

Chapter 29

Disaster Mitigation Education for the Next Generation

Field of expertise: Communication Psychology, Disaster Mitigation Education

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Summary

As long as we live, it's inevitable that we will encounter disasters. Although the mechanisms of disaster occurrence are becoming more or less understood, we still do not know when, where, or what kind of disasters will occur. For this reason, we have to live in harmony with disasters while trying to minimize the damage they cause.

Keywords: natural disaster science, integration of humanities and sciences, disaster reduction awareness, active learning, tool development

Introduction

The loss of children who were able to act on their own in the massive earthquake and tsunami that occurred on March 11, 2011, changed disaster prevention education in a major way: It shifted from adults needing to protect the lives of children, to fostering children's power to live - the ability to protect one's own life.

1: Problems Exposed by the Great East Japan Earthquake

What happened?

On the afternoon of Friday, March 11, 2011, all schools had already dismissed or were preparing to dismiss their students for the next day's graduation ceremony. At 2:46 pm, an earthquake hit. It was a strong and long tremor, unlike anything experienced before. The schools immediately gathered their students in the schoolyard, and those that were in danger of being hit by a tsunami immediately evacuated their students to higher ground near the school or to the top floor of the school.

However, schools and residents that did not have tsunami evacuation plans were able to evacuate according to their usual evacuation drills. The damage caused by the earthquake was immediately visible, but the tsunami took some time to reach land. In schools where there was no view of the ocean, tsunamis could not be anticipated and evacuation to higher ground was delayed, resulting in deaths of those who were under school protection. In particular, the damage to Okawa Elementary School in Ishinomaki City, Miyagi Prefecture, which was caught in the

tsunami 50 minutes after the earthquake, triggered a major change in disaster prevention education (Tsunami Research Subcommittee, 2009).

2: Paradigms Destroyed by the Earthquake

Conventional wisdom and necessary measures

Tsunamis are a type of disaster where you can survive if you evacuate to an elevation high enough that the waves cannot reach (Yasuda, et al., 2018). In the case of the Great East Japan Earthquake, there was a sign - the major earthquake. There are cases in regions where the ocean is visible, in which children returned to their school, located on higher ground, after being urged to do so by local residents. It's a disaster in which human loss could have been avoided if people had evacuated to higher ground. Although evacuation drills and disaster prevention education have been conducted for various disasters in the past, the mainstream approach has been to have children follow the guidance of teachers and protect themselves as a group. In particular, tsunami countermeasures were considered to be important in areas with rias topography, as these areas had historically suffered many major disasters. In the area south of Oshika Peninsula, Miyagi Prefecture, which had not experienced severe damage in recent tsunamis, there was little awareness that tsunamis could cause immense damage. The fact that there was no major tsunami damage after the Great Chilean Earthquake of 1960 may have contributed to the lack of tsunami awareness among residents. In particular, even at low elevations, people in areas a little inland from the coast cannot see the ocean directly from their buildings. They likely could not have imagined that a tsunami would come from the ocean that they could not even see.

Even at schools, drills focused on evacuation from typical earthquakes and fires. Teachers who provide disaster prevention education to children also commute from outside the school district or have been transferred there, making it difficult for them to imagine a local disaster. Residents, too, stop sharing their disaster experiences after 50 years, much less have the ability to imagine a tsunami bigger than anything they experienced in the past. At that time, there were few opportunities for university professors who study tsunamis to explain the mechanism of tsunamis directly to children. Tsunamis are said to be one of the low frequency disasters. Although it can be mitigated by evacuation, it is characterized by the fact that they occur when people have forgotten about them, causing a repetition of similar damage.

3: A New Approach

The lessons learned from the Great East Japan Earthquake have given rise to the concept of disaster prevention education, which aims to make the entire community safer by encouraging adults and children to protect their own lives against natural disasters that can occur anywhere at any time. We thought that it was necessary for university researchers to visit elementary schools around the time young children first learn about disasters to explain the mechanisms of natural disasters and encourage children to think about how to mitigate disaster damage. With the cooperation of the boards of education in each prefecture, we launched the Tohoku University Disaster Mitigation Education Yui Project in 2015 to communicate to children the results of our research in an easy-to-understand manner. We visited schools and provided lessons to fifth-grade elementary school students and older, whose understanding of language and interest in science are developing.

The team, which used to be centered on science and engineering but then combined cognitive psychology and history with natural disaster science, devised ways to make visual teaching materials so that they would be easier to understand. They teach while observing the reactions of the students and teachers in the classroom, and have adopted active learning methods to make it easier for the students to think about what could happen to them in such situations, and give importance to the time spent in group work. Considering game-like group work is effective, they developed disaster prevention/mitigation stamp rallies with businesses. They made a disaster mitigation handkerchief and distributed them to children as a tool for reviewing lessons and communicating with family members about disaster preparedness, thereby helping to maintain awareness. By going beyond the university's original role and connecting directly with society, a new form of education was created. We conduct questionnaire surveys on changes in children's awareness of disaster mitigation. One question asks how they prepare for disasters with their families and what actions they would take in case of an emergency. We asked them what they discussed with their families and what specific actions they took after these discussions. The results are shown in Figure 29-1 and Figure 29-2 below (Lopes, 1992).

