

A Case Study of Disaster Risk Reduction in Schools for the Blind in Thailand

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ABSTRACT

In Thailand, 9% of people with disabilities are visually impaired (VI). VI children are vulnerable when disasters occur. This study investigates risk situations and disaster risk reduction (DRR) methods in VI schools to identify present and potential ways that students can be provided skills. An interview was administered in two schools to schoolteachers and administrators. Content analysis was used to analyze qualitative data based on core keywords. DRR for daily risk exposure and fires is the priority. Concerns over VI students are based on the difficulty in orientation. Support is considered crucial for student safety. Supervisory means to limit risk among the VI is uncertain in times of disaster. Students are capable of learning about DRR and, combined with assistive techniques, can limit their risk. DRR policies in VI schools are primarily reactive. Uncomplicated risk awareness information and training could foster an appropriate approach to bringing self-efficacy to deal with risk.

KEYWORDS

Disaster Risk Reduction, Schools for the Blind, Self-Efficacy, Students With Visual Impairment, Thailand

BACKGROUND

Persons with disabilities are often overlooked throughout disaster management, although considered vulnerable. They are more likely to have limited access to services, information, and community networks. In terms of disasters, the implications are life-threatening. Because disaster warning signs are frequently delivered through a visual base, people with visual impairment (VI) often cannot receive important information. Wheelchair users frequently have difficulty accessing evacuation routes. Similarly, people with an intellectual disability or psychosocial disorders are frequently isolated because they cannot receive proper communication and emotional support.

Disasters unequally affect people with disabilities. The estimated mortality rate from the Great East Japan Earthquake in 2011 in the general population was 1.03%, compared to 2.06% for those with disabilities. Besides, a survey showed that people with disabilities accounted for 24.6% of total “disaster-related deaths,” while only 7% of deaths were in the total population (Kyodo News, 2020). A study was conducted after the 2015 earthquakes in Nepal. People with disabilities experience various challenges and difficulties, including daily accessibility issues, physical vulnerability, psychological

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issues, a lack of health services, problems with government disability payments, and access to information. Findings showed that structural disparities and patterns of social exclusion have a wide variety of implications for patterns of recovery and resilience (Lord, 2016).

In a global society built on the ability to see, VI is a significant disadvantage to access to information. People with VI face significant challenges in daily life as they cannot freely move around, read, or write. This situation becomes incalculable during disaster events. There are many layers of barriers for those with VI to face during a disaster. For example, people need to know where to find and how to get to emergency shelters. At the shelter, people must understand where and when food is provided and how to access and use toilets. People with VI must obtain the required information precisely (Japan Disability Forum, 2015).

In Thailand, there are disasters, such as floods, storms, landslides, earthquakes, and tsunamis. The 2004 Indian Ocean Tsunami was a significant disaster, and the 2011 Great Flood caused the most damage to lives and economies. Active faults also caused the magnitude 6.3 earthquake in Chiang Rai in 2014 (Department of Disaster Prevention and Mitigation [DDPM], 2015). Thailand has 2,127,332 people with disabilities, accounting for 3.18% of the population. Those with VI account for almost 9% (Punbutre, 2021). At the present, there is no study focusing on VI persons in Thailand that investigate their situation in disasters.

LITERATURE REVIEW

Visual Impairment and Blindness

VI occurs when an eye condition affects the visual system and one or more vision functions. Globally, at least 2.2 billion people have near or distant vision impairment (Steinmetz et al., 2021).

People With Visual Impairment in Thailand

According to a report from the Ministry of Social Development and Human Security, the number of people with visual impairment of those who hold disability ID cards is 186,701 as of July 2022 (Office of the Basic Education Commission, 2017). However, National Statistic Office reported data from a disability survey that includes non-disability registration, non-ID holder, and non-Thai nationality with two-eyed blindness or low vision representing 447,864 total, with 6,080 represented VI children aged 2–17 years old (Social Statistical Division, 2020).

