Chapter 28

Community-Based Disaster Risk Reduction (DRR) in Schools

Field of expertise: School Disaster Safety, Disaster Risk Reduction Education, International Educational Development

Aiko Sakurai

Translated by Catherine Sachi Kikuchi

Summary

One of the major lessons from the Great East Japan Earthquake on disaster risk reduction (DRR) in schools was the reaffirmation that they have an obligation to ensure the safety of children from natural disasters. Based on this lesson, there is an urgent need for schools across the country to develop effective school DRR systems that take into account the local characteristics of the community in which the school is located. The question now is, in order to prepare for the next disaster, how can we widely share the measures that have been established based on lessons learned in Miyagi Prefecture?

Keywords: local disaster characteristics, school disaster risk management , use of maps, DRR education , teacher training

Introduction

Disaster risk reduction in schools in Japan encompases community safety and traffic safety, which are considered to be part of school safety. Since the Great Hanshin-Awaji Earthquake, this has been reviewed and expanded based on the experiences and lessons learned from major disasters. However, when the Great East Japan Earthquake struck on a Friday afternoon, a time when most children were at school, the question of how schools can protect children's lives was raised.

1: Problems Revealed by the Great East Japan Earthquake

What happened?

Disaster risk reduction in schools is expected to function on the basis of both disaster risk management and disaster risk reduction education, as well as organizational activities such as inschool training and cooperation with families and communities to ensure the smooth implementation of these interrelated activities. Disaster risk reduction education in schools is mainly implemented throughout the educational activities of schools, based on curriculum guidelines. Disaster risk management in schools is aimed at ensuring the safety of students and others, and includes the preparation of manuals for responding to disasters. Safety management of the school environment, such as earthquake resistance of school buildings, is also included in disaster risk management. Articles 26 to 30 of the School Health and Safety Law have provisions regarding school safety.

The Great East Japan Earthquake occurred at 2:46 p.m. on Friday, March 11, 2011. Therefore, many students were in school at the time of the earthquake. There were no fatalities among the students, teachers, and staff due to the shaking during the earthquake, but there was severe damage caused by the tsunami, especially in the coastal areas.

The reality of the damage

According to the 2010 White Paper by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), a total of 645 students, faculty and staff from kindergartens to universities were killed, and 125 went missing in the Great East Japan Earthquake. In addition, there were cases of high school students who were engaged in extracurricular activities at facilities outside the school, or who were affected by the tsunami while leaving school or after being returned to their parents or guardians. In particular, 74 out of 108 students, and 10 teachers and staff of Okawa Elementary School in Ishinomaki City, Miyagi Prefecture, were killed by the tsunami.

In terms of physical damage to educational facilities, many were completely or partially destroyed, flooded, or rendered unusable due to ground subsidence caused by the earthquake and inundation by the tsunami, and 193 public schools alone required reconstruction or large-scale restoration work (according to the 2010 White Paper by the Ministry of Education, Culture, Sports, Science and Technology). In many school facilities, non-structural materials such as ceilings, lights, and windows fell, equipment toppled over, which confirmed the urgent need to improve the earthquake resistance of non-structural materials as well as the school buildings themselves. A large number of people evacuated to schools that were spared from the disaster, and issues were raised regarding the role of schools in times of disaster, as well as the disaster prevention functions and management of these school facilities, along with cooperation with the local communities.

In the affected schools, classes were canceled and education was suspended for a minimum of one month and a maximum of almost two months, including spring break. Even after the schools reopened, classes were held jointly at other schools, or in rented or temporary classrooms. It took many more years for education to resume in the renovated and reconstructed schools. This confirmed the need for plans to continue normal activities and prepare for the early return to classes in the event of a disaster.

2: Paradigms Destroyed by the Earthquake

Conventional wisdom and necessary responses

According to a survey conducted by MEXT, 2,052 or about 90% of schools and preschools in lwate, Miyagi, and Fukushima prefectures where students were present at the time of the Great East Japan Earthquake, had provisions for evacuation in the event of an earthquake in their crisis management manuals. On the other hand, among 149 schools that were located in areas that were predicted to be inundated by tsunamis according to hazard maps or that were actually hit by

tsunamis, only about 50% had provisions for evacuation of students in case of tsunamis, indicating that schools were inadequately prepared for a major tsunami (Ministry of Education, Culture, Sports, Science and Technology, 2012). The aforementioned Okawa Elementary School was located outside the inundation area on the tsunami inundation hazard map prepared by Miyagi Prefecture, but was hit by the tsunami.

