

“Monster VIPs” : disaster preparedness training for children with intellectual disabilities

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Abstract. Disaster resilience is vital to everyone, including people with disabilities. However, teaching people with disabilities requires special techniques, and there is scant literature in the area. This case study designs and implements disaster preparedness training at a school for children with intellectual disabilities in Padang, Indonesia, an area prone to earthquakes and tsunamis. The training utilizes a blended learning approach called ‘Monster VIPs’ that combines various learning methods such as storytelling, posters, videos, puzzles, and disaster simulations to facilitate students to understand disasters responses. The training involves university teachers and disaster preparedness volunteers (Taruna Siaga Bencana/TAGANA) of the city’s social services.

1 Introduction

Thousands of schools worldwide have been delivering education for around 200 million people with significant disabilities [1]. Half of those schools are dedicated to teaching children. However, there are many challenges encountered by special schools in educating these children with special needs, such as low accessibility, inadequate teacher training and support, and inflexible curriculum and material [2]. Therefore, it is essential to support efforts to increase access, train teachers, and improve special education curricula.

In the increasing number of disasters worldwide, children with disabilities are the most marginalized people who are often excluded from the disaster management framework. However, a growing body of research has started to draw attention to these children’s needs regarding disaster education [3,4,5]. This case study explores a way to design and implement disaster education training for children with intellectual disabilities. It starts with a review on disaster risk knowledge in the context of special education, followed by a method section that describes the design and implementation processes, discussion, and ended with a conclusion and recommendations for future studies and actions.

1.1 Disaster Risk Knowledge and Special Education

Promoting disaster risk knowledge in formal and non-formal education is one of the top priority actions to

increase disaster resilience. It is a vital strategy stated in the priority action—understanding disaster risk—described in Sendai Framework for Disaster Risk Reduction 2015-2030 established by the United Nations [6]. To increase the young generation’s disaster resilience, schools around the world have been incorporating disaster risk knowledge in their existing education and training mechanisms [7,8,9]. However, special schools for children with disabilities were often overlooked by governments and other stakeholders in disaster management systems [3].

Studies show that children with disabilities are often portrayed as the ‘powerless’ ones in the disaster risk reduction (DRR) program [10,11,12]. The reasons are due to challenges they face to process early warning information or other disaster management phases [11] and their limited social networks. Another reason is due to their social structures and how disability is conceptualized in their society. Hence, The United Nations Convention on the Right of Persons with Disabilities (UNCRPD) has recommended several actions to protect and promote the fundamental rights of persons with disabilities [4]. In reality, many young students with disabilities are not included in disaster and mitigation management programs [10]. They were left behind in disaster education, which makes them lack improvisational skills to manage the worst situation [4]. Possible pathways towards special school education programs about DRR are essential to be explored and exercised by considering proper instructional methods that fit with the students’ different abilities.

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1.2 Teaching Children with Intellectual Disability

Special education schools are educational institutions prepared to handle and provide special education services for children with specific physical or mental, behavioral, and social issues. One of these issues is intellectual disability. Children with intellectual disabilities experience obstacles in cognitive, psychomotor, and social adaptation functions during their development phase. However, they have their own pace in learning.

Literature shows that instructional methods for teaching normal children are not different from those for children with intellectual disabilities, except that it will often require more time and more repetition [13]. Studies recommend several strategies, including:

- a. Active learning may stimulate students' participation in learning activities with opportunities to apply information [13],
- b. A structured format of learning is much more effective instead of an unstructured one [14],
- c. Direct instruction is better compared to problem-solving [15], (Dagseven Emecen, 2011),
- d. Teaching should use sign language or pictorial prompts to foreground verbal communication afterward [16],
- e. Increasing students' interests by showing videos or pictures of people that they admire [17],
- f. Reinforcers for positive behavior may help students to learn. This includes music, praise, happy face, tokens, stickers, and so on [13].