Schools for Blind Students in Thailand

Education Provision for Persons with Disabilities Act, 2008, persons with disabilities have the right to education as follows (Royal Thai Government Gazette, 2008):

1. To obtain an education free of charge from birth or with disability throughout their life, including receiving technology facilities, media, services, and other educational assistance.
2. To choose educational services, educational institutes, educational systems, and programs, considering the person's abilities, interests, aptitudes, and special needs.
3. To obtain an education that meets standards and quality assurance, including the course, learning process, and educational test suitable to the unique needs of people with disabilities and person.

There are two governmental schools for blind students under the Ministry of Education, one in the northern region, another in the southern region, and 11 private schools. VI students can obtain education from joint schools where the school for blind students sends their students to study with sighted students, special education centers in each province, and schools for disabilities. Such a school's curriculum is set following the learning standards of the Ministry of Education.

Perceived Social Support and Self-Efficacy

Self-efficacy is the belief in one's capabilities to organize and execute courses of action required to produce given attainments (Bandura, 1997). It is a critical component of motivation and can impact an individual's willingness to take on new tasks or persist in the face of difficulty. One perceived social support can enhance their self-efficacy. For VI children, social support plays a significant role in their adjustment and achievement. For example, social support from family, friends, and teachers can provide practical and emotional encouragement, which can help individuals to feel motivated and more confident in their abilities. Social support can also provide access to knowledge, resources, and opportunities which help promote individual self-efficacy to obtain and develop new skills. The significance of support for VI students is demonstrated by a significant relationship between academic achievement, self-efficacy, and perceived social support. VI students can accomplish educational goals if supported; this encouragement will also increase their self-efficacy (Shahed et al., 2016).

Disability-Inclusive Disaster Risk Reduction

Disability-inclusive disaster risk reduction (DiDRR) is a concept and practice of *disaster risk reduction* (DRR) that focuses on including people with disabilities. It requires all actors to consider what they are doing from the perspective of users with difficulties. The design and planning of DiDRR systems, protocols, signage, and other means of public communication, standard operating procedures, and infrastructure must be considerably more straightforward and safer for universal use. DiDRR has been established as a standard for evaluating policies and practices of people with disabilities and their inclusion in DRR (Villeneuve et al., 2021).

Disaster Education

Education for disaster risk reduction is a critical approach and awareness strategy to convey information about disaster awareness and knowledge of preparedness strategies. A study indicated that disaster education is a functional, operational, and cost-effective tool for risk management. Vulnerable groups must learn about disasters (Torani et al., 2019). Evidence from a study conducted in Japan and the U.S. showed that disaster education could enhance awareness and knowledge of disasters, enhancing preparedness activities. It is suggested that DRR should begin at school. In Japan, disaster education is regulated by the School Health and Safety Act, which mandates every school to implement a School Safety Plan with guidance from the Ministry of Education (MEXT). It requires school preparedness to undertake suitable safety measures with the primary objective of enhancing student capacities. Risk awareness is enhanced by developing practical skills and routine disaster education based on past disaster experiences in Japan (Kitagawa, 2016). In New Zealand, the Ministry of Civil Defense and Emergency Management (MCDEM) provides preparedness educational resources to provide a consistent platform for teaching disaster preparedness in primary schools (Johnson et al., 2014). In contrast, India's disaster management school curriculum introduces knowledge of disasters through a social studies course. The curriculum and content are inflexible and traditionally delivered (Kharade, 2017; United Nations Children's Fund, 2003).

Disaster Education in Thailand

The Learning Standards and Indicators of Social Studies, Religion, and Culture under the 2008 Core Education Curriculum (Revised 2017) published by the Office of the Basic Education Commission, Ministry of Education (Office of the Basic Education Commission, 2017) sets standard learner quality relevant to disaster education. However, the Thai curriculum's general content and disaster-related activities must be improved. It only offers basic information about the causes and effects of natural disasters, omitting in-depth knowledge and first-hand experience that would prepare students for disaster preparation and response in actual circumstances, and lessons were only lectures and assigned reports (Wongphyat & Tanaka, 2020).

