



Child-Centred Risk Reduction Research-into-Action Brief:

Post-Disaster Educational Continuity in Urban Floods

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Statement of purpose

The Research-into-Action Brief series provides concise summaries of academic and grey literature on a range of topics for practitioners working in the fields of child-centred risk reduction (CCRR), climate change adaptation, and school safety. This purpose of this brief is to provide a concise review of research findings for practitioners about the critical factors for post-disaster educational continuity, especially in areas affected by urban floods.

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Highlights

1. Education is a right of children and all human beings. Ensuring education for all children and youth is crucial for addressing sustainability goals and for adopting effective disaster risk reduction (DRR) strategies.
2. Urban floods have widespread impacts on the education sector, including school buildings and infrastructure, institutional and organisational structures, as well as individual and community health and wellbeing. Combinations of these impacts interrupt educational continuity over both the short and long-term and must be minimised using tried and tested strategies.
3. The capacities of individuals, communities and institutions must be harnessed to respond to the threat of flooding. The evidence shows that flood- (and associated hazard-) affected people are not helpless bystanders but active first-responders and change agents.
4. There are factors that both block and enable educational continuity. The literature pinpoints areas that must be prioritised in operational and policy planning, with a focus on clear relationships, communication and consistency.
5. Practitioners working on improving education continuity should consider that:
 - The impacts of urban floods on school stakeholders are many and varied;
 - The affected people are not helpless, and their capacities are central to continuity;
 - There are key enabling operational and policy factors;
 - Frameworks are useful; and
 - Everyday vulnerabilities must be reduced.

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Glossary

| Term | Definition |
|------------------------|---|
| Impact | Human, financial, environmental and social damages, losses and other consequences stemming from flood event |
| Educational Continuity | An operational process including policies, activities and planning that supports minimising disruption to schooling and education |

| | |
|---------------------|---|
| Stakeholders | Individuals and groups that are connected to school education activities and who contribute to educational continuity in case of flooding |
| Vulnerability | The characteristics and conditions of a person or group that influence their capacity to anticipate, cope with, resist and recover from the impact of a hazardous event |
| Adaptive capacities | The ability of individuals and groups to work independently and collaboratively to adapt to hazardous events, to minimise potential damages and losses, to take advantage of existing and new opportunities, or to provide an effective response to the consequences of hazards |

Educational continuity: a critical concern for practitioners

Increased income potential and proximity to services draws many people to live in urban areas. However, these benefits often do not allow the poorest and most vulnerable people to gain access to vital basic services (Bartlett, 2008). In particular, people living in urban informal settlements may face multiple risks because of a chronic and widespread lack of access to drinkable water, working sanitation facilities, sufficient space to undertake activities, safe and durable housing and security of tenure (the right to occupy and use land) (Brown and Dodman, 2014; Chatterjee, 2015; Satterthwaite and Bartlett, 2017).

These conditions negatively affect life in urban settlements, particularly for children and youth. In urban areas, children and youth often represent a large part of the vulnerable population and disproportionately face the burden of risks, including those associated with natural hazards (Cadag et al., 2017). We must listen to their voices, and support them as they shape their communities (Amri et al., 2017). It is critical to recognise the symbolic, cultural, economic and political significance of schools within communities – they are more than “just” the site for educating students (Wisner et al., 2004).

The education sector is key to ensuring protection of children and youth, particularly for those living in areas at risk (Wisner et al., 2004; Sakurai et al., 2017). In schools, children and youth should feel and safe, and find an enjoyable environment for study and socialisation. However, urban disasters, including floods, often make schools unusable, inaccessible or called into use as emergency shelter for displaced communities.

After floods, students may be injured, ill or unable to attend classes. The poorest families face enormous emotional, financial, logistical and housing constraints, and often take students out of school to enter the workforce or care for younger siblings (Save the Children Australia, 2016; Cadag et al., 2017). These and other challenges can lead to the interruption of education. However, due to a lack of focused research a full understanding of school education continuity in urban flooding is still being developed.

Impacts of urban flooding on children and youth

The fact that children and youth are still developing leaves them physiologically and metabolically less able than adults to cope with high exposure to hazards (Bartlett, 2008). In urban areas, these conditions can be exacerbated, particularly for children and youth living in poverty and in precarious situations in regard to housing, land tenure, water and waste management systems, healthcare and emergency services (Chatterjee, 2015). Children and youth who lack appropriate safeguards and care in urban areas are vulnerable to discrimination, exploitation and violence, as well as lack of protection, education and medical assistance. These issues inhibit the full development of individual and interpersonal skills (Brown and Dodman, 2014; Chatterjee, 2015).

