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Article

School-Based Response on Disaster Risk Occurrence

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Abstract: This study encapsulates a comprehensive analysis of disaster risk reduction (DRR) strategies and training effectiveness, drawing insights from three distinct data tables. The study focusses on the evaluation of DRR training activities and plan formulation, highlighting the perspectives of both teachers and learners. Key findings include the high importance placed on educational components, the identification of safe zones and emergency exits, and the management of essential records in disaster scenarios. The third table shifts to a broader scope, ranking best practices in DRR programs. Here, education and knowledge development, along with the identification and measurement of disaster risks, emerge as top priorities, underscoring the critical role of informed awareness in DRR. The results collectively point towards a multifaceted approach to disaster management, emphasizing the need for robust educational programs, practical preparedness plans, and strong institutional frameworks. This integrated perspective is crucial for building resilient communities capable of effectively managing and mitigating the risks associated with disasters.

Keywords: Disaster Risk Reduction, Emergency Preparedness, Risk Identification

Introduction

Disasters have always been a result of human interaction with nature, technology, and other living entities. Hoffman (2019) emphasized that sometimes unpredictable and sudden, sometimes slow and lingering, various types of disasters continually affect the way in which we live our daily lives. Wakui et al. (2021) suggested that given the circumstances, public schools are required to take measures to

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Copyright: © 2024 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license(https://creativecommons.org/licens es/by/4.0/). ensure the safety of learners during any school activity. Cvetkovic et al. (2020) stated that there is a need to assess whether learners and educators are aware of the safety plans and are well prepared for any outbreak of disasters. Human beings, as innovative creatures, have sought new ways in which to curb the devastating effects of disasters (Viera & Anthony, 2021; Mavrodieva & Shaw, 2020). However, for years, human conduct regarding disasters has been reactive in nature. Communities, sometimes aware of the risks that they face, would wait in anticipation of a disastrous event, and then activate plans and procedures (Shmueli et al., 2021). Human social and economic development has further contributed to creating vulnerability and thus weakening the ability of humans to cope with disasters and their effects (Hallegatte et al., 2020; Udo & Naidu, 2023). Disasters impede human development. The progress in a community's development is closely tied to its exposure to disaster risk. Likewise, the developmental decisions made by a community influence the extent of disaster risk it faces (UNDP, 2004).

Risk has various connotations within different disciplines. In general risk is defined as "the combination of the probability of an event and its negative consequences" (UNISDR, 2009). Risk is usually associated with the degree to which humans cannot cope (lack of capacity) with a particular situation (Ward et al., 2020). The term disaster risk therefore refers to the potential (not actual and realized) disaster losses, in lives, health status, livelihoods, assets and services, which could occur in a particular community or society over some specified future time (Naheed (2021). Disaster risk arises from the potential harm caused by a hazard, influenced by the vulnerability of a community. It's important to recognize that the impact of a hazard of a specific magnitude can vary across different communities (Von Kotze, 1999). This is true because of the level of the coping mechanisms within that community. Poorer communities are therefore more at risk than communities that do have the capacity to cope. Dangers are present or emerge within societal structures and the social context in which risk occurs is an important consideration (Beck, 2020). It should also be noted that people therefore do not share the same perceptions of risk and their underlying causes due to their social circumstances (Siegrist, 2021).

In the Philippines, natural disasters such as typhoons, earthquakes, floods, volcanic eruptions, landslides, and fires affect the country. Volcanic eruptions and tsunamis are related to the continental plate activity around "the Ring of Fire." Because it is one of the most geologically active areas, it is nicknamed "The Ring of Fire." Republic Act (RA) 10121, otherwise known as the Philippine Disaster Risk Reduction and Management Act of 2010, mandated all government agencies to institutionalize policies, structures, coordination mechanisms, and programs with continuing budget appropriation on disaster risk reduction at all levels.

The National Disaster Risk Reduction and Management Council (NDRRMC) of the Philippines reported that when Super Typhoon Yolanda (International Name: Haiyan) hit the country in 2013, it left 6,300 casualties, 28,689 injured, 1,061 missing, and unprecedented destruction in various educational investments. In the Division of Bohol, Typhoon Odette has totally damaged 45 classrooms, 20 of which are in the main school. The international community signed the Hyogo Framework for Action (HFA) 2005-2010: Building the Resilience of Nations and Communities to Disasters. It is a 10-year disaster risk reduction blueprint strategy adopted by 168 governments around the world, including the Philippines. Priority 3 of HFA, which is to "use knowledge, innovation, and education to build a culture of safety and resilience at all levels," is considerably relevant and attached to education.4 As a response to HFA, the Department of Education issued DepEd Order No. 55, s. 2007 about "Prioritizing the Mainstreaming of Disaster Risk Reduction Management in the School System and Implementation of Programs and Projects Relatively," of which, under its non-structural component, the department prepared the Disaster Risk Reduction Resource Manual, which serves as a source of information to be used by school administrators, school heads/principals, supervisors, and teachers relative to the implementation of disaster risk reduction management projects. In 2010, the government passed Republic Act No. 10121, known as the Philippine Disaster Risk Reduction and Management Act. Consequently, the Department of Education reiterated the related implementing guidelines on climate change adaptation and disaster risk reduction at all school levels through DepEd Order 82, s. 2010.

