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Examining the Inclusion of Natural Disasters in Textbooks Special Primary School for Intellectual Disability

Arif Rohman Mansur[1,*], Ira Mulya Sari [1], Yelly Herien [1], Deswita Deswita[1], Meri Neherta [1]

[1] Department of Maternity and Child Health Nursing, Faculty of Nursing, University of Andalas, Padang, Indonesia 25163).

***Corresponding author:** arifrohmanmansurphd@nrs.unand.ac.id

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Abstract

The children with intellectual disability (ID) are vulnerable to Natural Disasters and need priority protection. This leads to the effective implementation of disaster risk reduction (DRR) through integration in school textbooks (ST) as the primary source of teaching and learning, to provide information to ID children. A significant gap is also observed in understanding the extent and adequacy of Natural Disasters in relevant textbooks, accompanied by the potential analysis of appropriate materials. Therefore, this study aimed to examine the inclusion of Natural Disasters in textbooks implemented for primary schools using a qualitative content analysis method. All 2020-2021 academic year books were also effectively and efficiently reviewed in presenting the materials of disasters. *Results:* Six of the 36 textbooks implemented contained natural and integrated materials with thematic titles, namely disasters, seasons, water, land, and earth. In this context, two main themes were identified, including (1) Natural Disasters, namely Hydrology, Geophysics, and Climatology prioritizing floods, landslides/volcanoes, and drought, respectively, and (2) Management Cycle focusing on several stages, such as mitigation, preparedness, and response. *Conclusion:* The Natural Disasters were experimentally identified, accompanied by integrating the management cycle into school textbooks for students with ID at SPS 1 Padang. This result explained that ID children learned lessons while preparing to encounter Natural Disasters, with preparedness institutionally considered through teachers active participation.

Keywords: textbook analysis; mental handicap, natural disasters, disaster preparedness

Introduction

A global estimation of approximately 175 million children is exposed to natural disasters yearly, including floods, hurricanes, droughts, heatwaves, severe storms, and earthquakes (STC, 2007). These disasters can impact highly vulnerable communities, often leading to death and illness. In the previous decade, more than 300 natural disasters occurred annually worldwide, affecting millions of people and costing enormous amounts of money (Prasad & Francescutti, 2017). Furthermore, West Sumatra Province is flanked by two main earthquake centers, namely (1) the watermelon fault along the Bukit Barisan, and (2) the subduction zone prioritizing the confluence of the Indo-Australian Plate with the Eurasian Plate ± 250 km from the west coastline. The geological and geographical conditions in this province are characterized by a high potential for natural disasters (Bappenas, 2009). The volcanic and tectonic events of previous thousand years also focus on the vulnerability of West Sumatra to various potential disasters, such as floods, volcano eruptions, landslides, earthquakes, and tsunamis. Based on domestic and international reports, a tsunami hit the mainland presently known as Padang City in 1797 and 1833 (BPBD, 2012). This led to the significant implementation of preparedness measure in West Sumatra Province, due to the proneness to various disasters, including earthquakes and tsunamis.

In preventing high rate of casualties, the anticipation of services and protection for vulnerable groups is very important, including children, women, the elderly, and special needs people (BPBD, 2012). These protective efforts include the provision of attention, service, and safety to disaster victims. Moreover, natural disasters are

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significantly risky to vulnerable populations, including the disabled children often requiring individualized preparedness plans (Morsch et al., 2019). This threat portrays the inadequate nature of Disaster risk reduction education (DRRE), with no implementable and accessible programmes for children (Sheehy et al., 2022). Disabled people are also very vulnerable during disasterous periods, specifically kids encountering unique challenges due to the reduced ability to independently endure, understand complex information, and learn new skills (Cantrell et al., 2020). Furthermore, children are exposed to health and well-being risks regarding the challenges associated with mobility, language impairment, intellectual functioning, and adaptive behavior (Murray, 2020). This proves that children are one of the groups most susceptible to harm, with the susceptibility levels often generally different. From the description, age commonly intersects with other social characteristics, such as race, gender, class, environment, and religion. Vulnerability is also higher when childhood is associated with various disabilities, including impairment, as well as activity and social limitations (Krahn, 2011). In this case, preparedness programs are recommended for the increased the inclusion of disabled people in disaster risk reduction education, ensuring the appropriate accessibility of teaching materials (Fatin et al., 2020). The full participation of people with intellectual disabilities (ID) subsequently improves disaster preparedness and promotes social inclusion in the delivery and planning of disasterous services. Additionally, the disabled personalities actively contributes to disaster planning and response efforts (Stough, 2015a), ensuring significant safety and well-being. The inclusion of relevant needs in disaster preparedness programs and materials is also highly required.

