Natural Disasters and Impact on Schools in India

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Abstract

Recent floods in Kashmir and very severe cyclonic stormwhich struck Andhra Pradesh have gone on to reinforce how schools and children get impacted. No structured database is available in India on number of schools and children studying in disaster prone areas. Not much statics is available on such disaster affected children who are vulnerable to drop out, forced to child labour and victims of child trafficking. This article talks of the concerns, impact on schools, initiatives by the government, gaps in plans and implementation and finally the way forward.

Key Words

District Information System for Education (DISE), Regional Consultative Committee (RCC), International Decade for Natural Disaster Reduction (IDNDR)

Natural disasters on rise – Concerns for schools

Natural disasters are aggravated by human intervention. The World Bank Report of 2013 has stated that "Climate change will increase frequency and severity of disasters, stress food and energy production in South Asia". The report also predicts increase of droughts in India. For the time period 1981–2006, there have been significant upward trends in the lifetime maximum tropical cyclone wind speeds both globally and for the western North Pacific and Northern Indian Ocean basins with 30 per cent strongest Tropical Cyclones shifting to higher maximum wind speeds (The World Bank, 2013).

In India, almost 85 per cent of geographical area is vulnerable to one or multiple natural disasters. 22 States in India have multi-hazard zones. It is estimated that 58.6 per cent of the landmass is prone to earthquakes of moderate to very high intensity, more than 40 million hectares (12 per cent of land) is prone to floods and river erosion, of the 7,516 km long coastline, close to 5,700 km is prone to cyclones and tsunamis, 68 per cent of the cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches (Das, 2012).

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Recent natural disasters have shown what adverse effect it can have despite improved warning system and rescue operations. It was estimated that 4,484 villages of four districts in Andhra Pradesh were affected by the cyclone 'Hudhud' that damaged 41,269 houses. The cyclone damaged 455 buildings, including 317 primary and secondary schools, before finally crossing over the state (The Times of India, Oct 25, 2014). Numerous schools remained closed in Srinagar, Kashmir for over a month after recent flood, considering the safety and security of the children (The Indian Express, Oct 02, 2014).

When a disaster strikes,either school buildings are damaged, converted to relief camps or altogether ordered shut by the local administration for months together. Disasters usually result in trauma among the children in addition to the financial and personal loss to the community. The academic sessions run as per schedule, however, the children affected by natural disasters are not able to cope up with the academics leading to exclusion from the school system. Researches state that somehazards are preventable whereas few others are not. But effects and losses caused by hazards can be prevented or mitigated by means of'vulnerability reduction' (Palliyaguru and Amaratunga, 2011).

Vulnerability of schools and school children in India

As per 2011 census, over 21 per cent of total population belongs to 5 – 14 age group. If we consider 5 – 18 as the schooling age (from 1st grade to 12th grade), it is about 30 per cent of total population in India, the community associated with that population is not negligible. According the State Report Card of 2013-14, there are in total 1,448,712 schools in India and total enrolment as per 2013-'14 District Information System for Education (DISE) data is 198,899,659. Out of these, 121,960,862 are enrolled in government schools.

It is indeed unfortunate that no structured database is available in India on the number of schools located in natural disaster prone areas in each State/UT and also number of school children studying in these schools facing same set of problems either seasonally or occasionally. It is also not known how many such vulnerable students have to migrate every year, have to drop out from the school permanently, how many of them add to the total stock of child labourers and how many get trapped in child trafficking business during or after the natural disasters.

Figure 1 shows the natural disasters which are common and regularly or occasionally affect different States/UTs, Figure 2 shows the number of schools located in each of the States/UTs. What does the data set tell us?

