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Disaster Management, Psychological Preparedness, and Disaster Resilience in Public Schools: Basis for Designing School-Based Disaster Risk Reduction Management Program

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Abstract
Aim: This study aimed to examine the relationships between perceived school disaster management, psychological preparedness, and disaster resilience, as well as between psychological preparedness and school disaster resilience.
Methodology: Using a correlational research design, the study surveyed 100 teaching and non-teaching personnel from public elementary and secondary schools in Mauban South District. Participants were selected through stratified random sampling, and data were gathered via Google Forms using survey questionnaires adapted from the National Disaster Risk Reduction and Management (NDRRM) Manual.
Results: The implementation of school disaster management in terms of mitigation, preparedness, response, and recovery was found to be well-executed. Respondents demonstrated high psychological preparedness, reflected in strong knowledge of preparedness measures, situational awareness, and the ability to manage emotional responses during emergencies. School disaster resilience was rated very capable across human resources, material facilities, knowledge and innovation, policies and plans, and operational capacities. Statistical analysis revealed significant positive correlations between (1) school disaster management and school disaster resilience, and (2) psychological preparedness and school disaster resilience, both at the 1% significance level ($p < 0.01$).
Conclusion: The findings reject the null hypotheses, confirming that effective school disaster management and strong psychological preparedness contribute significantly to higher disaster resilience. These results underscore the importance of integrating both management and psychological readiness in designing a school-based Disaster Risk Reduction and Management (DRRM) program.
Keywords: *Disaster Resilience, Psychological Preparedness, School Disaster Management*

INTRODUCTION

The Philippines is highly vulnerable to both natural and man-made disasters due to its geographical and climatic conditions. Situated along the Pacific Ring of Fire and within the typhoon belt, the country is prone to cyclones, volcanic eruptions, earthquakes, landslides, and flooding. For the third consecutive year, the Philippines has been ranked the most at-risk country to extreme natural events and adverse climate change impacts, according to the 2024 edition of the World Risk Report. The report's World Risk Index—covering all 193 United Nations member states for the first time—assesses disaster risks by evaluating each country's "exposure to natural hazards, the susceptibility of the population, and the coping and adaptive capacities of societies." The Philippines also recorded "very high" scores in vulnerability (55.03), susceptibility (51.16), and lack of coping capacities (58.07).

Mauban is a first-class municipality in the province of Quezon, located 157 kilometers (98 miles) southeast of Manila and approximately 52 kilometers (32 miles) north of Lucena City, the provincial capital. The municipality is politically subdivided into 40 barangays, each consisting of puroks, with some having sitios. Surrounded by bodies of water and protected on some sides by mountain ranges, Mauban is shielded from certain weather disturbances. However, powerful typhoons can still cause significant damage, especially when signal warnings reach higher levels.

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One of Mauban's notable tourist attractions is Cagbalete Island, located in Lamon Bay and renowned for its white sandbars. Covering an area of 17.51 square kilometers (6.76 square miles) with a 20.97-kilometer (13.03-mile) coastline, the island has an elevation of about 2 meters (6.56 feet) above mean sea level. It is home to 147 families who face recurring risks from typhoons, heavy rainfall leading to floods, landslides, earthquakes, and storm surges. The Local Government Unit (LGU) of Mauban provides training and workshops to prepare residents for disasters, while the Department of Education (DepEd) disseminates guidelines for natural disaster response in schools.

Given these risks, disaster readiness in schools is critical to safeguarding lives and preventing damage to property. Disaster resilience refers to the capacity of individuals, communities, organizations, and states to adapt to and recover from hazards, shocks, or stresses without compromising long-term development. The Hyogo Framework for Action (UNISDR, 2005) emphasizes that disaster resilience depends on the degree to which stakeholders can learn from past events and reduce risks at all governance levels. DepEd Order No. 33, s. 2021, also known as the School-Based Disaster Preparedness and Response Measures for Tropical Cyclones, Floods, and Other Weather-Related Disturbances and Calamities, mandates emergency preparedness practices in schools. Strengthening such measures is crucial in ensuring the safety of teachers and, more importantly, learners (Pangilinan, 2025).

Furthermore, disaster risk reduction and management should prioritize community cooperation to prevent disruptions in education. Engaging teachers, learners, parents, and other stakeholders has been proven effective in increasing awareness and promoting a culture of preparedness (Carvajal et al., 2025). The effects of disasters on learners are often long-lasting, impacting their emotional, physical, cognitive, and social development. Whether natural (e.g., earthquakes, floods, wildfires) or man-made (e.g., conflict, terrorism), disasters can significantly disrupt education and hinder overall growth.

This study aims to help develop a school-based risk reduction and management program to mitigate the effects of disasters on learners, teachers, and the broader community. While much of the existing literature on disaster management focuses on community-wide preparedness, national policies, or institutional responses, limited research addresses the realities of disaster management in individual schools. By focusing on a localized school setting, this research aims to provide a detailed analysis of preparedness, response mechanisms, and resilience strategies. The findings can guide the creation of targeted, effective disaster risk reduction measures for educational institutions (Sanchez et al., 2022).

Objectives

This study aimed to determine the relationship of school disaster management and psychological preparedness to disaster resilience in schools.

