

Doctoral Dissertation

**Exploring Key Elements to Conduct Effective Disaster Mitigation
Education in Inclusive Primary Schools in Yogyakarta, Indonesia
(Summary)**

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Children with special needs are one of the most vulnerable groups when disasters occur. They are often excluded from any risk reduction conducted for the situation. They can actively participate in disaster risk reduction education; thus, introducing disaster mitigation education at the early stage has many benefits. The purpose of the current study is to investigate current disaster mitigation education activities in primary schools in inclusive settings, identify critical practices that support efforts to improve disaster preparedness, and determine the effect of disaster mitigation education on students, including those with special needs. While the current study's specific objectives were: (1) to explore the critical elements of disaster mitigation education from the stakeholders' perceptions in the context of inclusive schools; (2) to identify teachers' skills to appropriately teach disaster mitigation education to students, including those with special needs; (3) to find out the appropriate contents and teaching method of disaster mitigation education program for teachers to deliver student including who have special needs, (4) to find out the efficacy of the disaster mitigation education program for students with and without special needs.

The current study used a mixed-method with exploratory sequential design. The study setting is the Special Region of Yogyakarta, where is a disaster-prone area in Indonesia and an area that implements inclusive education. Data were collected by focus group discussions (FGDs), observation, documentation, and questionnaire. Data were analyzed using thematic analysis and statistical analysis. FGDs were conducted with education authorities, the regional disaster management agency, non-governmental organizations (NGOs), principals, teachers, school committees, and students, including students with special needs in primary schools. A total of 165 students with special needs and without special needs participated in the quasi-experiment.

By exploring the viewpoints of stakeholders, the present study identified six crucial components of conducting inclusive disaster mitigation education in Indonesian schools: (1) strong initiative to conduct self-initiated disaster risk reduction (DRR) education for all students; (2) modification of infrastructure and learning environment to accommodate children with special needs and other students; (3) broadening learning methods in DRR; (4) child empowerment and meaningful participation; (5) school management awareness and strategies for conducting DRR; (6) extensive stakeholder involvement within disaster mitigation education. The critical elements of disaster mitigation education in inclusive schools are intimately linked to one another. Modification of the infrastructure and learning environment is needed to accommodate students with special needs and other students to ensure the active participation of students with special needs. In order to provide proper access, the correct data is also needed through the initiative to identify the needs of children with disabilities, who will participate, and their capacities and difficulties. Accessibility is also related to broadening learning methods to increase meaningful participation. School management awareness and DRR strategies can be promoted through collaborative networks of stakeholders.

The required teaching skills for inclusive disaster mitigation education are as follows: (1)

knowledge regarding disaster mitigation education, (2) knowledge about the characteristics of children with special needs, (3) ability to develop subject-specific pedagogy related to DRR, and (4) competence in accommodating and modifying DRR learning. The knowledge and skills of teachers must be improved in order to ensure their ability to teach disaster mitigation education in the classroom. This improvement is necessary to support teachers in terms of materials and lesson plan ideas. Alternative models of teacher professional development on disaster mitigation education include observed guide-driven DRR professional development, web-led teacher support, professional journals with features on best practices and local experience in teaching DRR, large-scale cascade training. Monitoring and evaluation are essential after the workshop. These activities ensure the sustainability of implementing disaster mitigation education programs in schools.

In choosing teaching methods, teachers consider the characteristics and abilities of their students. The ability of students to receive information is adjusted to their intellectual capacity. Alternative teaching methods in disaster mitigation education in the inclusive setting are small group peer tutoring, simulations/mock drills, DRR learning using songs, DRR learning using interesting media, and DRR learning using games. The essential contents of disaster mitigation education in schools include potential hazards, disaster risk mapping, “Drop, Cover, Hold,” and emergency preparedness.

Results of the Mann-Whitney U tests showed that the experimental and control groups of children with and without special needs had a significant difference in average scores. Specifically, the results showed significant differences between the effects of disaster mitigation education programs on the dependent research variables, such as risk perception, awareness, readiness, and knowledge. In the present study, the control group only studied disaster mitigation education from the integration of subjects in thematic books. The majority of teachers only use the lecture method. One factor contributing to the difference in disaster preparedness in the experimental group is that various methods have been used to teach and learn disaster mitigation education. Different disaster education methods could improve individuals’ level of knowledge and skills, which is critical for children’s disaster preparedness. Lectures and textbook readings alone are ineffective for disaster education. These methods should be combined with disaster exercises and drills. Comprehensive and exclusive textbooks for school-based disabilities education are required for better results.

Findings in the present study, from exploring key elements, teaching skills, methods and contents in DRR, and efficacy of disaster mitigation education programs, indicate that teachers have a strategic role in successfully implementing disaster mitigation education at inclusive schools. Teachers can increase students’ participation by using active and fun methods. Teachers accommodate the needs of students with disabilities by providing accessible learning materials. Teachers must have the required skills to effectively teach disaster mitigation education to students, including those with special needs. Enhanced teaching skills are also needed to create the appropriate content and teaching methods of disaster mitigation education programs for teachers to deliver to students, including those with special needs. One of the determining characteristics of an effective disaster mitigation education program for students with and without special needs is a teaching and

learning process that uses various learning methods. Therefore, building teacher skills is important in disaster mitigation education in inclusive settings.

However, there also are limitations to the current study: (1)–Although many students with special needs are not able to access public education in Indonesia, only school-going children participated; (2) The sample size was small, and the data were collected only in inclusive primary schools in the special region of Yogyakarta; therefore, the findings do not represent the whole of Indonesia; (3) Participants involved in exploring stakeholders' perceptions in disaster mitigation education in inclusive schools were only school teachers and administrators, education authorities, regional disaster management authorities, NGO personnel, school committee members, and parents; (4) Only disaster mitigation education for earthquake disaster preparedness was implemented; and (5) The effectiveness of implementing disaster mitigation education were measured in a short period of the time.

Suggested areas for further research include involving more participants from various regions. Further research should examine the effects of disaster mitigation education in inclusive schools to medium efficacy and long-term efficacy. Research findings have explored several learning methods used in disaster mitigation education in inclusive schools. Further research is required to explore the efficacy of methods that can be used as an alternative to DRR learning in inclusive schools, including the peer tutor method, using songs and games. Future research should implement different interventions in tsunami preparedness. The different interventions in DRR are essential because many primary schools in the Special Region of Yogyakarta are located near the coast. Students must remain safe during an earthquake; however, they would have to run away as quickly as possible during a tsunami after an earthquake. In such a case, students' actions will differ depending on their learning, physical, and other disabilities. Additionally, there is a need for more studies that will focus on the education of children with sensory disabilities, motoric disabilities, intellectual disabilities, autism in disaster mitigation education and involve them as active participants.