

Fostering Educational Resilience: Proactive Approaches to School Safety and Disaster Risk Reduction

Randulph I. Navasca¹, Mayeth G. Navasca², May Ann Rose E. Montemayor³,

^{1,2,3} Don Mariano Marcos Memorial State University, North La Union Campus

¹rnavasca@dmmmsu.edu.ph, ²mnavasca@dmmmsu.edu.ph, ³mestilong@dmmmsu.edu.ph,

¹<https://orcid.org/0009-0004-7739-5028>, ²<https://orcid.org/0009-0002-0610-3855>,

³<https://orcid.org/0009-0002-1445-6255>

Abstract- The significance of school safety and the implementation of disaster risk reduction and management in educational institutions underscore the necessity of proactive measures to safeguard students, faculty, and infrastructure. Schools are vulnerable to various hazards, including natural disasters and human-induced threats, necessitating a structured approach to risk reduction. This paper explores key themes such as safe learning facilities, school disaster management, and resilience education. The study synthesizes existing literature and policy frameworks to provide a comprehensive analysis of DRRM strategies in schools.

Keywords: Disaster Risk Reduction Management, School Safety, Resilience Education, Emergency Preparedness, Risk Reduction, Policy Implementation, Educational Institutions, Sustainability

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INTRODUCTION

Educational institutions serve as fundamental pillars in safeguarding students and staff against hazards that threaten their safety and well-being. The Philippines, as one of the most disaster-prone countries in the world, faces recurring threats from typhoons, earthquakes, floods, and other natural hazards due to its geographical location along the Pacific Ring of Fire and the typhoon belt (Center for Disaster Preparedness, 2024). This heightened exposure underscores the urgent need for structured and proactive disaster risk reduction and management (DRRM) strategies within schools to minimize vulnerabilities and ensure continuous educational operations.

In response to these challenges, the Philippine Disaster Risk Reduction and Management Act of 2010 (RA 10121) institutionalized disaster preparedness by mandating schools and universities to integrate risk reduction measures into their policies and operations. This legislation aligns with global frameworks such as the Sendai Framework for Disaster Risk Reduction 2015–2030, which emphasizes resilience-building, governance structures for disaster preparedness, and the reduction of disaster-induced losses in lives, livelihoods, and infrastructure (United Nations Office for Disaster Risk Reduction, 2015). Additionally, the Republic Act 10821—the "Children's Emergency Relief and Protection Act"—reinforces the prioritization of child-centered disaster preparedness in educational settings, ensuring safeguarding mechanisms for young learners during emergencies.

At Don Mariano Marcos Memorial State University (DMMMSU), disaster preparedness is institutionalized through the University DRRM Team, which oversees emergency response protocols, conducts earthquake and fire drills, and ensures compliance with national and international safety standards (DMMMSU, 2025). Beyond regulatory adherence, DMMMSU emphasizes resilience-building through strategic disaster mitigation policies, faculty and student training, and risk assessments tailored to the specific vulnerabilities of the institution.

This study critically examines the implementation of DRRM frameworks within academic institutions, focusing on DMMMSU's approach to disaster risk governance, preparedness measures, and resilience-building initiatives. By analyzing institutional policies, existing risk reduction practices, and potential areas for improvement, this research aims to contribute to the broader discourse on strengthening educational institutions' capacity for disaster readiness, ensuring a safer and more secure learning environment in Philippine schools and universities.

METHODOLOGY

This is literature review, it is a systematic analysis of existing studies, policies, and frameworks related to DRRM in the Don Mariano Marcos Memorial State University, an educational institution. This will help establish foundational knowledge and identify gaps in current practices.

Main Body

1. Safe Learning Facilities

Schools must be designed to withstand environmental hazards while ensuring the safety and well-being of occupants. A robust disaster-resilient infrastructure includes structural reinforcements, emergency exits, and hazard assessments, all of which are essential for creating a secure learning environment (Cresencio & Yabut, 2023).