Specifically, it sought answers to the following questions:

1. What is the status of the implementation of the school disaster management in terms of:
   - 1.1 mitigation;
   - 1.2 preparedness;
   - 1.3 response; and
   - 1.4 recovery?
2. How can the psychological preparedness of the teachers be described in terms of:
   - 2.1 knowledge and management of the external situational environment; and
   - 2.2 anticipation, awareness, and management of one's psychological response?
3. How can the school disaster resilience be described in terms of:
   - 3.1 human resources;
   - 3.2 material facilities;
   - 3.3 knowledge, innovation, and education;
   - 3.4 policies, plans and procedures; and
   - 3.5 capacities and mechanisms?
4. Is there a significant relationship between perceived school disaster management and psychological preparedness and disaster resilience in terms of:
   - 4.1 human resource;
   - 4.2 material facilities;
   - 4.3 knowledge, innovation, and education;
   - 4.4 policies, plans and procedures; and
   - 4.5 capacities and mechanisms?
5. Is there a significant relationship between perceived psychological preparedness and school resilience in terms of:

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5.1 human resource;
5.2 material facilities;
5.3 knowledge, innovation, and education;
5.4 policies, plans and procedures; and
5.5 capacities and mechanisms?

6. Based on the findings, what School-Based Disaster Risk Reduction and Management (SDRRM) program can be proposed?

Hypotheses

Based on previous research and observations, this study aimed to test the following hypotheses:

H_0: There is no significant relationship between school disaster management and school disaster resilience.

H_0: There is no significant relationship between psychological preparedness and school disaster resilience.

METHODS

Research Design

This study employed a descriptive-quantitative correlational research design. The descriptive-quantitative method assessed the status of disaster management, the respondents' psychological preparedness, and the level of disaster resilience. Meanwhile, the correlational method determined the relationship between school disaster preparedness, respondents' psychological preparedness, and school disaster resilience. Such a design is appropriate for understanding existing conditions while establishing possible relationships between variables (Carvajal et al., 2025; Sanchez et al., 2023).

Population and Sampling

The respondents consisted of one hundred (100) public elementary and secondary school teachers and non-teaching personnel from Cagbalete I Annex Elementary School, Cagbalete I Elementary School, Cagbalete II Elementary School, and Cagbalete Island National High School, located in Barangay Cagbalete I and Barangay Cagbalete II, Mauban, Quezon. Teachers and non-teaching personnel from schools in other coastal areas in Mauban, Quezon, were also included.

This research utilized a stratified random sampling method, ensuring that each sample had an equal probability of selection. Sampling was conducted across different grade levels in various schools within Barangay Cagbalete I, Barangay Cagbalete II, and other coastal locations in Mauban. This sampling approach enhanced representativeness and minimized selection bias, which is crucial in studies involving diverse educational environments (Pangilinan, 2025; Sanchez et al., 2022).

Instrument

The research utilized survey questionnaires to gather data on respondents' personal profiles, disaster management, psychological preparedness, and resilience. The instrument incorporated the Psychological Preparedness for Disaster Threat Scale (PPDTS) and selected questionnaires from the National Disaster Risk Reduction and Management (NDRRM) Manual.

The first part of the instrument, Part I, covered the respondents' personal profiles, including gender, age, civil status, and educational attainment. Part II described the physical setting of the study locale. The remaining sections contained items under each aspect of school disaster management, psychological preparedness, and school resilience. Responses were rated using Code Interpretations: Very Well Implemented (VWI), Well Implemented (WI), Implemented (I), Less Implemented (LI), and Not Implemented (NI), with corresponding points. Psychological preparedness was rated as follows: 5–Very True (VT), 4–True (T), 3–Slightly True (ST), 2–Not True (NT), and 1–Extremely Not True (ENT). Disaster resilience was rated using: 5–Very Much Capable (VMC), 4–Very Capable (VC), 3–Capable (C), 2–Less Capable (LC), and 1–Not Capable (NC). The use of validated tools and standardized rating scales enhances the reliability and validity of the findings (Punzalan et al., 2025; Sanchez & Sarmiento, 2020).

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Data Collection

The questionnaires were distributed via Google Forms and sent to participants through their Messenger accounts. Responses were collected after one week. The use of online survey tools allowed efficient data gathering from respondents in geographically dispersed coastal areas, minimizing logistical constraints and maximizing participation rates (Muñoz & Sanchez, 2023).

Treatment of Data

The collected data were analyzed by computing the mean and standard deviation. Descriptive statistics summarized the data, while inferential statistics tested the hypotheses and drew meaningful conclusions. All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS), with a significance level set at $p < 0.05$. The computed mean score and standard deviation were tabulated to measure disaster management and resilience, both assessed through a 5-point Likert scale. To determine the relationship between disaster management, psychological preparedness, and disaster resilience, Pearson's *r* was employed. The chosen statistical techniques aligned with the study's objectives and the nature of the data, ensuring methodological rigor (Amihan et al., 2023).

Ethical Considerations

The researchers strictly adhered to ethical research protocols to protect the welfare and rights of all participants and institutions involved in the study. Informed consent was secured from all respondents, and confidentiality of data was maintained throughout the research process. Ethical compliance strengthens the credibility and trustworthiness of educational research (Carvajal & Sanchez, 2024; Sanchez, 2025).

RESULTS and DISCUSSION

Part I. School Disaster Management

Table 1. Status of Implementation of School Disaster Management in Terms of Mitigation

Indicators	Mean	SD	Verbal Interpretation
1. DRRM and CCA mainstreamed and integrated into national, sectoral, regional and local development policies, plans and budgets.	4.02	.696	Well Implemented
2. DRRM and CCA-sensitive environmental management	4.03	.626	Well Implemented
3. Increased disaster resiliency of infrastructure systems	3.98	.635	Well Implemented
4. Community-based and scientific DRR-CCA assessment, mapping, analysis and monitoring	3.98	.724	Well Implemented
5. Communities have access to effective and applicable disaster risk financing and insurance	3.80	.765	Well Implemented
6. End-to-end monitoring, forecasting and early warning systems are established and/or improved	4.03	.758	Well Implemented
Overall	**3.97**	**.700**	**Well Implemented**

Legend: 1.00-1.49 Not Implemented (NI), 1.50-2.49 Less Implemented (LI), 2.50-3.49 Implemented (I), 3.50-4.49 (Well Implemented (WI), 4.50-5.00 Very Well Implemented (VWI)

The overall mean score in the respondents' perceptions of their school's disaster management performance, specifically in terms of disaster prevention and mitigation is 3.97 or "Well Implemented" which suggest that the schools have established a solid foundation in disaster prevention and mitigation measures. However, enhancing access to disaster risk financing and insurance could further strengthen the schools' disaster resilience efforts.