Visually Impaired Persons in Disasters

VI persons are considered a vulnerable group throughout disaster management. Some case studies reported as follows.

A Case of the Event of the Great East Japan Earthquake 2011

During the Great East Japan Earthquake in 2011, VI persons had numerous challenges. The proposals from the Japan Federation of the Blind were released after the event (Japan Disability Forum, 2015). Some lessons learned for the VI and those who are responsible for disaster management include the following:

1. **Support System:** It was reported that neighbors or colleagues immediately assisted many VI persons who reached the shelters. This assistance emphasized the importance of building relationships with neighbors daily and maintaining routine communication to get support during an emergency. Sufficient support should include a system that always makes it possible for support activities and contact with VI persons.
2. **Disaster Preparedness Training:** VI persons must participate in routine disaster prevention training, confirm the location and route to emergency shelters, plan for disasters, prepare emergency supplies, and make themselves accessible for assistance.
3. **Joining Blind Association:** Participating in disability organizations and creating contacts allows VI persons to interact with others about various issues. Using disability groups and facilities is a meaningful way to receive support in an emergency.
4. **Welfare Evacuation Shelters:** VI persons have various challenges living in shelters, such as getting around inside and outside the shelter, checking the surrounding area, and using toilets. Local governments can create a welfare evacuation shelter with facilities for people with disabilities who face difficulties in their well-being and to lessen their stress.

A Case Study in Brazil

A study investigated the inclusion of VI persons in DRR and climate change in Brazil (Gomes et al., 2022). The situations of visually impaired Brazilians in the context of disasters were investigated. Several issues were raised: lack of public policies, access to information, educational vulnerability, preparedness to assist VI persons, and institutional vulnerability.

In addition, the participants perceived barriers in daily life that they experience as impossible to overcome. Therefore, disaster is perceived as something hopeless. To cope with these, participants always tried to be with other people or temporarily avoid some disabling barriers. As a result, the researchers propose three proposals for the better inclusion of VI persons in DRR are to create an application tailored to VI person needs of information, a tactile risk map to gather information, and insight into how to develop methods to promote DRR education.

A Case Study in India

The school curriculum of disaster management in India was investigated (Kharade, 2017). It is reported that the curriculum and content are inflexible and are delivered traditionally, and all students are evaluated similarly. Thus, VI students are overlooked in preparation for disaster risk management. Some general barriers to embracing such inclusion include non-accommodative course content, a lack of facilities and trained staff, insufficient resources, and a lack of technology (Kef, 2002).

METHODOLOGY

The objectives of this study are to understand the DRR situation and capabilities of VI students and to investigate the risk situations and present methods of DRR administration in schools for blind

students. Hence, teachers, educators, and school administrators from schools for blind students were asked to participate in the interviews. The interview protocol refinement (IPR) was employed to develop the interviews (Castillo-Montoya, 2016). The interviews were held four times in groups between July 2021 and August 2022. First, three online interviews using the Zoom meeting program were conducted. Second, there was a face-to-face interview session. Each session lasted about 45 minutes to an hour. These interviews were consensual and conducted following ethical standards. A video clip of a fire evacuation drill from the school in Pattaya was shown. Firefighting activities such as rappelling with a sling from the upper story of the school building, extinguishing a fire from a gas tank, and first aid training were represented. Content analysis was used to analyze qualitative data based on core keywords and terms (Krippendorff, 1980). The interview transcripts were coded into content categories to examine the occurrence of selected terms in the data.