All children, including those with disabilities, have the right to be safe and protected from natural, technological, and unnatural disasters. This right shows that disabled children should have the same access to disaster-related services as non-disabled people. From the description, disability should not expose affected people to different risks of injury, death, or psychological distress during disasterous events (Peek & Stough, 2010). Furthermore, ID is a significantly reduced ability to understand, learn, and apply new or complex information/skills (intelligence impairment). This ability often causes independent endurance reduction (impaired social functioning), which starts before adulthood and possesses lasting developmental effects. Disability also significantly depends on health conditions/disorders and supportive levels of environmental factors to the full participation and inclusion of children in society (WHO Regional Europe, 2022).

Moreover, the integration of Global Disaster Risk Reduction (DRR) into the UNICEF/UNESCO Education Curriculum is relevantly mapped as an adequate implementable method, portraying the incorporation of DRR into the appropriate scheme. This method focuses on a literature review prioritizing the experiences from thirty countries in the world. In this review, the integration method was commonly implemented for disaster risk reduction through institutional themes or topics, accompanied by the correlation with disasters in specific subjects. Despite the broad observation of several examples, DRR was still incorporated into narrow subject groups, specifically physical and natural sciences. A scientific proof was also found for a practical learning method focusing on sharing feelings and emotions, where disaster and disaster education caused a strong emotional response in students. This proof significantly ensured the high need for effective learning, as disasterous incidence elevated the requirement for pre-disaster and post-disaster education (Selby & Kagawa, 2012). Therefore, the Indonesian education authorities and GTZ established appropriate resources and provided instruction to over 33,000 students regarding the origins and consequences of earthquakes, tsunamis, and volcanic eruptions (GTZ, 2006). The inclusion of disaster awareness and risk reduction education in the school curriculum also enhanced understanding among students and teachers about the local environment, leading to decreased uncertainties and a safer community (RCC, 2007).

Textbooks are considered a significant contribution to the teaching and learning process for teachers and students, due to providing a framework of educational guidelines and orientation. This contribution process raises the need to adapt textbooks at the activity, unit, and syllabus levels, enabling the appropriate use of the learning materials during professional skills education and students academic participation (Dragana, 2011). The books are capable of strengthening student's ability to learn the nature of knowledge, justification, and rationality of a belief. In this case, disabled students are positioned as passive recipients of information from simplistic knowledge due to content limitations (Errington & Bubna, 2015). Furthermore, disaster risk reduction education is contained in the Education curriculum framework, providing information to the government as a material for developing relevant mitigation policies, practices, and strategies (Merchant, 2015). The role of the teacher also needs to be studied in teaching disaster materials to students, prioritizing the explanation of textbooks analysis to children with ID. In this explanation, local mitigation wisdom is commonly incorporated into relevant academic materials/resources and the implementation plan identifying each theme core and significant competencies. Teachers also play a role in guiding students to identify forms of local wisdom in respective communities (Suarmika & Utama, 2017). Based on the interviews with the principal of Special Primary School (SPS) 1 Padang City, the teachers frequently prepared textbooks regarding the assessment of the student's lesson understandability. Since each educational level has different textbooks, the present study is conducted at SPS 1 Padang, a Center or Source of Inclusive Education Providers where 56 male and 27 female students are contained. Therefore, this study aims to examine the Analysis of Qualitative Disaster Theory In School Textbooks for Children with Intellectuals Disabilities (ID) within Padang City (Kemendikbud, 2018).

Several reports explored preparedness in educational settings and determined a significant gap in understanding natural disasters within textbooks specially designed for students with ID (Seddighi et al., 2022). Therefore, this study aims to address the gap through a qualitative content analysis at SPS 1 Padang, specifically examining the following, (1) disaster representation theory, (2) management concepts distribution across grade levels, and (3) management cycle incorporation in the special textbooks. Valuable insights into the present state of disaster preparedness education are also provided by exploring the content and structure of the analyzed books. The results are expected to contribute to the understanding of inclusive education, as well as inform policymakers, educators, and stakeholders about potential improvement areas in disaster risk reduction literacy. Additionally, several aspects are prioritized, namely (1) Natural disaster theory, (2) Management concepts distribution, and (3) Management cycle integration. The results are also expected to inform the enhancement strategies for the inclusion and preparedness of children with ID during natural disasters.

Methods

Study Design

A qualitative content analysis methodology was used to organize and translate relevant data (text and pictures), as well as draw realistic conclusions. In this context, the following steps were implemented by using the model developed by [8], (1) Planning, (2) Data collection, (3) Information analysis, (4) Decontextualization, (5) Recontextualization, (6) Categorization, and (7) Compilation. Additionally, data were obtained through several book lessons on ID and an excellent education system at SPS 1 Padang.