2 Methods

2.1 The Context

This case study aimed to design and implement disaster preparedness training for children with mental retardation. It took place at one of the special schools in Padang, the capital city of West Sumatra province, Indonesia. The particular school, called Sekolah Luar Biasa Perwari (SLB Perwari), has 53 students with intellectual disabilities with the assistance of eight teachers. It is located only one kilometer inland of the coastline of Purus beach connected to the Indian Ocean, where Sunda Megathrust is located. Sunda Megathrust is the most active tectonic crack in the world, the most significant source of earthquakes. This situation makes SLB Perwari prone to earthquakes and tsunamis.

West Sumatra province, in general, has a relatively high seismic activity compared to other provinces in Indonesia. Several strong earthquakes above the 5 Richter Scale have been recorded in this area, destroying several towns, including Padang. One of the most significant earthquakes occurred in 2009, which took 1.195 lives and caused significant destruction of thousands of buildings in the city [18]. West Sumatra Disaster Management Agency has predicted a big megathrust earthquake with a magnitude of 8.9 SR that will occur and cause a six-meter tsunami. It is predicted to destroy huge areas within five kilometers from the coastline of West Sumatera, including Purus beach and Padang [19].

To assess the school's need for disaster preparedness training, members of the Department of Medical Education team interviewed the principal of SLB Perwari. Based on her information, there has never been education on earthquake and tsunami disaster mitigation implemented within the school. Meanwhile, other schools in Padang are often invited by the mayor of the city to participate in earthquake and tsunami mitigation education programs. The principal was concerned that children with intellectual disabilities would not be able to save themselves because of their lack of disaster knowledge. In addition, the limited number of teachers would not be adequate to assist the students in evacuating if a disaster occurs. Children with intellectual disabilities may need extra explanations and time to evacuate due to their different intellectual and social adaptations [5].

2.2 Design Phase

Responding to the problem stated above, medical teachers in the Department of Medical Education and undergraduate medical student team of Fakultas Kedokteran Universitas Andalas aimed to design and implement disaster preparedness training for students and teachers SLB Perwari. This training's objective was to increase the children's capacities to anticipate earthquakes and tsunami.

The training should be designed well to fit the children's different abilities in processing information and fight the stigma linked to their cognitive limitation in accessing vital resources, social networks, or their disabilities to adjust emotionally during and after the disaster. By utilizing suitable instructional methods, such as those reviewed in the literature review section, the training was designed to engage the students in exciting and fun activities. After a long study and discussion, the medical teacher and student team came with the idea of blending different instructional methods. They called it 'Monster VIPS,' an acronym of 'method blending storytelling, posters, videos, puzzles, and simulations. Monster VIPS blends different methods of instructions to teach content on disaster and mitigation, emphasizing ways to save themselves when an earthquake and tsunami occur.

The purpose of this activity is to provide education and improve the knowledge of intellectually disabled students in Padang City— especially students with intellectual disabilities of SLB Perwari located in Purus beach, Ulak Karang Village, Padang Utara District, Padang City about mitigation action to save themselves during earthquake and tsunami using repetitive modification methods. It is also supposed to stimulate these students to create their participation in disaster management. They should be viewed with an active role in constructing their own life (and lives around them). The training was systematically arranged from the preparation stage, implementation stage, and evaluation stage.

2.3 Preparation phase

This phase mainly focused on preparing teaching equipment. The team also established a partnership with another community stakeholder, which is the TAGANA

team (acronym of ‘Taruna Siaga Bencana’ or disaster preparedness and response volunteer team). After conducting a literature review on unique education teaching methods, the entire team decided to use a combination of instructional methods called ‘Monster VIPS’ and started to prepare the properties needed. They also planned other preparation activities, including:

2.3.1 Making hand puppets for storytelling method

The team prepared five hand puppets to perform a puppet show. These hand puppets are animating five animals made from cloth. The show delivers dialogue and simulation between those animals, including tips on what to do during and after a big earthquake. It aims to share information about earthquake and tsunami mitigation that children should understand if they are indoor and outdoor when an earthquake occurs.