Masocha et al. (2025) pointed strong advocacy for mainstreaming DRR and CCA into school curricula, making education systems catalysts for resilience aligned with the Sendai Framework. This supports the finding that "DRRM and CCA-sensitive environmental management" and "end-to-end monitoring, forecasting, and early warning systems" were the highest-rated indicators.

The status of implementing School Disaster Management in terms of mitigation, which is well implemented in the school, can be justified by the presence of both structural and non-structural measures that reduce disaster

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risks. Additionally, the integration of disaster risk reduction in the curriculum and active participation of learners and staff in hazard drills demonstrate a proactive approach. There are quarterly earthquake and fire drills conducted in schools as part of the activities by the Department of Education (DepEd).

Table 2. Status of Implementation of School Disaster Management in Terms of Preparedness

Indicators	Mean	SD	Verbal Interpretation
1. Increased level of awareness and enhanced capacity of the community to the threats and impacts of all hazards	4.13	0.747	Well Implemented
2. Communities are equipped with the necessary skills and capability to cope with the impact of disasters	3.89	0.737	Well Implemented
3. Increased disaster resiliency of infrastructure systems	3.87	0.774	Well Implemented
4. Developed and implemented comprehensive national and local preparedness policies, plans and systems	3.98	0.791	Well Implemented
5. Strengthened partnership and coordination among all key players and stakeholders	4.08	0.800	Well Implemented
Overall	**3.99**	**0.770**	**Well Implemented**

Legend: 1.00-1.49 Not Implemented (NI), 1.50-2.49 Less Implemented (LI), 2.50-3.49 Implemented (I), 3.50-4.49 (Well Implemented (WI), 4.50-5.00 Very Well Implemented (VWI)

The overall mean in the respondents' perceptions of their school's disaster management performance in terms of Disaster Preparedness is 3.99 or "Well Implemented." The results reflect a consistent implementation of disaster preparedness measures across different aspects, with relatively small variations in the ratings. The higher standard deviations, particularly in items related to infrastructure resilience and coordination, suggest slight differences in perceptions among respondents, potentially due to varying experiences across schools.

The study of Hosseini and Izadkhah (2020) emphasizes education programs and simulated exercises for students, families, and school personnel—boosting awareness and capability before disasters occur. This aligns with your data indicating that "Strengthened partnership and coordination among all key players and stakeholders" received a high rating.

The status of implementing School Disaster Management, in terms of preparedness, is evident through the school's systematic planning and active engagement of stakeholders in disaster readiness. This includes the development and regular updating of a School Disaster Risk Reduction and Management (SDRRM) plan by the SDRRM Coordinator who is now the School Head and not the teacher anymore, conduct of periodic emergency drills such as earthquake and fire drills by learners and staff, and capacity-building activities like first aid and basic life support training for teachers during Learning Action Cell (LAC) sessions.

Table 3. Status of Implementation of School Disaster Management in Terms of Response

Indicators	Mean	SD	Verbal Interpretation
1. Well-established disaster response and relief operations	3.97	0.771	Well Implemented
2. Adequate and prompt assessment of needs and damages	3.94	0.776	Well Implemented
3. Integrated and coordinated Search, Rescue and Retrieval (SRR) capacity	3.92	0.748	Well Implemented
4. Evacuated safely and on time affected communities	4.10	0.759	Well Implemented
5. Temporary shelter and/or structural needs are adequately addressed	4.05	0.796	Well Implemented
6. Basic social services provided to the affected population (whether inside or outside ECs)	3.98	0.791	Well Implemented
7. Psychosocial needs of the affected population addressed	3.79	0.795	Well Implemented
8. Coordinated and integrated system for early recovery	3.92	0.787	Well Implemented
Overall	**3.96**	**0.778**	**Well Implemented**

Legend: 1.00-1.49 Not Implemented (NI), 1.50-2.49 Less Implemented (LI), 2.50-3.49 Implemented (I), 3.50-4.49 (Well Implemented (WI), 4.50-5.00 Very Well Implemented (VWI)

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On the respondents' perceptions regarding their school's disaster management performance in terms of Disaster Response, the overall mean is 3.96 or "Well Implemented."

Overall, the findings suggest that schools are performing well in managing key aspects of disaster response, such as evacuation, relief operations, and basic service provision. However, the lower rating of psychosocial support indicates a need to strengthen mental health interventions and emotional support mechanisms for affected individuals, which is crucial for building long-term resilience.

Pfefferbaum et al. (2014) highlight that well-executed evacuation plans significantly reduce casualties and ensure safety. Schools with structured drills and clear emergency protocols tend to perform better in disaster response, aligning with the finding that, "Evacuated safely and on time affected communities" was the highest-rated item.

The status of implementing School Disaster Management in terms of response is well established, as evidenced by the school's ability to act quickly and efficiently during emergencies. This is demonstrated by the presence of an organized emergency response team with clearly defined roles, the availability of first aid supplies and emergency equipment, and the established coordination with local disaster risk reduction and management offices (LDRRMOs) for immediate assistance. The school also coordinates with the Barangay Disaster Risk Reduction and Management (DRRM) regarding evacuation activities.