At DMMMSU, structural reinforcements have been implemented across campus buildings to ensure compliance with seismic safety standards and flood mitigation measures, reducing vulnerabilities to natural disasters (DMMMSU, 2025). Additionally, regular Hazard Identification, Risk Assessment, and Control (HIRAC) procedures help proactively address potential risks, reinforcing a culture of preparedness and resilience.

To further promote safety, 7S/5S good housekeeping principles are consistently practiced across all learning spaces and infrastructure. These organizational and maintenance strategies enhance safety, efficiency, and environmental sustainability, ensuring that physical facilities remain conducive to learning while minimizing hazards.

2. School Disaster Management

A robust Disaster Risk Reduction and Management (DRRM) Framework is essential for ensuring institutional resilience against natural hazards. Effective disaster management encompasses preparedness, response, mitigation, and recovery, safeguarding school communities from potential threats (Tolentino, 2021).

The figure 1, presents the DRRM framework and emphasizes that through time, resources invested in disaster prevention, mitigation, preparedness and climate change adaptation will be more effective towards attaining the goal of adaptive, disaster resilient communities and sustainable development. The Framework shows that mitigating the potential impacts of existing disaster and climate risks, preventing hazards and small emergencies from becoming disasters, and being prepared for disasters, will substantially reduce loss of life and damage to social, economic and environmental assets. It also highlights the need for effective and coordinated humanitarian assistance and disaster response to save lives and protect the more vulnerable groups during and immediately after a disaster. Further, building back better and building better lives after a disaster will lead to sustainable development after the recovery and reconstruction process.

At DMMMSU, the DRRM Framework is institutionalized through structured policies, proactive training programs, and strategic infrastructure planning. Annual earthquake and fire drills enhance response efficiency, fostering a culture of preparedness among students, faculty, and staff (DMMMSU, 2025).