The future of disaster preparedness and response is dependent on the next generation's knowledge and inclusion in the disaster process. According to Lekies and Wells (2006), people are fixed on a particular path toward an outcome, and they will stay on this path unless a turning point occurs that sets them on a different trajectory. Accordingly, youth need to be set on a path that enables them to protect themselves. Based on the Climate Change and Disaster Risk Assessment of the Philippines by the Asian Development Bank, they emphasized the "need for effective government policies" in the country with regards to vulnerability. Moreover, vulnerability is influenced first by governance aspects such as the quality of infrastructure, the implementation of building codes, and good urban and land use planning. Second, vulnerability is influenced by the state of environmental degradation and, thirdly, by the resilience of rural livelihoods (ADB, 2012).

Moreover, the concepts of disaster and vulnerability themselves are not static but, rather, dynamic. School as the heart of any learning institution is a good start in promoting awareness in terms of disaster preparedness. Furthermore, the related studies above suggest that

there is a need to monitor and evaluate the disaster preparedness of the decision-makers to ensure the welfare of all stakeholders.

Myers (2017) stated that not only are we altering the Earth's atmosphere, but our young people and future generations are as well. It is now impossible to avoid disasters; therefore, everyone must focus on their own defense. the United Nations' strategy, the effect of catastrophe is a severe disturbance to the overall functionality of a population or culture, resulting in wide-ranging individual, material, and even environmental and/environmental capital casualties that outweigh the affected community's capacity to deal with them." Moreover, a disaster is an unforeseen event, which can overwhelm the capacity of the affected people to manage its impact. Many people are periodically exposed to natural disasters in their life, and most disasters, or more correctly hazards that lead to disasters, cannot be prevented. However, their 11 effects can be mitigated. Disaster management efforts aim to reduce or avoid the potential losses from hazards, assure prompt and appropriate assistance to the victims of a disaster, and achieve a rapid and effective recovery (Nia et al, 2017).

Methodology

The methodology employed in this research utilizes the descriptive research method to assess the level of disaster preparedness among the group of respondents, which consists of teachers and learners from various elementary schools, including Tintinan Elementary School, Benliw Elementary School, Juagdan Elementary School, Imelda Elementary School, and Cagting Elementary School. The primary objective of this study is to measure disaster preparedness, and the descriptive research approach is well-suited for this purpose as it allows for the systematic collection and analysis of data without delving into the causes of the situation. The research begins with an orientation of the respondents to the study, likely involving an explanation of the research objectives and the utilization of the inputprocess-output approach to structure data collection and analysis. The instrument used for data collection is a survey questionnaire developed based on Department of Education guidelines related to disaster risk reduction. This questionnaire is divided into two parts: Part II assesses the awareness of school heads on disaster risk reduction measures, covering areas such as information dissemination, policy mechanisms, organizational structure, and mitigation measures. Part III evaluates the status of the implementation of these disaster risk reduction measures. Overall, this research methodology aims to provide valuable insights into the disaster preparedness of the target group, facilitating informed decision-making and potentially improving disaster resilience within these educational institutions.

Results and Discussion

Training on Reduction Activities	Teachers		Learners	
	Mean	VD	Mean	VD
Educated pupils and school personnel what to do				
before, during and after disasters	4.02	А	4.21	SA
Posted evacuation/exit plan	3.48	А	3.64	А
Identified emergency exits	4.16	А	4.07	А
Identified safe places where children and school	4.21	SA	4.24	SA
personnel can go in case of emergencies				
Installed early warning devices and signages	3.64	AA	3.18	А
Educated pupils and school personnel what to do	4.07	А	4.10	А
before, during and after disasters				
Posted evacuation/exit plan	4.01	Α	4.06	Α
Grand Mean	3.94	А	3.93	А

Table 1. Training on Reduction Activities

The Training on Reduction Activities reveals a positive reception among teachers and learners towards disaster preparedness training. The highest approval was seen in educating about actions before, during, and after disasters, with teachers and learners showing strong agreement on its effectiveness (mean scores of 4.02 and 4.21, respectively). Both groups also highly rated the identification of safe places and emergency exits, signifying a shared understanding of these critical safety measures. A notable discrepancy emerged in the perception of early warning devices and signages, with teachers rating these higher than learners, suggesting a need for improved learner engagement or understanding in this area. Despite this, the overall perception of the training was uniformly positive, as indicated by the close grand mean scores of 3.94 for teachers and 3.93 for learners. This uniformity underscores the training's effectiveness in imparting essential disaster preparedness strategies to both educators and students.