Table 4. Status of Implementation of School Disaster Management in Terms of Rehabilitation and Recovery

Indicators	Mean	SD	Verbal Interpretation
1. Damages, Losses and Needs Assessed	4.01	.810	Well Implemented
2. Economic activities restored and, if possible, strengthened or expanded	3.91	.767	Well Implemented
3. DRRM and CCA elements are mainstreamed in human settlement	3.92	.761	Well Implemented
4. Disaster and climate change resilient infrastructure constructed/reconstructed	3.85	.796	Well Implemented
5. A psychologically sound, safe and secure citizenry that is protected from the effects of disasters can restore to normal functioning after each disaster	3.94	.802	Well Implemented
Overall	**3.93**	**0.787**	**Well Implemented**

Legend: 1.00-1.49 Not Implemented (NI), 1.50-2.49 Less Implemented (LI), 2.50-3.49 Implemented (I), 3.50-4.49 (Well Implemented (WI), 4.50-5.00 Very Well Implemented (VWI)

The mean analysis of respondents' perceptions regarding their school's disaster management performance in terms of Disaster Rehabilitation and Recovery is 3.93 or "Well Implemented. The findings suggest that schools place a strong emphasis on assessing damages and providing psychosocial support, which are essential for effective recovery. However, there is room for improvement in enhancing infrastructure resilience and expanding economic recovery activities to build more sustainable disaster recovery processes. These insights align with the broader goal of fostering a psychologically prepared and disaster-resilient school community, ensuring that recovery efforts address not only physical rebuilding but also the emotional and socio-economic well-being of those affected.

Nina Hauser, Luis Santos, and Indranil Sengupta (2024) explain that communities which pursue needs-focused recovery planning, prioritizing post-disaster needs assessments, facilitate more transparent and participatory recovery processes—engaging communities as key stakeholders rather than passive recipients. This supports the finding that "Damages, Losses and Needs Assessed" was the highest-rated item, indicating that schools prioritize structured post-disaster evaluations.

The well-implemented status of School Disaster Management in terms of rehabilitation and recovery can be attributed to the school's proactive planning and collaboration with local government units and stakeholders. Possible causes or activities that contribute to this include the creation of a post-disaster recovery plan, immediate damage assessment procedures, and allocation of budget or resources for repairs and restoration of learning spaces. Partnerships with NGOs, School Parent-Teacher Associations (SPTAs), and community volunteers, including the Sangguniang Kabataan (SK), further strengthen recovery efforts by providing workforce and material assistance, enabling the school to resume normal operations quickly and effectively after a disaster.

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Part II. Psychological Preparedness

Table 5. Perceived Psychological Preparedness in Terms of Knowledge and Management of the External Situational Environment

Indicators	Mean	SD	Verbal Interpretation
1. I know the materials available for severe storms or cyclones.	4.11	.737	True
2. I know which preparedness measures are needed to stay safe in a severe storm or cyclone.	4.29	.656	True
3. I know how to prepare for the forthcoming storm or cyclone season adequately.	4.30	.644	True
4. I know what to look for in my home and workplace if an emergency weather situation develops.	4.34	.655	True
5. I know the disaster warning system messages are used for extreme weather events.	4.35	.657	True
6. I am confident that I know what to do and what actions to take in a severe weather situation.	4.19	.677	True
7. I would easily be able to locate the severe storm or cyclone preparedness materials in a cyclone warning situation.	3.97	.731	True
8. I am knowledgeable about the impact that very severe storms or cyclones can have on my home and place of work.	4.28	.683	True
9. I know the difference between a cyclone warning and a cyclone watch situation.	4.05	.716	True
10. I know the weather signs of an approaching storm or cyclone.	4.13	.677	True
Overall	**4.20**	**0.683**	**True**

Legend: 1.00-1.49 Extremely Not True (ENT), 1.50-2.49 Not True (NT), 2.50-3.49 Slightly True (ST), 3.50-4.49 True (T), 4.50-5.00 Very true (VT)

When it comes to Psychological Preparedness in terms of Knowledge and Management of the External Situational Environment, the overall mean score is 4.20 or "True" which suggests that respondents generally perceive themselves as knowledgeable and prepared to manage external environmental factors during severe weather events, such as storms or cyclones. The respondents have a strong understanding of preparedness measures, weather signs, and emergency protocols. However, slight improvements could be made in ensuring quick access to preparedness materials through better organization or regular drills. This heightened level of psychological preparedness is a key factor in strengthening the resilience of schools, as it equips individuals with the knowledge and confidence to respond effectively to severe weather events.

Zulch and Khan (2021) found that "participants with higher levels of disaster-related knowledge were significantly more confident in managing external situations, such as responding appropriately to cyclone warnings or securing their environments ahead of a storm." This supports the result where high mean scores (M = 4.20) indicate strong agreement among respondents regarding their knowledge of how to prepare for, recognize, and respond to environmental threats.