First, Pattaya Redemptorist School for the Blind in Chon Buri province was selected as one case study. This boarding school was established in 1986 to provide primary and secondary education for the visually impaired. Initially, it taught students from kindergarten to primary school level 6. Second is the Bangkok School for blind students in the Bangkok metropolitan area. This school teaches VI students from kindergarten to primary school level 6 and provides boarding and day school. There were five interviewees in total. Interviewee 1 is a school director with visual impairment at Pattaya Redemptorist School for blind students. Interviewee 2 is a male assistant director of the Pattaya Redemptorist School for blind students with 18 years of experience teaching VI students. Interviewee 3 is a male teacher of the O&M subject with 26 years of teaching at the Bangkok School for blind students. Interviewee 4 is a VI male educator working on research and information technology development for education at the Bangkok School for blind students for three years. Interviewee 5 is a female science teacher and a class administrator with seven years of teaching at the Bangkok School for blind students.

RESULTS

Table 1 presents the interview questions and answers. Table 2 presents the eight categories of content analyzed in the interview data.

Visual Impaired Students: DRR Capabilities and Risk Situations

Risks

Priority disaster risk centers on fires, flooding, and criminal fears. As for the VI persons and a school for the blind, according to the interviews, *criminal activity* referred to scams and the fear of a shooting rampage. “Criminal? The news of a shooting in a special education school raised awareness.” “Blind people are often cheated or scammed, such as when taking a bus or taxi” (Interviewee 1). Also, the interviewees referred to risk exposures that increase VI persons’ vulnerability which could cause potential loss of life and assets, such as exposed electric cables, poles, and uncovered utility access holes on pedestrian ways. This risk exposure is the primary concern for student safety in daily life.

Concerns and Vulnerabilities

In conditions that teachers described as unusual such as disasters, negative affectivity, such as being afraid, worried, frightened, panicked, and losing confidence, is expected to happen, which may affect self-control among VI students. Concerns over VI students in disasters are placed on the difficulty in orientation, which is the leading cause of delayed evacuation, clumsiness, difficulty living in shelters, and limited ability to apply evacuation skills to unfamiliar places. “Yes, there was some delayed evacuation. It is normal for the blind students that sometimes they scurry and hit into some things, but finally they can reach the assembly point” (Interviewee 2). As a result, students can only do self-evacuation in school.

Table 1. Interview questions and answers

Questions	Bangkok	Pattaya
Does the school have a protocol for disasters?	No	Yes
Are there any drill practices for students, teachers, and staff?	No	Yes
Where does support for practice come from?	N/A	Volunteer
What disasters should the school prepare for in Thailand?	Fire, Flood	Fire, Flood, Earthquake, Tsunami, Criminal
Can you rely on professional emergency services for support?	Yes	Yes
Are student capabilities sufficient for disaster preparedness?	No	No
Are you concerned about student abilities to deal with disaster difficulties?	Yes	Yes
What are your concerns if students must evacuate or live in an evacuation center?	Orientation problem, delayed evacuation, panic, accident, social perception toward VI persons	
What support is needed for students who must evacuate or live in an evacuation center?	Accompany, guidance, separated shelter or space, Voice Instruction	
How do teachers typically educate students to learn new skills related to their safety?	Training, training camp, independent living skill education	
How confident are you that you, students, and teachers have abilities to respond to disasters?	Considerable low	

Table 2. Content analysis

Categories of Analysis						
VI Students					Schools for the Blind	
Risks	Concerns and Vulnerability	Abilities	Assistance	Supports	Institutional Vulnerability	Institution Safe Conditions
Fire accident	Negative affectivity	Independent living skill	Assistive technology	Teachers / facilitators	Insufficient DRR training	Safe location
Potential disasters	Delayed evacuation	DRR trained skill with support	Cane	Buddy/senior students	No DRR standard to follow	Rely on government support
Criminal fear	Orientation problem	Access to technology	Voice instruction	Parents/Family members	Lack of resource	
Risk exposure daily	Difficulty in living in a shelter	Swimming	Tactile technique	Community	Being overlooked	
	Needs of absent and non-VI person: DRR training focus		Smartphone application	Sighted volunteers/ Social support	School personnel perceive low confidence in DRR	

There is a problem with the orientation of places too. The evacuation drill has been practiced only at the school, so they can do evacuation only in the school area because they can remember the evacuation route. When the students are outside, they must start learning and remembering new patterns and structures of the places and buildings. It is not like people who practice evacuation in one building and then can apply it to another. Blind people have difficulty in orientation. (Interviewee 1)

Abilities

Under normal conditions, students can perform their daily routines inside the school even without a cane since they are well-trained to remember the school plan. Independent living skills are instilled in students to be able to live in society.

