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Compliance and Predicaments Encountered in the Risk Reduction and Disaster Preparedness Program (RRDPP) of Selected Academic Institutions General Mariano Alvarez (GMA), Cavite, Philippines

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ABSTRACT

The Philippines, located within the Pacific Ring of Fire and typhoon belt, remains one of the world's most disaster-prone countries. Educational institutions play a pivotal role in cultivating disaster awareness, preparedness, and resilience among learners and communities. Anchored on Republic Act No. 10121 or the Philippine Disaster Risk Reduction and Management (DRRM) Act of 2010, this study examined the compliance and predicaments encountered in the implementation of school-based DRRM programs among selected public academic institutions in General Mariano Alvarez (GMA), Cavite. Using a descriptive-correlational design, the study gathered data from 259 faculty members and School DRRM Officers across elementary, junior high, and senior high schools. Results revealed high compliance levels across academic tiers, *with senior high schools demonstrating relatively higher compliance due to greater institutional autonomy, more established administrative systems, and better access to resources*. Financial constraints emerged as the most recurring challenge, followed by human resource limitations, while technical issues were least encountered. ANOVA results indicated no significant differences in compliance or challenges across academic levels, *suggesting that uniformity in compliance may reflect effective top-down policy dissemination under DepEd's DRRM mandates rather than equal resource access*. The findings underscore the critical need for increased budget allocation, staff augmentation, and sustained capacity building to strengthen DRRM integration in schools. *These implications align with the Department of Education's Comprehensive School Safety Framework, Republic Act No. 10121, and the Sustainable Development Goal (SDG) 13 on Climate Action.*

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RESUMO

As Filipinas, localizadas no Anel de Fogo do Pacífico e na zona de tufões, continuam sendo um dos países mais propensos a desastres no mundo. As instituições educacionais desempenham um papel fundamental no desenvolvimento da conscientização, preparação e resiliência a desastres entre alunos e comunidades. Com base na Lei da República nº 10121, ou Lei Filipina de Redução e Gestão de Riscos de Desastres (DRRM) de 2010, este estudo examinou a conformidade e os problemas encontrados na implementação de programas de DRRM em escolas selecionadas em General Mariano Alvarez (GMA), Cavite. Utilizando um delineamento descritivo-correlacional, o estudo coletou dados de 259 membros do corpo docente e Oficiais de DRRM Escolares em escolas de ensino fundamental, médio e superior. Os resultados revelaram altos níveis de conformidade em todos os níveis acadêmicos, com as escolas de ensino médio demonstrando uma conformidade relativamente maior devido à maior autonomia institucional, sistemas administrativos mais estabelecidos e melhor acesso a recursos. As restrições financeiras emergiram como o desafio mais recorrente, seguidas pelas limitações de recursos humanos, enquanto os problemas técnicos foram os menos encontrados.Os resultados da ANOVA não indicaram diferenças significativas na conformidade ou nos desafios enfrentados entre os níveis acadêmicos, sugerindo que a uniformidade na conformidade pode refletir uma disseminação eficaz de políticas de cima para baixo, conforme os mandatos de Gestão de Riscos de Desastres (GRD) do Departamento de Educação, em vez de igualdade de acesso a recursos. As descobertas ressaltam a necessidade crítica de aumento na alocação orçamentária, contratação de pessoal e capacitação contínua para fortalecer a integração da GRD nas escolas. Essas implicações estão alinhadas com a Estrutura Abrangente de Segurança Escolar do Departamento de Educação, a Lei nº 10121 e o Objetivo de Desenvolvimento Sustentável (ODS) 13 sobre Ação Climática.

Keywords:
Redução e Gestão de Riscos de Desastres (RGRD), Redução de Riscos e Preparação para Desastres (RRPD)

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Introduction

Natural and human-induced disasters remain a persistent challenge to human security and sustainable development. The Philippines' geographical location within the Pacific Ring of Fire and typhoon belt makes it highly vulnerable to geophysical and hydrometeorological hazards such as earthquakes, volcanic eruptions, typhoons, and floods (UNDRR, 2023). Over the past decades, these recurring disasters have disrupted education, damaged infrastructure, and claimed countless lives, underscoring the need for robust disaster preparedness and risk management systems in schools (Masum & Akhbar, 2021; Habitat for Humanity Philippines, 2022).

Recognizing this, the Philippine government institutionalized the **Republic Act No. 10121**, or the **Philippine Disaster Risk Reduction and Management Act of 2010**, which mandates the mainstreaming of DRRM principles into national and local governance, including educational institutions (NDRRMC, 2023). Schools are expected to serve not only as centers of learning but also as safe spaces for temporary shelter, emergency coordination, and community mobilization during crises.