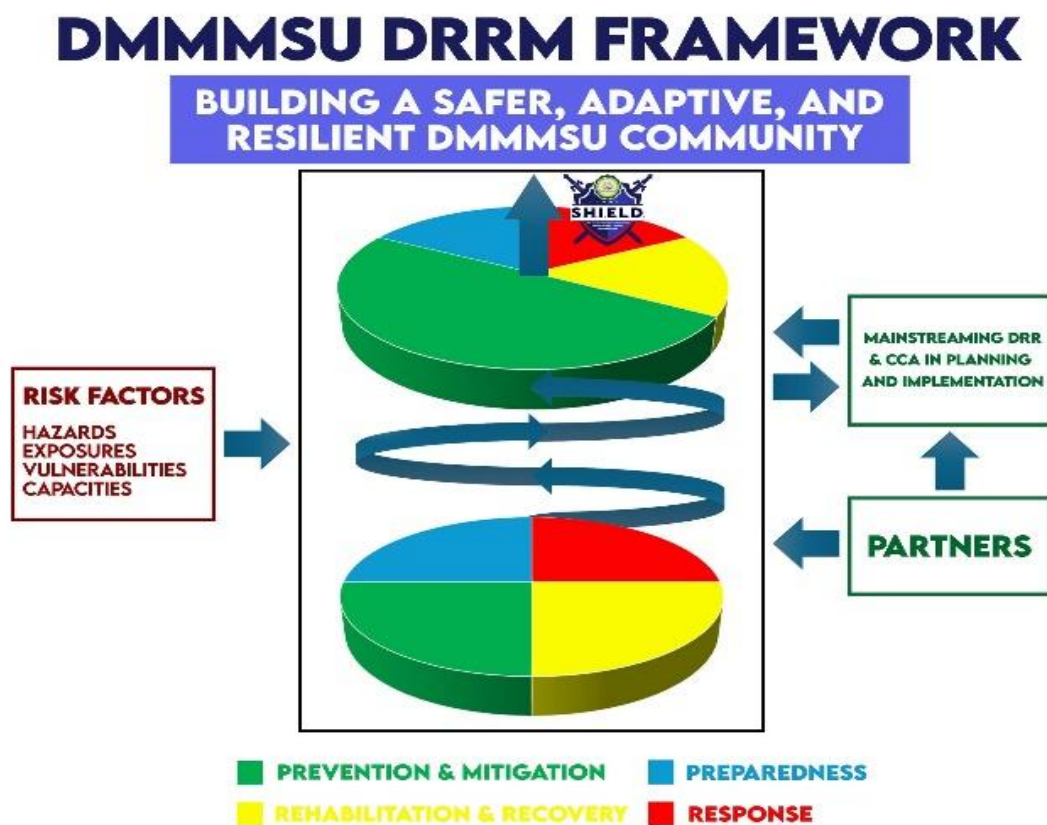


Figure 1. *DMMMSU DRRM Framework*

The DRRM Committee, composed of university officials, trained individuals and certified safety officers, including partners from different agencies, plays a pivotal role in overseeing risk assessment, emergency planning, and capacity-building initiatives. Their expertise strengthens hazard mitigation, reinforcing a comprehensive disaster management approach. Moreover, established standard operating procedures (SOPs) refine incident command systems, ensuring structured crisis interventions.

The organizational structure of DMMMSU DRRM Services is meticulously designed to ensure efficient management, clear communication, and effective coordination across all levels of disaster risk reduction and management within the

university. It aligns with DMMMSU's mission, vision, and strategic goals, fostering a cohesive and collaborative environment that prioritizes safety and resilience.

The DMMMSU DRRM Services organizational structure headed by the University President, who provides overall leadership and strategic direction for DRRM initiatives within the university. And approving DRRM plans, policies, and resource allocations; overseeing the implementation of disaster risk reduction and management strategies. The DRRM Committee, A multi-disciplinary team responsible for guiding and supporting DRRM efforts. Responsible in advising on policy development, ensuring compliance with DRRM regulations, and monitoring the effectiveness of DRRM programs. The Vice President for Administration and Quality Assurance, assisting the President in their respective areas, developing policies, managing resources, and ensuring the effective implementation of programs and initiatives. While the Director of the DRRM Services, acts as the principal coordinator of all DRRM activities across the university. And also responsible in developing and implementing DRRM plans, facilitating training and drills, conducting risk assessments, and coordinating with external agencies.

The DMMMSU DRRM Services organizational structure promotes collaboration, accountability, and excellence at every level, ensuring that the university is well-prepared to respond to and recover from disasters. By integrating comprehensive disaster risk reduction and management practices, DMMMSU strives to create a resilient and safe environment for all members of its community.