We teach our students to be well prepared, like preparing banknotes. Preparedness is an add-on subject of Independent Living (I.L.); it does not appear in the curriculum. Every school for blind students has I.L. subjects to teach students how to take care of themselves, like cooking, self-care, and traveling outside. (Interviewee 1)

VI students also have abilities to perform DRR activities if they have the opportunity to practice. For example, evacuation from the school building, including using rope rappelling, extinguishing a fire for those with partial sight, using technology to access information, doing first aid, and swimming are skills the students can master. “Yes, students know what disaster is, students can access the knowledge of Earthquakes or Tsunami, they are very good at using a smartphone for internet surfing by themselves” (Interviewee 4).

Assistance

Technology that can decrease orientation problems as guiding direction and detecting dangers, is considered an advantage in disaster. A cane provides the best defense for students if the environment is unfamiliar. Voice is also necessary to instruct the evacuation route. Tactile techniques like touch points, landmarks, or remarks are references to help students identify objects, places, and directions.

Cane is important. About 80% of the students can remember all the school's areas; they can walk around without a cane or guide. They may be familiar with the area, but everyone must have a cane when an unusual event happens because the situation and environment may change from what it was. A cane is the best defense. Voice must also inform them of meeting and assembly points so they can follow the voice instruction correctly. (Interviewee 2)

Support

Support is considered crucial for students' safety in disasters. As in the fire evacuation drill, the leader must facilitate student action. Teachers or friends are assigned to accompany students who are more vulnerable such as those who are young and have multiple disabilities.

Well, if it is an emergency, we have teachers to supervise in the school. We will focus on a [Buddy System] where the senior takes care of the junior because many younger students have multiple disabilities. They must be paired with teachers or their buddies. They must be paired. Children sometimes have panic attacks and cannot control themselves. (Interviewee 1)

Students are taught to ask for support from those with more resources for response, such as sighted persons who can guide them.

Risk Situations and Present Methods of DRR Administration in Schools for the Blind

Institutional Vulnerability

For schools to work on DRR, there is no standard to follow. Lack of resources and being overlooked are perceived barriers that prevent proper training for people who are blind. No budget for DRR and support that sometimes shows a lack of understanding of the actual needs of VI persons impedes risk response.

Yes, we usually get support if we ask, but sometimes talking about the function of what we get is another story. Regardless of the utilization for the blind students, teachers, or the school, sometimes the support we get from the government cannot be used. (Interviewee 4)

The school curriculum and practice of social education and living skills only provide basic knowledge of disasters without knowing how to do a personal preparedness plan or self-protection in a major disaster. Insufficient disaster preparedness could also be described as one vulnerability, as school personnel reported low confidence in performing DRR.

But earthquakes are unpredictable; they can happen at any time. It would be good to have an agency to help in this regard. Which agency will we request? Training or education about earthquakes, not even teachers have ever experienced this, and we have never been trained. (Interviewee 2)

Institution's Safe Condition

Regarding school settings, major disasters like earthquakes and tsunamis are far from their present concern. The interviewees trust the reactive support from the government and emergency services.

Normally, we contact the fire department or the rescuer team to train for us inside the school. It is a project of our school. Since COVID-19, the students, and teachers have not been trained for two years. Some government agencies may have a proactive project, but it never comes to us. Usually, when we ask them, they always come to us. Once a fire accident happened near our school, and the firefighters responded immediately when we reported it. (Interviewee 1)

DISCUSSION

Decreased VI Student Concerns in Disasters Through Support

Orientation difficulty is a significant concern for VI students, as it is commonly known that the visually impaired have orientation and mobility problems (Kokhan et al., 2020). Subjects are taught in schools for blind students to help students overcome these difficulties. One of them is called *orientation and mobility* (O&M). In disasters, problems with orientation can cause several negative consequences.