Since the beginning of this millennium, some of the largest storm and flood impacts on schools have occurred in Asia. The table below illustrates some key examples:

| Year | Countries | Education sector impacts |
|------|--------------------------|---|
| 2004 | Cambodia | up to 1m students in 1000-2000 schools in eight provinces |
| 2004 | Bangladesh | Cyclone Sidr: >1250 school buildings destroyed and >24,000 damaged |
| 2007 | Bangladesh | > 6000 schools damaged |
| 2011 | Thailand | In Bangkok, > 2600 schools damaged >\$USD166m losses. Damage affected >5300,00 students and > 21,000 teachers. |
| 2013 | Bangladesh | Tropical Storm Mahasen: 171 schools destroyed, >1000 damaged |
| 2015 | Indonesia | 373 floods |
| 2016 | Vietnam | 70 per cent of Quang Binh schools flooded, > \$USD10m damage |
| 2017 | Bangladesh, India, Nepal | Monsoon rains: in Bangladesh, 4000 schools inundated affecting 3m children in 32 districts. 1693 schools being used as temporary shelter. |

(UNISDR, 2008; Save the Children, 2016)

Access to education is a basic human right (European Court of Human Rights, Council of Europe, 1950, Article 2), as well as a children's right (Wisner et al., 2004). Goal 2 of the United Nation's Millennium Development Goals (MDGs) considered access to education as a priority¹. More recently, Goal 4 of the Sustainable Development Goals (SDGs) stressed the importance of education by promoting an inclusive and quality education for all and lifelong learning as sustainability goal².

Nevertheless, education is often threatened by a variety of natural and man-made hazards (Save the Children Australia, 2016). Studies of disaster trends suggest that floods were the most frequent type of disaster in 1994-2013, accounting for 43 per cent of all events and 55 per

¹ <http://www.un.org/millenniumgoals/education.shtml>

² <http://www.un.org/sustainabledevelopment/>

cent of affected people, more than all other types of natural hazards combined. Major floods are becoming more frequent, rising from 123 per year on average between 1994 and 2003 to an annual average of 171 in the period 2004-2013 (CRED, 2015). Impacts from these intensive and extensive events on the education sector include: health and safety of students; physical impacts on school facilities; economic impacts on education sector investments; and educational impacts on students (see table, below).

| Impact | Factors |
|-------------------|--|
| Health and safety | <ul style="list-style-type: none"> • Deaths and injuries among students, families and teachers • Diseases (e.g., diarrhea, cholera, mosquito-born illnesses) • Road accidents • Different degrees of prolonged trauma (e.g., sadness, nervousness, emotional outbursts, and preoccupation) among students • Lack of access to basic resources (e.g., food, water, medicine) |
| School facilities | <ul style="list-style-type: none"> • Building damage and destruction (roofs, floors, walls) • Internal (e.g., latrines) and external (e.g., wells, gardens, trees, fields, playgrounds) facilities damages and disruption • Disruption of transportation • Disruption of road access |
| Economic | <ul style="list-style-type: none"> • Destruction of furniture and teaching and learning materials • Loss of jobs, and market and livelihood opportunities for families • Financial burdens for families • Lack of adequate and affordable housing • Family displacement, migration and relocation |
| Educational | <ul style="list-style-type: none"> • Suspension and disruption of education • School used as community shelters or evacuation centers • Missed learning • Drop-outs • Irregular attendance • Poor learning environment at home • Loss of ability to concentrate on study • Change in classroom schedule • School relocation |

Sources: Picou and Marshall (2007), Alam et al (2010); Ochola et al. (2010); Chen and Lee (2012); Okum et al (2012); Tong et al (2012); Chang et al. (2013); Mudavanhu (2014); Cadag et al. (2017); Pazzi et al. (2016); Sakurai et al. (2017); Tipler et al. (2017).

“Access to education is a basic human right...but education is often threatened by a variety of natural and man-made hazards...”

Flooding disrupts education through:

- *Damage to school buildings*
- *Damage to infrastructure*
- *Use of schools as temporary shelters*
- *Deaths and injuries of students, teachers and parents*
- *Damage to or loss of teaching and learning materials*
- *Outbreaks of diseases*

Disruption of education due to flooding is common across the world, based on common issues such as the damage to school buildings and infrastructure and the use of schools as shelters. Death and injuries of students, teachers and parents have been reported for several countries, including Pakistan (Chang et al., 2012) and Kenya (Okum et al., 2012). Outbreaks of diseases are also very common.