The **Department of Education (DepEd)** operationalized these mandates through the **Comprehensive School Safety (CSS) Framework**, which encompasses three major pillars: **(1) Safe Learning Facilities, (2) School Disaster Management, and (3) Disaster Risk Reduction in Education** (DepEd, 2022). This framework ensures that disaster preparedness is integrated into school operations, curricula, and community partnerships.

Despite these national efforts, the implementation of DRRM programs in many public schools faces persistent constraints. Limited funding, inadequate infrastructure, insufficient training, and competing administrative priorities hinder full compliance (Cruz, Bautista, & Rivera, 2021). *These gaps often reflect the disparity between policy intent and actual institutional capacity, especially in resource-constrained municipalities such as General Mariano Alvarez (GMA), Cavite. The area's rapid urbanization and dense population heighten exposure to hazards, emphasizing the importance of school-level preparedness as a local resilience mechanism.*

This study explores the compliance level and challenges faced by academic institutions in GMA, Cavite, in implementing DRRM programs. It specifically aims to assess: The level of compliance with DRRM standards across academic levels; The financial, technical, and human resource challenges encountered; and Whether differences exist in DRRM compliance across educational tiers.

In doing so, the research not only evaluates quantitative differences but also explores the underlying causes of compliance variations, institutional limitations, and systemic barriers that shape school-based disaster management. By aligning the study with RA 10121, DepEd's CSS Framework, and global frameworks such as the Sendai Framework for Disaster Risk Reduction (2015–2030), this paper contributes to the understanding of how policy, practice, and institutional capacity interact in fostering disaster-resilient education systems.

This research generally aimed to determine the problems encountered and compliance level of the municipality of General Mariano Alvarez (GMA), Cavite in the implementation of the DRRM Program. Specifically, the study aimed to: determine the level of compliance in the Risk Reduction and Disaster Preparedness Program as perceived by the teacher respondents and the level of evidence as perceived by the DRRM Officers according to academic levels in General Mariano Alvarez (GMA), Cavite in terms of: Safe Learning Facilities; School Learning Facilities; Disaster Risk Reduction in Education.

a. Disaster Risk Reduction in Education. determine the problems encountered by the selected public academic institutions in the 5th district of Cavite in

connection to the implementation of RRDPP in General Mariano Alvarez (GMA), Cavite, according to academic levels, in terms of: Financial Aspect; Technical Aspect; Human Aspect.

b. Determine if there is a significant difference in the level of compliance in the RRDP program as perceived by the teacher respondents according to academic levels.

Literature Review

Natural and anthropogenic disasters have increasingly challenged communities across the globe, posing serious threats to lives, infrastructure, and socio-economic stability. The Philippines, owing to its geophysical and meteorological conditions, remains among the world's most disaster-prone nations. According to the United Nations Office for Disaster Risk Reduction (UNDRR, 2021), the country's location along the Pacific Ring of Fire and the typhoon belt renders it highly susceptible to earthquakes, volcanic eruptions, and tropical cyclones. Each year, the Philippines experiences multiple typhoons, with Northern Luzon and Eastern Visayas often suffering the most damage (Habitat for Humanity Philippines, 2022).

Additionally, the nation is exposed to frequent seismic activity, posing severe risks to urbanized and densely populated areas such as General Mariano Alvarez (GMA), Cavite. As Masum and Akhbar (2021) argue, such environmental vulnerabilities require institutionalized strategies for building community resilience and preparedness.

Educational institutions play a critical role in disaster risk reduction (DRR). Beyond educating students, schools serve as evacuation centers, relief distribution points, and emergency information hubs (Mutch, 2023; UNESCO, 2023). Thus, they must be integrated into broader DRRM frameworks such as the **Philippine Disaster Risk Reduction and Management Act of 2010 (RA 10121)**. This law mandates schools to develop disaster management plans, integrate DRRM into curricula, conduct regular drills, and foster collaborations with stakeholders (NDRRMC, 2023).

Despite this mandate, challenges remain. Many schools lack adequate funding, structural safety, and trained personnel. According to the Asian Disaster Preparedness Center (ADPC, 2021), a significant number of schools in disaster-prone regions have not yet aligned with the Safe School Framework, largely due to financial, human, and technical resource limitations. *This gap between national policy and local implementation demonstrates the persistent challenge of translating DRRM laws into actionable, sustainable practices at the school level.*

Cruz, Bautista, and Rivera (2021) emphasized that while DRRM policies exist, implementation remains inconsistent—especially in remote or marginalized communities. Regular emergency drills are often nonstandard, and infrastructure remains vulnerable. Similarly, Basco (2019) identified issues such as limited local government cooperation, lack of training, and weak stakeholder involvement. *These observations resonate with the findings of this study, wherein institutional compliance is high but operational sustainability is constrained by financial and human factors.*

In response, the Department of Education (2022) recommended increasing budget allocations and capacity-building programs to improve school-level DRRM. Moreover, Escaleras and Register (2021) suggested that decentralizing DRRM responsibilities allows school leaders to tailor their programs more effectively, especially when supported by adequate guidelines and resources.

