario of climate change and disasters. The case studies presented in this paper show that schools in the NCT of Delhi are integrating disaster risk management principles as per the provisions are made. The efforts towards integrating disaster risk management and comprehensive school safety are building a synergy towards school and the community as they are percolating to the community through school children and the involvement of parents. These efforts directly align and contribute to achieving overarching Sustainable Development Goal 4 – Quality Education.

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