States/UTs	Types of natural disasters remarkably affecting the State/UT			
Uttar Pradesh	D	EQ	F	LS
Madhya Pradesh	D	F	EQ	
Rajasthan	D	EQ		
Andhra Pradesh + Telangana	C	D	F	T
Maharashtra	C	D	EQ	FF
West Bengal	C	D	F	T
Bihar	C	D	F	
Orissa	C	D	F	T
Assam	EQ	F	FF	LS
Karnataka	D	F		
Tamil Nadu	C	F		
Chhattisgarh	D	EQ		
Jharkhand	D	F		
Gujarat	C	EQ		
Punjab	F			
Jammu and Kashmir	F	FF	EQ	LS
Uttarakhand	F	FF	EQ	LS
Haryana	D	EQ		
Himachal Pradesh	F	FF	EQ	LS
Kerala	C	D	F	
Meghalaya	F	FF	EQ	LS
Delhi	D	EQ		
Tripura	EQ	LS		
Manipur	EQ	LS		
Arunachal Pradesh	F	EQ	LS	
Nagaland	F	EQ	LS	
Mizoram	F	EQ	LS	
Goa	C			
Sikkim	F	EQ	LS	
Puducherry	C	F		
Andaman and Nicobar Island	F	T		
Dadra and Nagar Haveli	C	F		
Chandigarh	EQ			
Daman and Diu	F			
Lakshadweep	C	F		

Legend	Disaster
D	Drought
EQ	Earthquake
T	Tsunami
FF	Flash flood
F	Flood
C	Cyclone
LS	Land slide

Figure 1: Natural disasters remarkably affecting States/UTs on regular basis (States and UTs are arranged as per descending order of number of schools)

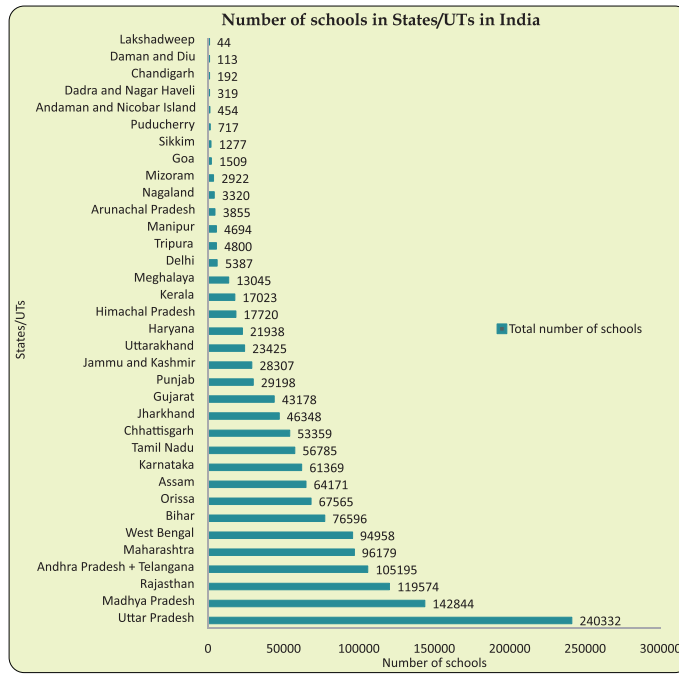

Figure 2: Number of schools in States/UTs in India (as per 2013-14 data)

(1) Most of the States and UTs are affected by more than one natural disasters.

(2) 4 States consist of more than one lakh schools each. These four states are Uttar Pradesh, Madhya Pradesh, Rajasthan and undivided Andhra Pradesh (including Telangana).Some of these States are affected by multiple natural disasters and at various points of time in a year. For example, coastal Andhra Pradesh may experience cyclone and flood in a year, whereas inland area of this State and Telangana may experience draught in the same year.

(3) There are 8 States which have 50,000 to 1,00,000 schools each which also experience multiple natural disasters. These states are Chhattisgarh, Tamil Nadu, Karnataka, Assam, Orissa, Bihar, West Bengal and Maharashtra. Among these, parts of Assam, Orissa, Bihar, West Bengal are chronic flood prone areas; parts of Chhattisgarh and Maharashtra experience draught almost every year. Apart from these, there are possibilities of experiencing earthquake in parts of Maharashtra.

(4) Haryana, Uttarakhand, Jammu and Kashmir, Punjab, Gujarat and Jharkhand have 20,000 – 50,000 schools each. Because of the terrain, Uttarakhand and Jammu and Kashmir have to face complex issues during natural disasters

like flash flood, flood and earthquake. Parts of Jharkhand experience flood almost every year, Gujarat experiences cyclone and flood frequently and of course there is a threat of earthquake in some part of this State.