Mutch (2023) highlights the importance of cultivating a school-wide culture of preparedness. This involves promoting student leadership in emergency planning, involving

parents, and conducting community-wide drills. Localized and participatory approaches to DRRM have shown to be more sustainable and effective. *Such participatory engagement enhances ownership and accountability among stakeholders, a factor critical for long-term resilience.*

In the case of GMA, Cavite, rapid urbanization has worsened disaster risks. Del Rosario, Mendoza, and Abao (2021) pointed out that increasing population density and unregulated land development make public schools more vulnerable to climate-related and seismic hazards. However, localized studies on DRRM implementation in this municipality remain limited. *This study thus fills a contextual gap by providing empirical data on compliance and predicaments at the school level, which can guide targeted policy interventions.*

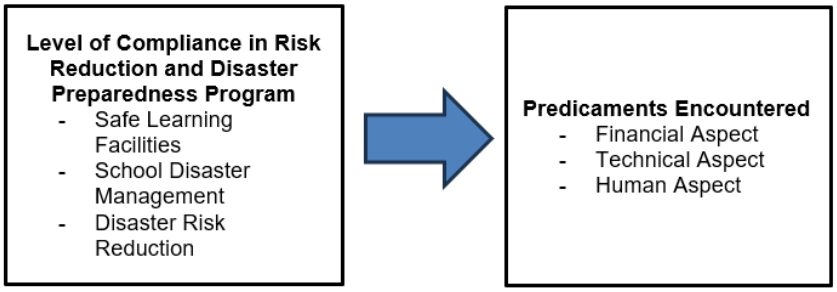
On a broader scale, Shiwaku and Fernandez (2011) argue that the most effective method to raise disaster awareness is through formal school education, which instills preparedness habits not only in children but also their families. Reinforcing this, Wang and Tsai (2022) found that teacher engagement in disaster education significantly enhances community resilience.

Newer studies also advocate for integrating DRR with climate change education. According to Djalante and Lassa (2022), this approach strengthens students' understanding of long-term risks and promotes sustainability. UNESCO (2023) echoes this by recommending regular drills and curriculum integration aligned with the Sendai Framework for Disaster Risk Reduction. *Hence, embedding DRRM and climate adaptation into education is not only a compliance matter but a transformative strategy for sustainable development, consistent with SDG 13 (Climate Action).*

Conceptual Framework

The conceptual framework of this study (see Fig.1) illustrates the level of compliance with the **Disaster Risk Reduction and Management (DRRM)** Program as perceived by faculty members in selected public academic institutions in General Mariano Alvarez (GMA), Cavite, across different academic levels. It also represents the challenges encountered in implementation, focusing on financial, technical, and human resource dimensions.

Figure 1.
Conceptual Framework



The framework adopts the **Department of Education's Comprehensive School Safety (CSS) Framework** (DepEd, 2022), which consists of three interrelated pillars: (1) *Safe Learning Facilities*, (2) *School Disaster Management*, and (3) *Disaster Risk Reduction in Education*. These pillars ensure that disaster preparedness is integrated within the physical environment, organizational systems, and instructional processes of schools.

In this study, the CSS Framework serves as both a diagnostic and analytical tool, allowing the researchers to measure not only compliance but also systemic capacity and readiness. The level of compliance is viewed as a reflection of institutional maturity, while the

identified challenges reveal structural or contextual limitations that impede full DRRM integration.

The interaction among these components is assumed to influence overall resilience at the school level. For example, schools with strong DRRM management and active leadership may overcome financial shortages through resource mobilization and partnerships, whereas those with limited technical knowledge may struggle despite adequate funding.

This conceptual lens recognizes that DRRM implementation is a *multi-level governance process*, influenced by national mandates (e.g., RA 10121), local government policies, school leadership, and community participation. It thus provides a holistic view of how institutional compliance and local constraints intersect to shape the overall effectiveness of disaster preparedness in educational settings.

Methodology

Research Design

This study employed a **descriptive-correlational research design** to assess the level of compliance and the predicaments encountered in the implementation of the **Disaster Risk Reduction and Management (DRRM)** Program among selected public academic institutions in General Mariano Alvarez (GMA), Cavite. The descriptive component measured the perceived compliance and challenges, while the correlational component analyzed whether significant differences existed in DRRM compliance and problems encountered across academic levels.