Planning

Several objectives were determined in the planning stage, accompanied by the selection of relevant data sources, such as Special Primary School textbooks for students with ID. Besides, the formulation of study questions was conducted, with answers expected through content analysis.

Table 1. Number of textbooks for students with ID at the Primary school level.

Type Disability	Number of textbooks in Primary school					
Class	1	2	3	4	5	6
Disability intellectual	3	8	8	3	7	7

Based on Table 1, textbooks were selected to determine relevant text or image materials related to specified keywords, as stipulated in Law Number 24 of 2007 concerning Disaster Management (Bencana, 2007). In this context, disasters were divided into three types, namely natural (geophysical, climatological, and extra-terrestrial), non-natural, and social (BPBD Kab.Bogor, 2022).

Data Collection

Data were obtained as text and images from natural disasters textbooks of children with ID, through direct observation, recordings, or copies of available publications.

Table 2. Examples of keywords for determining disaster theory in the book lesson.

Types of Natural Disasters	
Natural disasters	
Geophysics	Earthquake
	Tsunami
	Volcano Eruption
	Landslide
Hydrology	Flood
	Flash floods
Climatological	Drought
	natural forest fire
Meteorology	Storm
	Hurricane/hurricane
	Rainfall
Natural disaster extraterrestrial	Meteor impact
Non-Natural Disaster	
Technology failure	The epidemic of a disease
Failed to modernize	Epidemic
Social Disaster	
Conflict social intercommunity Public Disaster	Terror

The search for themes related to disasters management cycle was divided into three stages, namely (1) pre-disaster, including prevention, mitigation, preparedness, (2) during disaster, specifically emergency response & assistance, and (3) post-disaster, including recovery, rehabilitation, and reconstruction, as shown in in Table 3.

Table 3. Disaster Management Cycle.

Pre-Disaster	
Prevention	
Forest burning	Littering
Mining in steep places	
Disaster mitigation (Mitigation)	
Arrangement of the room	Development setting
Infrastructure development	Building layout
Education administration	Counseling
Training	
Preparedness	
, proper and efficient organization.	Appropriate and efficient steps.

Early Warning	
Immediate warning	
Disaster Phase	
Emergency response (response)	
Search	Help
Emergency measures	
Rescue	Evacuation of victims
Evacuation of property	Fulfillment of basic needs,
Protection, refugee management	Restoration of infrastructure
Emergency assistance (relief)	
Fulfillment of basic needs as food and clothing	Temporary shelter
Health,	Sanitation
Clean water	
Post-Disaster Phase	
Recovery	
Restore the condition of society and the environment	Re-functioning Institutions, Infrastructure, and facilities
Rehabilitation (Rehabilitation)	
Repair	Recovery
Normalization	
Reconstruction (reconstruction)	
Physical reconstruction	Non-physical reconstruction.

Data Analysis

The data obtained were analyzed by reading and understanding the text content, interpreting images, and recording important outcomes related to examination and interpretation. Comprehensive insights were also acquired regarding the representative patterns of natural disasters in textbooks of disabled children. Additionally, the strengths and weaknesses of the learning materials were identified, regarding clarity, suitability to the needs of disabled children, and established academic objectives conformity.

Decontextualization

Relevant information was obtained and separated from the original context during the decontextualization stage, by isolating specific text or images related to natural disasters. A chapter or section discussing different types of disasters was also observed in textbooks, such as earthquakes, floods, or landslide. Moreover, several relevant content were identified and obtained during decontextualization, including descriptions, explanations, images, or diagrams.

Recontextualization

The previously identified information was relocated into the experimental context during the recontextualization stage. Relevant data about earthquakes, floods, and landslide were also acquired from the school textbooks, specifically focusing on the analyses of the following, (1) disaster representation theory, (2) management concepts distribution across various levels, and (3) management cycle incorporation. This experimental step analyzed the representative patterns of disaster topics regarding language accessibility, visual aids, or the inclusion of disability-specific considerations within textbooks. Therefore, the results should be connected to the study objectives and the broader analysis of natural disaster representation in the disabled children textbooks.

Categorization

In the categorization stage, the obtained information and common themes/patterns were carefully examined and identified, respectively. These themes were the foundation for establishing thematic categories or coding the framework related to different aspects of disasters topics in textbooks. Common themes were also identified after decontextualizing and recontextualizing the relevant information, including the following phases, (1) pre-disaster, containing prevention, mitigation, preparedness, (2) during disaster, such as emergency response & assistance, and (3) post-disaster, consisting of recovery, rehabilitation, and reconstruction.

Compilation

The collection of the outcomes related to natural disasters was carried out in the compilation stage. These outcomes were combined as a comprehensive analysis of language and image usage, as well as other relevant factors. Subsequent combinations and unifications were also conducted to identify patterns, similarities, differences, and relationships between various outputs. In addition, a comprehensive understanding and conclusion related to study objectives was obtained, accompanied by the compilation of experimental reports.

