



STRENGTHENING DISASTER PREPAREDNESS IN PUBLIC SCHOOLS AT PILA DISTRICT: FROM EVALUATION TO ACTION

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ABSTRACT

This study assessed how disaster preparedness programs are being implemented in public schools across the Pila District, Laguna, and how these efforts shape the readiness of School DRRM Coordinators. Anchored on the Protective Action Decision Model (PADM) and the Sendai Framework for Disaster Risk Reduction, the research examined three program areas prevention and mitigation, preparedness, and continuous improvement and linked them to readiness indicators such as knowledge, skills, compliance during drills, awareness, and confidence. Using a descriptive-correlational design, data were collected from fifty coordinators through a validated survey questionnaire. Results revealed that schools implement preparedness programs at a very high level, and coordinators likewise demonstrate very high readiness. Continuous improvement was found to strongly influence knowledge of response procedures, while prevention and mitigation had the greatest impact on skills, compliance, awareness, and confidence. Preparedness activities, however, showed less consistent effects. These findings highlight that sustained improvement and preventive measures are the most critical drivers of readiness. The study recommends ongoing capacity-building, regular drills, systematic monitoring of emergency resources, and continuous evaluation of preparedness systems to further strengthen resilience. Based on these results, a Disaster Preparedness Action Plan was developed to enhance coordination, training, and risk reduction strategies. The plan outlines targeted interventions involving school DRRM coordinators, teachers, school heads, and partner agencies to ensure safer and more resilient learning environments across Pila District schools.

KEYWORDS: Disaster preparedness, prevention and mitigation, continuous improvement, School DRRM Coordinators, descriptive-correlational design.

INTRODUCTION

The Philippines is highly vulnerable to natural hazards due to its geographic position along the Pacific Ring of Fire and its exposure to frequent tropical cyclones. Communities regularly face risks from typhoons, earthquakes, floods, volcanic activity, and landslides, which disrupt daily life and threaten infrastructure and safety. Schools, in particular, require strong disaster preparedness measures because they serve not only as centers of learning but also as potential evacuation sites during emergencies. The presence of students, teachers, and staff underscores the need for systematic safety programs to protect lives and ensure continuity of education.

Although the Department of Education has mandated Disaster Risk Reduction and Management (DRRM) initiatives, challenges remain in sustaining programs, securing resources, and coordinating activities across institutions. Effective preparedness requires more than policies; it depends on the readiness of school personnel, especially DRRM Coordinators, who organize drills, facilitate training, and ensure compliance with safety protocols.

This study therefore evaluates the implementation of DRRM programs in Pila District public schools, focusing on prevention and mitigation, preparedness, and continuous improvement. It also examines coordinators' readiness in terms of knowledge, skills, compliance, awareness, and confidence, with the goal of identifying strengths, addressing gaps, and proposing an action plan to enhance school disaster preparedness.

Community Awareness and Education

Disaster risk reduction requires active participation and understanding among community members. Awareness and education serve as important foundations in developing individuals' ability to recognize hazards, understand risks, and practice appropriate actions during emergency situations. According to Christy (2020), effective disaster risk reduction involves interconnected components such as risk assessment, early warning mechanisms, community education, and sustainable planning. These elements support communities in improving their capacity to prepare for possible disasters and minimize their negative consequences.

In the school setting, disaster awareness initiatives help develop a culture of safety among learners and personnel. Through continuous information dissemination, training activities, and preparedness programs, schools can strengthen the knowledge and confidence of stakeholders in responding effectively during emergencies.

Knowledge Toward Disaster Response

Disasters are no longer viewed solely as unavoidable events but as situations where risks can be reduced through proper planning, awareness, and preparedness. Effective disaster response depends greatly on individuals' understanding of hazards, their ability to



interpret risks, and their knowledge of appropriate protective actions. Setyawan (2021) emphasized that recognizing vulnerabilities and strengthening disaster knowledge are essential steps in developing effective disaster management strategies.

Within educational institutions, improving disaster response knowledge among school personnel is important because their decisions and actions directly influence the safety of learners during emergencies. Preparedness programs that provide accurate information, training, and practical experiences contribute to developing more capable and responsive school communities.