This design was appropriate because it allowed both quantitative measurement and comparative assessment of compliance patterns among different school categories, revealing systemic consistencies or disparities in DRRM implementation.

Participants of the Study

A total of **259 participants** (see Tab. 1) were included, composed of teachers and School DRRM Officers (SDRRMOs) from public elementary, junior high, and senior high schools in GMA. The sample was derived using the **Krejcie and Morgan formula** for a known population (N = 896), ensuring representativeness across institutions.

Each participating school had one designated SDRRMO automatically included as a key informant. *Including both teachers and SDRRM officers strengthened triangulation, thereby enhancing data credibility — a methodological rigor highlighted by the evaluator as a strength of this paper.*

Initially, the study intended to include respondents from local colleges and universities within General Mariano Alvarez (GMA). However, these higher education institutions declined participation due to administrative restrictions and ongoing institutional review processes. Consequently, the study focused solely on DepEd-supervised schools (elementary, junior high, and senior high). This exclusion does not compromise the integrity of the study since DRRM implementation in higher education falls under the Commission on Higher Education (CHED), which follows a separate policy framework. Therefore, the present scope accurately represents DRRM compliance under the DepEd system.

Table 1.
shows the distribution of participants.

MUNICIPALITY	TOTAL POPULATION	SAMPLE POPULATION
GENERAL MARIANO ALVAREZ		
*Elementary		
Area J Elementary School	82	24
Family Village Resources Elementary School	48	14
Francisco De Castro Elementary School	48	14
San Gabriel I Elementary School	115	33
San Gabriel II Elementary School	121	35
San Gabriel III Elementary School	38	11
*Junior High School		
General Mariano Alvarez Technical High School	277	80
San Jose Community High School	76	22
*Senior High School		
General Mariano Alvarez Technical High School	77	22
San Jose Community High School	14	4
TOTAL	**896**	**259**

Data Gathering Procedure

Formal permission was secured from the Department of Education, Division of Cavite, before data collection. Surveys were administered through both face-to-face distribution and Google Forms, ensuring accessibility and adherence to ethical standards. *This study strictly adhered to ethical research protocols. Formal authorization was secured from the Department of Education (DepEd) Division of Cavite prior to the distribution of survey instruments. All participants were informed of the study's objectives, procedures, and voluntary nature before data collection. Participation was entirely voluntary, and respondents were assured of anonymity and confidentiality in accordance with the Data Privacy Act of 2012 (Republic Act No. 10173). No personal identifiers were recorded, and all data were used solely for academic purposes. The researchers also obtained verbal and written consent from teacher respondents and School DRRM Officers, ensuring that ethical principles of respect, beneficence, and justice were observed throughout the study.*
This hybrid collection approach enhanced data reliability while ensuring inclusivity among respondents despite logistical and technological differences between schools.

Research Instrument

The study utilized a **validated survey instrument** adapted from the Department of Education's *School DRRM Manual (2012)* and from the study of Lopez, Echavez, Magallen, and Sales (2018). The instrument consisted of 33 indicators categorized under the three pillars of the CSS Framework: Safe Learning Facilities (12 items), School Disaster Management (10 items), and Disaster Risk Reduction in Education (11 items).

Additional items were developed to measure problems encountered along three dimensions: financial, technical, and human resources. Responses were rated using a **four-point Likert scale** ranging from 1 (Not Complied/Not Encountered) to 4 (Highly Complied/Highly Encountered).

To validate perceptions, SDRRM Officers were interviewed using a *Disaster Risk Reduction and Monitoring Tool* containing 34 statements reflecting observable evidence of DRRM implementation.

The adapted questionnaire underwent both content validation and reliability testing prior to deployment. Validation was conducted by a panel composed of three experts in disaster risk reduction and management (DRRM) and three academic research methodologists. Revisions were made based on their feedback to ensure item clarity, relevance, and construct alignment with the study objectives. To determine the internal consistency of the instrument, a pilot test was conducted among 30 teachers from a neighboring municipality not included in the final sample. The resulting Cronbach's alpha coefficient was ***0.87****, indicating high reliability. This supports that the instrument is internally consistent and suitable for descriptive-correlational analysis.*

Statistical Treatment

Data were analyzed using Weighted Mean for descriptive interpretation and Analysis of Variance (ANOVA) to test for significant differences in compliance and encountered problems across academic levels.

Interpretations followed DepEd's descriptive scaling:

- 3.26–4.00 = Highly Complied / Highly Encountered
- 2.51–3.25 = Moderately Complied / Moderately Encountered
- 1.76–2.50 = Slightly Complied / Slightly Encountered
- 1.00–1.75 = Not Complied / Not Encountered

The use of ANOVA enabled cross-level comparisons, consistent with the evaluator's emphasis on identifying uniformity or disparity in DRRM program adherence across educational tiers.