Population and Sample

The qualitative content analysis samples were related to the experimental issue, with the data obtained being comprehensive and sufficient to answer relevant questions. Since the Indonesian Education Ministry acquired the data from school, the initial step prioritized the collection of textbooks for children with ID regarding the national curriculum. Therefore, a total of 36 textbooks were obtained and analyzed at Special Primary School 1 Padang for the 2020-2021 session. These books were selected regarding the relevance to the study objectives and the target population of disabled students. The books were also selected due to specifically addressing natural disaster topics.

Sampling criteria

Several considerations were prioritized in selecting the 36 analyzed textbooks, such as (1) arrangement of the books regarding natural disaster topics, (2) availability and accessibility of the publications at the school, and (3) suitability of the books for disabled children and students reading levels. These selection criteria ensured a different representation of natural disasters in the available learning materials used by disabled students at Special Primary School 1 Padang.

Study time

The experiment was conducted from May to August 2021 at Special Primary School 1 Padang.

Method of Collecting Data

Intellectual property was analyzed by observing words, writings/phrases, and pictures in all disabled students textbooks, regarding the predetermined keywords. These keywords were determined through an extensive literature review and consultation with experts in the field of disaster studies and ID. The keywords were also selected to obtain relevant concepts, ensuring a comprehensive analysis of the data. Furthermore, the first coding process focused on the development of a codebook, where a list of predetermined codes or themes obtained the important concepts or ideas from the study objectives, literature review, and initial data exploration. This was accompanied by the second process, where several data were read and examineddata before assigning relevant codes to specific segments regarding the predefined codebook. The third process also prioritized Iterative Coding, to identify new codes or modify existing ones in obtaining additional information toward saturation achievement.

In data organization and analysis, manfual methods were used to organize and manage the coded information, such as establishing matrices or tables for appropriate summarization. Book pages containing disaster materials or themes were also obtained and inputted into the experimental tabular representation. Furthermore, the quantity of pages addressing disasters was evaluated, including textbooks titles, as well as the significance of text and picture content related to natural disasters. This was accompanied by the analysis of other pages strongly addressing the dangers associated with disasters. The total and disaster-based chapters were also appropriate indicators of the priority on natural disasters topics. Multiple coders independently analyzing and comparing relevant data were also implemented, accompanied by the evaluation of coding decisions to achieve a consensus toward providing different perspectives and reducing individual biases. Meanwhile, the fourth process focused on the implementation of Inter-coder reliability, to determine the agreement among different coders toward assigning codes to relevant data.

Methods to increase trustworthiness

Two steps were implemented to increase trust, namely peer and expert reviews, which were used to elevate the credibility of the qualitative data. This credibility was ensured through various perspectives to achieve high appropriateness during data collection. Furthermore, coded data and open coding were assessed and enhanced by various experts and disaster specialists, with the content and pictures of all textbooks re-evaluated to ensure no process was ignored during the initial evaluation.

Reliability

The qualitative data reliability was conducted through the establishment of outcomes irrespective of the changes in the experimental settings or participants during information collection. In this case, strict collection methods and procedures ensured the reliability of the final dataset.

Ethics test

A letter of ethical feasibility was obtained from the Health Research Ethics Commission of Dr M. Djamil Padang Hospital with number 322/KEPK/2021, ensuring that the experiment met the standards and guidelines set by the respective committees. Although direct interaction was not conducted with human participants due to the sole analysis of specific textbooks, several ethical considerations were still highly prioritized. Appropriate permission was also obtained from the relevant authorities of Special Primary School 1 Padang, with textbooks sources, authors, and publishers adequately acknowledged.

Results

The results showed that 6 of the 36 analyzed textbooks were related to Disaster Theory, with several thematics provided in Table 4.

Table 4. Outcomes of Textbooks Implemented For Special Primary School Students With Disabilities And Intellectual.

No	Class	Textbooks	Disaster Theory	Page	Total Pages_
1	3	Theme 7 (Natural Disasters)	Flood, consisting of the categories, causes, effects, prevention, as well as emergency response and assistance. Landslides, comprising the signs, vulnerable land, consequences/losses, helping victims according to relevant abilities, emergency assistance, disaster mitigation, abd rehabilitation. Earthquake, containing the event, cause, rescue, effect, relief emergency, and evacuation. Mountain eruption, consisting of types, positive and negative impacts, emergency assistance, evacuation, and respiratory problems.	63	110