Republic Act No. 10121, The Philippine Disaster Risk Reduction and Management (PDRDM) Act of 2010

Consequently, to safeguard vulnerable populations from natural and manufactured catastrophes, the Philippine educational system continuously strengthens Republic Act (RA) No. 10121, widely recognized as the Philippine Disaster Risk Reduction and Management (PDRDM) Act of 2010. This legislative framework legally mandates that all national public entities, including educational institutions, establish institutional policies, operational frameworks, and actionable risk reduction programs. The statutory mandates of RA 10121 are systematically categorized into four distinct pillars: disaster prevention and mitigation, emergency preparedness, immediate disaster response, and long-term recovery and rehabilitation. (Florano, 2018; Turpin, 2019)

Prevention and Mitigation

Disaster prevention and mitigation focus on reducing the possible effects of hazards before they occur. These strategies involve identifying risks, minimizing vulnerabilities, and implementing safety measures that lessen potential damage to people and property. Diaz et al. (2019) and Suk et al. (2020) explained that proactive approaches aimed at reducing exposure to risks are essential components of effective disaster management.

In schools, prevention and mitigation may include conducting hazard assessments, maintaining safe facilities, preparing emergency resources, and implementing programs that address identified risks. These actions help create safer learning environments and reduce the possible impact of disasters on school operations.

Workplace Preparedness

Preparedness within organizations has become an important area of disaster research because institutions play a major role in protecting individuals and maintaining operations during emergencies. Organizational preparedness involves developing emergency plans, providing necessary resources, training personnel, and establishing systems that allow continuous functioning even after disruptive events.

In the school context, preparedness requires coordination among administrators, teachers, staff, and designated DRRM personnel. Effective planning and regular practice help ensure that members of the organization understand their responsibilities and can respond appropriately during disaster situations.

Household Disaster Awareness and Preparedness

Exploring localized vulnerability, Glago (2019) observed that flooding presents a critical environmental obstacle for community members in Asamankese, the capital of Ghana's West Akim Municipality. This research highlighted that heightened risk perception among inhabitants stems heavily from direct personal exposure to these crises, functioning independently of socioeconomic demographics such as employment status, gender, or formal education. Furthermore, the study noted that while the rampant flood disasters in Asamankese are a combined result of the natural environment and inappropriate human behaviors, local residents maintain a remarkably high level of disaster risk awareness.

Natural Disaster

As defined by Metych (2024), a natural disaster represents a catastrophic event triggered by environmental and ecological factors rather than anthropogenic actions, resulting in widespread casualties, structural devastation, and the ruin of public or private infrastructure. These severe phenomena generally stem from atmospheric anomalies, seismic activity, mass movements of land, or intrinsic planetary disruptions that severely threaten established human settlements.

Level of Disaster Awareness and Preparedness

A study by Maminta (2019) on institutional safety metrics emphasizes that the consequences of large-scale emergencies extend far beyond structural damage, encompassing severe disruptions to essential public services, loss of community resource access, and casualties. On a national scale, these recurring environmental crises place an immense fiscal burden on the country, draining an estimated 15 billion PHP from the Philippine government's annual budget. To combat this vulnerability, regional data suggests that local governments and non-governmental entities must design targeted, localized interventions. However, mitigating and managing these risks effectively demands heightened accountability and active engagement from all community stakeholders. Specifically, this involves integrating parents into mandatory school wide safety routines, such as quarterly earthquake and fire evacuation drills and dedicated informational sessions during general assembly meetings. Distributing localized educational materials, including safety pamphlets and



informational brochures, further enhances public awareness regarding typhoons, landslides, and seismic threats a strategic approach prioritized by municipal authorities following destructive weather events.