A one-way Analysis of Variance (ANOVA) was utilized to determine whether there were statistically significant differences in compliance and problems encountered among the three school levels (elementary, junior high, and senior high). This test was chosen because the independent variable (academic level) had three categorical groups, while the dependent variables (compliance and challenges) were continuous. The test employed a significance level of $\alpha = 0.05$, with degrees of freedom calculated as $df_1 = 2$ (between groups) and $df_2 = 256$ (within groups). The F-value and corresponding p-value were computed using SPSS software to test the null hypothesis of equal means. The results—$F(2, 256) = 1.333$, $p = 0.266$—indicated no significant difference in compliance across academic levels, while $F(2, 256) = 1.855$, $p = 0.159$ revealed no significant difference in encountered problems.

The numerical range for the Likert scale interpretation was derived by dividing the total range ($4 – 1 = 3$) by the number of categories (4). This produced an interval width of 0.75 for each level. Accordingly, the following descriptive ranges were applied: 3.26–4.00 (Highly Complied/Highly Encountered), 2.51–3.25 (Moderately Complied/Moderately Encountered), 1.76–2.50 (Slightly Complied/Slightly Encountered), and 1.00–1.75 (Not Complied/Not Encountered). This approach follows the standard practice in Likert-based descriptive analysis, ensuring consistent and quantifiable interpretation of responses across variables.

Results and Discussions

The Level of Compliance with DRRM Program Across Academic Levels

Across all educational levels—elementary, junior high, and senior high—schools in General Mariano Alvarez (GMA) displayed **high compliance** with DRRM program standards.

Comparative Analysis Summary:

Academic Level	Overall Interpretation Mean	Interpretation	SDRRM Officer Mean	Interpretation
Elementary	3.54	Highly Complied	2.57	Strongly Evident
Junior High	3.48	Highly Complied	2.96	Strongly Evident
Senior High	3.69	Highly Complied	2.88	Strongly Evident

Senior high schools demonstrated relatively higher compliance, largely attributed to their more structured administrative systems, better access to resources, and higher institutional autonomy.

All levels were most compliant in the **"Disaster Risk Reduction in Education"** component, reflecting effective classroom-based integration of DRRM topics. *This may be linked to increased teacher training and DepEd's integration of DRRM in the K–12 curriculum, as recommended in recent policy memos (DepEd, 2023).*

Predicaments Encountered in DRRM Implementation

Across academic levels, **financial constraints** were identified as the most recurring challenge, followed by human resource limitations and technical issues.

Summary of Problems Encountered:

Aspect Mean	Elementary Mean	Junior High Mean	Senior High Mean	Overall Interpretaion
Financial	2.35	2.34	2.12	Slightly Encountered
Human	1.99	2.15	1.64	Slightly Encountered
Technical	1.81	2.05	1.72	Slightly Encountered

The predominance of financial challenges supports prior findings (Cruz et al., 2021; ADPC, 2021) indicating that DRRM implementation success is strongly tied to resource sufficiency and administrative prioritization.

The least encountered category, technical problems, may indicate that despite limited funds, schools have access to sufficient guidelines and procedural manuals under DepEd's national DRRM framework. However, this could also suggest overreliance on prescriptive procedures rather than adaptive, context-specific strategies.

Significant Differences Across Academic Levels

ANOVA results revealed **no significant differences** in the level of compliance or problems encountered across school types:

Variable	F-Value	p-Value	Interpretation
Compliance	1.33	0.266	Not Significant
Problem Encountered	1.855	0.159	Not Significant

This uniformity suggests a top-down implementation pattern where DRRM compliance is guided by centralized DepEd directives rather than distinct local innovations.

While this may reflect policy consistency, it may also mask underlying disparities in resource distribution and stakeholder engagement across academic levels.

The results confirmed that public academic institutions in General Mariano Alvarez (GMA), Cavite demonstrated a high level of compliance with the Disaster Risk Reduction and Management (DRRM) Program. *This consistent performance across academic tiers reinforces the institutionalization of DRRM practices within DepEd's Comprehensive School Safety (CSS) Framework and reflects the national reach of Republic Act No. 10121.*

Patterns of Compliance

The high compliance observed among all school levels—especially in Disaster Risk Reduction in Education—suggests that DRRM concepts are well integrated into teaching and learning processes. *This alignment supports findings by Caballero et al. (2023) and Mutch (2023), who argue that curriculum-based integration fosters student-centered preparedness and community-level resilience.*

Senior high schools, showing relatively higher compliance, likely benefit from greater administrative autonomy and more stable financial structures. Their ability to mobilize partnerships and utilize technology for information dissemination (as observed by Almonte et al., 2024) may also explain this performance. By contrast, elementary schools—while compliant—often depend on limited local resources, restricting the scale of their preparedness activities.