Alam et al. (2010) provided a framework for impact assessments of floods on education continuity in Bangladesh and divided the impacts into access to education (e.g., buildings and infrastructure), quality of education (learning and teaching materials) and inclusion (gender issues). They asserted that the overall destruction of the physical environment debilitated the wider community and that low-intensity and frequent hazards such as localised flooding had the highest cumulative impact on schools, while increasing vulnerability to high-impact hazards. The 2010 research by Cadag et al. (2017) in the Philippines confirmed these findings on school closure, dropouts due to flooding and the use of schools as emergency shelters.

Cadag et al. (2017) found that recurrent flood events in Manila interrupted educational continuity by impacting schools and transportation networks, by forcing students to stay at home and by disrupting teaching and learning material. The disruption of educational continuity due to the use of schools as temporary shelters, especially when unplanned or unlimited, is also regularly documented (Save the Children, 2016).

Frameworks to support Educational Continuity

The Hyogo Framework for Action (2005-2015) recognised the necessity for including disaster risk assessment, disaster preparedness programs and activities minimising hazards' impacts on schools³. The Sendai Framework for DRR (SFDRR) 2015-2030, reiterated these findings, identifying schools as critically important facilities and calling for the implementation of structural, non-structural and functional disaster-risk prevention and -reduction measures⁴.

The Comprehensive School Safety Framework (GADRRRES, 2017) supports the objectives of the international community relating to safe schools. Through the Worldwide Initiative for Safe Schools, it provides collaborating intergovernmental, international and regional non-governmental organisations with a focus on alignment of the education sector and disaster management policy, by addressing (1) safe learning facilities, (2) school disaster management, and (3) risk reduction and resilience education. It is essential that a number of international organisations are involved in these initiatives.

³ http://www.unisdr.org/files/1037_hyogoframeworkforactionenglish.pdf

⁴ http://www.unisdr.org/files/43291_sendaiframeworkfordrr.pdf

The Importance of Adaptive Capacities

In response to the changes occurring after hazards (including floods) and its impacts, local communities have always used their own strategies to adapt. This includes taking action to preserve housing, workplaces goods and properties, family health and security, as well as children's schooling (Cissé and Sèye, 2016). Depending on the social capital present in communities, these actions can look very different. Understanding the capacities available is crucial in promoting DRR policy, planning and actions at multiple scales for educational continuity in case of flooding. Communities are not helpless victims but are central actors to a successful response that mitigates losses.

These capacities contribute greatly to educational continuity; for example, by promoting disaster preparedness planning, by improving risk awareness among school stakeholders, as well as by reducing local vulnerabilities or mobilising the community in assisting and protecting children after floods (Cadag et al., 2017). However, literature on educational continuity after floods has mainly focused on floods' impacts, while devoting less attention to the role of adaptive capacities in promoting and ensuring educational continuity.

Practitioners must consider adaptive capacities with an integrated perspective, able to embrace the wide range of school stakeholders (e.g. students, teachers, staff and families) without limiting any analysis to the school environment alone (Cadag et al., 2017). For example, after some floods in Zimbabwe, an affected local community used local resources to construct a footbridge to link the schools with the community and to help children cross to schools in case of flooding (Mudavanhu et al., 2015).

Enhancing collaborative networks between schools and local communities has been found to be essential, as reported in the province of Aceh, Indonesia. This enables the exchange of mutual knowledge about risks and hazards between universities, communities and schools, which also provides benefits to other local stakeholders (Oktari et al., 2017). In addition, promoting awareness, preparedness and emergency and safe behaviour in schools and among communities has been found to be relevant both in flood scenarios and in case of associated hazards (e.g., fires) (Cadag et al., 2017 for Manila; Chang et al., 2013 for India; Tipler et al., 2017 for New Zealand).

Enablers and Blockers of Educational Continuity

It is critical that programming focuses on enabling operational and policy actions, while pushing back on actions that inhibit educational continuity. The literature pinpoints some of the critical factors at play. Operational and policy measures suggested to increase DRR across the whole education sector include building, infrastructure, governance, school staff and environmental conditions, as well as relationships between and among schools, communities and institutions (Alam et al., 2010; Tong et al., 2012; Cadag et al., 2017).

“Communities are not helpless victims. They are central to promoting and ensuring educational continuity...”

Factors that support Educational Continuity

- *School continuity planning*
- *Communication and co-ordination among schools' stakeholders and governments*
- *Integrating DRR into education sector policies*

Some scholars have pointed out the necessity for schools to have a current continuity plan that can help to, for example, restore critical school operation, reduce the length of school interruption and protect physical assets (Ketterer and Price, 2007). This plan should involve children and youth as active participants (Delicado et al., 2017, for Portugal). Recently, Cadag et al. (2017) revealed that a proactive school response in Manila was based on strengthening early warning systems and communications, and established school management committees leading in implementing DRR.