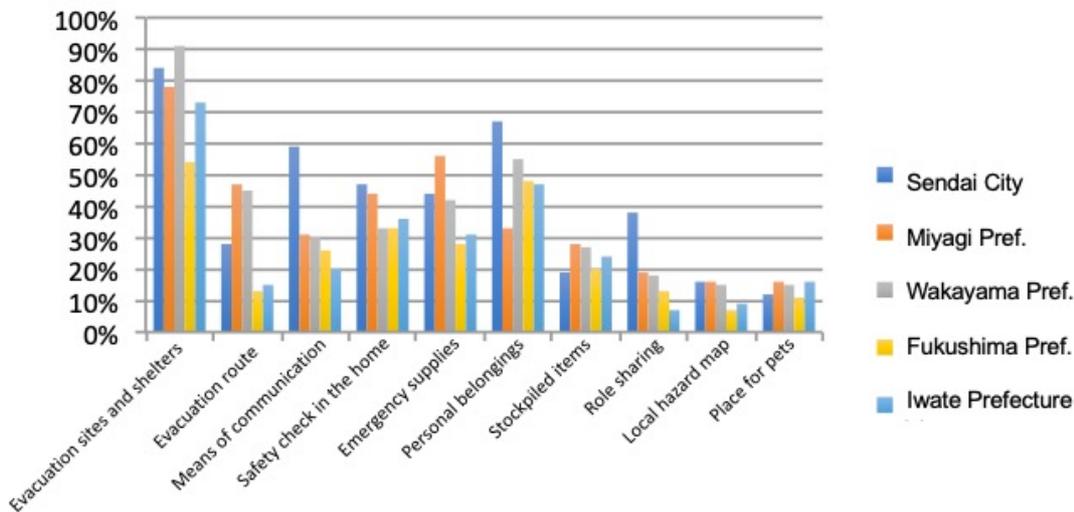


Figure 29-1. Items that children discussed with their families at home after the disaster preparedness class

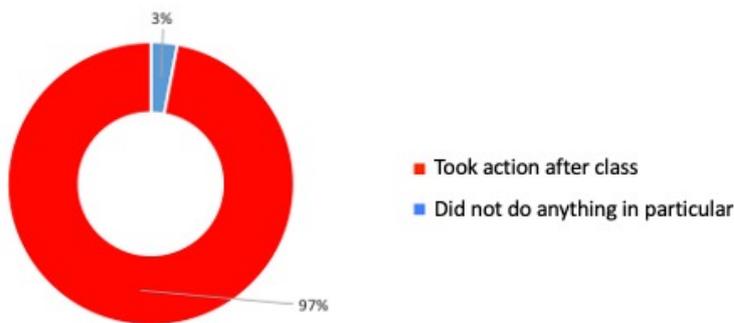


Figure 29-2. Percentage of children who took preparedness measures with their families

4: Achievements and the Future

The purpose of disaster mitigation education is to protect people's lives in times of emergency and to enable them to lead lives as close to normal as possible. In order to achieve

this, we should learn the basics of natural disaster science, find out what we can do through learning about them, and take immediate action. When discussing with students and teachers what can be done I advise them to start with what they think they might be able to do. It's one step at a time. It's enough to take one step at a time. Even if it's not perfect in the beginning, it is important to develop the plan little by little. It's not enough to think about it, and try just once. We need to adjust and reshape our plans as we learn and grow. That is the important part. In order to achieve this, disaster prevention education itself needs to be fun and interesting. If only the painful and sad part of the damage is shared, it may leave a strong impression, but it will not lead to disaster mitigation actions. In order to prevent this from happening, we need to think about what we can do now and try to devise ways in our daily lives to make the concept of disaster mitigation our own responsibility. In our classes, students learn about the mechanisms of disasters and work in groups to develop their own ideas of disasters. Figure 29-3 and 29-4 show this in action. By exchanging our ideas of disaster mitigation with others, we broaden our own judgment and actions, and this increases the number of children who consider learning to be an enjoyable activity. In the future, it will be important for children to develop their own way to take what they have learned in disaster mitigation classes and turn it into action.



Figure 29-3. Children reviewing what they learned with the disaster mitigation handkerchief



Figure 29-4. Children exchanging opinions in group work

Conclusion - From the author

No two natural disasters are the same. Damage differs depending on the place, time of day, and season in which it occurs. The situation changes with the passage of time as well. That is why there is no single right answer about the best course of action. I would like you, the people

who will create our future, to continue to think about how you should act in the event of a disaster and keep preparing for it in order to stay safe.

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