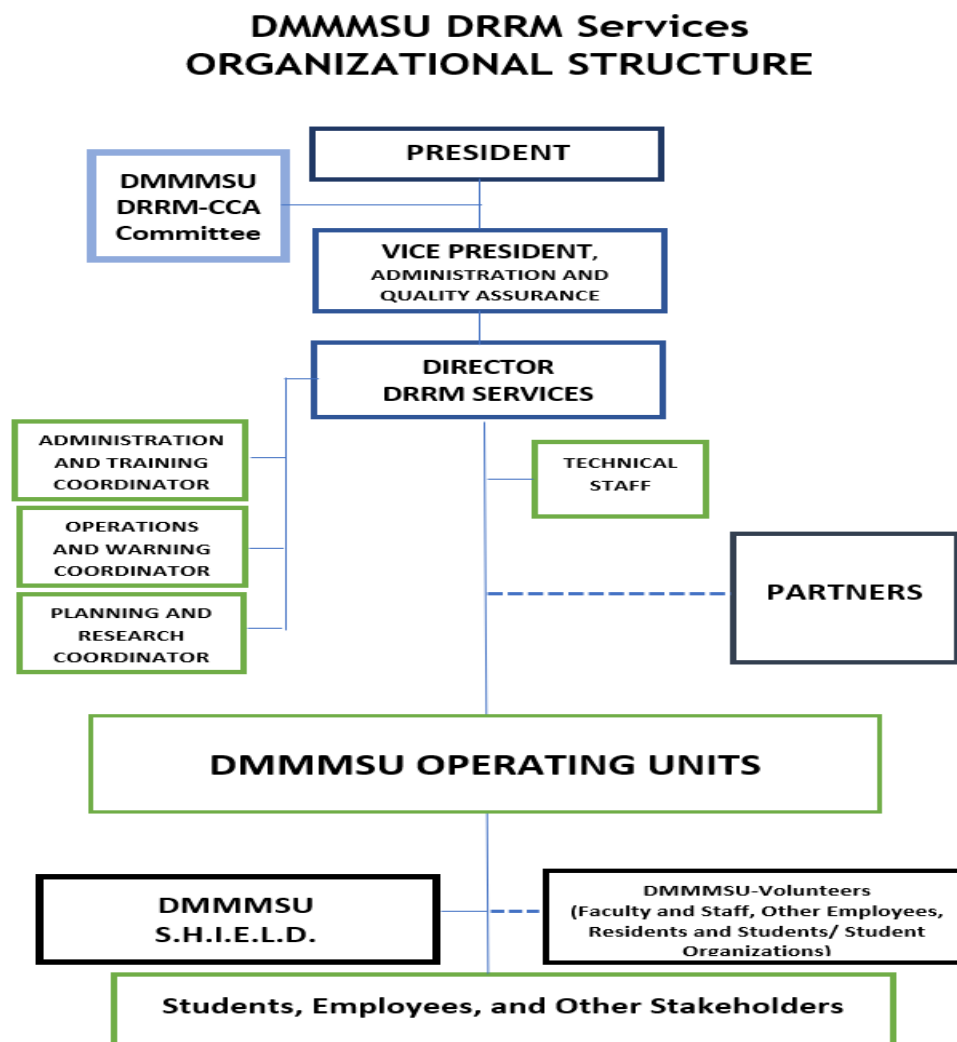


Figure 2. *DMMMSU DRRM Committee*

As part of its disaster mitigation strategy, DMMMSU integrates the Land Use Development Infrastructure Plan (LUDIP) into its DRRM Framework. This initiative ensures disaster-resilient infrastructure, minimizing vulnerabilities through sustainable construction, flood mitigation measures, and strategically planned evacuation routes.

Through institutionalizing DRRM principles, DMMMSU demonstrates proactive disaster governance, ensuring long-term resilience, operational continuity, and enhanced safety standards. This comprehensive framework serves as a model for academic institutions, reinforcing the vital role of structured risk management and preparedness in safeguarding the educational sector.

The Campus Emergency Response Team (CERT), branded as S.H.I.E.L.D, leads swift evacuations and medical assistance, ensuring a coordinated and systematic emergency response. Don Mariano Marcos Memorial State University (DMMMSU) has established a comprehensive Disaster Risk Reduction and Management (DRRM) framework, drawing from the NDRRMC Framework to ensure the safety and well-being of its campus community. The University has operationalized this initiative through its emergency response team, branded as DMMMSU S.H.I.E.L.D. (Safety, Hazard Intervention, Incident Control, Emergency Response, Leverage Strategies, Disaster Management). This team is dedicated to implementing proactive measures, ensuring preparedness, and effectively managing emergencies within the university.

Act as a protective shield for the DMMMSU community, ensuring preparedness and resilience in the face of various hazards. Through proactive interventions and efficient responses, we aim to safeguard lives, protect property, and promote a culture of safety and preparedness.

The core responsibilities encompass ensuring safety by implementing stringent protocols and conducting regular drills, while also identifying potential hazards and taking immediate action to mitigate risks. Incident control is a critical function, requiring swift management to minimize impact and prevent escalation. In addition, emergency response demands rapid and effective measures to provide timely assistance and support. These responsibilities also involve leveraging available resources and technologies to enhance disaster management strategies. Finally, comprehensive disaster management is coordinated through well-structured plans that cover preparedness, mitigation, response, and recovery, ensuring resilience and continuity in the face of crises.

DMMMSU S.H.I.E.L.D. is committed to building a resilient and safe university environment. By fostering strong partnerships and continuous improvement, we strive to lead by example in promoting disaster resilience and safety in the broader community. Together, we stand ready to face any challenge, protect our community, and ensure a safer future for all.