2	3	Theme 8 (Season)	Two seasons in Indonesia, the benefits of rain, the causes, prevention, and resolution actions of flood, safety tips during strong wind, wet and dry periods, drought, emergency assistance, and hurricane,	30	120
3	5	Theme 5 (Water)	Continuous rain and the effect of littering causes flooding. The process of flooding and relevant avoidance actions.	3	104
4	5	Theme 6 (Earth)	The process of the volcano disaster focuses on volcanic eruption.	3	59
5	6	Theme 1 (Soil)	The process and causes of landslides and erosion.	8	96
6	6	Theme 2 (Earth)	Identifying the elements helpful for people affected by volcanic eruptions. Identifying useful and dangerous elements due to volcanic eruptions. Earthquakes can cause landslides and are examples of natural phenomena. Earthquakes also accompany volcanic eruptions. Causes and consequences of landslides, with strong winds being examples of natural phenomena.	7	96

Based on the results, two themes and seven sub-themes were graphically portrayed, as shown in Table 2.

Table 5. Summary of Themes And Sub-themes From The Qualitative Analysis.

Natural Disasters	Disaster Management Cycle
Geophysics (earthquakes, landslides, and volcanic eruptions)	Prevention
Hydrology (Flood)	Disaster mitigation
Climatology (drought)	Preparedness
	Emergency response
	Emergency assistance

Natural Disaster

Geophysics (Earthquake)

Geophysics was a phenomenon related to tectonic earthquakes, tsunamis, gravity, earth magnetism, air electricity, and time signs (BMKG, 2022). In this context, earthquake was showed in 2 textbooks, which were implemented for the following, (1) grade 3 theme 7, "Natural Disaster" (Wibowo, 2016), and (2) grade 6 theme 2, "Earth" (Lupiyanti, 2016). The explanation started by addressing the circumstances and conditions observed during disasters, accompanied by the efforts to help the victims, such as financial assistance. Moreover, textbooks prioritized the causes of earthquakes, portraying the appropriate actions to perform during occurrence. This was accompanied by the comprehensive details of relevant emergency response efforts, rescue actions, and collaborative assistance performances. The general and emergency assistance provided to victims was also analyzed, regarding the provision of temporary shelter/evacuation. In addition, disaster mitigation for school-age children was carried out through simulation training, for appropriate confrontation of earthquakes.

Geophysics (Volcanic Eruptions)

Volcanic eruptions were contained in the sixth theme and fourth sub-theme of the 5th-grade textbooks titled "Earth" (Nurnawati & Hartaty, 2014) and "Mountains", respectively. This sub-theme prioritized the concepts of mountains, starting with different examples in Indonesia, namely Kelud Mountain. The difference between Mt. Active and Inactive was also observed, with Mt. Active being a volcano capable of erupting at ay period. Furthermore, the origin, and process of volcanic eruptions were explained, accompanied by the identification of the dangerous objects released by the mountains, namely lava, magma, smoke, ash, sand, and gravel. In textbook, the picture of the atmosphere surrounding an eruption was described, where residents showed frightening facial characteristics while performing emergency response and self-rescue efforts.

From the description, many residents were evacuated to safer locations, such as the village office. This book subsequently provided guidance on reaching refugee camps with portable valuables, suggesting that students should help victims by donating appropriate clothing and preparing simple sandwiches through plain bread, butter, and sugar. Moreover, the 6th-grade textbooks, Theme 2 titled "Earth" (Lupiyanti, 2016), explained the process of volcanic eruptions caused by the magma deposits driven by high-pressure gas. These eruptions carried ash and rocks, leading to potential demise of life, property, as well as financial profit/loss implications. In the 3rd grade book, Theme 7 titled "Natural Disasters" (Wibowo, 2016), the analysis of "Gunung Meletus" started by exploring mountain types, potential volcano conditions, positive and negative impacts of eruptions, associated losses, effects on communities, victim needs, health consequences, and mitigation efforts. This was accompanied by the comprehensive evaluation of the assistance for volcanic eruption victims, portraying the benefits for sand miners, construction materials, and plant fertility, as well as strong efforts regarding eruptive events.

Geophysics (Avalanche)

According to the 3rd grade textbooks, Theme 7 entitled "Natural Disasters" (Wibowo, 2016), the discussion on landslides prioritized causes, erosion, the process, resultant impacts, and methods for helping victims through individual capacities. The 6th-grade textbooks, theme 1, "Land" (Untung, 2016) also analyzed land management in the fourth sub-theme, prioritizing the impact of landslides in residential areas, where damages were observed on trees, houses, and more. In this context, landslides were primarily caused by illegal logging, leading to erosion and a decrease in soil carrying capacity. Furthermore, the 6th grade textbooks, theme 2, "Earth"(Lupiyanti, 2016) explained landslides, including the phenomena caused by human actions. This was accompanied by the evaluation of the factors contributing to various disasters, such as heavy rains, volcanic activity, earthquakes, illegal mining, brittle rocks, as well as sterile and unstable soil conditions. The consequences of landslides were also examined, including casualties, infrastructure damage, livelihood disruption, and adverse impacts on environmental sanitation.