This focus on strengthening communication and co-ordination between and among schools' stakeholders and governments is echoed by Alam et al. (2010). Both works highlight the importance of local governments in this process, as well as the wider community in establishing this environment for educational continuity.

Education sector stakeholders in South and South-East Asia work within a policy context that is often fragmented, or does not focus specifically on the issue of urban flooding. Therefore as argued by studies around the world, it is essential to integrate DRR into education sector policies (Cadag et al., 2017 for Manila; Alam et al., 2010 for Bangladesh; Mudavanhu, 2014 for Zimbabwe; Amri et al., 2017). These authors argue for integration at multiple levels of government and stress the importance of specific and strong local implementation based on national guidelines.

Practitioners must not only focus on encouraging positive factors but must actively fight against what may hamper progress. This often includes advocacy to create policies that reduce the everyday vulnerabilities of communities (Cadag et al., 2017; Alam et al., 2010). Flood impacts are invariably driven by inequalities and structural injustices, and education practitioners are in the best position to make this point to policy-makers.

Case Study

A 2017 research study analysed educational continuity in urban floods in South and South-east Asia by focusing on primary, lower secondary and upper secondary schools in Dhaka, Bangladesh, Bangkok, Thailand and Dong Hoi, Vietnam. The findings suggest that researchers, policy-makers and practitioners working on post-flood educational continuity need to deeply engage with the physical, institutional and organisational context of the schools. The researchers argue that a nuanced understanding of the vulnerabilities and capacities of school stakeholders must be central to strategic practice.

The key findings included:

Enabling environment and policy: strengthening communication and co-ordination between and among school stakeholders and governments; integrating DRR into education sector policies; advocacy for policy to reduce everyday vulnerabilities of communities.

Safer school facilities: raising the ground floor and adding floor levels; improving drainage systems and irrigation channels; promoting safe storage of teaching and learning equipment and supplies; strengthening early warning systems.

School disaster management: promoting standard operating procedures for safe family reunification; adopting a flexible education calendar; promoting an adjustment in exam schedules; providing first-aid boxes.

Risk reduction and resilience education: promoting disaster awareness, preparedness and safe behaviour; supporting adaptive capacities of school stakeholders and local communities.

Conclusions and recommendations

The existing literature has explored the impacts of urban floods on school education, and has provided guidelines to be followed to ensure educational continuity. These are somewhat limited to date and certain knowledge is drawn from studies with a broader scope. The impact of urban flooding on school stakeholders has been demonstrated to extend to the health and safety of students; physical impacts on school facilities; economic impacts on education sector investments; and educational impacts on students. The examples from literature are drawn from a variety of regions.

Most of the literature highlights the need to promote better integration between national and local knowledge. The importance of utilising human, financial and institutional resources to enhance DRR planning and actions often takes the form of harnessing “adaptive capacities”. This

refers to qualities that societies possess and can draw on to adapt to change. The literature promotes the implementation of structural, non-structural and functional DRR practical and policy measures, with an emphasis on the importance of improving risk awareness and disaster preparedness planning.

Research to date has overwhelmingly argued for the need to reduce the everyday vulnerabilities of children and families in terms of resource access, built environment, livelihood and everyday living conditions. The institutional, environmental and social context in which schools are located and how students, school staff and their families live is also important in contributing to DRR.

Education authorities need to document the impact of floods on education more systematically, in order to inform stakeholders, and enable better decisions to be made locally in response to urban floods and towards education continuity. Future research and practice should improve the dialogue between researchers, policy-makers and practitioners and local communities.

Key lessons from the research and ways they can be applied to practice

Findings from the literature highlight that current knowledge covers a variety of themes, with several key lessons for practitioners working in flood-prone urban areas. It is essential for practitioners working on the school education system to embrace institutional, social, economic, and political issues within an integrated perspective.

Effective solutions for ensuring educational continuity need to be reached by contextualising the school education system within the everyday life of communities. Therefore, the interactions of the school education system with the surrounding built environment, the multi-level institutional context and the social, economic, and cultural context in which students live and study should be considered when strategies are implemented.

The key lessons emerging are:

1. **Impacts of urban floods on school stakeholders are many and varied.** Practitioners should assess impacts using context-appropriate and proven methods to mitigate against and reduce impact.
2. **Affected people are not helpless and their capacities are central to educational continuity.** Individuals, communities and institutions across South and South-East Asia possess skills, competencies, knowledge, networks and experience to act on the front line of flood mitigation and preparedness. Practitioners need to enact strategies to support these vital participants.
3. **There are key enabling operational and policy factors.** Educational continuity can be supported through the functionality or dysfunctionality of operational and policy factors. Practitioners need to help school stakeholders to understand how they can use these levers to achieve greater continuity.