Figure 3. *DMMMSU DRRM-S.H.I.E.L.D*

3. Risk Reduction and Resilience Education

The Sendai Framework for Disaster Risk Reduction (2015-2030) emphasizes the role of education in building a culture of safety and resilience, advocating for the inclusion of DRM in formal and informal learning environments (United Nations Office for Disaster Risk Reduction [UNDRR], 2015). Educating students and staff about disaster preparedness enhances resilience. Integrating DRM into school curricula fosters awareness and equips individuals with the skills needed to respond to emergencies (Department of Education – Bohol, 2012). DMMMSU incorporates disaster risk

education into its academic programs, ensuring that students are trained in first aid, emergency response, and climate adaptation strategies (DMMMSU, 2025).

Recognizing the critical role of DRRM in education, DMMMSU has institutionalized a comprehensive DRRM framework, integrating preparedness strategies into both academic and extracurricular activities. The university conducts annual earthquake and fire drills, ensuring that students, faculty, and staff are familiar with evacuation procedures and emergency response protocols (DMMMSU, 2025). Additionally, the Campus Emergency Response Team (CERT) plays a vital role in coordinating immediate disaster response, providing first aid, and facilitating safe evacuations during crises (DMMMSU, 2025).

Beyond drills, DMMMSU incorporates disaster risk education into its curricula, embedding modules on climate adaptation, emergency response, and community-based disaster risk reduction into relevant courses. This approach aligns with national policies such as DepEd Order No. 37, s. 2015, which mandates the integration of DRM into basic education frameworks (DepEd, 2015). Studies indicate that schools with structured DRM programs experience reduced casualties and improved emergency response efficiency, reinforcing the importance of institutionalized preparedness measures (Tolentino, 2021).

Furthermore, DMMMSU collaborates with local government units and emergency response agencies, ensuring a multi-sectoral approach to disaster preparedness. Through partnerships with the Philippine Red Cross and local DRRM councils, students receive hands-on training in first aid, search and rescue operations, and disaster mitigation strategies (DMMMSU, 2025). This aligns with findings from Apronti et al. (2015), who emphasize the need for practical disaster education that bridges theoretical knowledge with real-world applications.

By embedding DRRM into its institutional framework, DMMMSU not only enhances campus safety but also fosters a culture of resilience, preparing students to become proactive agents of disaster risk reduction in their communities. This aligns with global best practices, as demonstrated in studies on disaster preparedness education models, which highlight the effectiveness of simulation-based learning and risk communication strategies in enhancing disaster resilience (Guo et al., 2025).

RESULTS AND DISCUSSION

This paper indicates that structured DRRM programs significantly enhance institutional resilience, emergency response coordination, and casualty reduction. Schools prioritizing risk reduction strategies experience fewer disruptions to learning, mitigating disaster impacts effectively.

DMMMSU's proactive disaster governance has resulted in improved risk assessments, enhanced response protocols, and strengthened institutional preparedness against earthquakes, typhoons, and fire hazards.

Despite notable advancements in DRRM implementation, challenges persist, including funding limitations, insufficient training, and inconsistent policy enforcement. Addressing these gaps requires strengthened collaboration among educational institutions, government agencies, and community stakeholders.

DMMMSU has actively enhanced local partnerships, engaging government units, emergency response agencies, and disaster mitigation organizations to fortify disaster preparedness coordination and optimize response mechanisms.

Institutional investments in capacity-building, disaster research, and infrastructure resilience further reinforce the long-term sustainability of DRRM initiatives. Continued adaptation of best practices, policy refinement, and stakeholder engagement remains essential to overcoming implementation barriers.

CONCLUSIONS

School safety and disaster risk management are imperative for protecting students and staff while ensuring educational continuity. Strengthening DRRM policies, infrastructure resilience, and curriculum integration enhances institutional disaster preparedness.

DMMMSU's institutionalized DRRM framework serves as a model for academic institutions, showcasing the effectiveness of proactive disaster risk governance and education-centered resilience strategies. These findings underscore the necessity of multi-sectoral collaboration, continuous policy improvements, and strategic investments to foster a culture of preparedness and safety in Philippine schools.

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