A civil suit was filed by some of the bereaved families of Okawa Elementary School against Ishinomaki City and Miyagi Prefecture, seeking damages for the school's negligence. In October 2019, the Supreme Court rejected the appeal by the city and the prefecture, and the decision was finalized, recognizing the negligence of the school and the government, which were responsible for the lives of the children. In the first instance, the court ruled that the teachers, who were aware that the tsunami was approaching the area around the school and that they should evacuate immediately, tried to take the children to an inappropriate evacuation site even though they had a duty of care to evacuate the children from the schoolyard to the hill behind the school after the earthquake. The school was found to be negligent. The court of appeal's decision was not limited to tsunami evacuation, but also brought into question how schools can ensure the safety of students and others in the event of a natural disaster, and how school disaster risk management should be conducted, including preparation and emergency responses. Article 26 of the School Health and Safety Law clearly states that schools are obligated to ensure the safety of children from natural disasters. The Court of Appeal ruled that the principal and others had the responsibility to revise the crisis management manual by specifying tertiary evacuation routes, methods, and sites suitable for the safe evacuation of children. It also said that the knowledge and experience required for schools to fulfill their obligation to ensure the safety of children without fail must be at a much higher level than the average knowledge and experience of the local population.

3: A New Approach

In accordance with the School Health and Safety Law, MEXT formulated a Plan for the Promotion of School Safety in 2012 to promote empirical and scientific school safety initiatives in each school. In response to the Supreme Court's decision, Miyagi Prefecture established the Miyagi Prefecture School Disaster Prevention System Study Council and set forth 3 basic policies for new efforts in the future. The first is to strengthen the ability of teachers, staff, and students to respond to disasters under various circumstances. The second policy is to develop an effective school DRR system based on the characteristics of local disasters, and the third is to build a community-wide school DRR system through cooperation with local communities and related organizations.

The International Collaborating Center for Disaster Education, Research and Implementation established in the International Research Institute of Disaster Science (IRIDeS), is promoting practical research through collaboration with schools and an interdisciplinary team of experts from earthquake disaster prevention, geography, and pedagogy to promote school DRR in Ishinomaki City, Miyagi Prefecture. We have been working on the development of a model for disaster recovery and DRReducation in the affected areas, paying careful attention to the changing conditions of schools and students and the awareness of teachers and staff as the years pass since the disaster. We are also working on the development of a teacher training program that uses maps to help teachers understand the disaster risks in their school districts. These are all attempts to implement university researchers' expertise in order to expand school DRR nationwide so that we can prepare for the next disaster based on the experience of the Great East Japan Earthquake.

4: Achievements and the Future

A new approach to disaster science

The disaster recovery and disaster risk reduction education model, Reconstruction and Disaster Risk Reduction (R-DRR) Mapping, was implemented for three years beginning in 2012, which was one year after the disaster. Periods of integrated study were used to do this at elementary schools in Ishinomaki City. The aim of the project was to create an opportunity for the children to record the reconstruction of the disaster-affected school district by themselves, face their experiences of the disaster, and be proactively involved in the reconstruction process through walking around the city and making maps. In the 2018 school year, we conducted a follow-up survey of third-year junior high school students to verify the effectiveness of this reconstruction mapping project. It was confirmed that students who had experienced the project as fourth-grade students in 2013 had a higher awareness of "having pride and love for the community as a member of the community and thinking about the future of the community" than those who had not been involved in the project (Sakurai et al., 2020).

At present, R-DRR mapping for multi-hazards including earthquakes, tsunamis, floods, and landslides, is being practiced in elementary and junior high schools in Ishinomaki City (Figure 28-1). It is expected to be further developed in cooperation with social studies and geography in elementary and junior high schools as a local study to understand the disaster risks in the school district by using topographical maps and hazard maps. In addition, a guide for teachers on how to practice R-DRR mapping has been developed so that they can make lesson plans according to the actual situation of their school districts (International Collaborating Center of Disaster Education Research and Implementation, 2019). In addition, we developed a model to train teachers to be able to look at maps and understand the disaster risks in their school districts. We are aiming to strengthen their map-reading skills through this program, and cooperate with them so that their school school disaster response manuals will take into account the characteristics of local disasters.



Figure 28-1. An example of a DRR map, using topographical classification maps and hazard maps (Inai district, Ishinomaki City). (Source) From left: Geospatial Information Authority of Japan flood control topographic map, former Kitakami River flood inundation area map by the Tohoku Regional Development Bureau, and Ishinomaki City sediment disaster hazard map, with additions made by each; right: DRR map by students of Inai Junior High School in 2019.

Conclusion - from the author

In order to realize community-based DRR in schools, it is essential for schools, local communities, governments, university researchers, and other experts to work together on a regular basis to improve the disaster preparedness of teachers and students by incorporating expert knowledge and local information in an easy-to-understand manner. The next task is to conduct

practical research on the integration of school DRR and community DRR . DRR is an extension of daily life, as it involves understanding the nature and lifestyle of the community in which we live. Regardless of one's social position, being actively involved in DRR in one's own community as a resident and a parent or guardian is a step toward community-based DRR in schools.

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