Disaster Preparedness

Research by Hipolito (2021) indicated that learners manifest a moderate-to-high comprehension regarding the fundamental theories and core concepts of emergency readiness. The data further revealed highly positive learner attitudes, with substantial student consensus advocating for the integration of disaster readiness principles directly into the academic curriculum. It is recommended that students develop a culture of disaster preparedness in school at all times, whether inside or outside the school, as a disaster could strike at any time. Therefore, it would be essential to consider students' knowledge and attitudes when responding to natural disasters in the context of increasing their learning competency in disaster preparedness, prevention, and mitigation

Conceptual Framework

The conceptual framework serves as a foundation of the study by illustrating the connection between the identified variables. It provides a clear direction on how the implementation of disaster preparedness programs may influence the level of readiness of the respondents.

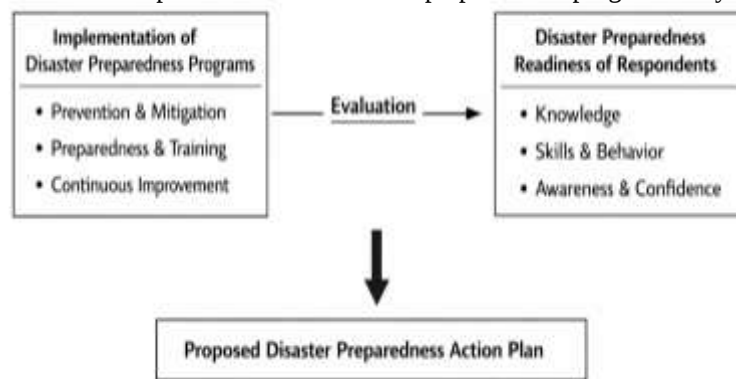


Figure 1. Paradigm of the Study

Figure 1 shows the conceptual framework of the study. The independent variable is the implementation of disaster preparedness programs in public schools in Pila, Laguna. This includes prevention and mitigation, preparedness and training, and continuous improvement. The dependent variable is the disaster preparedness and readiness of the respondents, evaluated by assessing their comprehension of emergency protocols, practical execution during institutional drills, and their overall operational confidence when facing hazardous scenarios. Utilizing these evaluated outcomes, this investigation culminates in a customized disaster readiness framework and action plan. The primary objective of this proposed framework is to elevate institutional competencies, augment collective safety awareness, and fortify stakeholder response confidence across the academic community.

Statement of The Problem

Despite existing disaster preparedness initiatives within the Pila District, gaps remain in organizational capacity, resources, and operational systems that hinder effective disaster response and readiness. There is a need to systematically evaluate current preparedness practices, identify existing weaknesses, and develop actionable strategies to strengthen the Pila District overall disaster preparedness. This study sought to determine the extent of these gaps and proposed evidence-based measures that would enhance the office's capability to anticipate, respond to, and manage disasters more effectively.

1. What is the level of implementation of Disaster Preparedness Programs in the public schools of Pila, Laguna, in terms of:

- 1.1 Disaster Prevention and Mitigation
- 1.2 Disaster Preparedness and training
- 1.3 Continuous Improvement

2. What is the level of disaster preparedness and readiness of the respondents in terms of:

- 2.1 Knowledge of disaster response procedures
- 2.2 Skills and behavioral compliance during disaster drills
- 2.3 Awareness and confidence in responding to disaster situations

3. Does the level of implementation of Disaster Preparedness Programs significantly affect the disaster preparedness readiness of the respondents?

4. What Disaster Preparedness Program or Action Plan may be implemented to improve the Disaster Preparedness Program and readiness in the public schools of Pila, Laguna?



THEORETICAL FRAMEWORK

This study is anchored on the Protective Action Decision Model (PADM) developed by Lindell and Perry (2012) and supported by the Sendai Framework for Disaster Risk Reduction 2015–2030 of the United Nations Office for Disaster Risk Reduction (UNDRR). These frameworks provide a foundation for understanding how disaster preparedness programs influence both institutional practices and individual readiness in responding to emergency situations.

Protective Action Decision Model (PADM)

The Protective Action Decision Model (PADM) provides an explanation of how individuals process disaster-related information and determine appropriate actions during emergency situations. The model suggests that a person's response to hazards is shaped by different factors, including the information received, understanding of possible risks, interpretation of warnings, and the influence of surrounding conditions (Lindell & Perry, 2012). In the context of this study, PADM helps explain how school DRRM Coordinators develop awareness, confidence, and decision-making abilities necessary for effective disaster response.