Financial Constraints as a Recurring Challenge

Among the three aspects assessed, financial limitations emerged as the most encountered problem. *This mirrors previous studies (Basco, 2019; Cruz et al., 2021) indicating that school-based DRRM programs are underfunded despite being statutory requirements. The realignment of budgets toward competing academic priorities restricts procurement of safety equipment, teacher training, and simulation exercises.*

Such financial bottlenecks highlight a systemic issue: while compliance with procedural requirements is achieved, the sustainability of DRRM programs is compromised by inadequate fiscal support. This gap indicates the need for both local government units (LGUs) and DepEd to prioritize budget augmentation for DRRM through the Special Education Fund (SEF) and disaster-response grants.

Human and Technical Dimensions

Human-related challenges—such as limited trained staff and competing responsibilities—were the second most encountered issue. *Teachers and DRRM coordinators often hold multiple roles, which constrains sustained engagement in preparedness activities. This supports the assertion of Limon and Santos (2022) that continuous capacity-building and psychosocial preparedness training are essential for educators who function as front-line responders during crises.*

Interestingly, technical problems were the least encountered. *This finding may imply that DepEd's standardized manuals and circulars have effectively guided DRRM operations at the school level. However, as noted by Escaleras and Register (2021), strong reliance on top-down templates may also reduce contextual innovation, leading to procedural uniformity rather than adaptive local solutions.*

Uniformity Across Levels

The ANOVA results showing no significant difference in compliance and encountered problems across academic levels reveal a pattern of homogeneity. *This uniformity could be*

interpreted as a sign of effective policy diffusion from DepEd's central directives, ensuring consistent implementation nationwide. Yet it could equally suggest that differences in resources and community support are not fully captured by quantitative measures. As Villanueva and Ramos (2023) argue, apparent uniform compliance may mask disparities in local engagement and resource allocation.

Integration with Broader Frameworks

The study's outcomes validate the operational relevance of the **Comprehensive School Safety Framework**, whose pillars—safe facilities, effective management, and education—collectively address physical, administrative, and pedagogical safety. *By evidencing its application, this study supports the Sendai Framework's Priority 3: "Investing in disaster risk reduction for resilience." Furthermore, alignment with SDG 13 (Climate Action) underscores the educational sector's contribution to national climate adaptation and community resilience.*

Overall, the discussion reinforces that while institutional compliance is commendable, sustainability requires systemic reforms addressing financial constraints, staffing adequacy, and localized innovation in disaster preparedness.

The findings hold several implications for policy formulation, educational governance, and community-level implementation:

1. Budget Institutionalization.
   Consistent with RA 10121 and DepEd Order No. 21 s. 2015, schools must integrate DRRM budgeting into their Annual Improvement Plans and School Operational Funds. Establishing earmarked allocations through the SEF and the Local Disaster Risk Reduction and Management Fund (LDRRMF) ensures that DRRM activities are sustained beyond compliance reporting.
2. Human Resource Strengthening.
   DepEd divisions should designate permanent DRRM Coordinators with specific workload credit and regular professional training. This aligns with DepEd Order No. 50 s. 2022 on capacity-building and staff well-being, reinforcing teacher readiness as a cornerstone of school safety.
3. Technical Capacity and Innovation.
   While existing manuals guide uniform practice, LGUs and schools can collaborate to develop localized hazard maps and digital monitoring systems. Public–private partnerships, as recommended by Villanueva and Ramos (2023), can provide technology-based solutions such as early-warning apps and data-sharing platforms.
4. Multi-Stakeholder Engagement.
   Schools should strengthen linkages with barangay councils, the Bureau of Fire Protection, and local DRRM Offices for coordinated drills and evacuation planning. This mirrors the participatory approach envisioned under the Sendai Framework and enhances collective accountability.
5. Policy Evaluation and Feedback.
   DepEd regional offices should conduct periodic policy reviews to measure not only compliance rates but also qualitative outcomes such as community awareness and post-disaster recovery efficiency. These indicators can better reflect resilience-building rather than procedural adherence alone.
6. Alignment with National and Global Agendas.
   Embedding DRRM in curriculum reforms supports the Philippines' commitments to SDG 4 (Quality Education) and SDG 13 (Climate Action). Schools, therefore, function

as microcosms of national climate resilience strategy, bridging policy frameworks with community empowerment.

In summary, these implications translate empirical findings into actionable governance strategies that strengthen the institutionalization, sustainability, and inclusivity of DRRM implementation in the educational sector.

Conclusions

This study sought to determine the level of compliance and the predicaments encountered in the implementation of the Disaster Risk Reduction and Management (DRRM) Program among selected academic institutions in General Mariano Alvarez (GMA), Cavite, as well as to assess whether compliance and challenges differed across educational levels.