2.3.2 Drawing posters

The team created two posters containing information about steps to protect themselves and evacuate when the earthquake and tsunami occur. First, the students should hide under a strong structure, such as a table, and then when the earthquake stops, they should walk out of school or other buildings while protecting their heads. They should walk to a designated gathering point. These posters were utilized to assist a trainer who tells a story about an earthquake and tsunami. Posters were made in two sizes: A5 distributed to each student and A3, which will be patched on a whiteboard in each class.

2.3.3 Video-making

The team prepared for two videos. The first video showed pictures of earthquakes and tsunamis. The other video introduced disaster responses and an educational song about self-rescue actions responding to earthquakes and tsunami.

2.3.4 Puzzle

The team provided pictures of actions to be taken when an earthquake occurs. Students would be asked to choose the proper sequential steps or actions responding to the hazard: whether they need to hide under or on a table, run to or away from the beach, stay in a building or run away to a gathering point, and so on. The puzzles aimed to facilitate the students to understand the information provided in previous methods (storytelling, posters, and videos). Hopefully, students would be able to be engaged with the puzzle as a learning game and remember the mitigation steps as they are explaining why they chose a piece of the puzzle to respond to the hazards.

2.3.5 Simulation Preparation

The team gathered tools and media needed, such as loudspeakers, sirens, and direction signs, to demonstrate

the earthquake and tsunami situation and ways to evacuate.

2.4 Implementation Phase

The activities in the implementation phase aimed to visually, auditory, and kinesthetically stimulate these students to understand steps in disaster response by blending various instructional methods. The total participants of the training activities were 64, consisting of 50 students and 14 teachers. In this phase, there were three activities. Each activity took three hours and was conducted on three different days within a month time.

2.4.1 Introduction, storytelling, posters, and puzzles

The first meeting started with an introduction session between the team and students to build a good relation and understanding. The team taught the children a song about earthquakes and evacuating after teachers alarmed them by sirens and sudden. During the singing, the team demonstrates the actions that need to be taken. After the demonstrations, the team continued with storytelling using hand puppets (Fig. 1). They also provided a brief explanation of mitigation actions with posters (Fig. 2). Storytelling by using hand puppets was an innovation to keep mitigation education interesting and adjust the concentration of students. It would be easier for intellectually disabled students to absorb new information about disasters and mitigation.



Fig. 1. Hand puppets for storytelling (left) and puzzle (right)



Fig. 2. Poster

These posters themselves were expected to help students to visualize how earthquakes and tsunamis occur and what actions should be taken in such a situation. Afterward, trainers asked the students to choose pictures, which looked like puzzles—depicting proper mitigation steps when an earthquake and tsunami occur. The use of puzzles aimed to stimulate students to understand and remember what they have learned in the previous learning activities.

2.4.2 Video watching followed by simulation

The second meeting started with watching the two videos prepared by the team. The first one aimed to introduce what earthquakes are and their impacts on buildings and people. It also shows tsunami as one of the aftereffects of an earthquake occurring from the crack in the ocean floors or an erupting volcano. In sum, it visualizes the situation when the earthquake and tsunami happen. The second video shows ways to respond to an earthquake and evacuation steps if teachers or parents announce an early tsunami warning.

Afterward, the students were invited to participate in two simulations. The first one was conducted inside a classroom to simulate responses when an earthquake occurs and indoor students. Another simulation was conducted outdoors to show ways to evacuate themselves from the classroom to a gathering point in a designated open space. These simulations were organized by the TAGANA team of the Padang City Social Services.

2.4.3 Simulation

Before the third activity, the medical teacher and student and TAGANA team prepared teachers and administrators to play their roles in the disaster simulation (Fig. 3). They were given an explanation and guidance as well as opportunities to ask questions. This ensures that they understand the early warning, incident command, and communication systems as essential disaster responses. They are the ones who are responsible for the safety and security of the students during school activities. A common understanding should be established between teachers and administrators in responding to a hazard. Hence, they would effectively assist students in evacuating from the classroom to a designated gathering point in the school's front yard. Then to the nearest shelter or other designated safe location where parents would pick their children up after an earthquake or tsunami occurs.