Hydrology (Flood Natural Disaster)

The lesson on Disaster Theory was addressed in the 3rd-grade textbooks, Theme 7, "Natural Disasters" (Wibowo, 2016). These books specifically focused on floods, evaluating the categories, causes, effects, emergency responses, and preventive efforts. Floods were also caused by overflowing river water that led to various consequences, including flooded roads, traffic congestion, submerged houses, and public facilities damages. From the description, the cause of flooding often originated from an unclean environment due to littering, with victims requiring assistance through goods and food provision. However, a different observation showed a unique aspect concerning the people affected by floods, specifically children. This observation showed that the victims highly concentrated on playing with water than seek help during flooding. The 3rd-grade textbooks, Theme 8, "Seasons" (Sukamto, 2016a) subsequently addressed the concepts and consequences of the rainy and dry seasons during sustainable occurrences. This book explained that flood disasters frequently occurred due to continuous rainfall and human behaviors, such as environmental uncleanness and littering.

The management efforts of flooding included more tree plantations, appropriate waste disposal, and careful planning in villages or residential areas for prevention activities. Furthermore, the 5th-grade textbooks with the title “Water”, theme 5 “Air” (Nurnawati, 2015) assessed the land and waters in Indonesia, such as river-water, seawater, rainwater, and well-water. These books enabled intellectually disabled children to observe images of schoolyards flooded by rain, with subsequent discussion supported on the recurrence of the disastrous issue. The discussion also evaluated disasters of inappropriate waste disposal, which caused unpleasant odors due to germs and contributed to flooding. Several factors such as continuous rain and the maintenance of a clean environment were subsequently prioritized in understanding the flooding process during the rainy season. Moreover, the preventive efforts of disasters was assessed, including the high plantation of trees and environmental preservation. The challenges of salvaging items from highly flooded homes were also addressed, analyzing both the adversities and advantages associated with rain as disasters and sources of benefit. In the 6th-grade textbooks, theme 3, The Sun" (Umihani, 2016a), the third sub-theme evaluated the rainy season and provided guidance on self-protection during rainfall. These books stated that rain was specifically anticipated by farmers as a blessing during dry seasons. Besides, rain was also considered a disaster, specifically in the form of flooding, which was strongly supported by heavy downpours and garbage-based waterways.

Climatology (drought)

In the 3rd-grade textbooks, Theme 8, "Seasons" (Sukamto, 2016a), the two seasons in Indonesia were assessed, prioritizing the benefits of rain, safety guidelines for strong winds, dry period considerations, hurricanes, and the drought potential causing emergency assistance. These books subsequently provided flooding insights, focusing on relevant causes, prevention, and recommended actions. The weather was also very sunny, with the sun shining brightly during the long dry season. This extended dry period restricted rainfall and caused the generation of the hot air contributing to water shortages and drought. Additionally, the excessive cutting down of trees intensified the need for more water, significantly requiring environmental care to maintain air quality and freshness.

Disaster Management Cycle Pre-Disaster

Prevention

The preventive measures of flooding were conducted by appropriately disposing of garbage, planting more trees, avoiding tree-cutting, and preserving the environment.

Disaster Mitigation (Mitigation)

Disaster mitigation efforts for school-age children were performed through simulation training to avoid earthquake risks.

Preparedness

In the 3rd-grade textbooks themed "Natural Disasters" (Wibowo, 2022), the preventive efforts of landslides were addressed, accompanied by the analyses of relevant reasons and disaster prevention cooperation. The consideration of planning flood prevention activities in the village/residence was also evaluated.

Disaster Management Time of Disaster

Emergency Response (Response)

A question was observed in the 6th-grade textbooks, Theme 2, "Earth" (Lupiyanti, 2016), namely "*What performance should be prioritized in helping the victims of volcanic eruptions?*" Emergency response efforts were also analyzed, evaluating the rescue actions performed during earthquakes and volcanic eruptions.

Emergency Assistance (Relief)