(5) Three States, Meghalaya, Himachal Pradesh and Kerala have 10,000 to 20,000 schools each. Among these, Meghalaya and Himachal Pradesh experience almost same set of natural disasters such as earthquake, flash flood and flood whereas Kerala's issues are little different, parts of this State suffer from seasonal floods.

(6) There are seven States and all seven UTs which have less than 10,000 schools each.Out of these, six States are located in north-eastern part which is earthquake prone and also prone to other natural disasters like flash flood, Goa is in coastal area and prone to cyclone. Among the 7 UTs, Delhi and Chandigarh are earthquake prone, remaining 5 UTs experience cyclone and tsunami.

DISE data tell us about the number of schools located in each State/UT and number of children enrolled there. But we don't have any dataset on the number of schools located in disaster prone areas in each State/UT. Also, we don't have maps showing schools located in each of the disaster prone blocks.

Mitigation strategy making a difference

Greubel et al argues that "Children in crisis benefit from the sense of normalcy provided by going to school" and therefore, "reopening schools, when safe, should be one of the primary priorities of disaster relief efforts" (Greubel et al, 2012). After Hurricane Katrina, the destructive Atlantic tropical cyclone of 2005, the first elementary school in New Orleans reopened after three months. In 2010, the earthquake in Haiti destroyed 4,000 schools, the schools slowly began to open in the capital after three months. But in Japan, following the massive 8.9 magnitude earthquake in 2011, where schools were physically destroyed and the several lives of teachers and children lost, classes commenced in disaster-proof and multi-hazard resilient buildingsjust after a week (Greubel et al, 2012). The preparedness for disasters makes this difference. Such preparedness can reduce the impact of natural crisis on schools and children studying there.

A study conducted by Shaw et al shows that school-knowledge-based education programmes are useful, also it suggests additional activities e.g. family education and community education for converting knowledge into action (Shaw et al. 2004). It is already proved by many countries who have excelled in disaster risk reduction minimising material damage and loss of life. In Japan, safe school sites are selected through risk assessments. It is ensured that schools are disaster-proofed and multi-hazard resilient. Students, teachers, parents and communities are involved in learning about disaster risk and practicing early

warning simulation drills and evacuation for expected and recurring disasters.

In Bangladesh, there are short-run programmes to resume academic activities of children in the disaster-torn institutions by erecting temporary structures, providing books and study materials often free of cost, waiving examination fees and rescheduling public examinations. The Government of Bangladesh also actively involves local School Managing Committees (SMCs) in rehabilitation of disaster affected schools, for constructing temporary structures and procuring furniture and for distribution of books and study materials (Government of the People's Republic of Bangladesh, 2010).

The trends of thoughts and processes of disaster management have undergone some changes as per the concerns raised by different nations at different points of time. The United Nations designated 1990s as International Decade for Natural Disaster Reduction (IDNDR). After the IDNDR and with the initiation of International Strategy for Disaster Reduction (ISDR) in 2001, a strong shift took place from post disaster activities to pre disaster mitigation and preparedness policy. A Regional Consultative Committee on Disaster Management (RCC) was established at the initiative of the Asian Disaster Preparedness Centre (ADPC) in 2000. Disaster Risk Reduction (DRR) systems have been already introduced to school children in some RCC signatory countries, which regularly or occasionally suffer natural disasters. Some others are also planning to introduce DRR systems to school children soon.

Initiative in India so far

In India, National Disaster Management Authority (NDMA) was established in 2002 and Disaster Management Act was passed in 2005. The National Centre for Disaster Management (NCDM) established in India in 1995 was upgraded in 2003 and now it is known as National Institute of Disaster management (NIDM). NIDM conducts lot of training programmes and workshops in India for disaster management and preparedness for administrative functionaries and provide inputs for policy formulation for disaster management. National School Safety Programme (NSSP) has been launched by NDMA which talks about schools' preparedness for disasters, ensuring safety and security of children, formation of Disaster Management Committee in schools.