Based on the results, the following conclusions were drawn:

1. High Overall Compliance Across Academic Levels.
   Schools at all educational levels—elementary, junior high, and senior high—demonstrated high compliance with DRRM standards, *indicating that DepEd's Comprehensive School Safety Framework is effectively institutionalized at the local level. Senior high schools exhibited relatively higher compliance due to more structured administrative systems, access to funding, and maturity of school management.*
2. Financial Limitations as the Primary Challenge.
   Across all academic levels, financial constraints consistently emerged as the recurring barrier to DRRM implementation. While human and technical challenges were reported, their effects were less pervasive. *This highlights that institutional readiness is largely dependent on the availability of sufficient and sustainable financial support from both DepEd and local government units (LGUs).*
3. No Significant Differences Across Levels but Consistent Patterns.
   Statistical analysis revealed no significant differences in compliance or encountered challenges across levels, *suggesting uniformity of DRRM program adoption guided by DepEd's top-down policy implementation.* However, *this uniform compliance may mask disparities in local resource allocation and contextual adaptability among schools.*
4. Integration of DRRM in Education as a Positive Trend.
   The strong performance in the "Disaster Risk Reduction in Education" dimension demonstrates increasing institutional commitment to embedding disaster awareness in teaching and learning. This trend reflects alignment with global frameworks such as the Sendai Framework and SDG 13 (Climate Action), reinforcing the education sector's role in resilience building.

Overall, the study concludes that while compliance with DRRM policies in GMA schools is commendably high, the sustainability and effectiveness of these programs depend on continuous financial support, institutional capacity building, and the localization of national policies to suit school-specific contexts.

Limitations of the Study

This study was limited to public elementary, junior high, and senior high schools within General Mariano Alvarez, Cavite, under the supervision of the Department of Education (DepEd). The exclusion of higher education institutions, which declined participation, may limit the generalizability of findings to CHED-regulated entities. The study utilized a cross-sectional descriptive-correlational design, providing a snapshot of DRRM compliance at a

single point in time. Data were self-reported, which may introduce response bias despite triangulation with School DRRM Officer validation. Furthermore, the study's quantitative nature did not explore deeper qualitative factors such as leadership dynamics or community engagement. Future studies may adopt mixed methods or longitudinal designs to capture more comprehensive DRRM implementation trends

Recommendations

To strengthen the implementation and sustainability of school-based Disaster Risk Reduction and Management (DRRM) programs, the following recommendations are presented according to strategic timelines:

A. Short-Term (Immediate Actions – within 1 year)

1. Standardize Terminology and Reporting.
   DepEd divisions and schools should adopt uniform usage of "Disaster Risk Reduction and Management (DRRM)" in all documents and reports to ensure clarity and alignment with Republic Act No. 10121.
2. Conduct Focused Capacity-Building Sessions.
   Organize refresher training for School DRRM Coordinators and teachers on updated DepEd Orders, psychosocial first aid, and emergency drills, as aligned with DepEd Order No. 21 s. 2015.
3. Improve Financial Transparency and Budget Planning.
4. *Schools should establish itemized DRRM budget templates in their School Improvement Plans (SIPs) to ensure traceability and accountability of funds allocated for preparedness activities.*

B. Medium-Term (Sustainable Strengthening – within 2–3 years)

1. Institutionalize Dedicated DRRM Personnel.
   DepEd and LGUs should assign permanent or full-time DRRM Coordinators in schools with official workload credit, ensuring continuity of program implementation and monitoring.
2. Enhance Multi-Stakeholder Partnerships.
   Forge collaborations with LGUs, local fire departments, NGOs, and private partners to support simulation drills, hazard mapping, and information dissemination campaigns. This aligns with RA 10121's call for multi-sectoral DRRM collaboration.
3. Integrate Technology for Preparedness.
   Implement low-cost digital innovations, such as early-warning SMS systems or online hazard maps, to improve communication and monitoring capacity, as recommended by Almonte et al. (2024).

C. Long-Term (Institutional and Policy Sustainability – 4 years and beyond)

1. Embed DRRM into Curriculum and Teacher Development.
   Fully integrate DRRM and climate adaptation topics into the K–12 curriculum, particularly within Science, Social Studies, and Values Education, consistent with SDG 4 (Quality Education) and SDG 13 (Climate Action).
2. Establish a DRRM Monitoring and Evaluation Framework.
   DepEd, in partnership with LGUs and the NDRRMC, should develop a school-level evaluation system that measures not only compliance rates but also preparedness outcomes, resilience capacity, and post-disaster recovery efficiency.
3. Secure Long-Term Funding Mechanisms.
   Legislate local ordinances that allocate a fixed percentage of the Special Education Fund (SEF) or the Local Disaster Risk Reduction and Management Fund (LDRRMF) to school-based DRRM initiatives, ensuring financial sustainability and reduced dependency on external grants.