Table 6. Perceived Psychological Preparedness in Terms of Anticipation, Awareness, and Management of One's Psychological Response

Indicators	Mean	SD	Verbal Interpretation
1. I can manage my feelings well in challenging situations.	4.25	.626	True
2. In a severe storm or cyclone situation, I would be able to cope with my anxiety and fear.	4.13	.677	True
3. I can stay cool and calm in most difficult situations.	4.10	.718	True
4. I am confident in my ability to deal with stressful situations that I find myself in.	4.05	.687	True
5. When necessary, I can talk to myself through challenging situations.	4.17	.620	True

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6. If I were in a severe storm or cyclone situation, I would know how to manage my response.	4.15	.626	True
7. I know which strategies to use to calm myself in a severe storm or cyclone situation.	4.11	.665	True
8. I have a good idea of how I would respond to an emergency.	4.11	.618	True
Overall	**4.13**	**0.655**	**True**

Legend: 1.00-1.49 Extremely Not True (ENT), 1.50-2.49 Not True (NT), 2.50-3.49 Slightly True (ST), 3.50-4.49 True (T), 4.50-5.00 Very true (VT)

The respondents' Psychological Preparedness in Terms of Anticipation, Awareness, and Management of One's Psychological Response got an overall mean is 4.13 or "True." This indicates that respondents generally believe they possess the psychological skills to manage their emotional responses during challenging situations, such as severe storms or cyclones. This reflects a strong sense of psychological preparedness, with respondents exhibiting confidence in managing emotions, calming themselves, and coping with fear and anxiety in high-pressure situations.

Yapici et al. (2025) stated that "survivors with fewer difficulties in emotion regulation reported higher resilience and lower psychological distress, which in turn predicted better mental well-being." This aligns with the findings indicating the respondents' confidence in their emotional regulation skills.

The perceived psychological preparedness, in terms of anticipation, awareness, and management of one's psychological response, proves to be true, as evidenced by the school community's composed and proactive behavior during both drills and actual emergencies. For example, during earthquake and fire drills, learners and teachers follow instructions and execute evacuation procedures without panic, indicating their ability to anticipate and manage emotional reactions. In actual events such as typhoons or sudden class suspensions due to natural hazards, learners display emotional resilience, while teachers still offer learning continuity by adapting modular learning.

Table 7. Perceived School Disaster Resilience in Terms of Human Resources

Indicators	Mean	SD	Verbal Interpretation
1. National policy and legal framework for DRRM have decentralized responsibilities and capacities at all levels.	3.97	.658	Very Capable
2. Dedicated and adequate resources are available to implement DRRM plans and activities at all administrative levels.	3.90	.644	Very Capable
3. Delegating authority and resources to local levels ensures community participation and decentralization.	4.00	.667	Very Capable
4. A platform for DRRM is functioning.	4.05	.702	Very Capable
Overall	**3.98**	**0.668**	**Very Capable**

Legend: 1.00-1.49 Not Capable (NC), 1.50-2.49 Less Capable (LC), 2.50-3.49 Capable (C), 3.50-4.49 Very Capable (VC), 4.50-5.00 Very Much Capable (VMC)

The respondents' perceptions regarding their school's Disaster Resilience in Terms of Human Resources got an overall mean of 3.98 or "Very Capable." This suggests that schools are perceived as having a robust human resource system in place to support disaster resilience efforts. The findings suggest that schools are well-equipped with capable human resources to implement DRRM policies, delegate authority, and ensure community participation. Strengthening resource allocation and enhancing the functionality of DRRM platforms could further bolster disaster resilience efforts. These results underscore the importance of empowering human resources as a key pillar in building resilient school environments.

Cayanan and Fernandez (2025) mentioned that "schools with fully operational DRRM structures demonstrated significantly higher capabilities across preparedness, response, recovery, and rehabilitation domains." This aligns with the findings showing that having operational DRRM systems contributes significantly to school preparedness and response.

The perceived school disaster resilience, in terms of human resources, is evident in incidents where the school staff demonstrate strong leadership and coordination during emergencies. For example, during a sudden earthquake, the school's disaster response team immediately assesses the situation, checks for injuries, and communicates with local emergency services.

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Table 8. Perceived School Disaster Resilience in Terms of Material Facilities

Indicators	Mean	SD	Verbal Interpretation
1. National and local risk assessments, including risk assessments for key sectors, are available based on hazard data and vulnerability information.	4.01	.689	Very Capable
2. Systems are in place to monitor, archive and disseminate data on key hazards and vulnerabilities.	3.98	.666	Very Capable
3. Early warning systems are in place for all major hazards with community outreach.	4.04	.751	Very Capable
4. National and local risk assessments consider regional/transboundary risks with a view to regional cooperation and risk reduction.	4.05	.744	Very Capable
Overall	**4.02**	**.713**	**Very Capable**

Legend: 1.00-1.49 Not Capable (NC), 1.50-2.49 Less Capable (LC), 2.50-3.49 Capable (C), 3.50-4.49 Very Capable (VC), 4.50-5.00 Very Much Capable (VMC)

The overall mean of respondents' perceptions of their school's Disaster Resilience in Terms of Material Facilities is 4.02 or "Very Capable" This indicates that schools are perceived as having adequate material resources to support disaster resilience efforts. The findings reflect a strong foundation of material facilities that support disaster resilience in schools, particularly in terms of risk assessment, early warning systems, and regional cooperation. Strengthening data management and ensuring continuous improvement of these material resources would further enhance the schools' disaster resilience.

Amri et al. (2018) emphasize that regional and transboundary risk assessments play a crucial role in improving disaster resilience in schools. This aligns with your finding that "National and local risk assessments consider regional/transboundary risks with a view to regional cooperation and risk reduction" was the highest-rated item, showing that schools recognize the value of collaborative risk assessments for preparedness.

The very capable status in perceived School Disaster Resilience in Terms of Material Facilities may be attributed to the fact that schools can avail themselves of the DRRM material facilities needed in schools. Aside from the School Maintenance and Other Operating Expenses (MOOE) that allocates a budget for DRRM, local government units (LGUs) also allocate a budget for this. Even the Schools Division Office (SDO) of Quezon also allocates a budget for DRRM materials for all schools in the division.