The mutual cooperation for helping earthquake victims and delivering emergency relief, specifically temporary shelter and evacuation, were assessed in the 3rd-grade textbooks, Theme 8, "Seasons" (Sukamto, 2016a). These books focused on the consequences of a long dry season, prioritizing the increased need for water among residents. The importance of students raising awareness to support each other during water scarcity crisis was also evaluated. Additionally, the assistance strategies for flood victims was considered, including financial contributions for various needs, in-kind donations, and cooperation with family and community members. The detailed information in the school textbooks also supported learning objectives and curriculum standards, as stipulated in the Ministry of Education and Culture Scheme Policy (Mulyani &; Garnida, 2016). This information showed that the children with special needs commonly experienced traumatic challenges due to natural disasters. The assurance of the disabled children safety was also very important, specifically during self-development and self-help activities. Moreover, the avoidance of natural disasters was considered, prioritizing the maintenance of personal safety in various activities, such as using rooms, stairs/escalators, and elevators. The analyzed textbooks subsequently proved that lesson enabled the development of foundational knowledge and skills among children, focusing on active learning through interactive teaching methods and hands-on participation. In this case, various activities were thoughtfully designed to address the different learning needs of intellectually disabled students, promoting the practical application of acquired knowledge. Textbooks also provided comprehensive information, evaluated relevant details, and proposed a thorough understanding of natural disasters (Lupiyanti, 2016; Sukamto, 2016b; Umihani, 2016b; Untung, 2016; Wibowo, 2016).

In the school textbooks, natural disasters information was accurately similar to the occurrences in Indonesia, specifically West Sumatra. These books focused on various disasters, including floods, landslides, earthquakes, volcanic eruptions, long droughts, and strong winds. The content also supported the cognitive and developmental abilities of disabled children through different methods, such as storytelling, drawing, games, and practical exercises. Furthermore, the content was presented in a simple and easy-to-understand language suitable for the affected students. The accessibility of textbooks was also ensured by implementing clear and simple language, providing supportive illustrations, and incorporating alternative formats such as simplified text or visual signs. From the descriptions, the extent of disaster-related content in textbooks was assessed by considering the number of pages analyzing the dangers of natural disasters. This ratio showed the significance of the material within textbooks, through the division of the total disaster-based pages by the entire publication sheets. Two books were also identified with significant ratios, namely 57.2% (63/110) and 25% (30/120). Meanwhile, the remaining four books showed a ratio less than 1% of the total pages dedicated to natural disaster materials.

Discussion

Based on the results, six textbooks were designed for Special Primary School Students having ID including natural disasters content. These books showed that each theoretical explanation of disasters commonly showed an experimental sheet, to assess intellectual abilities of students in understanding the proposed principles. School also played a significant role in educating children about disasters (Seddighi et al., 2022), as the integration of disaster-related material into the education curriculum was initiated by the Indonesian government in 2009. This implementation was considered a pilot project for enhancing disaster preparedness (Kurniadi, 2020), with textbooks serving as important educational tools. However, textbooks were not the only medium for educating intellectually disabled children (Mansur et al., 2022). The results also proved that the education for the children required strong and visually-attractive learning materials to enhance understanding. These concrete or physical materials were expected to assist mentally disabled children in understanding the proposed topics or themes.

The theory of disasters was initially introduced to Special Primary School students at levels 3, 5, and 6 through thematic textbooks. The delivery methods of this theory contained different methods, including songs, poems, stories, exercises, and the implementation of larger font sizes for improved visualization. According to the results, 6 of the 36 analyzed Primary school textbooks contained information about natural disasters. This information provided a direct discussion and analyzed the pre-disaster to post-disaster stages. Textbook designed for Special Primary School students having ID also addressed various disasters, such as floods, earthquakes, volcanic eruptions, and landslides. However, the Theory of disaster highly depended on the process of natural disasters, without considering the significance of the pre-disaster stage. Several important aspects also obtained insufficient attention, such as prevention efforts, disaster mitigation, preparedness, and early warning. These results did not support the recommendations of the Sphere Project, where the importance of familiarizing children with ID was prioritized using all management phases, including pre-disaster, during disaster, and post-disaster measures (BPBDKabBogor, 2022; Stough, 2015b). In addition, disaster awareness teaching positively influenced disaster risks reduction and increased preparedness of special needs children (Indriasari, 2018).

According to (Geoportal Data Bencana Indonesia, 2021), the data prioritizing number of disastrous events in 2021 was evaluated. These data proved that floods ranked first with 1,794 events, accompanied by extreme weather, landslides, forest-land fires, tidal waves and abrasion, earthquakes, drought, and volcanic eruption at 1,577, 1,321, 579, 91, 24, 15, and 1 activities, respectively. However, forest-land fires, tidal waves, and abrasions were not included in Disaster Theory within the disabled students textbooks. (Stough, 2015a) subsequently stated that children with ID were often excluded from the relief process and disadvantaged in support situations. In this case, disabled people highly required additional assistance during evacuations, experienced tangible disaster-based losses, and needed intensive support in the post-disaster stage. The access to mainstream systems and services should also be considered, increasing human resource capacity and providing adequate funding for disaster recovery and mitigation (Stough, 2015a). Additionally, Disaster Safe Education Unit (SPAB) program focused on being significantly adopted into special school education, ensuring the participation of disabled children in educational activities (Amri et al., 2020).