In the Tenth Five Year Plan document of the Government of India, the need for integrating disaster management into the education system was highlighted. The Central Board of Secondary Education (CBSE) introduced the subject on Disaster Management as a frontline curriculum in Social Science for Classes VIII in 2003, for class IX in 2004 and for class X in 2005. But other examination boards including State Boards have not yet introduced this.

There are also some initiatives towards introducing disaster management in higher education. For example, the University Grants Commission (UGC), in 2012, proposed an optional paper on disaster management in undergrad education and recommended disaster management in orientation and refresher courses offered by teacher training colleges. Mumbai based Tata Institute of Social Sciences (TISS) also runs a postgrad programme on disaster management.

Gaps in plans and implementation

Sarva Shiksha Abhiyan (SSA) Framework of India suggests schools "to incorporate safety features for resistance against hazards" in buildings. Apart from earthquake resistant design and construction in school buildings, the framework also talks about "other natural and man-made hazards against which appropriate safety should be ensured, such as floods, cyclones, fires, etc" (MHRD, GoI, 2011). But there is a gap in between the policy expectations and ground reality in the domain of disaster management in schools. Some of the issues are as follows:

1. Enough research work has not been done to understand what model of disaster preparedness would be suitable at the micro level for various natural disasters. Disaster management plan at state or district level would not serve its purpose if the plan doesn't consider the local level variations and requirements.
2. There is no database starting from the block level to national level on the schools vulnerable to various types of natural disasters.
3. None of the courses launched and recommended so far address the issues directly pertaining to schools.
4. There is no context-specific approach recommended so far to address the issues related to preparedness of the schools for disasters so that the children can be saved from post disaster impacts. No specific authority has been made accountable to take care of the safety and security of school children and to ensure their continuity in school.

Suggestions for better disaster managementin schools

Numerous institutional structures have been set up between district and school level, in 1990s to strengthen schools as well as school curriculum. Now there are education functionaries at district, block and cluster levels who have defined roles and responsibilities. This structure would be useful to implement plans and strategies from national to school levels. A suggestive plan is shown in Figure 3. The tasks suggested are explained below.

Task 1: Identifying and enumerating disaster prone schools

Regular enumeration of schools and publication of maps identifying schools in each State and Union Territory by the Census of India and National Sample Survey Organisation(NSSO) should be done at the central level monitored by Ministry of Human Resource Development (MHRD). DISE should capture data to show the number of schools in each State and UT located in multi-hazard or single hazard zones. It will help education officials at the block and cluster levels:

(i) to plan for disaster mitigation and come up with contingency plan,

(ii) to reopen schools within a week which will also help impacted community,

(iii) determine number of students migrating or dropping out annually and take precautionary measures and

(iv) to address psychological trauma related issues.

Task 2: Mapping the schools

Digitised maps and satellite images published by the National Remote Sensing Agency (NRSA) and National Atlas & Thematic Mapping Organisation (NATMO) must be made available to education officers at the district, block and cluster levels. With the help of maps and imageries, the regional level education functionaries can prepare disaster management plans for the schools within their respective jurisdiction.

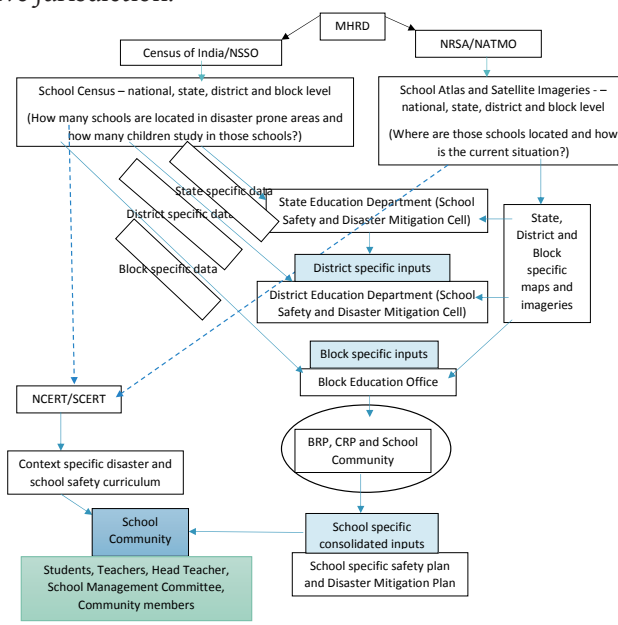

Figure 3: Plan and distribution of responsibilities for disaster management in schools

Task 3: Affix accountability for school safety measures

It must be made obligatory for education officials at district, block and cluster levels to collect and analyse information relating to the number of children within their jurisdictional realm. There must be a structured mechanism to conduct school safety audits and devise contingency plans for managing disasters in schools involving the school community.