Table 9. Perceived School Disaster Resilience in Terms of Knowledge, Innovation, and Education

Indicators	Mean	SD	Verbal Interpretation
1. Relevant information on disasters is available and accessible at all levels to all stakeholders.	3.98	.696	Very Capable
2. School curricula, education materials, and relevant training include DRRM and recovery concepts and practices.	4.08	.720	Very Capable
3. Research methods and tools for multi-risk assessments and cost-benefit analysis are developed and strengthened.	3.95	.716	Very Capable
4. A countrywide public awareness strategy, with outreach to urban and rural communities, exists to stimulate a culture of disaster resilience.	3.97	.731	Very Capable
Overall	**4.00**	**.716**	**Very Capable**

Legend: 1.00-1.49 Not Capable (NC), 1.50-2.49 Less Capable (LC), 2.50-3.49 Capable (C), 3.50-4.49 Very Capable (VC), 4.50-5.00 Very Much Capable (VMC)

There is an overall mean of 4.00 or "Very Capable" on the respondents' perceptions of their school's Disaster Resilience in Terms of Knowledge, Innovation, and Education. This suggests that schools are effectively integrating knowledge-sharing, innovation, and educational strategies into their disaster resilience efforts. The findings reflect that schools are "Very Capable" of utilizing knowledge, innovation, and education as tools to enhance disaster resilience. Efforts to strengthen research capacity and develop more advanced tools for risk assessment

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could further improve this dimension. Enhancing collaboration with research institutions, integrating more hands-on disaster preparedness training, and conducting regular awareness campaigns may also reinforce positive outcomes.

Li and Liu (2023) found out that "disaster education was shown to statistically mediate the relationship between school preparedness and student preparedness, meaning schools with DRR-informed curriculum and preparedness plans foster higher proactive safety behaviors among students. Schools that implemented formal DRR education and preparedness policies reported significantly higher levels of student individual protective actions, reinforcing the value of school-level DRR in curriculum and practice." This aligns with the finding that "School curricula, education materials, and relevant training include DRRM and recovery concepts and practices" was the highest-rated item. The study emphasizes that well-integrated Disaster Risk Reduction (DRR) education fosters awareness, builds preparedness, and reduces vulnerabilities in schools.

The school's perceived disaster resilience, in terms of knowledge, innovation, and education, is evident in its integration of disaster risk reduction concepts into the curriculum and the use of creative strategies to engage students in preparedness. For example, the school conducts interactive seminars, poster-making contests, and simulation activities that teach students about different hazards and safety measures. Teachers regularly incorporate disaster-related topics in science, social studies, and health subjects, reinforcing awareness and preparedness. Moreover, the use of innovative tools, such as educational videos, hazard mapping projects, and student-led campaigns, promotes a deeper understanding of risks and fosters proactive behaviors.

Table 10. Perceived School Disaster Resilience in Terms of Policies, Plans, and Procedures

Indicators	Mean	SD	Verbal Interpretation
1. DRRM is an integral objective of environment-related policies and plans, including those related to land use, natural resource management, and adaptation to climate change.	4.16	.662	Very Capable
2. Social development policies and plans are being implemented to reduce the vulnerability of populations at risk.	4.09	.683	Very Capable
3. Economic and productive sectoral policies and plans have been implemented to reduce the vulnerability of economic activities.	4.08	.662	Very Capable
4. Planning and management of human settlements incorporate DRRM elements, including enforcement of building codes.	4.05	.716	Very Capable
5. DRRM measures are incorporated into post-disaster recovery and rehabilitation processes.	4.07	.685	Very Capable
Overall	**4.07**	**.687**	**Very Capable**

Legend: 1.00-1.49 Not Capable (NC), 1.50-2.49 Less Capable (LC), 2.50-3.49 Capable (C), 3.50-4.49 Very Capable (VC), 4.50-5.00 Very Much Capable (VMC)

The mean analysis of respondents' perceptions of their school's Disaster Resilience in Terms of Policies, Plans, and Procedures got an overall mean of 4.07 or "Very Capable." This indicates that schools have established and implemented policies, plans, and procedures that effectively contribute to disaster resilience. Overall, these findings reflect that schools are "Very Capable" of developing and implementing policies, plans, and procedures that promote disaster resilience. Efforts to further enhance the enforcement of building codes, strengthen economic resilience strategies, and continuously integrate Disaster Risk Reduction and Management (DRRM) into post-disaster recovery processes could further improve resilience outcomes.

The results underscore the importance of institutionalizing DRRM policies within schools, ensuring alignment with broader national and local strategies, and fostering a proactive culture of disaster preparedness and resilience.

Mora et al. (2021) cited that "Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) were integrated into comprehensive land-use plans, investment budgets, hazard/vulnerability mapping, and environmental policies for five cities. The integration facilitated alignment between DRR objectives and local natural resource management, infrastructure resilience, and community adaptation strategies—demonstrating institutional mainstreaming of DRR into environmental and land-use governance."

The perceived school disaster resilience in terms of policies, plans, and procedures being very capable is justified by the presence of a comprehensive and well-implemented School Disaster Risk Reduction and Management (SDRRM) Plan. This includes clearly defined emergency protocols, designated evacuation routes, and assigned roles for disaster response teams. The school's policy on early suspension of classes during extreme weather, as well as its

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post-disaster recovery and reporting protocols, further demonstrate a proactive and structured approach to emergency management. Regular reviews and updates of these policies ensure alignment with local Disaster Risk Reduction and Management (DRRM) guidelines, reflecting the school's high level of preparedness and resilience.