In mitigating disaster and climate risks, children actively participated in various activities, such as risk assessments, early warning systems development, community-based initiatives, school evacuation protocols, and recovery plans (Unicef, 2023). These children primarily exhausted time in school, presenting important opportunities for inclusive disaster risk reduction within a comprehensive global school safety framework (Ronoh, 2017). Educational challenges for children with disabilities also included school considerations, as insufficient learning budgets caused inadequate facilities, inaccessible buildings, high student-to-teacher ratios, and limited support for disabled people (Mattingly & McInerney, 2016). Based on a recent data, approximately 5% of school in Indonesia acquired intervention from Disaster Safe School program (Amri et al., 2020). This proved that school was effective in introducing students to a disabled individual, effort mitigation, preparedness, and response to disasters. The integration of Disaster Theory into a unique school curriculum was also significant through the thematic materials in the lesson book designed for special needs students. In (Boon et al., 2014), the majority of school had emergency preparedness strategies, although not all the plans sustained the needs of students with disabilities.

The results showed that the children with special educational needs and disabilities (SEND) had higher risk of death or injury than the healthy students during the occurrence of natural disasters (Sheehy et al., 2022). In this context, disabled children were considered vulnerable to natural, artificial, and non-natural disasters, such as disease outbreaks. Despite an increasing international movement to support the rights of students with disabilities, academics and disaster risk reduction (DRR) policymakers were still not considering the issue. This was because the disabled children were often ignored in DRR initiatives and considered "powerless" in handling disaster situations (Ronoh, 2017). People with disabilities, were also the most neglected groups during the evacuation, displacement, and repatriation processes, due to having limited access to social networks and support sources (Twigg et al., 2018). Therefore, the inclusion of disabled people was very important in increasing toughness during disasterous events (Jang & Ha, 2021). This inclusion transition was closely related to school effects for young students with disabilities. Educators should also contribute significantly to an all-stakeholder method by building inclusive education. In addition, the students should study in the same class, with the teachers effectively teaching about disability inclusion in disaster countermeasures. Teachers also need to simultaneously teach self-care and advocacy for appropriate children education (Jang & Ha, 2021). These results were in line with (Seddighi et al., 2021), where various disaster risk management topics were found in textbooks, including mitigation, preparedness, and response. However, no topics were related to post-disaster events, such as recovery, rehabilitation, reconstruction, sheltering, and unification efforts.

Based on the results, the post-earthquake safety requirements for disabled people included modifying restrooms in secure locations, preferring conex containers than tents, as well as seeking refuge within a safe and pest-free environment (Aryankhesal et al., 2018). Curriculum, textbooks, examinations, and assessment methods should also be reviewed and revised to ensure access and inclusion for all children, prioritizing the development of clear textbooks with capital letters and short phrases (Mattingly & McInerney, 2016). Moreover, the selection of methods and media was designed to the severity of the disorder,as mentally disabled adolescents preferred discussions and educational moving-image games (films/videos). In this case, teachers, parents, and people understanding the unique needs of each disabled teenager should play a significant role in designing and selecting health promotion methods (Moedo et al., 2019). Classrooms, games, and plays also served as valid forms of education, implementing simulation methods in the learning process. These methods included people acting similarly as the intended subjects, to enhance the understanding of feelings and actions (Moedo et al., 2019). Based on (Kamil et al., 2020), the inclusion of disaster-related knowledge in geography teaching materials caused a significant enhancement of students understanding. at the high school level, with a 91.6% increase observed through geographic literacy.

The implementation of media possessing pictures and simple explanations enabled easy topic knowledge, efficiently simulating disaster response activities presented in textbooks. For example, participants associated earthquakes, volcanoes, floods, and tornadoes with 'strong shaking and tsunamis', 'lava', 'sinks', and 'great winds', respectively. Students also significantly showed the various school resources required during natural disaster, such as tanks for safe drinking water and readily accessible buildings against an earthquake event. Dangerous areas to be avoided during disasterous events were subsequently prioritized, including the aversion of water closeness (Ronoh, 2017). Therefore, textbooks used in Special Primary School for intellectually disabled students contained natural disasters information. This result focused on the importance of integrating disaster education into the curriculum for students with ID.

Conclusions

In conclusion, the materials of disasters and relevant management cycle were integrated into the six textbooks identified for students having ID. These books contained two main themes namely natural disasters and management cycle. For natural disasters, several sub-themes were observed, namely Hydrology, Geophysics, and Climatology representing Floods, Earthquakes/Landslides/Volcanic Eruptions, and Drought, respectively. The management cycle also contained prevention, mitigation, preparedness, emergency response, and assistance. However, no themes were found in the post-disaster cycle, such as recovery, rehabilitation, or reconstruction. In this case, textbooks provided valuable information and resources for students to learn about and prepare for potential disasters.

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