PADM highlights that individuals are more capable of responding effectively when they have access to accurate information, recognize potential threats, and understand the procedures required during emergencies. Activities such as simulation exercises, disaster orientations, and continuous capacity-building programs contribute to improving preparedness by strengthening individuals' ability to evaluate situations and respond properly when hazards occur.

In this study, PADM supports the assessment of disaster preparedness readiness among school DRRM Coordinators, particularly in terms of their knowledge of disaster response procedures, behavioral compliance during drills, and confidence in responding to disaster situations. The framework suggests that effective disaster preparedness programs strengthen individuals' awareness and decision-making abilities, leading to safer and more organized emergency responses.

Sendai Framework for Disaster Risk Reduction

The Sendai Framework for Disaster Risk Reduction 2015–2030 provides a global direction for strengthening disaster resilience through planned actions, risk reduction strategies, preparedness measures, and continuous evaluation (United Nations Office for Disaster Risk Reduction [UNDRR], 2015). It promotes the idea that disaster management should extend beyond emergency response by focusing on reducing existing vulnerabilities and improving the capacity of communities and institutions before disasters take place.

In educational institutions, the principles of the Sendai Framework are reflected through activities such as identifying possible hazards, assessing risks, strengthening emergency plans, developing personnel capabilities, and conducting preparedness activities. These approaches enable schools to establish safer learning environments and enhance their ability to respond to and recover from disaster situations.

For this study, the Sendai Framework serves as a basis for examining the implementation of disaster preparedness programs in terms of disaster prevention and mitigation, preparedness, and continuous improvement. It emphasizes that schools can enhance resilience by establishing systematic DRRM practices, strengthening coordination, and continuously evaluating existing preparedness measures.

Synthesis of the Theories

The PADM and Sendai Framework complement each other by explaining disaster preparedness from both the individual and organizational perspectives. The Sendai Framework focuses on the development of institutional systems, policies, and strategies that reduce disaster risks, while PADM explains how individuals process information and make decisions that influence their actions during emergencies.

Together, these theories suggest that effective disaster preparedness requires both strong school-based DRRM programs and capable individuals who understand their responsibilities and can respond appropriately during disasters. Through continuous implementation, training, evaluation, and improvement of preparedness programs, schools can develop a more resilient environment where personnel are equipped with the knowledge, skills, and confidence needed to protect the school community.

METHODOLOGY

This research employed a descriptive design utilizing a validated survey questionnaire as the primary tool to evaluate disaster preparedness practices across public schools in Pila District, Laguna. Through total enumeration, fifty (50) teaching and non-teaching School DRRM Coordinators were selected as respondents due to their direct involvement in planning, implementing, and monitoring school-level safety programs. Prior to final deployment, the instrument was pilot-tested to ensure its clarity and reliability, and its validity was evaluated and approved by a panel during the research proposal defense.

The data gathering process followed a systematic approach, beginning with obtaining official permissions from the Schools Division Office and the Pila District administration. Once approved, the researcher personally distributed and retrieved the questionnaires to ensure a high response rate and address any participant inquiries. To complement the survey, the researcher also conducted brief interviews and examined official document reviews of existing institutional DRRM plans, reports, and policies. Ethical



principles, including informed consent, participant confidentiality, and responsible AI data handling, were strictly enforced throughout the entire data collection period.

To interpret the gathered information, a mixed analytical approach was applied. Quantitative data regarding the respondents' levels of awareness and preparedness were summarized using descriptive statistics, including frequency distributions, percentages, means, and standard deviations. Concurrently, qualitative insights extracted from the interviews and school documents were processed using thematic analysis to expose recurring issues, operational strengths, and current systematic gaps. The combined findings serve as a comprehensive baseline for crafting actionable, evidence-based recommendations to strengthen future disaster readiness in the district.

The study observed all ethical standards in conducting and reporting research, including the proper use of AI tools. Informed consent was obtained from all participants involved in assessing disaster preparedness in the Pila District, and all results are presented in aggregate form. Steps were taken to ensure the accuracy and validity of the data, and the confidentiality and anonymity of all respondents were strictly maintained.

