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DISASTER RISK REDUCTION MANAGEMENT IMPLEMENTATION AND SAFETY PRACTICES AMONG ELEMENTARY SCHOOLS

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ABSTRACT

This quantitative study examined the level of disaster risk reduction and management (DRRM) implementation practices and the extent of disaster safety practices among elementary schools in Magpet, President Roxas, and Arakan. Using a descriptive-correlational design, data were gathered from teachers and DRRM coordinators through a validated survey questionnaire analyzed using Spearman's rho correlation and multiple linear regression. Findings revealed that DRRM implementation practices were generally implemented to highly implemented: emergency preparedness and response plans (WM=4.19, Implemented), disaster risk education and training (WM=4.23, Highly Implemented), physical infrastructure and safety measures (WM=4.23, Highly Implemented), and community and local government collaboration (WM=4.19, Implemented). Disaster safety practices were rated as generally practiced: response to disasters (WM=4.17), resilience (WM=4.14), and sustainability of DRRM practices (WM=4.19). Spearman's rho analysis confirmed highly significant positive relationships between all DRRM implementation dimensions and disaster safety practices (p=0.000). Multiple regression revealed that community and local government collaboration was the sole significant predictor of response to disasters (β=.425, p=.000, R^2=0.480); disaster risk education and training and emergency preparedness were the significant predictors of resilience (R^2=0.544); and all four DRRM dimensions significantly predicted sustainability of DRRM practices (R^2=0.984). The null hypotheses were rejected, confirming that DRRM implementation practices significantly influence disaster safety practices in elementary schools.

KEYWORDS: *Disaster Risk Reduction and Management, DRRM, Safety Practices, Elementary Schools, Emergency Preparedness, Resilience, Sustainability.*

INTRODUCTION

Disasters present serious challenges when schools are not adequately prepared. Without proper preparedness plans, schools face severe disruptions including loss of instructional time, infrastructure damage, and risks to the safety of students and staff (Dela Pena, 2023). The Philippines, ranked among the countries most frequently affected by natural disasters, requires robust DRRM practices in schools to minimize their impact on education (ChildFund International, 2013). The Department of Education (DepEd) has recognized this through issuance of DepEd Order No. 50, Series of 2011, establishing the DRRM Office, and DepEd Order No. 37, Series of 2015, establishing the Comprehensive DRRM in Basic Education Framework.

Despite these policy foundations, research evaluating the specific implementation and effectiveness of DRRM practices in elementary schools—particularly in localized, disaster-prone areas such as Magpet, President Roxas, and Arakan—remains limited (Ronquillo, 2020; Lapada, 2022). This study addressed that gap by assessing the current level of DRRM implementation practices and disaster safety preparedness, and by examining the relationships and predictive influences between these constructs.

MATERIALS AND METHODS

Research Design

A quantitative descriptive-correlational design was employed (Ary, Jacobs & Sorensen, 2010; Creswell, 2014) to describe the levels of DRRM implementation practices and disaster safety practices, and to examine the relationships and influences between them without experimental manipulation.

Participants

Teacher-respondents and DRRM coordinators from selected elementary schools in Magpet, President Roxas, and Arakan, Cotabato participated through survey questionnaires.

Research Instrument

A validated self-made survey questionnaire was used, assessing: (1) DRRM Implementation Practices across four dimensions—emergency preparedness and response plans, disaster risk education and training, physical infrastructure and safety measures, and community and local government collaboration; and (2) Disaster Safety Practices across three dimensions—response to disasters, resilience, and sustainability of DRRM practices. Items were rated on a

five-point Likert scale (1=Not Implemented/Not Practiced to 5=Highly Implemented/Highly Practiced).

Statistical Analysis

Weighted means described the levels of all variables. Spearman's rho correlation assessed the significance and direction of relationships between DRRM implementation dimensions and disaster safety dimensions. Multiple linear regression identified the significant predictors and proportion of variance explained in each disaster safety outcome.

RESULTS AND DISCUSSION

Level of DRRM Implementation Practices

Disaster risk education and training and physical infrastructure and safety measures were both rated Highly Implemented (WM=4.23), indicating fully implemented and consistently observed practices. Emergency preparedness and response plans (WM=4.19) and community and local government collaboration (WM=4.19) were rated Implemented, indicating generally implemented practices that still need improvement. Among the specific items, the highly practiced indicators included established evacuation routes, effective emergency communication systems, organized drills, integration of DRR topics into curricula, continuous teacher training, reinforcement of structural components, and coordination with community disaster response teams.

Table 1. Level of DRRM Implementation Practices.