Table 11. Perceived School Disaster Resilience in Terms of Capacities and Mechanisms

Indicators	Mean	SD	Verbal Interpretation
1. Strong policy, technical, and institutional capacities and mechanisms for disaster risk management are in place, with a disaster risk reduction perspective.	4.07	.671	Very Capable
2. Disaster preparedness and contingency plans are in place at all administrative levels, and regular training drills and rehearsals are held to test and develop disaster response programs.	4.14	.725	Very Capable
3. Financial reserves and contingency mechanisms are in place to support effective response and recovery when required.	3.99	.732	Very Capable
4. Procedures are in place to exchange relevant information during hazard events and disasters and to undertake post-event reviews.	4.09	.698	Very Capable
Overall	**4.07**	**.706**	**Very Capable**

Legend: 1.00-1.49 Not Capable (NC), 1.50-2.49 Less Capable (LC), 2.50-3.49 Capable (C), 3.50-4.49 Very Capable (VC), 4.50-5.00 Very Much Capable (VMC)

The mean analysis of respondents' perceptions of their school's Disaster Resilience in Terms of Capacities and Mechanisms got an overall mean of 4.07 with a standard deviation of 0.706, corresponding to the verbal interpretation of "Very Capable." This suggests that schools have established strong capacities and mechanisms to manage disaster risks and enhance resilience effectively. These findings imply that schools are "Very Capable" in terms of developing and implementing the necessary capacities and mechanisms for disaster resilience. Strengthening financial reserves and contingency funding, as well as continuing regular training drills and enhancing information exchange mechanisms, could further solidify these capacities.

Attri et al. (2022) used interpretive structural modeling to examine obstacles to effective disaster preparedness and found that preparedness efforts fail unless key elements are institutionalized across multiple levels, including formal school policies (school-level mandate), disaster-preparedness curriculum integration (classroom level), integration into multiple subjects and extra-curricular programs (curricular level). They conclude that only when these elements are embedded bureaucratically and systematically at organizational, curricular, and classroom levels does school preparedness become effective and sustainable. This aligns with the finding that "Disaster preparedness and contingency plans are in place at all administrative levels, and regular training drills and rehearsals are held to test and develop disaster response programs" was the highest-rated item (mean = 4.14).

The very capable status in the perceived School Disaster Resilience in Terms of Capacities and Mechanisms can be justified by the school's readiness of its Contingency Plans submitted to the Division Office as part of its mechanisms to achieve resilience.

Part IV. Test of the Relationship Between Variables

Table 12. Significant Relationship Between Perceived School Disaster Management and School Disaster Resilience

School Disaster Management	School Disaster Resilience				
	Human Resources	Material Facilities	Knowledge, Innovation, and Education	Policies, Plans and Procedures	Capacities and Mechanism
Mitigation;	.705**	.702**	.627**	.647**	.652**
Preparedness	.641**	.696**	.612**	.588**	.623**
Response	.598**	.729**	.628**	.570**	.626**
Recovery	.620**	.695**	.631**	.562**	.613**

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***. Correlation is significant at the 0.01 level (2-tailed).*
R values for interpretation (0.00-0.199 – Very Weak, 0.20-0.399 Weak, 0.40-0.599 Moderate, 0.60-0.799- Strong, 0.80-1.00 Very strong)

The table illustrates the correlation between School Disaster Management (SDM) and School Disaster Resilience (SDR) across five dimensions: human resources, material facilities, knowledge, innovation, and education, as well as policies, plans, procedures, capacities and mechanisms. Each dimension is further analyzed across the four phases of disaster management: mitigation, preparedness, response, and recovery.

The correlation between School Disaster Management (SDM) and School Disaster Resilience (SDR) across five dimensions: human resources, material facilities, knowledge, innovation, and education, as well as policies, plans, procedures, capacities and mechanisms was analyzed. Each dimension is further analyzed across the four phases of disaster management: mitigation, preparedness, response, and recovery. All correlations are significant at the 0.01 level (2-tailed), meaning there is a statistically significant relationship between SDM and SDR in every phase and dimension.

Therefore, the data suggest that effective School Disaster Management (SDM) across key dimensions—such as human resources, infrastructure, education, policies, and operational capacities—plays a significant role in enhancing School Disaster Resilience (SDR) throughout all phases of disaster management. This implies that the better a school manages its disaster-related resources and planning, the more resilient it becomes in preventing, preparing for, responding to, and recovering from disasters.

Strengthening these dimensions through comprehensive and coordinated efforts in SDM is likely to enhance a school's ability to withstand and recover from disasters, ultimately ensuring the safety, continuity, and well-being of the school community.

It is supported by a study by Viado and Espiritu (2023) which evaluated disaster management components, including vulnerability assessment, planning, resource management, and early warning systems, in six schools. It found that most activities were implemented, contributing to effective programs, with teachers and students showing preparedness in various aspects.

The significant relationship between perceived School Disaster Management (SDM) and School Disaster Resilience (SDR) suggests that the effectiveness of disaster management practices directly influences a school's ability to withstand, respond to, and recover from disasters. When disaster management is well-implemented—through preparedness drills, risk reduction strategies, clear policies, and active stakeholder involvement—it strengthens the overall resilience of the school community.

Table 13. Significant Relationship Between Perceived Psychological Preparedness and School Resilience

Perceived Psychological Preparedness	**School Disaster Resilience**				
	Human Resources	Material Facilities	Knowledge, Innovation, and Education	Policies, Plans and Procedures	Capacities and Mechanism
Knowledge and Management of the External Situational Environment	.535**	.595**	.532**	.531**	.517**
Anticipation, Awareness, and Management of One's Psychological Response	.535**	.595**	.532**	.531**	.517**

***. Correlation is significant at the 0.01 level (2-tailed).*
R values for interpretation (0.00-0.199 – Very Weak, 0.20-0.399 Weak, 0.40-0.599 Moderate, 0.60-0.799- Strong, 0.80-1.00 Very strong)

The table presents the correlation between Perceived Psychological Preparedness (PPP) and School Disaster Resilience (SDR) across five dimensions: human resources, material facilities, knowledge, innovation, education, policies, plans, procedures, and capacities and mechanisms. PPP is measured through two aspects: Knowledge and Management of the External Situational Environment and Anticipation, Awareness, and Management of One's Psychological Response.