Formulating Plans	Teachers		Learners	
	Mean	VD	Mean	VD
Built a well-fastened overhead cabinet for important	4.12	А	4.01	А
documents				
Educated pupils and school personnel what to do before,	4.22	SA	4.25	SA
during and after disasters				
Identified safe places where children and school	4.16	А	4.16	А
personnel can go in case of emergencies				
Installed early warning devices and signages	4.21	SA	4.11	А
Ensuring the Safety of School Records	4.15	А	4.12	А
Established and/or installed back up files of vital records	4.01	А	4.15	А
Identified emergency exits	4.22	SA	4.21	SA
Grand Mean	4.16	А	4.14	А

Table 2. F	Formulating	Plans
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Table 2, focusing on the aspect of Formulating Plans in a disaster preparedness context, showcases positive feedback from both teachers and learners. The data reveals that both groups highly value the education of pupils and school personnel about actions before, during, and after disasters, with mean scores of 4.22 and 4.25 for teachers and learners respectively, indicating strong agreement (SA). This underscores the significance placed on disaster education. Additionally, the identification of safe places and emergency exits received high mean scores (4.16 and 4.22 respectively), reflecting a consensus on the importance of having well-known safety locations and exits in emergencies. The installation of early warning devices and signages also received high approval, particularly from teachers (4.21, SA), suggesting a strong belief in the effectiveness of these measures. The focus on ensuring the safety of school records, including building well-fastened overhead cabinets and establishing backup files for vital records, received positive responses (mean scores above 4.0 in all cases), highlighting the importance placed on document safety and accessibility in disaster scenarios. Overall, the responses indicate a comprehensive approach to disaster preparedness, with a focus on both physical safety measures and the protection of important documents and records.

Table 3. Best Practices for Drr Program

Best Practices for DRR Program	
Education and knowledge development	
Identification and measuring disaster risk	
Informing people about their risk (awareness raising)	
Strengthening institutional and legislative arrangements	
Incorporating DRM into national planning and investment	

Table 3 outlines the ranking of best practices for Disaster Risk Reduction (DRR) programs. Topping the list are "Education and Knowledge Development" and "Identification and Measuring Disaster Risk," both ranked at number 1. This highlights the paramount importance of educating people about disaster management and accurately assessing potential risks as foundational elements of effective DRR programs. These practices are crucial for developing a well-informed and prepared community that can proactively mitigate and manage the risks of disasters. Ranked third is "Informing People about Their Risk (Awareness Raising)," emphasizing the need for continuous public awareness and education to ensure that communities are fully aware of the hazards they face. The fourth rank goes to "Strengthening Institutional and Legislative

Arrangements," underlining the role of robust institutional frameworks and legal systems in supporting and enforcing DRR measures. Finally, "Incorporating DRM into National Planning and Investment" is ranked fifth, indicating the necessity of integrating disaster risk management into broader national policy and investment strategies to ensure a comprehensive and long-term approach to disaster resilience. This ranking reflects a comprehensive view of DRR, underscoring the multifaceted approach required to effectively reduce and manage disaster risks.

The results present a comprehensive view of disaster risk reduction (DRR) training and best practices. Table 1 and 2, focusing on Training on Reduction Activities and Formulating Plans respectively, reveal a high level of agreement among both teachers and learners on key preparedness measures. These include educating school personnel and students about actions before, during, and after disasters, identifying safe places and emergency exits, and ensuring the safety of school records. Particularly notable is the emphasis on the educational aspect, consistently receiving high ratings, indicating its perceived importance in disaster preparedness. Table 3, detailing Best Practices for DRR Programs, further reinforces this focus by ranking 'Education and Knowledge Development' and 'Identification and Measuring Disaster Risk' as top priorities. Additionally, the importance of informing people about risks, strengthening institutional frameworks, and incorporating disaster risk management into national planning highlights a multi-faceted approach to DRR. Collectively, these results underscore the vital role of education, awareness, planning, and systemic support in effective disaster risk reduction and management strategies.

Conclusion

The results collectively underscore the critical importance of comprehensive education, precise planning, and systemic support in effective disaster risk reduction (DRR) strategies. The high valuation of educational initiatives in disaster preparedness, as consistently observed across teacher and learner feedback, highlights the essential role of knowledge and awareness in fostering a proactive and informed approach to disaster management. The emphasis on identifying safe places, emergency exits, and safeguarding vital records further illustrates the practical aspects of preparedness that are crucial in mitigating risks. Moreover, the prioritization of risk identification and measurement, alongside the need for robust institutional and legislative frameworks in DRR programs, reflects a broader understanding of the multifaceted nature of disaster management. This comprehensive approach, integrating education, planning, and

systemic reinforcement, forms the cornerstone of effective DRR, ensuring that communities are not only well-prepared but also resilient in the face of disasters.

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