DRRM Implementation Dimension	Weighted Mean	Description
Emergency Preparedness and Response Plans	4.19	Implemented
Disaster Risk Education and Training	4.23	Highly Implemented
Physical Infrastructure and Safety Measures	4.23	Highly Implemented
Community and Local Government Collaboration	4.19	Implemented

These results are consistent with Fischer et al. (2019), who emphasized that comprehensive emergency planning is essential for safety and effective disaster management. The highly implemented status of disaster risk education aligns with Cabilao-Valencia et al. (2018) and Ronan et al. (2008), who emphasized that integrating DRR into curricula builds resilience and preparedness. The Implemented rating for community collaboration aligns with Rahman et al. (2020), who noted that school-LGU partnerships enhance preparedness but require consistent strengthening.

Extent of Disaster Safety Practices

All three disaster safety dimensions were rated as Practiced. Response to disasters (WM=4.17) and resilience (WM=4.14) indicated generally practiced but still needing improvement, while sustainability of DRRM practices (WM=4.19) was also practiced. The highest-rated individual indicators were the school's ability to implement evacuation procedures quickly (4.21, Highly Practiced), provision of emotional and psychological support after disasters (4.27, Highly Practiced), and resource allocation for long-term DRRM programs (4.34, Highly Practiced).

Table 2. Extent of Disaster Safety Practices.

Disaster Safety Dimension	Weighted Mean	Description
Response to Disasters	4.17	Practiced
Resilience	4.14	Practiced
Sustainability of DRRM Practices	4.19	Practiced

Relationship between DRRM Implementation and Disaster Safety Practices

All Spearman's rho values were significant at p=0.000, leading to the rejection of the null hypothesis. Emergency preparedness correlated moderately with response (r=.481) and resilience (r=.520), and strongly with sustainability (r=.611). Disaster risk education correlated moderately with response (r=.494), strongly with resilience (r=.650), and moderately with sustainability (r=.548). Physical infrastructure correlated moderately with response (r=.470) and resilience (r=.581), and weakly to moderately with sustainability (r=.387). Community and local government collaboration correlated moderately with response (r=.529) and resilience (r=.420), and had a very strong correlation with sustainability of DRRM practices (r=.999).

Table 3. Spearman's Rho Correlation Matrix.

DRRM Implementation Dimension	Response (r)	Resilience (r)	Sustainability (r)
Emergency Preparedness & Response Plans	0.481**	0.520**	0.611**
Disaster Risk Education and Training	0.494**	0.650**	0.548**
Physical Infrastructure & Safety Measures	0.470**	0.581**	0.387**
Community & Local Govt. Collaboration	0.529**	0.420**	0.999**

***p<0.01 (2-tailed)*

Influence of DRRM Implementation on Disaster Safety Practices

Multiple regression confirmed significant collective influence on all three safety outcomes. For response to disasters (R^2=0.480, F=21.468, p=0.000), community and local government collaboration was the sole significant predictor (β=.425, p=.000), explaining that stronger school-LGU partnerships are the most critical driver of effective disaster response—consistent with Rahman et al. (2020) and Lindell and Perry (2004). For resilience (R^2=0.544, F=27.769, p=0.000), disaster risk education (β=.368, p=.001) and emergency preparedness (β=.244, p=.028) were the significant predictors, confirming that training and well-structured emergency plans build schools' adaptive and recovery capacity (Cabilao-Valencia et al., 2018; Fischer et al., 2019). For sustainability of DRRM practices (R^2=0.984, F=289.999, p=0.000), all four DRRM dimensions were significant predictors, indicating an exceptionally strong and comprehensive collective influence on long-term sustainability.

Table 4. Multiple Regression: DRRM Implementation Predicting Disaster Safety Practices.

Safety Dimension	Significant Predictor(s)	R^2	F-value	p
Response to Disasters	Community & LGU Collaboration (β=.425)	0.480	21.468	0.000**
Resilience	Education & Training (β=.368); Emergency Prep (β=.244)	0.544	27.769	0.000**
Sustainability of DRRM	All four dimensions significant	0.984	289.999	0.000**

***p<0.01*

CONCLUSION

This study confirms that DRRM implementation practices in elementary schools of Magpet, President Roxas, and Arakan are generally at an Implemented to Highly Implemented level, with disaster risk education, physical infrastructure, and safety measures as the strongest components. Disaster safety practices are consistently Practiced but still require improvement, particularly in resilience and response to disasters. Significant positive relationships exist between all DRRM implementation dimensions and all disaster safety dimensions. The null hypotheses are rejected, confirming that DRRM implementation significantly influences disaster safety practices. Community and local government collaboration is the decisive predictor of effective disaster response, while education and training and emergency preparedness drive resilience. The near-perfect explanatory power for sustainability (R^2=0.984) underscores that comprehensive, multi-dimensional DRRM

implementation is essential for sustaining long-term disaster preparedness in elementary schools. School leaders and policymakers should prioritize strengthening community collaboration, enhancing training programs, and continuously updating emergency infrastructure to achieve optimal DRRM outcomes.

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