In this study, the teachers frequently reflected that students express negative affectivity if things surrounding are unusual. It also happens when they experience a new situation, as they need to be orientated and have time to become familiar with new environments. This finding is similar to many studies in which VI children report more fear of potentially physically dangerous and harmful situations than psychologically harmful ones (Wiemer & Kratochwill, 1991). Results revealed that the main fear in VI children is fear of voices and social communication (Al-Zboon et al., 2016). A study that included 38 children with low vision found one type of anxiety at 47.4%, with boys reporting significantly more stress than girls (Bekmez et al., 2020).

To overcome this, the schoolteachers we interviewed usually use a supportive technique such as accompanying, going with a group, traveling with their buddies, or asking sighted persons to guide their students to develop confidence in daily situations. They also mentioned lessons learned from disaster events about the importance of support and the ability to seek it by VI victims. Before the disaster, a support system should be available to ensure support activities and contact with VI persons (Japan Disability Forum, 2015).

The significance of support is also explored by Shahed et al. (2016) who noted a significant relationship between academic achievement, self-efficacy, and perceived social support. VI students can accomplish educational goals if supported, and this encouragement will also increase their self-efficacy, potentially leading to even tremendous success. It is also suggested that educational institutions design support networks that encourage higher achievement and self-reliance by VI students (Shahed et al., 2016). Similarly, social support is essential to enhance the equality of learning experience and performance in studying disaster risk management with assistance from sighted students (Kharade, 2017).

Assistive Techniques to Design Disaster Education and Training for the Visually Impaired

Several abilities related to DRR by VI students have been discovered in this study. Suitable teaching techniques have also been found in practice, allowing students to become familiar with or habituated to them. This finding is similar to one from Indonesia, which suggested that habituation and parent–teacher guidance are required to strengthen students’ ability to practice motions so that their motor abilities can improve progressively (Subroto et al., 2022). Teachers introduce techniques like using technology, cane, voice instruction, and tactile methods that can support students in learning and coping with orientation problems. This situation has increased with researchers developing innovative tools and technologies for navigational support (Kuriakose et al., 2022). To promote learning equity and access to learning material for VI students, using a *differentiated instruction technique* (DIT) in studying disaster risk management and creating an application tailor-made for VI persons needing information and a tactile risk map should be applied (Gomes et al., 2022; Kharade, 2017).

Self-Efficacy for Strengthening Student Abilities

Different levels of capabilities of students have also been reported. Fostering students’ potential abilities to respond to disasters could be done by adding more knowledge and training in an approach that suits them, together with working on their self-efficacy. Motivation and confidence are essential for students to develop their inner strength to respond to disasters. The experiential teaching technique that the school in Pattaya applies for students is similar to how one could create a self-efficacy approach with mastery experience. Many studies in the field of education prove the motivational benefits of self-efficacy. Self-efficacy techniques should be included as a functional social cognitive approach to promote the independence of the visually impaired. Confidence in acting on student capabilities will have an impact on DRR performance, as studies suggest the importance of self-efficacy in the design of effective interventions (Adams et al., 2019; Adi et al., 2018; Marceron & Rohrbeck, 2018; Newnham et al., 2017; Paton, 2003; Samaddar et al., 2014; Timalisina et al., 2022).

Institutional Vulnerabilities Reflect Awareness Levels

There needs to be more resources and clarity regarding responsible agencies to promote DRR. According to Education Provision for Persons with Disabilities Act B.E. 2551 (2008; Royal Thai Government Gazette, 2018), the schools for the blind have received financial support under Section 7, which states that:

Public and private educational institutions providing joint learning, private charitable schools that manage education specifically for people with disabilities and learning centers for people with disabilities that have been certified to receive grants and special assistance from the state.