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On the correlation between Perceived Psychological Preparedness (PPP) and School Disaster Resilience (SDR) across five dimensions: human resources, material facilities, knowledge, innovation, education, policies, plans, procedures, and capacities and mechanisms wherein PPP is measured through two aspects: Knowledge and Management of the External Situational Environment and Anticipation, Awareness, and Management of One's Psychological Response, all correlations are significant at the 0.01 level (2-tailed), showing a strong, positive relationship between PPP and SDR across all dimensions.

The data suggest that schools exhibiting higher levels of PPP are more resilient to disasters. This implies that when school communities—comprising administrators, teachers, and students—possess both the knowledge to manage external disaster-related situations and the psychological acumen to anticipate and handle their emotional responses, they are better equipped to implement effective disaster management strategies. Such preparedness not only aids in immediate response but also facilitates quicker recovery and long-term resilience.

Yıldırım et al. (2022) evaluated the effects of a disaster nursing education program on nursing students' beliefs in disaster preparedness, response self-efficacy, and psychological resilience. The study concluded that such educational interventions significantly bolster psychological resilience, emphasizing the role of targeted training in enhancing disaster readiness.

The significant relationship between perceived psychological preparedness and school resilience indicates that the mental and emotional readiness of students, teachers, and staff plays a crucial role in the school's overall capacity to withstand and recover from disasters. When individuals are psychologically prepared—meaning they can anticipate risks, remain calm under pressure, and manage their emotional responses—they are more likely to act effectively during emergencies.

The data show a significant relationship between both perceived school disaster management and school disaster resilience, as well as between perceived psychological preparedness and school disaster resilience, at the 0.01 level.

School Disaster Management and Resilience: The highest correlation is between Response and Material Facilities ($r = .729$), suggesting that effective response strategies rely heavily on the availability of proper infrastructure and equipment.

Psychological Preparedness and Resilience: Both Anticipation and Awareness/Management of Psychological Responses exhibit the same correlation values across all resilience factors, with the highest correlation observed with Material Facilities ($r = .595$). This suggests that psychological preparedness is closely aligned with ensuring that physical resources are in place to support mental well-being.

Conclusions

The findings of this study reveal that school disaster management across the four phases—mitigation, preparedness, response, and recovery—is generally perceived as "Well Implemented," while disaster resilience across key dimensions—human resources, material facilities, knowledge and education, policies and plans, and institutional mechanisms—is viewed as "Very Capable." These outcomes indicate that schools in the study area have laid down strong foundations for disaster risk reduction and management, supported by structured policies, regular drills, well-functioning emergency response systems, and community participation.

The study confirms that effective disaster management practices directly influence a school's ability to remain resilient before, during, and after disasters. In particular, preparedness and response mechanisms—such as well-rehearsed evacuation drills, updated contingency plans, and coordinated stakeholder involvement—have contributed to building a culture of readiness and safety within school environments. Furthermore, the integration of disaster risk reduction (DRR) and climate change adaptation (CCA) into school curricula and planning frameworks aligns with global standards like the Sendai Framework, reinforcing the schools' role as drivers of community resilience.

Importantly, the findings also highlight the critical role of psychological preparedness. High scores in both knowledge of external disaster environments and management of emotional responses suggest that students, teachers, and staff are not only informed but also emotionally equipped to handle high-stress scenarios. The significant correlations between psychological preparedness and school disaster resilience underscore that mental and emotional readiness enhances the ability of individuals and institutions to implement disaster strategies effectively and recover sustainably.

The strong positive relationships identified between school disaster management (SDM), psychological preparedness (PPP), and school disaster resilience (SDR) affirm that a multidimensional approach—one that combines sound infrastructure, clear policies, ongoing training, and psychosocial support—is essential to building

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truly resilient schools. As such, continuous improvement in disaster financing, infrastructure reinforcement, and psychological support services will be critical in elevating existing capacities and sustaining long-term resilience.

Ultimately, the study emphasizes that resilience is not solely a product of physical safety measures but also of informed minds and emotionally prepared individuals. Schools that invest in comprehensive disaster risk management—backed by education, innovation, and inclusive participation—are better positioned to protect lives, sustain learning continuity, and recover more effectively from any adverse event.

Recommendations

Based on the findings and conclusions, there are several recommendations to enhance school disaster resilience through both disaster management and psychological preparedness:

1. Strengthen School Disaster Management by developing comprehensive Disaster Plans. Schools may create and regularly update disaster management plans that cover the mitigation, preparedness, response, and recovery phases. These plans may address both structural and psychological aspects of resilience. More so, schools may conduct Capacity Building for Human Resources. This can be accomplished through regular training for teachers, staff, and students on emergency procedures, first aid, and crisis management, ensuring a well-prepared community.

2. Promote Psychological Preparedness by integrating Psychological First Aid (PFA) into training. This will train staff and student leaders to provide immediate emotional support during and after disasters. There should also be regular drills and simulations conducted: Rehearsing disaster scenarios reduces anxiety and builds confidence in handling real crises. Inclusion of psychological preparedness components, such as managing panic and ensuring emotional support, should also be considered.

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