D. Future Research

Future studies may explore causal pathways between financial investment and DRRM effectiveness, evaluate the role of digital tools in enhancing preparedness, or conduct comparative analyses across provinces to identify replicable best practices in DRRM education.

REFERENCES

Almonte, J. C., Reyes, F. A., & Delos Santos, M. L. (2024). *Digital innovations in disaster preparedness: A case study of Philippine public schools. Journal of Disaster and Technology Integration, 6*(2), 112–127.

Asian Disaster Preparedness Center. (2021). *Assessment of school-based DRRM frameworks in Southeast Asia.* ADPC Publications.

Basco, R. D. (2019). *Implementation issues of DRRM in public elementary schools in the Philippines. Asian Journal of Education and E-Learning, 7*(2), 30–35.

Caballero, R. M., De Leon, A. P., & Trinidad, K. G. (2023). *Integrating disaster risk reduction education in Philippine secondary schools: Teachers' perspectives and experiences. Philippine Journal of Educational Development, 18*(1), 45–61.

Climate Reality Project Philippines. (2022). *The state of climate education and adaptation in the Philippines: Challenges and policy recommendations.* Retrieved from https://www.climatereality.ph

Cruz, C. R., Bautista, L. S., & Rivera, F. D. (2021). *Disaster risk management practices in public schools: Gaps and prospects. Philippine Journal of Educational Policy and Planning, 5*(1), 45–60.

Del Rosario, A. T., Mendoza, K. L., & Abao, J. B. (2021). *Urban development and disaster vulnerability in Cavite: A case study of General Mariano Alvarez. Journal of Urban Studies in the Philippines, 3*(1), 10–22.

Department of Education (DepEd). (2023). *Reinforcing climate change adaptation and disaster risk reduction in basic education. DepEd Memorandum No. 017, s. 2023.*

Department of Education (DepEd). (2022). *Annual DRRM implementation report.* Retrieved from https://www.deped.gov.ph

Djalante, R., & Lassa, J. (2022). *Integrating DRR and climate change adaptation in education systems. International Journal of Disaster Risk Science, 13*(1), 27–39. https://doi.org/10.1007/s13753-022-00400-1

Escaleras, M., & Register, C. A. (2021). *Decentralized disaster management and school preparedness: Evidence from Southeast Asia. Education and Disaster Policy Review, 6*(2), 59–73.

Gaillard, J. C., & Gomez, C. (2022). *Everyday disaster risk reduction: Empowering communities through education and participation. International Journal of Disaster Risk Science, 13*(1), 10–19. https://doi.org/10.1007/s13753-021-00374-6

Habitat for Humanity Philippines. (2022). *Disaster risk in the Philippines: Building safe homes and communities.* Retrieved from https://www.habitat.org.ph

Limon, M. P., & Santos, A. G. (2022). *Psychosocial preparedness in schools: Addressing student trauma during disasters. Philippine Journal of Psychology and Education, 12*(3), 89–101.

Masum, M., & Akhbar, N. (2021). *Disaster risk governance in vulnerable nations: Lessons from the Philippines. Asian Journal of Risk and Resilience, 10*(1), 17–31.

Mutch, C. (2023). *Cultivating a culture of safety: School-based disaster preparedness in the Asia-Pacific. Journal of Disaster Studies in Education, 9*(1), 40–55.

National Disaster Risk Reduction and Management Council (NDRRMC). (2023). *Annual DRRM report: Enhancing school safety through digital transformation.* Retrieved from https://www.ndrrmc.gov.ph

Shiwaku, K., & Fernandez, G. (2011). *School disaster resilience: Experiences from Asia. International Journal of Disaster Risk Reduction, 2*(1), 1–10.

United Nations Office for Disaster Risk Reduction (UNDRR). (2021). *Disaster risk profile: Philippines.* Retrieved from https://www.undrr.org

United Nations Office for Disaster Risk Reduction (UNDRR). (2023). *Strengthening partnerships for school-based disaster preparedness.* Retrieved from https://www.undrr.org

Villanueva, C. R., & Ramos, P. L. (2023). *Public–private partnerships in DRR education: Lessons from Philippine school-based initiatives. Journal of Community Resilience and Safety, 7*(2), 67–81.

Wang, Y., & Tsai, H. C. (2022). *Examining teacher engagement in school-based DRR: A Taiwanese case study. Asia-Pacific Education Review, 23*(2), 123–135. https://doi.org/10.1007/s12564-022-09763-4