Practitioners can:

- *Assess the impacts of urban floods using appropriate and proven methods*
- *Work with the affected people, communities, and institutions to improve educational continuity*
- *Help school stakeholders understand how to use policies to achieve greater educational continuity*
- *Encourage stakeholders and institutions to adopt the principles of frameworks, such as SFDRR*
- *Advocate for policy changes to benefit the most vulnerable groups*

4. **Key frameworks are useful.** Practitioners should encourage adoption of the principles of frameworks such as the SFDRR and Comprehensive School Safety (CSS) into national education systems and encourage stakeholders to adopt the principles.
5. **Everyday vulnerabilities must be reduced.** Practitioners can use their position and voice to advocate for policy change to benefit the most vulnerable based on gender, class, disability and race. These factors push many children and youth into much higher risk during floods.

The vulnerability of poor and marginalised urban communities – and particularly of children and youth – is central to promoting educational continuity. Engaging with communities and listening particularly to children and youth and understanding their needs can ultimately lead to safer schools and more resilient education systems.

If insufficient attention is paid to improving the living environments of children in urban poverty, millions of children across the world – particularly those in low-income countries of the global south – will continue to live in conditions that threaten their life and wellbeing. If inadequate living environments are not addressed in policy and practice, the gains made in health and wellbeing risk being undermined, and vulnerabilities could be exacerbated.

Follow-up Questions

1. What are the main impacts of urban floods on school education systems and stakeholders?
2. How do these impacts interrupt educational continuity?
3. What existing adaptive capacities exist within the school education system and school stakeholders, and how might they be harnessed?
4. How can disaster awareness, preparedness and planning be improved within the education sector?
5. How do everyday vulnerabilities of school stakeholders contribute to interrupt educational continuity after flooding?

Readings

Alam, K, Saadi, S, Hossain, K, Rahman, K A, Hossain, M, Al Rashed, A, Azad, A ., Jasmeen, T., Neelim, A, Kabir, S, & Islam, T 2010, *Disaster resilient primary education in Bangladesh. Problems, priorities and actions for disaster risk management in primary education*, Final Study Report, Save the Children UK.

Amri, A, Haynes, K, Bird, D, & Ronan, K 2017, 'Bridging the divide between studies on disaster risk reduction education and child-centred disaster risk reduction: a critical review', *Children's Geographies*, vol. 16, no. 3, pp. 239-251.

Bartlett, S 2008, 'Climate change and urban children: impacts and implications for adaptation in low- and middle-income countries', *Environment and Urbanization*, vol. 20, no. 2, pp. 501-520.

Brown, D & Dodman, D 2014, *Understanding Children's risk and agency in urban areas and their implications for child-centred urban disaster risk reduction in Asia: Insights from Dhaka, Kathmandu, Manila and Jakarta*, International Institute for Environment and Development, <http://pubs.iied.org/pdfs/10652IIED.pdf> (Accessed 10 December 2017).

Cadag, J, Petal, M, Luna, E, Gaillard, JC, Pambid, L & Santos, G 2017, 'Hidden disasters: Recurrent flooding impacts on educational continuity in the Philippines', *International Journal of Disaster Risk Reduction*, vol. 25, pp. 72-81.

Chatterjee, S 2015, *Climate change risks and resilience in urban children in Asia, synthesis report for secondary cities: Da Nang, Khulna and Malolos*, International Institute for Environment and Development, <http://pubs.iied.org/pdfs/10738IIED.pdf> (Accessed 10 December 2017).

GADRRRES 2017, Comprehensive School Safety Framework, <http://gadrrres.net/uploads/files/resources/CSS-Framework-2017.pdf> (Accessed 05 January 2018).

Satterthwaite, D, & Bartlett, S 2017, 'Editorial: The full spectrum of risk in urban centres: changing perceptions, changing priorities', *Environment and Urbanization*, vol. 29, no. 1, pp. 3-14, <http://pubs.iied.org/pdfs/10832IIED.pdf> (Accessed 10 December 2017).

Save the Children Australia 2016, *No child left behind: Education in crisis in the Asia-Pacific region*.

Bibliography

All the references cited in this Research-into-Action Brief, can be found in the Child-Centred Risk Reduction and Comprehensive School Safety Bibliography at:

https://www.zotero.org/groups/1857446/ccrr_css

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