However, it is considered insufficient and ineffective according to this statement: “Not to mention about the budget to support disaster preparedness, very few budgets that the school receive from the government. There is only a budget allocation per capita as subsidy for schools” (Interviewee 2). This reflects the lack of understanding due to the lack of inclusion. The absence of funds and failure to understand students are similar factors in the study of the deaf and hard of hearing in New South Wales (Calgaro et al., 2021).

However, there is a window of opportunity. First, it is possible for schools to apply for funding by purposing a specific project about DRR in section 9 (Royal Thai Government Gazette, 2018) states that “The state shall allocate budget and other special educational resources as appropriate and in line with the special needs of people with disabilities and educational institutions that provide education for people with disabilities.” In the same way, as being charitable schools, there are opportunities to receive donations from private donators or organizations in the form of money, supplies, and resources or volunteers in terms of activities. Nevertheless, building a community of resilience requires a level of attention from policymakers and human resources on DRR. In Japan, the second Fundamental Plan for National Resilience (FPNR) has identified 179 key performance indicators (KPIs) and was funded at roughly 5 trillion yen per year which one of the indicators is the share of schools that educate in disaster safety (Cabinet Secretariat, 2018).

Regarding disaster education, according to the National Disaster Prevention and Mitigation Plan 2021–2027, the Ministry of Education has given only supportive responsibilities. The basis of disaster education in Thailand is primarily prescriptive without practice (Wongphyat & Tanaka, 2020). Disaster education and practice in schools are not compulsory; students have few opportunities to build capabilities to deal with potential disasters. The schools’ social education and living skills curriculum are only for learners to deal with daily difficulties. “I also think that my skill is not enough. Maybe I would rate myself 6 points out of 10, the maximum. Having more frequent training, like every year, could help us become masters and confident” (Interviewee 1). Compared to Japanese and New Zealand policies of disaster education, which mandated that every school follow a national plan and guidance (Johnson et al., 2014; Kitagawa, 2016).

There are two distinct strategies for Japan. The first is subject-specific learning. The second category is extracurricular activities for education (Fujioka & Sakakibara, 2018). Compared to these, the situation of schools in Thailand is considered insufficient in terms of policy for schools and students’ preparedness with suitable safety measures. However, the issue of educational vulnerability is also present in Brazil. The lack of educational programs and initiatives addressing climate change and DRR is reflected in the school curricula (Gomes et al., 2022). Student capabilities in response to disasters should get more attention. Disaster education should be more concrete, with school practice mandatory. This educational component is supported by previous studies where the importance of vulnerable group learning about disasters was raised (Tanaka, 2005; Torani et al., 2019).

CONCLUSION

Due to vision restrictions that generate an orientation problem, VI students in two schools for blind students in Thailand have difficulty coping with unusual situations, including disasters. Students are prone to developing negative affectivities, leading to chaos, particularly during an evacuation. Support is required for their safety in disasters. DRR training could incorporate assistive techniques used in schools for blind students. Self-efficacy should be used as a behavioral indication to determine whether students understand and can perform DRR activity regularly. To further design DRR interventions for VI students, the students’ different capabilities, support systems, and assistive techniques should be

considered. Self-efficacy should be employed as a behavioral indicator to assess if students understand and can produce risk response behavior routinely.

Our findings investigated three factors of DRR in students with visual impairment:

1. A framework of support and assistive techniques for students with visual impairment should be incorporated into the design and tailoring of DRR interventions or training.
2. The abilities, confidence, and motivation of students must be sustained continuously. Self-efficacy should be employed as a behavioral indicator to assess if students understand and can produce DRR behavior routinely.
3. Standards for school safety, especially for special schools, must be set at the policy level. Schools should take responsibility for implementation processes consistent with the standard by preparing students and teachers with resources and practice for risk response behaviors.

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COMPETING INTERESTS

The authors of this publication declare there are no competing interests.

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