RESULTS AND DISCUSSIONS

Multiple regression analysis of Implementation of Disaster Preparedness Programs on the Disaster Preparedness Readiness of the Respondents in terms of Awareness and confidence in responding to disaster situations

Predictors	Unstandardized Coefficient (B)	Std. Error	T-value	p-value	Decision	Interpretation
Disaster Prevention and Mitigation	0.512	0.244	2.099	0.041	Reject Ho	Significant
Disaster Preparedness	-0.195	0.259	-0.752	0.456	Failed to Reject Ho	Not Significant
Continuous Improvement	0.476	0.226	2.101	0.041	Reject Ho	Significant

Test used: Linear Regression Analysis at 0.05 level of significance

The table provides a comprehensive analysis of how various Disaster Preparedness Programs influence the respondents' Awareness and Confidence in Responding to Disaster Situations. This regression model is particularly important because awareness and confidence represent the psychological foundation of readiness. If personnel feel unsure or unaware, they may struggle to lead effectively during an actual emergency. The statistical results highlight that two specific predictors—Disaster Prevention and Mitigation and Continuous Improvement—play a significant role in building this mental readiness among the school personnel in Pila, Laguna.

The first significant predictor is "Disaster Prevention and Mitigation," which shows an unstandardized coefficient of 0.512 ($B=0.512$) and a p-value of 0.041. Since the p-value is less than the 0.05 significance level, the null hypothesis is rejected. This indicates that when schools focus on identifying risks and reducing hazards—such as improving building safety or clearing exit paths—the respondents' personal confidence and awareness increase significantly. Essentially, when staff members see that the physical environment is being made safer and that risks are being managed, they feel more empowered and assured that they can handle a disaster if one occurs.

The second significant predictor is "Continuous Improvement," which yielded an unstandardized coefficient of 0.476 ($B=0.476$) and a p-value of 0.041. This also leads to the rejection of the null hypothesis. This finding suggests that a culture of constant learning, regular training updates, and evaluating past performances directly boosts the awareness of the staff. When disaster programs are treated as an ongoing process rather than a one-time event, the respondents remain "in the loop" and feel more mentally prepared. The data shows that the more a school district commits to refining its plans and teaching its staff, the more confident those staff members become in their own abilities.

On the contrary, the predictor for "Disaster Preparedness" was found to be not significant, with a p-value of 0.456 ($B=-0.195$). This means that general preparedness activities—such as simply having a written plan or maintaining a stockpile of supplies—do not necessarily increase an individual's internal sense of confidence or awareness. While these activities are standard requirements, they do not appear to have the same psychological impact as active mitigation and the visible effort of continuous improvement.

These findings are consistent with Abril & Francia (2026), who studied compliance and predicaments in school disaster preparedness programs in Cavite. Their research revealed that while schools often meet administrative preparedness requirements, it is the visible mitigation of hazards and the continuous updating of training programs that most strongly influence staff confidence and awareness. They emphasized that preparedness on paper does not automatically translate into psychological readiness; instead, confidence grows when personnel see risks being reduced and when they are regularly engaged in training and evaluation. This supports the regression results in Pila schools, where Disaster Prevention and Mitigation and Continuous Improvement emerged as the most influential predictors of awareness and confidence.



In summary, the analysis suggests that to create a truly aware and confident workforce, school administrators should prioritize hazard mitigation and ongoing educational improvements. By focusing on these two areas, schools can move beyond basic compliance and build a staff that is mentally tough, well-informed, and ready to take charge during a crisis. This targeted approach ensures that the "human element" of disaster readiness is as strong as the official safety protocols.

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AI Declaration:

The researchers used Grammarly Pro as an AI-assisted language editing tool during the preparation of this manuscript. Its use was limited to correcting grammatical errors, improving sentence structures, and enhancing readability. The conceptualization of the study, data collection, interpretation of findings, and writing of the substantive content were performed by the researchers. All AI-generated suggestions were critically reviewed before incorporation into the final document.