Task 4: Regular courses for professional development

SSA emphasizes on the participation of community and civil society in school's regular activities and development. The ground level reality in respect of community participation in school activities and development is at present far from the expectations in many schools. For preparing schools for disaster management, it is important to involve the community and civil society closely in related activities.

Apart from *ad hoc* short programmes to train teachers and education officials, programmes offered by UN agencies, NGOs and the National Institute of Disaster Management (NIDM), long term regular courses need to be offered by the higher education institutions to prepare young professionals to work with schools to provide a better and safer environment for future citizens. Such young professionals must start working with the school education system so that functionaries associated with the department of education at various levels gain an overall understanding about the requirements and can work on context-specific and relevant framework of disaster management for schools.

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References:

[1] Anderson, Allice (2011). Learning from Japan: Promoting Education on Climate Change and Disaster Risk Reduction. http://www.brookings.edu/research/opinions/2011/03/14-japan-disaster-education-anderson

[2] Das, P. (2012). Disaster Management in India: Policy Review and Institutional Structure. Asia Pacific Journal of Social Sciences, 4(1), 37-52.

[3] Department of School Education and Literacy, Ministry of Human Resource Development (MHRD), Government of India (2011). SarvaShikshaAbhiyan – Framework for Implementation.

[4] Disaster risk education at schools (2009). Report from APEC Emergency Management Senior Disaster Officials' Forum.

[5] Greubel, Lauren, Xanthe Ackerman and Rebecca Winthrop (2012). Prioritizing Education in the Face of Natural Disasters. www.brookings.edu/blogs/up-front/posts/2012/10/31-natural-disasters-winthrop

[6] Gupta, K. (2010). Disaster Management and India: Responding internally and simultaneously in neighboring countries. University of North Texas, Dentan Texas, USA.

[7] Joshi, H. A. Journal of Pharmaceutical and Scientific Innovation.

[8] Kaul, Daya, Md. Ayaz, Lohitkumar S N. Disaster Management In India. http://home.iitk.ac.in/~ayazmd/Projects/project.pdf

[9] Ministry of Women and Children Affairs, Government of the People's Republic of Bangladesh (2010). Children and Disaster Risk Reduction in the Asia Pacific. A background paper by Bangladesh. High Level Meeting on International Cooperation for Child Rights (ICCR) in the Asia Pacific Region.Beijing.

[10] Paik, Saswati (2014). Time to anticipate natural disasters. The Education World. Issue: October 2014.

[11] Palliyaguru, R. S., &Amaratunga, D. (2011). Linking reconstruction to sustainable socio-economic development. Reconstructing for Resilience: Strategies for Building Sustainable Communities after a Disaster. Wiley-Blackwell, Oxford, 268-286.

[12] Shaw, R., Shiwaku, K., Kobayashi, H. and Kobayashi, M. (2004). Linking experience, education, perception and earthquake preparedness. Disaster Prevention and Management, 13 (1).

[13] Takeuchi, Y., Mulyasari, F., & Shaw, R. (2011). Roles of family and community in disaster education. Community, Environment and Disaster Risk Management, 7, 77-94.

[14] The Indian Express (Oct 02, 2014). With Schools shut in Srinagar, future of thousands hang in balance. indianexpress.com

[15] The Times of India (Oct 25, 2014). Hudhud killed 46 in Andhra Pradesh, 21 lakh families hit. timesofindia.indiatimes.com

[16] The World Bank (2013). Turn Down the Heat: Climate Extremes, Regional Impacts, and the Casefor Resilience. A report for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics. Washington,DC:World Bank.