The simulation started with an indoor activity. Trainers asked the children to sing together a song about evacuation when an earthquake and tsunami occur. An 'earthquake' announcement followed it, and students are guided to respond according to the evacuation plan explained in previous activities. On this occasion, the team utilized a route to a shelter at the Ulak Karang Cooperative Center, higher ground, and a safe location or gathering point if a 10-meter tsunami occurs.



Fig. 3. Simulation

2.5 Program Evaluation Phase

The team interviewed several teachers informally a few days after the implementation of the last training. Three themes emerged from the interviews.

First, the teachers were very thankful that community members, such as the team from the nearby university and TAGANA team, were involved in increasing their knowledge and skills in disaster preparedness. It is crucial for the safety and security of children with intellectual disability and their teachers and administrator. The training is evidence of community engagement in increasing the disaster resilience of its members.

Second, the teachers of SLB Perwari were inspired by the education approach utilized by the team. The 'Monster VIPS' approach offers alternative ways of blending different instructional methods to increase students' engagement with the content. These alternative approaches may help address various needs of the students, as some of the students came with different conditions, such as a combination of disabilities.

Third, the teachers hope that there will be a continuation of the disaster preparedness training in the future. The teachers need to upgrade their knowledge and skills to train their current and future students.

3 Discussion

This case study aimed to describe different phases in a disaster education program for children with intellectual ability in the context of a particular school prone to earthquakes and tsunamis. There were several insights obtained from the disaster education program.

3.1 The Overlooked Special Schools

The data from the preliminary study that SLB Perwari was not invited to participate in disaster preparedness programs arranged by the local government represents the reality that special education is still overlooked by education stakeholders, especially in disaster education [4,5].

This fact supports statements in previous studies that explore the same issue located in different countries in the world. This study calls for the implementation of social justice in special education schools and action to fight the stigma of 'powerlessness' of children with intellectual disabilities.

3.2 Steps In Designing An Educational Program

A good learning program should be designed by considering different steps, including identifying learning beliefs, need analysis, designing the content, media, assessment, and so on until evaluating the program [20]. This disaster preparedness training has established the designed steps from the learning belief and need analysis very well. The core of instructional designs has also been prepared accordingly by carefully thinking on the proper content, media that assisted its delivery, types of instructional methods, and the sequence of learning experiences that repeat and increase students' competencies. However, the assessment and program evaluation have not been prepared very well. Consequently, the program was inadequately evaluated, and it was not easy to spot the aspects that need improvement.

The program's implementation provides a rich experience of ways to establish good collaboration with different stakeholders Volunteers, academia, teachers, administrators, and of course, the students themselves to achieve the objective of the training, which was increasing their disaster knowledge. This rebuts the assumption that children with disabilities are powerless. They certainly have power

3.3 Blended Instructional Methods May Work

The findings of this case study show that active learning that blends pictorial (posters, videos, and puzzles), verbal (storytelling), physical prompts(simulation), reinforcements such as song and music may be effective in teaching disaster knowledge. Considering children's situations, who had a combination of disabilities, this blended learning offers multiple stimulations to their visual, auditory, and kinesthetic senses that may help them understand the core content.

4 Conclusions and Recommendations

This case study explores the design, preparation, implementation, and evaluation of disaster preparedness training for children with intellectual disabilities. Need assessment that was conducted in the form of a preliminary study revealed the exclusion of special schools in the disaster preparedness framework set by the local government. However, since building community disaster resilience is the responsibility of all parts of the community, stakeholders in disaster education should consider efforts to include people with disabilities in the resiliency framework. The medical teacher and student team and TAGANA collaboration have set a good example that can be extended to a broader audience.

This case study produces several recommendations. First, disaster education for children with disabilities should be prioritized since it is long overdue. Stakeholders should take action against the stigma of the powerlessness of people with disabilities. They are indeed robust and collaborative. Second, stakeholders may collaborate to strengthen the network of disaster preparedness. This study shows that collaborative actions between university teachers and the disaster preparedness volunteer team have produced significant results, hopefully, a good impact on the children's resilience. However, it requires a lot more effort to engage a broader audience to increase community resilience toward disasters.

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